Policies on Non-Discrimination and Sexual Harassment

The City College prohibits discrimination on the basis of race, color, creed, national origin, ethnicity, ancestry, religion, age, sex (including pregnancy, childbirth and related conditions), sexual orientation, gender, gender identity, marital status, partnership status, disability, genetic information, alienage, citizenship, military or veteran status, status as a victim of domestic violence/stalking/sex offenses, unemployment status, or any other legally prohibited basis in accordance with federal, state and city laws. The Sexual Misconduct policy prohibits sexual harassment, gender-based harassment and sexual violence (together "sexual misconduct") against any CUNY student, employee or visitor.

It is also the University's policy to provide reasonable accommodations when appropriate to individuals with disabilities, individuals observing religious practices, employees who have pregnancy or childbirth-related medical conditions, or employees who are victims of domestic violence/stalking/sex offenses. Questions, concerns, or complaints based on any of the above may be directed to the Office of Diversity and Compliance, Shepard Hall, Room 109A-D (212-650-6310). Additionally, complaints under the Sexual Misconduct policy can also be filed with the Office of Public Safety or Office of Student Affairs.

Disclaimer

The City College of New York, 2016–2017 Undergraduate Bulletin represents the academic policies and procedures, services, course and program offerings that are in effect at the time of publishing. The Bulletin will not be updated to include any changes taking effect since publication. The most current information regarding academic programs and course descriptions, academic policies and services available to students can be found on The City College of New York web site. For matters of academic policy (e.g., applicable degree requirements), students are also advised to consult their major department adviser, refer to the departments web page, the Office of the Provost, and/or the Registrar for additional information.

Important Notice of Possible Changes

The City University of New York reserves the right, because of changing conditions, to make modifications of any nature in the academic programs and requirements of the University and its constituent colleges without advance notice. Tuition and fees set forth in this publication (or website) are similarly subject to change by the Board of Trustees of the City University of New York. The University regrets any inconvenience this may cause. The College does not guarantee to offer all courses it announces. The announcement is made in good faith, but circumstances beyond the control of the College may sometimes necessitate changes. The college may cancel courses if the enrollment does not warrant their being offered or if other contingencies make such a cancellation necessary.
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## Directory

### Mail Address:
The City College/CUNY  
160 Convent Avenue at 138th Street  
New York, N.Y. 10031  
Telephone: 212-650-7000  
www.ccny.cuny.edu

### School and Division Offices
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<td>Architecture (Bernard and Anne Spitzer School of)</td>
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<td>Biomedical Education (Sophie Davis School of)</td>
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<tr>
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<td>Liberal Arts and Science (College of)</td>
<td>NA 5/225</td>
<td>212-650-8166</td>
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<td>Science (Division of)</td>
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<td>Division of Interdisciplinary Studies at the Center for Worker Education</td>
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<td>212-925-6625</td>
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### Other Important Numbers

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<td>NA 1/107</td>
<td>212-650-8106</td>
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<td>Office of Recreation and Campus Fitness</td>
<td>WG floor 3</td>
<td>212-650-7556</td>
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<td>Library (Main)</td>
<td>NA floor 2</td>
<td>212-650-7155</td>
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<td>212-650-8768</td>
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<td>25 Bwy, 7th floor</td>
<td>212-925-6625 x228</td>
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<td>Music Library</td>
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<td>Admin 102</td>
<td>212-650-7850</td>
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<td>Security</td>
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<td>Admin 204</td>
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<td>Student Services</td>
<td>NA 1/210A</td>
<td>212-650-5010</td>
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<td>Graduate Student Council</td>
<td>NA 1/113</td>
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<td>MR 15</td>
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</table>
Directions to the City College Campus

http://www.ccny.cuny.edu/about/directions.cfm

By Train
Take the IRT #1 local to 137th Street and Broadway. Walk up 138th Street three blocks to Convent Avenue.

Take the IND “A” or “D” express or “B” or “C” local to 145th Street and St. Nicholas Avenue, walk west one block to 145th Street and Convent Avenue, then south to 138th Street. The CCNY shuttle bus makes regular stops to this subway during the day.

Take the IRT #4 or #5 express or #6 local to 125th Street and Lexington Avenue. Change there for the M-100 or M-101 bus to Amsterdam Avenue and 138th Street. Walk east one block to Convent Avenue.

Take the Metro North to 125th Street and Park Avenue. Change there for the M-100 or M-101 bus to Amsterdam Avenue and 138th Street, walk east one block to Convent Avenue.

By Bus
Take the M-4 or M-5 to Broadway and 137th Street. Walk up 138th Street three blocks to Convent Avenue.

Take the M-100 or M-101 to Amsterdam Avenue and 138th Street, walk east one block to Convent Avenue.

Take the M-101 to 135th Street and Amsterdam Avenue and walk north to 138th Street, then east one block to Convent Avenue.

Take the BX-19 to 145th Street and Convent Avenue, walk south on Convent Avenue to 138th Street.

By Car
From the West Side Highway: Exit at 125th Street. Cross Broadway and turn left onto Amsterdam Avenue. The College is at 138th Street and Amsterdam Avenue.

From the East Side: Take the FDR or the RFK (Triborough) Bridge to Harlem River Drive. Exit at 135th Street. Continue to St. Nicholas Avenue and turn right, then left onto 141st Street. Turn left onto Convent Avenue. The campus begins at 140th Street and Convent Avenue.

Please note that visitor parking on campus is extremely limited and must be arranged in advance through the Office of Public Safety, (212-650-6911) or the City College Office organizing the public event. Parking is available in the neighborhood.
Shuttle Bus Service

http://www.ccny.cuny.edu/about/gettingthere.cfm

For your convenience and safety, the college offers several ways to get to and from the subways at all times.

CCNY to 145th Street

A CCNY marked bus stops at Campus Bus stops and 145th Street & St. Nicholas Ave. every 15 minutes.

7:00 a.m. to 9:45 p.m. Monday through Friday / 8:15 a.m. to 4:00 p.m. Saturday

Intersession 7:00 a.m. to 8:30 p.m. Monday through Friday

Holidays and Intersession Saturdays: Escort Service only

CCNY to 124th Street

A CCNY marked bus stops at Campus Bus stops & runs from 124th St. to The Towers every 20 minutes.

7:15 a.m. to 9:45p.m. Monday through Friday/8:15 a.m. to 4:00 p.m. Saturday

After hours and Holidays and Intersession - Escort Service only

NEXTBUS @ CCNY

NextBus @ CCNY is a new information system to track and report on the current positions and arrival predictions of City College shuttle buses. With the new NextBus information system, students, faculty and staff will be able to know when the next shuttle bus will arrive. Our CCNY buses are now equipped with GPS devices that will allow for real-time tracking for both of the bus routes: the 145th Street Loop and the 125th Street Loop.

http://www.adm.ccny.cuny.edu/nextbus/

Escort Service (212-650-6911)

Transportation by CCNY marked Bus or GEM cars is available when shuttle services do not run: Pickup and drop off is limited to same stops as the bus stops, plus 125th Street & St. Nicholas Ave. We do not pickup or drop off at any other stops than these, so please plan your safe return to campus accordingly. (Gem cars on Campus only)

9:45 p.m. to 7:00 a.m. Monday to Friday

9:45 p.m. Friday until 7:00 a.m. Monday

8:00 p.m. to 7:00 a.m. Intersession

All day on Holidays

NOTE: For all transportation services riders must display a valid CUNY ID, The Towers ID or visitor’s pass.

For inquiries about the Mass Transit or Campus Loop service call (212) 650-8675 between 8:00 a.m. to 4:00 p.m. Monday to Friday - All other times call (212) 650-6911. For inquiries about the Escort Service call (212) 650-6911.

Students at City College use the many free shuttle and escort services available to get to and from the subway.
Welcome to The City College of New York!

Whether you completed your undergraduate work here at City College or you come to us from another university or country, you are about to embark on a deeper, more committed and rewarding exploration of any one of more than 60 graduate programs. You will be taught by internationally renowned and accomplished faculty in diverse fields, ranging from science, engineering, and architecture to humanities and the arts, education, and social sciences.

To optimize your experience at CCNY, please use this bulletin to familiarize yourself with our graduate programs. Each program offers a rich academic foundation for future success and prepares you to become a leader in an increasingly complex and global world. As a graduate of City, you will join a rich tradition of excellence and achievement. You will shape not only the career path you have chosen, but also the world in which we live.

College life outside of the classroom is just as varied and diverse as our student body.

You will find endless opportunities to join with other like-minded students to pursue your interests in more than 100 student clubs. In particular, I hope that you will bring your concerns and ideas to the graduate student government.

Use our valuable resources to maximize your City Experience. From innovation and entrepreneurship to cutting-edge research, scholarship and creativity, City College is an institution where education is a vital force for progress in the lives of our students and in our communities.

I look forward to seeing you on the City College campus.

Sincerely,

President
The City College of New York is a small university within The City University of New York, offering a rich program of undergraduate and graduate study through its College of Liberal Arts and Science and the Professional Schools. The College of Liberal Arts and Science consists of the following:

- Division of Humanities and the Arts
- Division of Science
- Division of Interdisciplinary Arts and Sciences

The Professional Schools are:

- Spitzer School of Architecture
- Colin L. Powell School for Civic and Global Leadership (formerly the Division of Social Science)
- School of Education
- Grove School of Engineering
- CUNY School of Medicine

Founded in 1847 by a referendum of the people of New York City, City College’s mandate was to offer the best education possible to the children of the poor and working class, and to open to new immigrants the opportunities of America. The City College (CCNY) is the oldest college among the twenty-three public institutions that make up The City University of New York (CUNY), which was established in 1961.

The City College campus occupies thirty-five acres along tree-lined Convent Avenue from 131st Street to 141st Street in Manhattan. The College can be reached easily by several subway and bus lines. Many buildings in the area are landmarks, including the six historic Neo-Gothic structures and three archways on CCNY's North Campus.

The College’s resources include the Morris Raphael Cohen Library, the largest library in the University system, with holdings of over one and a half million volumes; more than two hundred teaching and research laboratories; the Towers, a 600-bed residence hall; and an Information Technology Center that provides instructional and research-oriented services and student access through numerous student computer labs. The Aaron Davis Hall is the site of rehearsals, performances, exhibits and technical training for students in the arts, as well as presentations by professional artists. It is a major cultural asset for CCNY as well as the New York City community.

Hundreds of millions of dollars of new construction and renovation is underway on the campus, including two advanced Science research centers on South campus.

The Towers Residence Hall

The Towers, which opened in 2006, is the first residence hall built on the CCNY campus in its 169-year history. Located at the corner of 130th Street and St. Nicholas Terrace on the South Campus it offers accommodations to nearly 600 resident students. The Towers also includes studio apartments for faculty housing.

The residence hall consists of 164 fully furnished, air-conditioned apartments in a variety of configurations; all units have full kitchen facilities. The residence hall includes wireless lounges, a multi-purpose study/seminar room, a fitness center, a central laundry facility, convenience store and a community kitchen. Living at The Towers is all-inclusive and includes Internet, phone, cable, laundry and all utilities. The Towers has twenty-four hour security with cameras installed throughout the building. CCNY operates a complimentary shuttle/escort service, which connects residents to local subway stations and other important locations.

The residence hall includes wireless lounges, a multi-purpose study/seminar room, a fitness center, a central laundry facility, convenience store and a community kitchen. Living at The Towers is all-inclusive and includes Internet, phone, cable, laundry and all utilities. The Towers has twenty-four hour security with cameras installed throughout the building. CCNY operates a complimentary shuttle/escort service, which connects residents to local subway stations and other important locations.

Information regarding housing costs and the application process can be found at www.ccnytowers.com or prospective students can contact the Office of Housing and Residence Life at 917-507-0070. Tours are offered throughout the year through The Office of Admissions and The Towers leasing office.
section of this Bulletin. In 2016, the state approved the conferment of the BS/MD degree in Biomedical Science/Medical Education. Students interested in applying to the BS/MD program should contact CUNY School of Medicine Office of Admissions.

Master's/Ph. D. Degree Admissions Requirements

Master’s level graduate study is open to qualified students who possess a bachelor’s degree from an accredited U.S. college or university or the equivalent from a foreign institution, and an adequate background in the field of study that they wish to pursue. Normally the equivalent of an undergraduate major in the field is required but the final judgment of preparation remains with the department concerned and the divisional dean. For policies and information governing the Masters and Ph.D. engineering and computer science programs, please refer to the Grove School of Engineer-

- A personal statement.
- International students whose native language is not English and who are not permanent residents (green-card holders) will be required to submit results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). Department score requirements vary; please visit the Graduate Admissions webpage for more information.
- Letters of recommendation.
- Some programs require writing samples, portfolios or auditions.
- GRE test scores are required for some programs. Contact the Office of Admissions for further information.
- Application procedures.

To apply for admission to a City College Graduate program, submit the following information:

- An online application for Graduate Admission with a $125 non-refundable fee.
- Transcripts of all undergraduate and graduate work.
- Letters of recommendation.
- A personal statement.
- GRE Scores (if applicable for master’s program, required for all Ph.D. programs).
- International Students must have a minimum passing TOEFL or IELTS score (Please see Graduate Admissions webpage for more information).
- Some programs require writing samples, portfolios, and/or auditions. Please consult the Office of Admissions for the requirements of the program in which you are seeking admission.

Admissions decisions are made only after receipt of all valid credentials. Admissions decisions are made by the Graduate Admissions Committee of the department and the divisional dean. Students may be admitted to the graduate program as fully matriculated or matriculated with conditions. Matriculant conditional students must fulfill requirements as specified by the academic department.

The Office of Graduate Admissions encourages applicants to apply early. International students should apply a minimum of six months prior to the semester of enrollment.

The college reserves the right to deny admission to any student if in its judgment, the presence of that student on campus poses an undue risk to the safety or security of the college or the college community. That judgment will be based on an individualized determination taking into account any information the college has about the crime committed by the student and the particular circumstances of the college, including the presence of a child care center, summer camp, public school or public school students on the campus. In addition, the college may consider factors such as the amount of time since the crime was committed, the amount of jail time served by the student, the number of years the student was on probation or parole, whether the student has satisfied probation or parole requirements at the time of the student’s application, whether the student has completed drug, alcohol, sex offender or other treatment, and what work or educational experience the student has had after the conviction. Finally, if the student is known to have been assisted by CUNY-sponsored or other re-entry program or initiative, the college will consult with a counselor or representative from said program.
Walk-in Non-Matriculate Status Admissions Process and Matriculation Process

To apply as a “walk-in non-matriculant”, a student must complete the online application and provide a transcript indicating proof of a baccalaureate degree. Approval is based on space availability and adequate prior preparation. Once the necessary approval has been received, the student pays the $125 application fee and may register. Students who obtain approval in this status are limited in the number of credits they may take, as follows:

- School of Education – nine credits
- School of Engineering – six credits
- Liberal Arts & Science – twelve credits

A student may apply to the College of Liberal Arts and Science, the Grove School of Engineering and the School of Education as a “walk-in non-matriculant” during the Fall, Spring and Summer registration period. The following programs do not accept non-matriculated applications: All Ph.D. programs, all Architecture programs, Branding + Integrated Communication, Computer Science-Information Systems, Digital and Interdisciplinary Art Practice, Media Arts Production, Mental Health Counseling and Public Service Management.

Education students who are planning to matriculate must take the New York State Teacher Certification Examination (NYSTCE) of the Academic Literacy Skills Test (ALST formally LAST) before completion of the 9 credit maximum as a non-degree student.

To obtain degree candidacy and obtain a master’s degree a student must be matriculated. Walk-in non-matriculants are encouraged to apply for matriculated status if they wish to continue graduate study at City College. Students must submit a Graduate Admissions application and official documents to the Office of Graduate Admissions in order to have their application reviewed.

Advanced Standing

Students who have completed graduate work at other regionally accredited institutions may receive advanced standing toward the master’s degree, pending approval of the CCNY departmental graduate advisor and the divisional dean. Courses considered for advanced standing must have been taken within a five-year period preceding matriculation at City College. The maximum number of credits awarded for advanced standing is:

Requirements:
1. Up to six credits in advanced standing may be allowed for graduate work satisfactorily completed at institutions other than The City College of New York, provided that the program head deems the work appropriate to the student’s program of study. An official transcript must accompany this completed form and submitted to The Admissions Office.
2. The course or courses for which such credit is sought must have been completed within the three-year period prior to the date of matriculation in the graduate program.

College of Liberal Arts and Science
Bernard and Anne Spitzer School of Architecture
- (M. Arch. I) 36
- (M.L.A. I) 30
- (M.U.P, M. Arch II; M.L.A. II) 0
Grove School of Engineering
- 6
School of Education
- 6

*Advanced standing will be granted for graduate courses in visual arts from accredited art schools.

For further information on admission to the College of Liberal Arts and Science or the Grove School of Engineering contact:

The City College of New York
Office of Admissions
Wille Administration Building, Room 101
160 Convent Avenue
New York, NY 10031
Telephone: 212-650-6977
graduateadmissions@ccny.cuny.edu

Information and applications for Architecture and Education programs may be obtained from:

School of Architecture
Bernard and Anne Spitzer School of Architecture
141 Convent Avenue, Room 120
New York, NY 10031
212-650-5663
archgrad@ccny.cuny.edu

School of Education
School of Education
NAC 3/223A
160 Convent Avenue
New York, NY 10031
212-650-6236
edgradadm@ccny.cuny.edu

Immunization

New York State Public Health Law (PHL) 2165 requires proof of immunity to measles, mumps and rubella (MMR) as a condition for attendance. The College reserves the right to prevent the registration of any applicant who fails to provide a record of immunization or who otherwise provides a health risk to the College community. It is University policy that all students who register for six or more credits/equivalent credits and were born after December 31, 1956 must provide proof of their immunity to measles, mumps and rubella. Students may fax their immunization records and the forms to 212-650-8227.

Recently, New York State passed Public Health Law 2167, addressing meningococcal meningitis. In compliance with PHL 2167, all New York State students, regardless of how many credits they take in college, must fill out a Meningococcal Meningitis Response form within 30 days of registration or at the same time they send in their MMR compliance documents.

Students may download forms at http://origin.admin.ccny.cuny.edu/student affairs/wellness/default.asp. If submitting the forms by fax, be sure to include the student’s name, social security number (or assigned City College identification number) and birth date. Applicants are advised to confirm the receipt of the fax by calling 212-650-8222.

Students may download forms from the Wellness website, which can be accessed from the CCNY homepage. If submitting the forms by fax, be sure to include the student’s name, social security number (or assigned City College identification number) and birth date. Applicants are advised to confirm the receipt of the fax by calling 212-650-8222.
Policies for Graduate Students

Certification of Full-Time Status
A full-time student is one taking twelve credits or the equivalent in equated credits. A student is eligible to enroll for equated credits when the student enrolls for a minimum of six real credits and is a matriculated student. A student may obtain the Application for Certified Full Time Status form from the Office of the Registrar.*

Equated credits include: (1) teaching assistantship - three credits (quarter-time) to six credits (half-time); (2) research assistantship - three credits (quarter-time) to six credits (half-time); (3) research for thesis - a maximum of six credits; (4) field work - a maximum of six credits; (5) preparation of thesis - a maximum of six credits. International students who are registered for certificated credits are not necessarily in compliance with Immigration Service requirements. They must consult with the Foreign Student Advisor in NA 1/107 for additional information.

* Effective Fall 2015, a program load of 9 credits is considered the minimum full-time graduate course load for the Master of Professional Studies (MPS) program in Branding + Integrated Communications.

Maintenance of Matriculation
Graduate students are expected to maintain continuous involvement and enrollment in the program. Failure to register for any period constitutes a de facto withdrawal. A student is not eligible to receive a master’s degree while not in attendance. Students who find it necessary to interrupt their graduate studies and wish to maintain their academic standing during the semesters when they are not registered for courses or research credits must pay the Maintenance of Matriculation fee. Students who do not maintain matriculation and wish to resume study must apply for readmission. Readmission is granted only on the recommendation of the department and the approval of the divisional dean.

Time for Completion of Degree
Normally a student will complete all requirements for the master’s degree within four years of matriculation. Extension of time for a student in regular attendance may be granted in exceptional circumstances upon recommendation by the departmental Graduate Committee and approval of the dean. However, a student who has been absent from the College for more than five years must reapply for admission to the program. All previous credits will be reevaluated by the graduate advisor and the remaining courses necessary for completion of the degree will be determined.

Grading System

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<tr>
<td>A+</td>
<td>Exceptional</td>
<td>4.00</td>
</tr>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td>Good</td>
<td>3.70</td>
</tr>
<tr>
<td>B+</td>
<td>Good</td>
<td>3.30</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td>Good</td>
<td>2.70</td>
</tr>
<tr>
<td>C+</td>
<td>Satisfactory</td>
<td>2.30</td>
</tr>
<tr>
<td>C</td>
<td>Satisfactory</td>
<td>2.00</td>
</tr>
<tr>
<td>F</td>
<td>Failure/Unsuccessful Completion of Course</td>
<td>0.00</td>
</tr>
<tr>
<td>CR</td>
<td>Completion of thesis and research courses</td>
<td>—</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>—</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawed without penalty (student initiated)</td>
<td>—</td>
</tr>
<tr>
<td>WN</td>
<td>Never attended</td>
<td>—</td>
</tr>
<tr>
<td>FIN</td>
<td>F due to incomplete</td>
<td>0.00</td>
</tr>
<tr>
<td>WU</td>
<td>Withdraw without approval</td>
<td>0.00</td>
</tr>
<tr>
<td>INC</td>
<td>Incompletes</td>
<td>—</td>
</tr>
<tr>
<td>SP</td>
<td>Satisfactory progress (restricted to thesis and research courses requiring more than one semester for completion)</td>
<td>—</td>
</tr>
<tr>
<td>AUD</td>
<td>Audit-no credit</td>
<td>—</td>
</tr>
</tbody>
</table>

Policy on Lateness and Absence
Students are expected to attend every class session of each course in which they are enrolled and to be on time. An instructor has the right to drop a student from a course for excessive absence. Students are advised to determine the instructor’s policy at the first class session. They should note that an instructor might treat lateness as equivalent to absence. No distinction is made between excused and unexcused absences. Each instructor retains the right to establish his or her own policy, but students should be guided by the following general College policy:

In courses designated as clinical, performance, laboratory or fieldwork courses, the limit on absences is established by the individual instructor. For all other courses, the number of hours absent may not exceed twice the number of contact hours the course meets per week.

When a student is dropped for excessive absence, the instructor will enter the grade of WU. A student may appeal this action to the Committee on Course and Standing in the school in which the course is offered.

Grade of Incomplete
A grade of incomplete (INC) may be given by an instructor to a student who, through unavoidable circumstances, has been unable to complete the assigned course work. Course work must be completed no later than the date published in each semester’s academic calendar (e.g., a student who receives an INC for a course ending in May must complete the work by mid-march of the following year). A grade of INC not resolved in a timely manner will become an FIN. Extensions of time for resolving FIN grades may be considered only by written appeal to the appropriate Committee on Course and Standing of the particular school.

Withdrawals
A student may withdraw from a course during the first ten weeks of the semester by requesting a withdrawal form from the Office of the Registrar, obtaining the signature of the course instructor and the advisor, and returning the form to the Office of the Registrar. A course dropped during the first three weeks will not appear on the record and a grade of W will be assigned to courses dropped between the fourth and tenth week. A student who wishes to drop a course later than the tenth week must petition the appropriate Committee on Course and Standing and must present, in writing, satisfactory reasons for requesting permission to withdraw. A student who fails to appear in class for a substantial portion of the semester will be given a grade of WU by the instructor.

Auditing
Students wishing to audit a course must select audit status at the time of registration. Auditors must register in the normal manner and pay required tuition and fees. No credit or grade will be given for audited classes. Auditors' status cannot be changed to credit status after the closing date for registration. Likewise, credit status cannot be changed to auditor status after registration.

Progress of Non-Matriculated Students
A student who is registered as a non-matriculant is not eligible to receive a master’s degree while in that status. A non-matriculant will not be granted a permit to register for courses off campus. Non-matriculated students must change status by formal application through the appropriate Office of Admissions. Applicants for a change in status from non-matriculant to matriculated students will be considered as new applicants for admission and therefore, may be accepted or denied admission. A non-matriculated student who wishes to become matriculated and thus eligible to receive a degree must have a B average or better in courses, which do not include more than two courses of Independent Study or Tutorial.

Academic Appeals
The faculty of each of the schools or Division defines the degree requirements, academic standards, and rules for students enrolled in the school and has jurisdiction over the courses offered by the school. Each of the schools and Divisions has a Committee on Course and Standing charged with overseeing special cases and appeals from graduate students. Students have the right to appeal any decision to the appropriate Committee on Course and Standing, which is the final authority on enforcement of curriculum, degree requirements, academic standards, grades and academic rules.

It should be noted that most academic rules are enforced without exception. Generally, the committee will consider requests for deviations from the rules only when the deviation is within the spirit, if not the letter, of the rule.

Student Complaints
Students with grievances concerning classroom matters other than grades should first attempt to resolve the grievance at the department level through discussion with the faculty member(s) or department chair. If the
matter is not resolved, the student or department may refer the problem to the appropriate academic dean, the Ombudsperson, or to the Vice President for Student Affairs, who shall, if necessary, refer it to the Office of the Provost for further consideration and possible action. For student complaints about faculty conduct in formal academic settings see also The City University of New York - Student complaint Procedure (Appendix B.16).

Probation and Dismissal
A student will be placed on probation if the grade point average falls below 3.0. The student may be removed from probation when the G.P.A. reaches 3.0.

A student will be dismissed if the G.P.A. remains below 3.0 for two semesters. Students may appeal their dismissal to the Committee on Course and Standing.

Courses Outside a Degree Program
Students who wish to take courses that do not count toward the degree must receive permission to do so from the department and the dean of the school or division awarding the degree.

Requirements for the Master's Degree
The master's degree is awarded three times during the year: February, May or June, and September. Commencement exercises take place once each year, in late May or early June.

Students are expected to be familiar with the requirements of their degree programs. All requirements for the degree must be met before the date of graduation. Therefore, all temporary grades must be resolved prior to the date of graduation, including those assigned in the final semester of attendance.

In addition, all "stops" must be cleared by the date of graduation. Failure to clear "stops" will result in the delay of the distribution of diplomas and the processing of requests for transcripts.

Students should have a preliminary graduation check conducted a minimum of two semesters before the anticipated date of graduation by an advisor in their department or division. Final graduation check and certification is conducted in the divisional dean's office. All students must apply for graduation, which is not automatic, upon completion of the program. Students must apply for graduation on the Registrar's website by the published dates on the academic calendar.

1. Residence: A minimum of 24 credits in residence at the College.
2. Matriculated status.
3. Satisfactory completion of an approved program of study: This program should normally comprise a coherent sequence of courses, lectures, seminars, discussions, and independent studies or investigations designed to help the student acquire an introduction to the mastery of knowledge, creative scholarship and research in the chosen field. Completion of the program generally requires one to two years of full-time study or the equivalent beyond the bachelor's degree. Each program must be approved and must include a minimum of 30 credits. Some programs may require more credits.
4. Grades: An average grade of B in all courses taken toward the degree. When students receive a grade of less than B in any of the required courses, their academic progress will automatically become subject to review.
5. Comprehensive examination: Some programs require the successful completion of a comprehensive examination; in some cases a comprehensive examination may be substituted for a thesis. The specific requirements are listed under each program. Students who plan to take a comprehensive examination must file an application with the chair of their program's Graduate Committee. Students who wish to take a first examination in a doctoral program in lieu of a master's comprehensive examination should make arrangements with the chair of the Graduate Committee.
6. Research and thesis: Many programs require a thesis; some do not. Where a thesis is required, the student must register the thesis topic, together with written certification of the mentor's acceptance of the topic, with the chair of the department's Graduate Committee and with the divisional dean. Any change of topic or mentor must be similarly recorded. When the completed thesis has been approved by the mentor and by additional faculty readers, the formal written notice of acceptance of the thesis must be submitted to the chair of the Graduate Committee in the field and to the divisional dean. Appropriate forms for both thesis topic registration and certification of the approved thesis may be secured from department or divisional offices.

The original and two photocopied pages of the approved thesis must be submitted to the office of the divisional or school dean by the divisional deadline, together with the formal certification of the accepted thesis, signed by the thesis mentor and by the chair of the Graduate Committee in the program.

All three copies of the thesis should be prepared on paper equivalent to a 16 lb. Bond, 8 1/2 x 11 inches, with a margin of 1 1/2 inches on the left-hand side of the page, and with pages consecutively numbered. The original and the second copy should be left unbound; the first copy is to be placed in a hardcover, spring-back binder. The thesis must have a title page bearing the subject, the department, the author's name, the mentor's name, and the date.

7. Foreign language proficiency: Some programs require evidence of proficiency to read and utilize in research, a foreign language or another appropriate tool of research (e.g. statistics, computer). The specific requirements are listed under each program. The Language Proficiency Examination is administered by the Department of Foreign Languages and Literatures, which assists in appropriate selection of texts and is responsible for grading the examination. Translation will be from the chosen language into English. Students wishing to take the language exam must apply in the office of the appropriate divisional or school dean.

8. Graduate scholastic standards: The result of a student's work in any course completed will be expressed by one of the following grades (including + and – grades): A (Excellent), B (Good), C (Pass), F (Failure).

CUNY Graduate Center Ph.D. Candidates Seeking Master's Degrees at CCNY

En-Route Master's Degree for candidates continuing in Ph.D. Program at the CUNY graduate center

Students who are currently registered in a Ph.D. Program at the CUNY Graduate Center, and intend to complete that degree, may receive a master's degree from The City College in graduate academic disciplines offered by CCNY.

Students must:
- Complete the appropriate forty-five (45) credits in the Ph.D. Program.
- Pass the first examination in their field of study.
- File the "eligibility for degree" form at the Graduate Center.

In all cases, the student must contact the Executive Officer of their program, at the Graduate Center, to initiate the process.

The en-route master's will be awarded as of the commencement dates at CCNY. City College will not maintain a transcript record for en-route master's students. However, for purposes of record keeping, the College will maintain an abbreviated record, indicating that the student has been awarded an En-Route Master's Degree from CCNY.

Note: The en-route master's is not available in the following areas: Classics, Comparative Literature, Linguistics, Liberal Studies, Philosophy and Political Science.

Master's degree candidates at CCNY who do not intend to continue in the Ph.D. Program at the CUNY Graduate Center

Students who wish to obtain a master's degree and who do not intend to continue in the Ph.D. Program at the Graduate Center must do the following:
- Officially withdraw from the Ph.D. Program prior to applying for admission to the master's program at City College.
- Complete an application for graduate admission with the Office of Admissions at City College.
- Complete an application for degree with the Office of the Registrar at City College.

Courses taken at the Graduate Center will count toward the CCNY residency requirement.

Advanced Standing

Students who have completed graduate work at other regionally accredited institutions may receive advanced standing toward the master's degree, pending approval of the CUNY departmental graduate advisor.

Courses considered for advanced standing must have been taken within the five-year period preceding matriculation at City College. The maximum number of credits awarded for advanced standing is:

- College of Liberal Arts and Science: 12 credits
- School of Engineering: 6 credits
- School of Education: 6 credits
Credit will be granted based on the applicability of course work towards the CCNY master’s degree as determined by the appropriate Dean’s Office.

**The Right to Privacy**
The College complies fully with the Family Educational Rights and Privacy Act (FERPA).

**Cancellation of Courses**
The College does not guarantee to give all courses it announces. The announcement is made in good faith, but circumstances beyond the control of the college sometimes necessitate changes. The College may cancel courses if the enrollment does not warrant their being offered or if other contingencies make such a cancellation necessary.

**CUNY School of Medicine**
For policies and information governing students in the BS-MD program or the Master of Science in Physician Assistant Studies program, please refer to the relevant program at https://www.ccny.cuny.edu/csom.
Tuition and Fees

The Bursar's Office is located in the Wille Administration Building, Room 103, and the telephone number is 212-650-8700.

Tuition is set by the CUNY Board of Trustees and is subject to change without notice of their actions. Students should arrange to pay their total tuition, fees and charges as the final step of the registration process if they wish to be admitted to classes. Students who may be eligible for financial assistance or grants should consult with the Financial Aid Office as early as possible.

Graduate Tuition Per Semester

<table>
<thead>
<tr>
<th>Masters of Architecture &amp; Engineering</th>
<th>Resident</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time</td>
<td>$5,930 per Semester</td>
<td>$870 per Credit</td>
</tr>
<tr>
<td>Part-Time</td>
<td>$505 per Credit</td>
<td>$870 per Credit</td>
</tr>
<tr>
<td>Excess Hours</td>
<td>$65 per Credit</td>
<td>$85 per Credit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Masters of Public Administration</th>
<th>Resident</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time</td>
<td>$5,820 per Semester</td>
<td>$920 per Credit</td>
</tr>
<tr>
<td>Part-Time</td>
<td>$500 per Credit</td>
<td>$920 per Credit</td>
</tr>
<tr>
<td>Excess Hours</td>
<td>$65 per Credit</td>
<td>$85 per Credit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Masters in Professional Studies in Branding and Integrated Communications</th>
<th>Resident</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time</td>
<td>$6,865 per Semester</td>
<td>$985 per Credit</td>
</tr>
<tr>
<td>Part-Time</td>
<td>$790 per Credit</td>
<td>$985 per Credit</td>
</tr>
<tr>
<td>Excess Hours</td>
<td>$65 per Credit</td>
<td>$85 per Credit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All Other Masters Programs</th>
<th>Resident</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Time</td>
<td>$5,065 per Semester</td>
<td>$780 per Credit</td>
</tr>
<tr>
<td>Part-Time</td>
<td>$425 per Credit</td>
<td>$780 per Credit</td>
</tr>
<tr>
<td>Maintenance of Matriculation</td>
<td>$210 per Semester</td>
<td>$340 per Semester</td>
</tr>
<tr>
<td>Excess Hours</td>
<td>$65 per Credit</td>
<td>$85 per Credit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Doctoral Tuition</th>
<th>Resident</th>
<th>Non-Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1: Full Time</td>
<td>$4,530 per Semester</td>
<td>$875 per Credit</td>
</tr>
<tr>
<td>Level 1: Part-Time</td>
<td>$515 per Credit</td>
<td>$875 per Credit</td>
</tr>
<tr>
<td>Level 2: FT/PT</td>
<td>$2,840 per Semester</td>
<td>$6,310 per Semester</td>
</tr>
<tr>
<td>Level 3: FT/PT</td>
<td>$1,130 per Semester</td>
<td>$2,240 per Semester</td>
</tr>
</tbody>
</table>

Application Fees

* Subject to change through a student referendum & Board approval

There may be other costs and fees associated with academic work, such as textbooks and studio or lab materials. Notice of additional fees will appear in the course listing in each semester's Schedule of Classes.

Tuition Refunds

When courses are withdrawn by the College, a full refund of appropriate tuition and fees will be made. In other cases, tuition refunds will be made or liability reduced only in accordance with Board of Trustees regulations. Further information can be obtained from the Office of the Registrar. On approved applications, proportionate refunds of tuition will be made in accordance with the schedule below. The date on which the application is filed, not the last date of attendance, is considered the official date of the student's withdrawal and serves as the basis for computing any refund.

- Withdrawal before first day of classes (as published in the academic calendar): 100%
- Withdrawal before completion of the first full scheduled week of classes: 75%
- Withdrawal before completion of the second full scheduled week of classes: 50%
- Withdrawal before completion of third full scheduled week of classes: 25%
- Withdrawal beyond third week: 0%

Consolidated and activity fees are not refundable.

Payment of Collection Costs

Students who do not make full payment of their tuition, fees and other college bills and whose account is sent to a collection agency will be responsible for all collection costs, including agency fees, attorney fees and court costs, in addition to whatever amounts are owed to the college. In addition, non-payment or a default judgment against a student's account may be reported to a credit bureau and be reflected in their credit report.

New York State Residency Requirements

Students are assigned residency status when admitted to the College. Since residency determines tuition rates, students should know their classifications. If there is a question of status it is the responsibility of the student to prove residency. An "Application for Proof of Bona Fide Residency" is available at the Office of the Registrar. New students must apply through the Office of Admissions.

The Financial Aid Office administers federal and state funds, as well as those provided by special programs and the College itself. Federal funds may be disbursed only to those who maintain their academic standing and are not in default of a student loan or owe a refund on a federal grant. For the most recent information on application filing procedures, deadline dates, and eligibility criteria for the various programs, students are urged to contact the Financial Aid Office.
The Financial Aid Office is located in the Wille Administration Building, Room 104, and the telephone number is 212-650-6656.

Tuition is set by the University Board of Trustees and is subject to change without notice by their action. Students should arrange to pay their total tuition, fees and charges to complete their registration if they wish to be admitted to classes. Students who may be eligible for financial assistance or grants should consult with the Financial Aid Office as early as possible.

Campus-Based Aid Programs

Funds from the two federal programs—Federal Work Study (FWS) and Federal Perkins Loan—may be changed from year to year. Contact the Financial Aid Office or visit the Financial Aid Office website. Maximum awards are subject to review and may be changed from year to year in unsubsidized loans regardless of income. Applicants for these programs should consult the Financial Aid Office regarding academic progress standards that are required to continuing to receive aid.

Federal Work-Study Program (FWS)

Students are offered an opportunity to work on-campus or at an approved off-campus public service or non-profit agency in the hope that they will gain educational and financial benefits through the FWS experience. During the academic year students work part-time; while during the summer and vacation periods, they may work part-time or full-time.

Federal Perkins Loan

Depending upon available funds, a student may receive a maximum of $2,500 for each year of graduate study. For details including repayment and interest rates, contact the Financial Aid Office. Maximum awards are subject to review and may be changed from year to year.

Federal Teacher Education Assistance for College and Higher Education grant program (TEACH Grant)

This is a federal program that provides grants of up to $4,000 per year to graduate students who are enrolled in an approved program that leads to Teacher certification in a federally approved high-needs field. Recipients must agree to fulfill a service obligation as a full-time teacher in a high-needs field, at a public or private elementary or secondary school that serves low-income families. Applicants for this grant must file a FAFSA, complete entrance counseling & TEACH Grant Agreement to serve (ATS) and submit a TEACH Grant application to the CCNY School of Education. For details including service obligation and agreement to serve, contact the CCNY School of Education. Maximum awards are subject to review and may be changed from year to year.

Exit counseling is required for students who are no longer enrolled in a TEACH Grant eligible program.

William D. Ford Federal Direct Loan

The Ford Federal Direct Loan Program enables matriculated students who are enrolled a minimum of half-time (6 credits) to meet educational expenses. Students must agree to fulfill a service obligation as a full-time teacher in a high-needs field, at a public or private elementary or secondary school that serves low-income families. Recipients must file a FAFSA, complete entrance counseling & TEACH Grant Agreement to serve (ATS) and submit a TEACH Grant application to the CCNY School of Education. For details including service obligation and agreement to serve, contact the CCNY School of Education. Maximum awards are subject to review and may be changed from year to year.

William D. Ford Plus Loan for Graduate and Professional Students

A graduate PLUS Loan is available to graduate students who need additional financial assistance to meet their educational expenses. Students are eligible to borrow up to their cost of attendance minus all other estimated financial aid. These loans require a credit check. Interest is accrued and repayment begins while a student is enrolled in school. Contact the Financial Aid Office or visit the Office’s website for more information.

Verification

Students who file a FAFSA may be chosen for a process called "verification". When the federal government requires verification, the financial aid office must confirm the information on a student's FAFSA. Items to be verified include adjusted gross income, US taxes paid, education credits, household size, number in college, child support paid, assets and untaxed income. Students chosen for verification cannot receive any disbursements until this process has been completed. Federal Return to Title IV Policy

Satisfactory Academic Progress (SAP) Requirements

Federal Financial Aid - All students must satisfy qualitative and quantitative academic standards in order to remain eligible for federal financial aid. Students will be measured against the Title IV Satisfactory Academic Progress Standards at the end of each spring semester in order to determine eligibility for the upcoming year. Those who fail to meet the academic standards will have their federal aid automatically suspended until they meet the minimum standards. (Students who can document that their failure to satisfy academic requirements were the result of extraordinary or exceptional circumstances may be able to apply for a waiver to receive federal aid for another semester).

Financial Aid Refunds

A student can receive financial aid refunds in one of three ways:

1. A check mailed to the student's address
2. Direct deposit
3. CUNY Scholar Card

For safety and security, direct deposit or CUNY Scholar card is strongly recommended. Financial aid will be applied to a student's outstanding tuition and fees charges first. Remaining funds will be refunded to the student.

Other Scholarships, Prizes, and Awards

Many prizes, scholarships, and various kinds of commendations are awarded annually to graduate students for their achievements at the College. Departmental awards are listed with the departmental descriptions. For more information on these, see the appropriate dean or chair. Information is also available on centrally administered merit and need-based scholarships. A listing and common application are available on the College’s website or through the Office of Admissions.
The mission of the Office of Information Technology is to:

- Empower the user community to achieve the highest level of academic and administrative success through the effective use of information technologies
- Facilitate academic innovations in teaching, learning, research and scholarship
- Deliver excellent technology services in support of City College’s mission.

The OIT is committed to collaborating with the college community to provide excellent information technology products and services. We recognize that the College community has the best chance to succeed when we within the OIT strive for excellence and uphold the highest standards in our daily operations.

The OIT is responsible for software applications, hardware support, telecommunications, media services, network infrastructure, instructional technologies and information security. In addition to providing technical support services to the College community we also initiate technology enhancement projects and implement innovative solutions to technology-based issues to improve campus life.

As College populations become more and more technology savvy, the professional skills development of the OIT staff has become extremely important. Technology is constantly evolving, and it seems that every day there is yet another new application released that is meant to simplify business dealings. We are committed to staying current with the high-level trends of technology and their corresponding impact on education with constant training courses for our staff.

The OIT houses two general computer labs to facilitate the technology needs of our students. (1) The North Academic Center (NAC) General Student Lab, which provides 108 Windows-based computers; and (2) The City Tech Center, City College’s new state-of-the-art computing, learning and training resource center, located on the ground floor of the Cohen Library in the North Academic Building, room NA 1/301. Re-designed to accommodate student learning in a variety of stimulating configurations. The Tech Center provides the following services:

- Over 300 workstations
- Seven printers (five general-use, one color, and one wifi enabled)
- Ten media study rooms (MSR) with dual-flat panel displays that accommodate from three to six students
- Fifteen two-person study rooms equipped with Windows or Macintosh desktop workstations
- Three smart classrooms containing 32, 35 and 50 workstations, high definition projectors, and, in the largest classroom, a podium with AV controls and laptop connections.
- Over 80 single-use desktop in the open bays
- Laptop loan program for students’ use while using the MSR rooms

The workstations are configured with compatible version of the college’s site-licensed software, including Adobe Creative Suite, Matlab, Microsoft Office Suite, SAS, and SPSS. The spatial configurations accommodate students who choose to work individually, as well as provide incentives for student collaboration.

The Service Desk was revamped in the summer of 2011, expanding services to improve support for the CityPortal, Blackboard LMS, laptops, CUNYFIRST wireless configuration and access, and act as a central distribution point for campus-wide, site-licensed software to the college community. The Service Desk also provides Tier 1 technical support for students, faculty and staff in the following areas:

- Technical information technology support
- Mobile devices
- Laptop
- Wireless configuration and access
- Site-licensed software
- College e-mail system (Citymail)
- Registration
- CUNY Portal
- Password Reset
- Blackboard
- Active Directory log-in

Research and Study Facilities

Library

The City College library system includes:

- The Morris Raphael Cohen Library (North Academic Center)
- The Music Library (Shepard 160)
- The Architecture Library (Spitzer School of Architecture 101)
- The Architecture Visual Resources Library (Spitzer School of Architecture 104)
- The Science/Engineering Library (Marshak 29)
- The Art Visual Resources Library (Compton Goethals 245A)

The Center For Worker Education Library (25 Broadway, 7th Floor)

Cohen Library, built around an atrium in the North Academic Center, occupies five floors and houses Humanities, Powell School and Education materials. The collections, the largest in the CUNY system, total more than 1,600,000 volumes, 901,600 microforms, 27,800 scores and recordings, 8,000 videos and DVDs, and 1.3 million periodicals. Established in 1884, the library has 197,000 government documents. The Archives and Special Collections Division contains 4,191 linear feet of official records and historical material on the College in addition to rare books and special subject collections. Digital library holdings include more than 161,000 e-books, 100,000 digital government documents and 77,000 electronic subscriptions.

The library serves instructional and research needs of undergraduate through doctoral levels and provides study areas, carrels and computer workstations for students and faculty.

The City College Libraries web site: http://library.ccny.cuny.edu

Books and periodicals are arranged on open stacks. The Library of Congress classification is used for the shelf arrangement of most books. Three hundred and fifty computers provide access to digital resources, document preparation software and the Internet. CLICS, the intra-CUNY borrowing system, allows users to request materials from any library in the University, for delivery to any CUNY library of their choice. Document delivery, Interlibrary loan and METRO referrals enable faculty and students to obtain materials from other library collections in the metropolitan area and beyond. MaRLI (Manhattan Research Library Initiative) provides borrowing privileges at NYPL, Columbia and NYU libraries to graduate students who apply to the program. See http://libguides.ccny.cuny.edu/policies for more information.

Both visual resources libraries are digital resource collections making extensive use of databases such as ARTStor, Saskia and Archivision, with Embark as an image catalog.

The libraries host a full calendar of exhibitions, readings, lectures and programs in multiple venues.

Library faculty provide individualized library service to faculty and students, information literacy education, instruction in research methodology and resource evaluation on multiple levels, from FICWS classes through graduate courses. A listing of library faculty is located in Appendix G.

Office of Information Technology

Over the past few years the Office of Information Technology (OIT), overseen by the Vice President and Chief Information Officer, has undergone a dramatic expansion. Major changes have included deploying smart classrooms in Shepard Hall, Marshak, Steinman, the North Academic Center and Harris Hall; extending wifi coverage (to include all libraries); and the creation of the Tech Center.

The mission of the Office of Information Technology is to:

- Provide excellent technology services in support of City College’s mission
- Empower the user community to achieve the highest level of academic and administrative success through the effective use of information technologies
- Facilitate academic innovations in teaching, learning, research and scholarship
- Deliver excellent technology services in support of City College’s mission

Wireless Access Points (WAPs) are available in the following areas:

- Site-licensed software
- Mobile devices
- Laptop
- Wireless configuration and access
- Site-licensed software
- College e-mail system (Citymail)
- Registration
- CUNY Portal
- Password Reset
- Blackboard
- Active Directory log-in
This one-stop shop solution has given the OIT staff a more efficient way of addressing the technology needs of students, faculty and staff.

Call us at 212.650.7878, email us at servicedesk@ccny.cuny.edu or come find us on the ground floor of the Cohen Library in the North Academic Building, room NAC 1/301.

For more information on our services and opening hours visit our website: https://www.ccny.cuny.edu/it/help

Our iMedia department provides audio-visual (AV) resources and services in support of academic instruction, scholarly communications, and other activities consistent with the College’s mission.

iMedia provides the following services:
- iMedia and classroom technology support
- Audio-visual resources for loan
- Video conferencing services
- Video duplication and conversion services

iMedia also provides in-classroom AV technology support for users in smart room locations, video-conferencing services utilizing IP based Polycom equipment, DVD duplication services, VHS to DVD conversion services and a host of AV resources including microphones, document cameras, AV cables, audio and video recorder and playback devices and Mac and PC laptops for loan on a per class or per semester basis.

The College has 115 Smart Classrooms that are outfitted with an LCD projector, projection screen, audio speakers and an audio and video input interface for use with laptops, iPods, document cameras and other AV devices. Our iMedia and Client Services technicians maintain and service this equipment.

Call us at 212.650.5480 or come find us in NAC 5/220.

At City College you will be joining a community devoted to creating and sharing information. Whatever happens you will be a learner, a discoverer, and a technology consumer at City College. You will be using computers and other information technologies for your coursework. We in the OIT are committed to helping you to achieve your full potential and are ready and available to answer any questions at any time.
The Division of Student Affairs

"Students First!" is the motto that guides the work and commitment of our talented and dedicated Student Affairs team. Our team is comprised of the Division of Student Affairs, a group seasoned professionals, and you, the students who care deeply for their peers and who partner with us to provide The City College community with a tremendously rewarding college experience. The Division of Student Affairs is organized into three clusters, each with its own goals for addressing the different components for students’ success.

We help students to successfully move through critical transitions, beginning with new student orientation through graduation, professional development, and graduate studies. The Professional Student Development cluster provides guidance to students as they transition from their college to career path, by providing numerous opportunities for experiential learning through internships and professional development, as well as employment and career services for current students and alumni. Included in the Professional Student Development cluster are the Professional Development Institute, the Office of International Students and Scholar Services, and the Office of Community Standards and Judicial Affairs.

We engage students, their families, and the college community in activities that build relationships and promote college spirit. Student Campus Involvement offers programs that encourage community engagement through the following departments: The office of Student Life and Leadership Development, Athletics and Recreational Sports, the Auxiliary Enterprise Corporation, and the Office of Veterans Affairs.

Student Affairs promotes a holistic model of Wellness for all our students. From the dedicated medical staff in Student Health Services, to our robust athletic and fitness programs, we help students to achieve and maintain a balanced and healthy lifestyle. The one-stop Student Support Resources provides critical support for students who have urgent needs. The departments housed within Student Support Resources are Student Health Services, the Counseling Center, the Office of AccessAbility and Student Disability Services, Housing and Residence Life, and Campus Ministry.

The Division of Student Affairs also offers services to accommodate students whose needs and responsibilities exceed their academic commitments. The Child Development and Family Services Center provides daily childcare and educational services to children and families of City College students. The Division also has a Student Affairs department at the Center for Worker Education to address the needs of working students.

The Division of Student Affairs is located in the Wille Administration Building, Room 204. The telephone number is (212) 650-5426. The Division office will help you to navigate its many programs and services.

Student Support Resources

Student Support Resources (SSR) provides programmatic and informational support to help students further their academic and personal growth goals. This office serves as an umbrella for several different departments including the AccessAbility Center (Student Disability Services), the Counseling Center, Student Health Services, the Towers on-campus residence hall, the Office of Off-Campus Housing, Campus Ministry, and the administering of emergency grants and loans. Through SSR, students are given assistance with different types of problems, such as how to navigate the College bureaucracy to resolve an academic or personal dispute, where to get counseling within and outside of the institution, and how to locate the College’s programs and resources that address student financial and social concerns. The goal is to provide clear and accessible information to allow students to feel confident and empowered in their interactions with the institution. Student Support Resources is currently located in the Marshak Science Building, Room J-15, with some of its various offices located throughout campus.

Students in need of spiritual guidance and counseling, or who wish to engage discussions related to spiritual development, should come to the Campus Ministry, located in Baskerville Hall, Room 204 for referrals (212-650-5866).

AccessAbility Center (Student Disability Services)

The AccessAbility Center (AAC) facilitates equal access and coordinates reasonable accommodations, academic adjustments, and support services for City College Students with disabilities while preserving the integrity of academic standards. AAC strives to increase disability awareness among members of the community and ensure compliance with the Americans with Disabilities Act of 1990, Amended in 2008, and Section 504 of the Rehabilitation Act of 1973. Students who would like to do so by self-identifying to AAC, which involves scheduling an appointment with an AAC counselor, completing a short intake form, and submitting disability-related documentation. While students may self-identify at any time, it is best to do so as early as possible to ensure services are in place at the start of the semester. (North Academic Center 1/218; 212-650-5913 or 212-650-6910 for TTY/TTD)

Student Health Services

Student Health Services (SHS) provides clinical services, physical exams and a wide range of laboratory services, STD screenings, immunizations, over-the-counter and prescriptions for medication, GYN exams, pregnancy testing, contraception education, and PPD testing, as required by the Education Department at no cost to all currently enrolled CCNY students.

SHS also arranges for free on-site HIV Testing, smoking cessation tabling, information regarding health insurance options, and Sexual Health Workshops led by the Peer Health Educators, and Healthy Monday Tabling.

Immunization Requirements:

New York State Public Health Law (PHL) 2165 requires proof of immunity to measles, mumps and rubella (MMR) as a condition for attendance. The College reserves the right to prevent the registration of any applicant who fails to provide a record of immunization or who, otherwise, provides a health risk to the College community. It is University policy that all students who register for six or more credits/equivalent credits and were born after December 31, 1956 must provide proof of their immunity to measles, mumps, and rubella.

New York State passed Public Health Law 2167, addressing meningococcal meningitis. In compliance with PHL 2167, all New York State students, regardless of how many credits they take in college, must fill out a Meningococcal Meningitis Response form. Students may download both forms from the Student Health Services website:

http://www1.ccny.cuny.edu/current/student/services/wellness/immunization.cfm
http://www1.ccny.cuny.edu/current/student/services/wellness/immunization.cfm

Student Health Services is located in the Marshak Building, Room J-15 and can be reached at 212-650-8222.

The Counseling Center

The Counseling Center provides individual and group psychological counseling services, including crisis intervention and short-term counseling, to registered CCNY students at no cost. For those students in need of longer-term counseling, referrals are made to community-based clinics or providers for more comprehensive treatment and services. The Counseling Center additionally offers workshops on popular topics such as Test Anxiety and Stress Management. Students who are interested in scheduling an appointment or learning more about the Counseling Center should call (212) 650-8222, stop by at the Counseling Center in the Marshak Building, Room J-15 or email counseling@ccny.cuny.edu.

The Office of Student Life and Leadership Development

The Office of Student Life and Leadership Development works collaboratively with undergraduate and graduate student leaders to create an engaging and vibrant co-curricular experience at City College. The office advises and provides assistance to over 150 student organizations in chartering their clubs, planning their activities and offering leadership training. The office also houses the CitySERV program that organizes and matches interested students with volunteer or community service opportunities. Additionally, the SEEDS (Student Empowerment & Engagement Development Series) program and the SLAPC (Student Life Activities Planning Committee) committee offer students the opportunity to get involved in planning campus events while developing leadership skills.
The Office of Community Standards

Academic communities exist to facilitate the process of acquiring and exchanging knowledge and understanding, to enhance the personal and intellectual development of its members, and to advance the interests of society. In order to realize its purpose, the College and its members must be free from personal injury or harm; bias or harassment; intimidation or coercion; damage or loss of property; disruption of educational and social activities; unreasonable interference with the exchange of concepts and ideas; and unreasonable interference with the administrative and supporting services offered by the College. Accordingly, all student members of the college community are expected to conduct themselves in a manner that demonstrates mutual respect for the rights and personal/academic well-being of others, preserves the integrity of the social and academic environment, and supports the mission of the college. The Office of Community Standards’ chief responsibility is to educate students of their role in maintaining this learning environment and to address behavior that impedes, obstructs, or threatens the maintenance of order and attainment of the aforementioned goals by violating the standards of conduct set forth in the college and University student conduct policies. The Office of Community Standards is also responsible for investigating alleged violations of the intentional rules on student conduct and for the coordination and implementation of the conduct process.

For more information about the Office of Community Standards, the CCNY Rules for Student Conduct and the Student Conduct Process you may visit the City College web site at https://www.ccny.cuny.edu/studentaffairs/community-standards or contact the Office of Community Standards at 212-650-5009 and grhinehart@ccny.cuny.edu.

Child Development and Family Services Center

The Child Development and Family Services Center provides quality childcare and early educational services to the students of City College New York. Services are provided for children ages two to five years old. The Center, which is located on-campus, operates daily from 7:45 a.m. to 5:30 p.m., Monday through Friday. To meet the needs and schedules of busy students, there is an evening program offered from 4:00 to 9:00 p.m., Monday through Thursday, as well as a summer program that is offered Monday through Thursday, Breakfast, lunch, and supper-snap are provided in the day program everyday during the fall and spring semesters. Additionally, the Center is a fieldwork placement site for students from the School of Education, the Sophie Davis School of Biomedical Studies, the Spitzer School of Architecture, and the departments of Psychology and Sociology, as well as a work-study placement site. (Shiff House, 133rd Street & Convent Avenue; 212-650-8615)

Office of Veterans Affairs

The goal of the Office of Veterans Affairs (OVA) is to educate the veterans, guardsmen, and reservists of the United States Armed Forces whose courageous service to their country must be rewarded by investing in their future and ensuring their academic success. The OVA is committed to recruiting, enrolling, and retaining veteran students and their families. The OVA works in collaboration with the various offices on campus including Student Affairs, Admissions, Disability Services, Financial Aid, Registrar, Student Health Services, the Counseling Center, and Affirmative Action to assist veterans in becoming acclimated to college life while obtaining veteran educational benefits and other available resources. Student veterans receive a maximum of 12 military elective credits and a maximum of 12 military credits from non-traditional sources for a total maximum of 24 credits. Credits will be granted for military training courses based on the recommendations from the ACE (American Council on Education) armed forces military evaluation guidelines. (Wingate Hall, Room 107; 212-650-7132)

Housing and Residence Life

The Towers at CCNY (On-Campus Residence Hall)

The Towers at CCNY is the first residence hall to be built on the CCNY campus. The Towers consists of 164 fully furnished, air-conditioned suites in four configurations that house one to four students each, as well as a limited number of 125 suite residents. Each suite consists of a living area, a private bedroom, a bathroom, a kitchenette, a desk, and a chair. All rooms are equipped with a small refrigerator, a microwave, and a sink. The Towers provides a warm and collegial introduction to student life on the City College campus. The Center is staffed by a team of enthusiastic student workers who are dedicated to accommodating students’ needs in a “One-Stop Center” that promotes student success and retention in a nurturing and welcoming environment. It serves as the key information, resource and referral center for students and visitors to City College. In addition to sharing vital information about campus resources and facilities the Center also arranges college trips and provides information on upcoming student events and programs. Other services include courtesy telephones for on-campus calls and maps to find your way around campus. Stop by and say “Hi” to the staff or call 212-650-5338 for more information.

The Professional Development Institute

The Professional Development Institute of the City College of New York is committed to providing essential resources, services, and opportunities that enable CCNY students and alumni to achieve their professional goals and career satisfaction in a global marketplace. The objective of the Professional Development Institute is to identify significant student transitions and strategically guide their college and career passages. In addition, it provides and expands opportunities for experiential learning through the greater development of internships. The Professional Development Institute’s programs and skills training provide a crucial link between talent and teamwork: connecting candidates with job opportunities while meeting the hiring needs of employers, businesses, and organizations. (North Academic Center 1/116; 212-650-5327)
of studio and one-bedroom suites available for faculty housing. All suites have a kitchenette that includes a cooktop stove, a microwave, full-size refrigerator, a sink, cabinets, and countertop space. The Towers offers free wireless internet service throughout the entire building (including resident rooms and lounges), a multipurpose seminar room, a fitness center, a 24-hour security desk, a convenience store (T-store), a central laundry facility (free for residents), a community kitchen, and lounge area with a billiards table and large TV with comfortable seating.

The Residence Life Staff, which consists of resident assistants and professional staff, provides supervision of the building in accordance with CCNY/CUNY policies and procedures. Residence Life also strives to create a sense of community through educational and social programming and serves as a resource to all residents. (The Towers at CCNY, 401 West 130th Street; Phone: 917-507-0070, Email: towers@ccny.cuny.edu; Website: www.ccnytowers.com)

**The Office of Off-Campus Housing**

This resource allows for students to find housing accommodation around or close to the City College Campus. We provide assistance and counseling to students looking for a room or apartment and want to know more about the rental process in New York City. Off-Campus Housing operates a website that allows student and faculty to access all the resources that this department provides at their own convenience. We are currently introducing other aspects to the department and website to allow for students to find roommates and find a way to get help for housing. We want to provide as much help as possible for students looking to move around the college, which in turn will boost on-campus activity and increase students’ study time and decrease commute time. (Wingate Hall, Room 107; Phone: 212-650-5370, Fax: 212-650-7369)
The College of Liberal Arts and Science

Graduate Programs in Liberal Arts and Science

The College of Liberal Arts and Science has long recognized the need and value of graduate studies for students, for the college, and for the community. The first course of study in the liberal arts and science leading to the earned master’s degree (Psychology) was introduced in 1944. Subsequently, a comprehensive survey confirmed the need for the expansion of graduate work. A Division of Graduate Studies was established in 1951 and a second master’s program (in International Relations) was inaugurated in that same year. As the need for additional programs developed, particularly after The City University came into being in 1961, the College extended its master’s offerings to include most of the disciplines in the arts and sciences, as well as several interdisciplinary programs. The College of Liberal Arts and Science offers master’s degrees in approximately 24 fields of study. Several of these programs are offered in cooperation with one or more of the other senior colleges of the City University or with The City University Graduate School. In 1962, The City University introduced its first doctoral programs; since then many others have been instituted. The City College fully participates in these programs. In several graduate programs, the master’s course of study is the same as the first year of doctoral work and students in the master’s program may be admitted to the Ph.D. program with advanced standing.

Goals

The graduate programs offered by the College of Liberal Arts and Science emphasize the standards of excellence and scholarship historically associated with The City College. The work of the College is animated by the ideals of scholarship and re-search, and prepares highly qualified students for careers in the learned professions, in the performing and visual arts, speech, creative writing, for government service, for positions in private industry, labor and welfare agencies, and for further study and research.

Admissions Requirements

Admissions policies for the various departments within the College of Liberal Arts and Science are described below. Additional information is available at http://www1.ccny.cuny.edu/prospective/admissions/grad/.

Art (M.F.A.)

(Fine Arts – Studio Arts) (Digital and Interdisciplinary Art Practice)

Bachelor of Fine Arts Degree (B.F.A.) from an accredited institution, or, for those holding other bachelor’s degrees, a substantial number of undergraduate credits in art, preferably at least twenty-eight credits or the equivalent in studio art, and twelve credits or the equivalent in art history. Exemptions from these requirements may be made at the discretion of the Departmental Graduate Committee and the Divisional Dean. The presentation by the applicant of a portfolio of creative work judged acceptable in quality by a faculty committee is also required. Applicants may be asked to appear for a personal interview by the Departmental Graduate Committee. Fine Arts now accepts applications in the Spring as well as Fall.

Art (M.A.)

(Art History) (Art History with a Concentrations in Art Museum Studies or Art Museum Education)

A minimum of twelve undergraduate credits in art history (or the equivalent) beyond the introductory level. Writing sample required: Art History paper (10-12 pages in length). Two letters of reference, at least one of which must be academic. Applicants may be asked to appear for a personal interview by the Departmental Graduate Committee.

Biochemistry (M.S.)

A minimum of one-year study in each of the following: freshman inorganic chemistry, calculus, physics, organic chemistry and physical chemistry in addition to a one-semester course in biochemistry. Where there are deficiencies in background, the candidate may be required to take additional courses, without credit, for the removal of such deficiencies.

Biology (M.S.)

A minimum of twenty-four credits in advanced undergraduate work in biology related subjects.

Chemistry (M.S.)

A minimum of one-year courses in each of the following fields: general, analytic, organic and physical chemistry, or their equivalents.

Earth and Atmospheric Sciences (M.S.) (Geology)

Qualified students with bachelor’s degrees in geology, meteorology, geology, oceanography, mathematics, physics, chemistry, biology, or engineering may apply. A minimum of one-year courses in college calculus, (differential and integral), physics, and chemistry are required.

Economics (M.A.)

While an undergraduate major in Economics is not a requirement, it is quite helpful. It is strongly recommended that all applicants have taken undergraduate core courses in microeconomics and macroeconomics, both introductory and intermediate; econometrics, or an equivalent statistics course; and (or) a substantial amount of work for the social sciences and/or statistics in graduate work. In general, students with substantial coursework in economics, mathematics, and statistics, and with good grades in these courses, will receive preference in the admissions process. A resume showing experience in economics-relevant work areas, while not a requirement, may also be helpful.

English (M.F.A.) (Creative Writing)

An undergraduate record that would qualify the applicant for admission to the master’s program in English, and, in addition, a sample of literary work consisting of the submission of 30-50 pages of fiction or nonfiction or 8-10 poems, and recommendations by two teachers or writers familiar with the work of the applicant.

English (M.A.) (Literature; Language and Literacy)

A bachelor's degree, preferably with a major in English or American Literature. Applicants must submit two writing samples, each no longer than twenty pages, no minimum length.

History (M.A.)

A minimum of twelve credits beyond introductory level courses in history.

International Relations (M.A.)

Background of undergraduate work in the social sciences, with special emphasis in the fields of Political Science or International Studies. Applicants must take the GRE, submit three letters of recommendation, and a two-page personal statement for admission to this program.

Mathematics (M.S.)

Eighteen credits in mathematics graduate courses and at least twelve more credits in additional graduate mathematics courses or in graduate science courses of a mathematical nature approved by the graduate advisor. Students without undergraduate real analysis or advanced calculus courses deemed equivalent to Advanced Calculus I and Advanced Calculus II will be required to complete these two courses prior to admission. Students without an undergraduate course in linear algebra will be required to complete Linear Algebra or its equivalent during their first semester.

Branding + Integrated Communications (M.P.S) (Media & Communications Arts)

For all three areas of specialization (Public Relations, Account Management/Planning, and Creative) candidates must have a BA or BFA degree, with a minimum 3.00 GPA (or equivalent) and substantial academic and/or working experience. Candidates interested in the Public Relations or Management/Planning track must also have completed prerequisite coursework in college-level statistics by the time of their enrollment. All candidates for the Creative track are expected to have some proficiency in Adobe InDesign and Photoshop (ACS6) as demonstrated by a portfolio submission of relevant creative work. A resume showing professional experience in communications-relevant work is an asset. The MPS Program in Branding + Integrated Communications is full-time, does not accept transfer credits and only admits part-time students on a limited basis. Admission is only offered for the fall semester.

Media & Communication Arts (M.F.A) (Film Program)

Undergraduate training in film and video production, with a minimum 3.0 average in the major, or equivalent work/industry experience in film production. Undergraduate training should include courses in the following subjects: film history and aesthetics; screenwriting; digital motion picture production, digital editing, directing for fiction and/or documentary. For applicants who do not have a film/video undergraduate degree (or comparable film/video experience) we recommend taking foundation courses prior to application. A creative portfolio of film and/or video work must be submitted with the application. The MFA Program in Film is full-time, does not accept transfer credits and does not offer courses or admit students on a part-time or non-matriculate basis. Admission is only offered for the fall semester.
Music (M.A.)
At least twenty-four credits in the field of music, including harmony and music history. The candidate must also be able to demonstrate (1) performing competence as an instrumentalist or vocalist, or the equivalent in composition or conducting; and (2) practical proficiency on the piano. Where there are deficiencies in background such as to impede the ability of the student to profit from graduate work, the Graduate Committee will require additional courses to be taken without credit for the removal of such deficiencies. Applicants may be required to appear for an audition.

Physics (M.S.)
A sufficient number of courses in physics and mathematics to indicate the likelihood that the candidate will profit from graduate study. Where there are deficiencies in background, the candidate may be required to take additional courses for the removal of such deficiencies.

Psychology (M.A. in General Psychology)
Undergraduate work should include courses in general psychology, statistical methods, experimental psychology (a full year is recommended, but not required) and nine additional coursework in psychology, work experience or research is desirable. There must be at least fifteen credits overall in psychology courses. Part of these requirements may be corequisites to graduate work. GRE is required.

Psychology (M.A. in Mental Health Counseling)
A minimum grade point average of 3.2 with an average in psychology of 3.5. (Applicants who do not meet these GPA’s are still considered and encouraged to apply.) Other requirements include an individual and/or group interview and three letters of recommendation attesting to the applicant’s strong sense of personal integrity, strong verbal and writing skills, commitment to learning, and potential to perform in an exemplary fashion in the roles of graduate student and Mental Health Counselor. The program admits for the fall semester only.

Public Service Management (M.P.A.)
This interdisciplinary program is designed to prepare students for management-level positions in government agencies and non-profit organizations. The program combines course work in management with the opportunity to specialize in one of four areas of public policy: urban affairs; environmental concerns; social issues; and international relations. This program does not admit students in the spring semester.

Sociology (M.A.)
The M.A. Program in Sociology is a directed course of study that provides general training in the discipline and its fundamental concepts and methods, and emphasizes the relationship between Sociological questions, research design, and practice. Students have diverse academic backgrounds and work in a variety of areas, spanning the private, non-profit, and public sectors. Although previous social science course work is preferable, humanities and arts students and those whose employment experiences prepare them for the program may also apply. All applicants must articulate why graduate training in sociology is appropriate and how it will advance their goals.

Spanish (M.A.)
An undergraduate major in Spanish. If general scholarship is superior but preparation in the literature of the specialization is found to be insufficient, or if the student has not majored in the field, the student may be admitted by approval of the Graduate Committee of the Department.

Study of the Americas (M.A.)
This program requires a B.A. or B.S. degree, with a GPA of at least 3.0, and a brief personal statement describing your interest in our course of study. This program is intended to provide working adults with a meaningful graduate-level program, meeting the needs of students who are interested in international and global studies or interdisciplinary studies. The Study of the Americas is a new and growing area of scholarship. The program seeks to address new questions and concepts about the Americas as it focuses on topics such as: racial and ethnic identities, migration and immigration, popular culture, politics, gender relations, and human rights. Our chief organizing questions move beyond a focus on identity politics to examine the historical, political, economic, and socio-cultural formations of the Americas.

Sustainability in the Urban Environment (M.A.)
Applicants should have a bachelor’s degree in architecture, engineering or science or social science from an accredited US college or university. Applicants with degrees in other fields may qualify depending on their experience and academic background. International student applicants must have an equivalent degree from their foreign institution and a GPA of at least 3.0. This program does not admit students in the Spring semester.
Department of Art

(Division of Humanities and the Arts)

Professor Leopoldo Fuentes, Interim Chair

Department Office: Compton-Goethals 109 • Tel: 212-650-7420

General Information

The City College offers the following master’s degrees in Art:

M.F.A. Studio Art

M.F.A. Digital and Interdisciplinary Art Practice (DIAP)

M.A. Art History

M.A. Art Education

Degree Requirements for the M.F.A. Studio Art

Required Courses

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<th>Credits</th>
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<tr>
<td>ART B0010</td>
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<td>ART B2210</td>
<td>Working Critique I</td>
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Elective Courses

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First-Year: Spring

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Second-Year: Fall

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<td>ART B3410</td>
<td>Theory in Practice</td>
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<td>ART B3610</td>
<td>Thesis Project Development: Research</td>
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<tr>
<td>ART B0500</td>
<td>Professional Development Seminar</td>
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Advisors

M.F.A.: Tom Thayer, Associate Professor

Admissions Procedures

Admission will be based on artistic merit and ascertained by portfolio (and/or evidence of research-based experience) and interview. Portfolio advising is available by appointment.

Graduation Requirements

At the end of the third semester each student must submit a final project proposal to the faculty review committee. This final project must be completed during the last semester and can be an individual or a collaborative project. In order to graduate, each MFA candidate will be required to submit a written thesis paper, present their final project in an exhibition or other appropriate public format and defend the project to the faculty review committee, which evaluates the candidates’ success. It is further recommended the student find an additional outside evaluator and thesis advisor for their committee. If needed, the faculty will aid in the search for this advisor and evaluator by supplying names and contact information. All students must mount a Thesis Exhibition in their final semester and prepare a packet for the Department archive that consists of their written Thesis paper and documentation of their Thesis Exhibition in print and digital format.

Transfer Credits

At the discretion of the program director, no more than six credits of graduate work in art may be transferred.

Degree Requirements for the M.A. in Art History

Art History Specialization

Required Courses

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<td>ART B9000</td>
<td>Master’s Thesis Research</td>
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Total Credits for M.A. in Art History | 30 |

Art History with Art Museum Studies Concentration

Required Courses

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<td>ART B7400</td>
<td>Museum Exhibition Analysis Seminar</td>
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<td>ART B8000</td>
<td>Art Museum Studies Colloquium</td>
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</tr>
<tr>
<td>OR ART B9000</td>
<td>Master’s Thesis Research</td>
<td></td>
</tr>
</tbody>
</table>

Elective Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate courses in Art History or other relevant topics</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

Total Credits for M.A. in Art History with Art Museum Studies Concentration | 36 |
Art History with Art Museum Education Concentration

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART A1000</td>
<td>Research Methods of Art History (if not taken as an undergraduate)</td>
<td>3</td>
</tr>
<tr>
<td>OR ARTE 3100C</td>
<td>Critical Perspectives in Art Education</td>
<td></td>
</tr>
<tr>
<td>ART B7000</td>
<td>Museology</td>
<td>3</td>
</tr>
<tr>
<td>OR ART B7400</td>
<td>Museum Exhibition Analysis Seminar</td>
<td></td>
</tr>
<tr>
<td>ART B7500, ART B7505</td>
<td>Museum Education I and II</td>
<td>6</td>
</tr>
<tr>
<td>ART B7100</td>
<td>Museum Apprenticeship I</td>
<td>3</td>
</tr>
<tr>
<td>Select 1 of 3 in consultation with advisor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDSE 4100E</td>
<td>Curriculum and Assessment in Art Education</td>
<td>3</td>
</tr>
<tr>
<td>EDSE 4200F</td>
<td>Identity, Community, Culture in Art Education</td>
<td></td>
</tr>
<tr>
<td>EDSE 4300F</td>
<td>Materials and Methods in Art Education</td>
<td></td>
</tr>
<tr>
<td>ART B9000</td>
<td>Master's Thesis Research (For students pursuing the MA thesis option)</td>
<td>3</td>
</tr>
<tr>
<td>OR EDSE 7200I</td>
<td>Master's Projects (For students pursuing the Qualifying Paper option)</td>
<td></td>
</tr>
</tbody>
</table>

Elective Courses

Graduate courses in Art History in consultation with advisor: [must include Research Methods in Art History if not taken as an undergraduate] 9-12

Graduate courses in Education and/or Art Education in consultation with advisor 3-6

Total Credits for M.A. in Art History with Art Museum Education Concentration 36

Additional Requirements for the M.A. Art History

Thesis
All Art History candidates are required to complete a written thesis demonstrating competence in scholarly research in those fields.

Option for Art Museum Studies Candidates
Art Museum Studies candidates may opt to write two qualifying papers: one in an art history elective course and the other in Art Museum Colloquium. Alternatively, Art Museum Studies candidates may choose to write a thesis provided that they can propose an acceptable thesis topic and secure an advisor.

The option to write two qualifying papers applies retroactively to all students pursuing the two art museum concentrations. As per the policies stated in the course bulletin, students who began their coursework before Fall 2013 were required to take only 30 credits to complete their degrees may choose to write two qualifying papers, instead of a thesis, and will not be required to complete the 36 credits of coursework.

Option for Art Museum Education Candidates
Art Museum Education candidates may opt to write two qualifying papers: one in an art history elective course and the other in Master’s Projects. Alternatively, Art Museum Education candidates may choose to write a thesis provided that they can propose an acceptable thesis topic and secure an advisor.

Comprehensive Examination
Not required.

Foreign Language Proficiency
Candidates for the M.A. degree in Art History with or without an Art Museum Studies or Art Museum Education concentration must demonstrate a reading proficiency in a foreign language approved by their graduate advisor.

Transfer Credit
At the discretion of the program director, no more than six credits of graduate work in art may be transferred.

Advisors
M.A.: Professor H. Senie; Craig Houser, Lecturer.

Degree Requirements for the M.A. Art Education

M.A. in Art Education
See the School of Education section of this Bulletin.

Facilities

Art Gallery
The Art Department's gallery space displays work of undergraduates and graduate students, professional artists, and specially curated exhibitions. Approximately 2000 sq. ft. in size, the gallery accommodates two- and three-dimensional art.

Ceramic Design
The facilities include a large open work area with 18 pottery wheels and a slab roller, extruder, and a kiln room with electric kilns. There is a plaster studio where students learn mold-making. Various clay bodies are used for utilitarian, sculptural, and architectural ceramics, with equal emphasis on clay's multicultural traditions, e.g., Egyptian paste, majolica.

Digital Output Center
Operating under the aegis of Electronic Design & Multimedia and Photography, the Digital Output Center is a service bureau that provides digital printing and equipment check-out services to E.D.M., Photography, and M.F.A. students. The Digital Output Center is a dedicated center and only open to students currently taking E.D.M. or specifically designated photography courses or enrolled in the B.F.A. or M.F.A. programs.

Painting and Drawing
The painting and drawing rooms are equipped with architectural-quality drafting tables and large easels. Each studio has wall space for critiques and large-scale projects. Model platforms, mat cutters, props, and tools for the construction of painting supports are available. The Visual Resources Library maintains a collection of images of student work for reference.

Photography
The photography facilities include a black & white darkroom, color darkroom, a color processing lab, advanced digital lab, and shooting studios/classrooms. Equipment includes: Speedotron, Bowens Calumet Travelite flash systems, as well as Arri and Lowell hot lights, large-format Omega enlargers, a 30” Colenta processor, and a NuArc mercury exposure unit. Cameras available for student use Mamiya 7 and RZ medium format systems, Cambo and Toyo 4x5 cameras. A four station advanced digital lab is equipped with iMac stations, Imacon Flexight X1, Nikon 5000EDLS, Epson XL10000, Epson 750 scanners, and Epson 3880 and 4880 printers. The David and Lenore Levy Collection of Contemporary Photography is available for student and faculty study in all areas of the Art Department.

Printmaking
The studio is equipped for the teaching of intaglio, lithography, and relief processes including woodcut and lino-cut, collagraph, carborundum aquatint, water-based silk-screen, photo-printmaking in etching, silkscreen and lithography, and combinations of all the print media. There are two etching, one relief and two lithography presses, a 62” x 62” NuArc plate maker with a deep well blanket, plate cutters, large hot plate, aquatint box, large aluminum bed for lithographic plates, lithographic stones in a full range of sizes, queen-size drying rack, numerous rollers of various diameters and dimensions, hydrobooth and hydroblaster for silk screen, and a large-format printer to facilitate the production of oversized images. The integration of equipment for computer-generated processes with conventional printmaking equipment allows for the full range of printmaking experiences.

Sculpture
The sculpture studio facility is amply equipped for the creation of traditional and non-traditional three-dimensional art. It accommodates various techniques including wood assemblage, construction, woodcarving, plaster, clay, and stone carving. There is a small efficient area for metal fabrication with metal working tools including mig welders and plasma cutters. The studio also houses a basic wood design shop with a table saw, jointer, surfacing tools, hand tools, and several band saws.

Department Activities

Art Department
The Department sponsors exhibitions, guest lectures, and appearances by visiting artists throughout the academic year.

Student Art Society
The Graduate Art Students Society is the primary student organization. The group, open to all graduate students, participates in department activities and generally promotes and stimulates various activities and events at the college.

Awards and Scholarships

The Therese McCabe Ralston Connor Awards
For the study of art and art history.
The Holly Popper Scholarship
For an outstanding female graduate of the CCNY Art Department to study in the College's M.F.A. program.

Ralph Fabri Scholarship
For the outstanding M.F.A. thesis exhibition.

Seymour Peck Scholarships and Creative Awards in the Arts
For outstanding undergraduate and graduate majors in the arts.

The Jacob Rothenberg Award for Excellence in Art History
For an outstanding student in the MA in Art History program or an undergraduate student concentrating in art history.

Art Course Descriptions

Courses Required of All M.F.A. Studio Art Candidates

ART B0051: Graduate Critique Studio I
This is an interdisciplinary/non-discipline-specific studio course for M.F.A. students. First-year students take B0051 and B0052 to develop first-year projects under the direction of a faculty member. 3 hr./wk.; 3 cr.

ART B0052: Graduate Critique Studio II
This is an interdisciplinary/non-discipline-specific studio course for M.F.A. students. First-year students take B0051 and B0052 to develop first-year projects under the direction of a faculty member. Prereq: B0051. 4 hr./wk.; 3 cr.

ART B0053: Graduate Critique Studio III
This is an interdisciplinary/non-discipline-specific studio course for M.F.A. students. Second-year students take B0053 and B0054 to develop thesis work under the direction of a faculty member. Prereq: B0052. 4 hr./wk.; 3 cr.

ART B0054: Graduate Critique Studio IV
This is an interdisciplinary/non-discipline-specific studio course for M.F.A. students. Second-year students take B0053 and B0054 to develop thesis work under the direction of a faculty member. Prereq: B0053. 4 hr./wk.; 3 cr.

ART B0300: Visual Concepts and Stylistic Traditions
Analysis of the components of traditional styles and movements. Student reports, papers, and discussion. Open to M.A. candidates by permission of the graduate advisor. 3 hr./wk.; 3 cr.

ART B0400: Issues in Contemporary Art
Investigation of the conceptual implications of contemporary movements in the visual arts. Student reports, papers, and discussion. Open to M.A. candidates by permission of the graduate advisor. 3 hr./wk.; 3 cr.

ART B0500: Professional Development
This course is designed to introduce the student to the practices in studio art. 3 hr./wk.; 3 cr.

ART B0600: M.F.A. Thesis Preparation
This course guides students in their preparation of both written theses and thesis exhibitions. Readings and analysis of writings about art by artists and others. Writing about artwork and documentation of the experience of making the work. This class must be taken during the last two semesters of the student's residence in the M.F.A. program. 3 hr./wk.; 3 cr.

ART B0800: Teaching Practicum
Theory and practice in college-level teaching of studio art, including course design, learning objectives, and pedagogical approaches to teaching fine art. Students have the opportunity to plan lessons, lead demonstrations, and develop syllabi. During this semester, students are assigned to a full-time faculty member in the Art Department for supervised practice teaching. 3 hr./wk.; 3 cr.

Courses Required of All M.F.A. DIAP Candidates

ART B2010-2040: Workshop: Theme
A subject-focused course that consists of research, discussions, independent (or collaborative) project development and technical workshops. Themed workshops have a specific semester topic that is subject-based, and will include practice-based assignments in students' area of study. (This course can be taken up to four times.) 3 hr./wk.; 3 cr. each Materials Fee: $50.

ART B2050-2080: Workshop: Medium
A medium-focused course that consists of technical workshops, medium-related exercises, research, discussions, and independent and/or collaborative project development. Medium workshops have a specific semester long medium-based topic, and will include practice-based assignments in students' area of study. Medium-based topics will be designed to allow "cross-pollination" and experimental multi-media approaches. (This course can be taken up to four times.) 3 hr./wk.; 3 cr. each Materials: $50.

ART B2210: Working Critique I
This digital and interdisciplinary studio course for MFA students focuses on weekly individual and group critiques of student work. In addition to research, discussion, and art practice in digital and new media, first year students will propose and develop a thesis project under the advisement of a faculty member. 3 hr./wk.; 3 cr. each. Materials Fee: $50.

ART B2220: Working Critique II
This digital and interdisciplinary studio course for MFA students focuses on weekly individual and group critiques. In addition to research, discussion and art practice, first year students will continue the development of a thesis project under the advisement of a faculty member. Student thesis proposals and progress will be reviewed by MFA faculty members at the end of the first year for entrance into the second year. 3 hr./wk.; 3 cr. each Materials Fee: $50.

ART B3210: Working Critique III
This digital and interdisciplinary studio course for MFA students focuses on weekly individual and group critiques. In addition to research, discussion and art practice, second year students will continue the development of a thesis project under the advisement of a faculty member. 3 hr./wk.; 3 cr. each Materials Fee: $50.

ART B3220: Critique Conferences
This digital and interdisciplinary studio course for MFA students focuses on weekly individual conferences with a faculty member and thesis committee members. In addition to research, discussion and art practice in digital and new media, second year students will finalize a thesis project, an exhibition and a written thesis. 3 hr./wk.; 3 cr. each Materials Fee: $50.

ART B2410: Project Research Seminar
A seminar to introduce students to a research-focused approach to practice in digital, lens-based, and experimental media art and design. Research techniques are introduced as part of a working method and practice and applied towards first year projects and thesis project proposals. 3 hr./wk.; 3 cr. each Materials Fee: $15.

ART B2420: Research-Based Art History/Theory
This seminar surveys the history and spectrum of research-based practices in art, architecture, design, digital media, film and writing and introduces the idea of research as a critical foundation for artistic output. Readings and discussions will be centered around the contexts, methods, and critical issues surrounding research-based art practices. 3 hr./wk.; 3 cr. each Materials Fee: $15.

ART B2600: First-Year Project
Under the guidance of a full-time faculty member, an independent or collaborative project that is intended as the practice based outcome of the first year experience. While a thesis project may grow out of the experience of developing this project, they are intended to be distinct projects. 6 hr./wk.; 6 cr. Materials Fee: $50.

ART B3410: Theory in Practice
Continuation of Research-based Art History seminar. It explores in depth specific examples in art, architecture, design, digital media, film and writing that use theory as a critical foundation for artistic output. Readings and discussions will be centered around specific historical and contemporary examples of artists using theory in practice and the set of contexts, methods, and critical issues surrounding these examples. 3 hr./wk.; 3 cr. Materials Fee: $15.

ART B3610: Thesis Project Development: Research
This course, to be taken in the fall semester of the second year, serves as the focused research and written work on thesis projects. 3 hr./wk.; 3 cr. Materials Fee: $50.

ART B3620: Thesis Project Development: Exhibition
This course, to be taken in the spring semester of the second year, serves as the focused work on thesis projects and exhibition. 6 hr./wk.; 6 cr. Materials Fee: $50.

Elective Courses in Studio Art

ART B0100: Projects in Drawing
Investigation of the conceptual implications of contemporary movements in the visual arts. Student reports, papers, and discussion. Open to M.A. candidates by permission of the graduate advisor. 3 hr./wk.; 3 cr.

ART B1100: Individual Projects in Painting
Intensive work under faculty supervision. Individual and group critiques. This course may be taken five times for credit. 4 hr./wk.; 3 cr.

ART B1200: Individual Projects in Sculpture
Intensive work under faculty supervision. This course may be taken five times for credit. 4 hr./wk.; 3 cr. each. Materials Fee: $25.
ART B1300: Individual Projects in Printmaking
Intensive work under faculty supervision. This course may be taken five times for credit. 4 hr./wk.; 3 cr. each. Materials Fee: $40.

ART B1400: Individual Projects in Electronic Design and Multimedia
Intensive work under faculty supervision, a part of which will be scheduled class hours. This course may be taken five times for credit. 4 hr./wk.; 3 cr. each. Materials Fee: $40.

ART B1500: Individual Projects in Photography
Intensive work under faculty supervision. This course may be taken five times for credit. 4 hr./wk.; 3 cr. each. Materials Fee: $40.

ART B1600: Individual Projects in Ceramic Design
Intensive work under faculty supervision. This course may be taken five times for credit. 4 hr./wk.; 3 cr. each.

ART B8051-B8099: Selected Topics in Studio Art
Advanced study in selected subjects outside of the regular curriculum. Course announcements will be made in the preceding semester. 4 hr./wk.; 3 cr. each.

Courses in the History, Theory, and Criticism of Art
These courses may be taken by M.F.A. and Graduate Art Education students.

ART A1000: Research Methods of Art History
Working methods of the art historian. Techniques for obtaining primary and secondary source material, including use of traditional archival and bibliographic materials, electronic information systems, interviewing techniques, and photographic documentation. Introduction to different approaches to objects and their contexts. Development of a variety of writing modes. Field trips; class reports. 3 hr./wk.; 3 cr.

ART A6000: Egyptian Art and Architecture
Painting, sculpture, architecture, and decorative arts of Egypt from pre-dynastic times through the Ptolemaic period. 3 hr./wk.; 3 cr.

ART A6020: Greek and Roman Art
Art of the Classical civilizations: Greece from the Geometric period through the Hellenistic era; the Etruscan contribution; Rome from the Republican period through late Imperial times. 3 hr./wk.; 3 cr.

ART A6100: Romanesque and Gothic Art of Medieval Europe
Art of the later Middle Ages: architecture, sculpture, manuscripts, stained glass, emphasis on French cathedrals, regional schools in emerging national states, and Byzantine influence on the West. 3 hr./wk.; 3 cr.

ART A6200: Italian Renaissance Art and Architecture
An overview of the painting, sculpture, and architecture created in Italy during the fourteenth, fifteenth, and sixteenth centuries. Discussion will focus on the needs and ambitions of private, civic, and ecclesiastical patrons, as well as the creative responses of individual artists from Giotto to Michelangelo. 3 hr./wk.; 3 cr.

ART A6220: Northern Renaissance Art
An overview of painting, sculpture, and printmaking created in Northern Europe during the fourteenth, fifteenth, and sixteenth centuries. Trace the development of naturalism and humanism in France, Germany, and the Netherlands, as well as the dialogue between Northern Europe and Italy during the Renaissance. Discussion will explore the needs and ambitions of private, civic, and ecclesiastical patrons, as well as the creative responses of individual artists from Van Eyck to Bruegel. 3 hr./wk.; 3 cr.

ART A6300: Baroque and Rococo Art in Europe
Seventeenth and eighteenth century art in Italy, France, Spain, and Holland. Artists include Bernini, Poussin, Caravaggio, Gentileschi, Velazquez, Rubens, Rembrandt, and Vermeer. 3 hr./wk.; 3 cr.

ART A6400: Nineteenth Century Art in Europe and the U.S
The development of early modern art styles in France, Germany, Italy, Russia, and the U.S. including Fauvism, Cubism, Futurism, Constructivism, Expressionism, Dada, and Surrealism. 3 hr./wk.; 3 cr.

ART A6440: Postwar Art in the U.S. and Europe
Art from 1945 through 1980 in the U.S. and Europe, including Abstract Expressionism, Pop Art, Minimal Art, Conceptual Art, the development of earthworks and public art, and feminist and other issue-based art. 3 hr./wk.; 3 cr.

ART A6450: Modern Art in Latin America
An overview of the various currents of modernism that developed in Latin America from 1900 to 1945. Emphasis will be placed on the artistic production of certain countries, such as Mexico, Brazil, Argentina, Cuba, and Uruguay. 3 hr./wk.; 3 cr.

ART A6452: Modern Mexican Art
This graduate course is an in-depth look at the period known as the “Mexican Renaissance” when numerous artists, intellectuals, and government institutions responded to the goals, proposals, and failures of the Mexican Revolutions (1910-1920), the first social uprising of the twentieth century. Structured as the combination of a lecture and seminar course, students will investigate issues such as cultural nationalism, gender, class, and race as they pertain to Mexican muralism and diverse media. Lectures will be complemented by focused discussions and presentations on numerous weekly readings. Selected from the advanced literature of the field, readings will offer students a variety of perspectives and methodologies utilized in the discipline. Students will engage in primary and secondary research for their final research paper. A field trip to the Orozco mural at the New School University and/or a local museum and/or gallery will provide students with first-hand knowledge of the art under discussion. 3 hr./wk.; 3 cr.

ART A6500: Art since 1980
Art since 1980 taught from a global perspective. Includes visits to galleries and conversations with artists. 3 hr./wk.; 3 cr.

ART A6510: Contemporary Art in Latin America
Artistic manifestations in post-World War II Latin America, including the work of diaspora artists and Latino/a artists in the United States. 3 hr./wk.; 3 cr.

ART A6600: Ancient Art of Meso-America, the Andes, and the Caribbean
A survey of sculpture, architecture, the town plan, and crafts in select pre-European cultures of the Caribbean Basin, the Andes, and Meso-America including the Tainos, the Inca, and the Aztecs. 3 hr./wk.; 3 cr.

ART A6700: Art of West Africa: From the Bissagos to the Cameroon Grasslands
A survey of traditions that generate the interface of visual and performance arts, place and architecture among the Akan, Bamana, Bamilike, Baule, Dan, Dogon, Edo, Fon, Moshi, Senufo, Yoruba, and their neighbors. The archeology of the “Valleys of the Niger” is included. 3 hr./wk.; 3 cr.

ART A6710: Art of Central Africa: Central, East, and Southern Africa from Gabon to Mozambique
Arts of chiefdoms and kingdoms of the equatorial forests and savannas from Equatorial Guinea to Mozambique. An interdisciplinary survey of traditions that generate the interface of visual and performance arts, place and architecture. Arts of the Chokwe, Fan, Konde, Kongo, Kuba, Kwele, Luba/Hemba, Nyamwezi, Mangbetu, Ndebele, Pende, Saremo, Songye, Tabwa, Zula, and their neighbors. The archeology of Zimbabwe and the East African coast. 3 hr./wk.; 3 cr.

ART A6800: Islamic Art
Architecture and decorative arts of the Islamic world including Syria, Egypt, Persia, Turkey, Spain, and northern India. 3 hr./wk.; 3 cr.

ART A6810: Art of India, Southeast Asia, and Indonesia
Buddhist, Jain, and Hindu art in India; Buddhist and Hindu art in Southeast Asia and Indonesia. 3 hr./wk.; 3 cr.

ART A6820: Art of China, Japan, and Korea
The art and architecture of China, Japan, and Korea from prehistoric times to the nineteenth century. 3 hr./wk.; 3 cr.

ART A6830: The Artist in Society: South Asian Perspectives
This course challenges students to think about how concepts of the artist develop in historically and culturally specific ways, and to consider how such concepts influence visual traditions. It focuses on the painters, sculptors, architects and craftspeople of South Asia. Major themes include concepts of art, artist/patron relationships, workshop practices, techniques and materials, tradition and innovation, and differing historical and cultural perceptions of artists. All periods of South Asian art history are covered, but the emphasis is on the 16th to 19th centuries. 3 hr./wk.; 3 cr.
ART A6840: Asian Art Since 1850: Tradition and Nation
This course looks at ideas of tradition and nation in modern and contemporary Asian arts, at rejections of these ideas and at the struggle of individuals to escape the confines of nationalist thinking and East/West dichotomies. The course will focus primarily on India and Japan, respectively colonized and colonizing nations, but Pakistan, Korea and China are also discussed. 3 hr./wk.; 3 cr.

ART A6900: Art Criticism
Problems of description, analysis, interpretation, and evaluation of the art object as an aesthetic and cultural phenomenon in the context of historical approaches and styles; various systems and premises of critical analysis that have emerged from ancient to contemporary times. 3 hr./wk.; 3 cr.

Courses in Art Museum Studies
ART B7000, B7100, B7200, and B7400 are required of all Museum Studies students. They may be taken by M.F.A. and other M.A. candidates, with permission of the Graduate Advisor and Director of Museum Studies.

ART B7000: Museology
Introduction to history of museums and current issues. Four sessions taught by museum professionals in local institutions. 3 hr./wk.; 3 cr.

ART B7100, B7200: Museum Apprenticeship I and II
Supervised internships at local museums, galleries or other art institutions. Two days work per week each course; 3 cr. each

ART B7400: Museum Exhibition Analysis Seminar
Discussion of approximately six current museum exhibitions, chosen to provide a unifying theme, such as reevaluating the retrospective. Each student will present a class lecture and museum tour evaluating the content and installation of a major exhibition. Prereq: graduate standing or permission of the instructor. 3 hr./wk.; 3 cr.

ART B7500: Museum Education
Techniques and methods of museum education. Regular meeting in museums with working professionals. Prereq: graduate standing or permission of the instructor. 3 hr./wk.; 3 cr.

ART B7502: Art Museum Education II
A seminar focused on effective teaching strategies for art museum settings. This course will prepare students to teach from objects, critically analyze research in museum education, and create developmentally appropriate programs for multiple audiences. 3 hr./wk.; 3 cr.

ART B8000: Art Museum Studies Colloquium
This course serves as the capstone course for the Art Museum Studies concentration, providing a forum for students to discuss recent trends in art museum studies and complete their final art museum studies qualifying paper. The format for the course will be that of a seminar. Prerequisites: Art A1000 and B7000. Corequisite: B7100, B7200, and B7400. 3 hr./wk.; 3 cr.

ART B8000-B8050: Selected Topics in Art History
Advanced study in selected subjects outside of the regular curriculum. Course announcements to be made in the preceding semester. 3 hr./wk.; 3 cr.

ART B9000: Master’s Thesis Research
Enrollment by permission of the graduate advisor. Hrs. to be arranged; 3 cr.

ART B9800, B9900: Independent Study in Art History
Enrollment by permission of the graduate advisor. Hrs. to be arranged; 3 cr. Each

Faculty
Molly Aitken-Zaidi, Associate Professor
B.A., Harvard Univ.; M.A., Columbia Univ., M.Phil., Ph.D.

Becca Albee, Associate Professor
B.A., Evergreen State College; M.F.A., Univ. of North Carolina Chapel Hill

Patterson Beckwith, Lecturer
B.F.A, Cooper Union; M.F.A., Univ. of California (Los Angeles)

Colin Chase, Associate Professor
A.A.S., Fashion Institute of Technology; B.F.A., Cooper Union; M.F.A., Univ. of Michigan

Joshua Cohen, Assistant Professor
B.A., Vassar College; Ph. D., Columbia Univ.

Marit Dewhurst, Assistant Professor
B.A., Univ. of Michigan; Ed.M., Harvard University, Ed.D.

Leopoldo Fuentes, Assistant Professor
B.F.A., California State Univ. (Los Angeles); M.F.A, Northwestern Univ.

Ellen Handy, Associate Professor
B.A., Barnard College; Ph.D., Princeton Univ.

Craig Houser, Lecturer
B.A., Carleton College; M.A., Hunter College; M. Phil., CUNY Graduate Center, Ph.D.

Anna Indych- López, Associate Professor
B.A., New York Univ., M.A., Ph.D.

Lise Kjaer, Lecturer
M.F.A., Academy of Fine Arts (Poland); M. Phil., CUNY Graduate Center, Ph.D.

Abby Kornfeld, Assistant Professor
B.A., Cornell University; M.A. New York Univ., Ph.D.

Joseph Moore, Assistant Professor
B.F.A., Atlanta College of Art; M.F.A., Bennington College

Mark Smith, Assistant Professor
B.F.A., Georgia State Univ.; M.F.A, School of the Art Institute of Chicago

Hajoe Moderegger, Associate Professor
M.F.A, Bauhaus-University Weimar (Germany)

Sylvia Netzer, Professor
B.A., City College; M.F.A., Columbia Univ.

Ina Saltz, Associate Professor and Chair
B.F.A., Cooper Union

Harriet F. Senie, Professor
B.A., Brandeis Univ.; M.A., Hunter College; Ph.D., New York Univ.

Tom Thayer, Associate Professor
B.F.A., Northern Illinois Univ., M.F.A.

Annette Weintraub, Professor
B.F.A., Cooper Union; M.F.A., Univ. of Pennsylvania

Professors Emeriti
Robert E. Borgatta
Sherman Drexler
Madeleine Gekiere
Michi Itami
Irving Kaufman
Jay Milder
Seong Moy
Elizabeth O’Connor
George Nelson Preston
Joan Webster Price
Department of Biology

(Division of Science)

Professor Karen Hubbard, Chair  •  Department Office: MR 526  •  Tel: 212-650-6800

General Information
The City College offers the following Master’s Degree in Biology:

M.S.

Programs and Objectives
Areas of specialization include Molecular, Cellular, and Developmental Biology, Ecology, Evolution and Behavior, and Neuroscience.

Degree Requirements
A student may elect one of two routes to the M.S. Degree in Biology: either writing a thesis or passing a Comprehensive Examination.

Thesis Option

Required Courses
BIO V9100: Colloquium (1 CR. each term) 2
BIO B9901: Thesis Research 3
BIO B9902: Thesis Research 3

Elective Courses
Graduate courses in an approved area of specialization 12
Additional elective courses (may include up to 6 credits of BIO V9200: Tutorial, or BIO V9201: Advanced Study) 10

Total Credits for Thesis Option 30

Comprehensive Exam Option

Required Courses
BIO V9100: Colloquium (1 CR. each term) 2

Elective Courses
Graduate courses in an approved area of specialization 12
Additional elective courses 20
(may include up to 6 credits of BIO V9200: Tutorial, or BIO V9201: Advanced Study)

Total Credits for Comprehensive Exam Option 34

Additional Requirements
Elective courses are to be chosen in consultation with the advisor and are subject to the approval of the Departmental Graduate Studies Committee. No more than 12 credits may be taken with any one faculty member.

Thesis: Candidates must complete a thesis based on independent laboratory or field investigation and pass an oral defense of the thesis. The faculty member selected by the student as research sponsor subsequently will serve as advisor and chairman of an Advisory Committee of at least three faculty members, three of whom must be from the Biology Department. This committee will serve in the preparation and approval of the thesis proposal, the thesis, and defense of the thesis.

Comprehensive Exam: Candidates not offering a thesis must pass a written and oral comprehensive examination during the final semester of study. With the approval of the Master’s Advisor and the appropriate doctoral subprogram, students are permitted to take the first doctoral examination in lieu of the Comprehensive Exam. An advisory committee of three faculty members from the Biology Department will serve to advise the student.

Residency Requirements: Some elective courses offered by other departments at CCNY or CUNY can be credited toward the MA degree. However, students are cautioned that a minimum of 60% of the credits required for the MA degree (i.e., 18 or 20 credits for the thesis or comprehensive exam options, respectively) must be taken from courses offered directly by the faculty in the Biology Department at CCNY.

TOEFL Requirements: Foreign students must submit a minimum TOEFL score of 550.

Foreign Language Proficiency: Not required.

Application Deadlines: Completed applications must be received by the CCNY Graduate Admissions deadlines (May 1 for the Fall semester, and Nov 15 for the Spring semester).

Affiliated Programs
City College has a long-standing affiliation with curators at the American Museum of Natural History for graduate education in systematics. Admission to the AMNH programs requires approval by AMNH curators as well as CCNY faculty. Interested students are encouraged to contact curators directly to discuss potential research projects.

Advisement
Students interested in entering the M.S. Program should contact:

Master’s Advisor
Department of Biology
The City College of New York
New York, NY 10031
Telephone: (212) 650-6800

Enrolled students should consult one of the following advisors:

M.S. Candidates
Dr. Jonathan Levitt
Loc: MR 731
Tel: 212-650-8539

Ph.D. Candidates
Professor Adrian Rodriguez-Contreras
Loc: MR 735
Tel: 212-650-5899

Biology Course Descriptions

Courses for Non-MS students

BIO B2700: Principles of Ecology
Structure and function in ecological systems and the effects of human activities on their biotic and abiotic components. Required for landscape architects. Education students may register by permission of the Biology Department. Not open to students in the Science Division. 3 lect. hr./wk.; 3 cr.

LAAR 65160: Botany for Landscape Architects
Study and identification of local flora and their possible use in urban landscaping. The structure, function, growth and propagation of plants will be considered to their natural habitats. Botanical gardens and arboreta will be visited. Required for landscape architects. Education students may register by permission of the Biology Department. Not open to students in the Science Division. 2 lect., 2 lab and field hr./wk.; 3 cr.

Courses for Biology MS students

Ecology, Evolution, and Behavior

BIO A2000: Virology
Introductory survey of diverse genera of animal viruses and bacteriophages and methods used in the classification, detection, and quantification of viruses. The course emphasizes an understanding of the mechanisms of DNA/RNA replication, expression, and macromolecular assembly into functional, infectious units (virions) in different viruses. Selected examples are presented in detail, including oncogenic RNA/DNA viruses and HIV/AIDS. 3 hr./wk.; 3 cr.

BIO A4430: Insect Ecology
Introduction to the diversity and biology of major insect groups, focusing on the role of insects and other arthropods in natural ecosystems and their role in human affairs. Prereq: BIO 22800 or permission of instructor. 6 hr./wk.; 4 cr.

BIO A4580: Biogeography
Introduction to biogeography, the study of spatial patterns of biological diversity. The course addresses the study of geographic variation in nature at all levels from genes to communities to ecosystems, with both ecological and evolutionary perspectives. It includes analyses of real data regarding biogeographic problems relevant to conservation biology. Prereq: BIO 22800 or permission of instructor. 3 hr./wk.; 3 cr.

BIO A8500: Evolution
Historical development and current understanding of the principles of evolution. Prereq: BIO 22800 or permission of instructor. 3 hr./wk.; 3 cr.
**BIO V0503: Evolution**

Study of the mechanism and processes of evolution. Theory, laboratory experimental results and the phenomena found in natural populations are described and discussed in relation to population genetics, speciation and macroevolution. Prereq: course in genetics, vertebrate or invertebrate zoology, botany or permission of instructor. 3 lect. hr./wk.; 3 cr.

**BIO V0603: Principles of Systematics**

Lecture and discussion sections involving general principles of biological systematics, including fundamentals of nomenclature, phylogenetic theory, character analysis, and their use of relevant computer algorithms. Readings from the primary literature as well as text sources will be emphasized. 3 lect. hr./wk., plus conf.; 4 cr.

**BIO V0611/12: Systematics and Evolution of Insects and Spiders**

Lectures emphasize basic knowledge and recent advances in the systematics, biogeography, morphology, behavior, and paleontology of these arthropods. Major Families of the world will be emphasized. Labs involve fieldwork, personal collections, identifications, techniques, and small research projects. 2 lect. hr./wk., 2 cr.; 4 lab hr./wk., 2 cr.

**BIO V0733/34: Zoology and Phylogeny of Chordata (Mammals)**

Lecture, laboratory. Origin, adaptive radiation, morphology, ecology and systematics of mammals. Discussion of the reptile-mammal transition emphasizing the fundamental characters of teeth, ear structure and tarsal bones. Survey of mammalian orders and practical work in laboratory on living families and local species, including field methods and preparation of specimens for study. Lecture and laboratory are integrated; the course cannot be taken in separate parts. Prereq: course in vertebrate comparative anatomy. 2 lect. hr./wk., 3 cr.

**BIO V0743/44: Zoology and Phylogeny of Chordata (Birds)**

Lecture, laboratory, special topics in the evolution of birds. Prereq: permission of the instructor. 2 lect. hr./wk., 2 cr.; 4 lab hr./wk., 2 cr.

**BIO V0901/02: Population Genetics**

Lecture, laboratory. The Hardy-Weinberg law, gene pools, gene frequencies, and gene migration. Prereq: a course in genetics, a course in organic chemistry. 3 lect. hr./wk., 3 cr.; 6 lab hr./wk., 3 cr.

**BIO V2403: Animal Behavior I**

Lectures and discussions of selected major areas in modern animal behavior research. Included among the topics are conceptual issues in methodology, orientation and navigation, and development of behavior. A modern ecological approach is emphasized. Students read and lead discussion of papers from the original literature. Prereq: an undergraduate course in animal behavior/comparative psychology or permission of the instructor. 3 lect. hr./wk.; 3 cr.

**BIO V2407: Animal Behavior II**

Lecture and discussion of the selected major areas in modern behavioral research. Topics include behavioral genetics, the evolution of behavior, and behavioral ecology. Prereq: an undergraduate course in animal behavior, evolution or ecology. 3 hr./wk.; 3 cr.

**BIO V6003/04: Community Ecology**

Lecture, laboratory. Structural attributes, growth, and regulation of plant and animal communities. Prereq: a course in either ecology or field biology. 3 lect. hr./wk., 3 cr.; 6 lab hr./wk., 3 cr.

**BIO V6005/06: Population Ecology**

Lecture, laboratory. An analysis of the structure and dynamics of plant and animal populations. Topics include density, growth, regulation, fluctuation of numbers, niche, dispersal systems, dispersion patterns, demographic techniques, and interactions between populations. 3 lect. hr./wk., 3 cr.; 6 lab hr./wk., 3 cr.

**BIO V9001: Seminar in Evolution**

Topics relating to the general subject of evolution. 2 hr./wk., plus conf.; 3 cr.

**BIO V9006: Seminar in Ecology**

The conservation ecology seminar will focus on genetic problems and implications of wildlife management programs. Prereq: permission of the instructor. 3 hr./wk.; 3 cr.

**BIO V9012: Seminar in Zoogeography**

Special topics are discussed and reviewed. Prereq: permission of the instructor. 2 hr./wk., plus conf.; 3 cr.

**BIO V9030: Seminar in Ecology, Evolution, and Behavior**

AMNH (Alternate weeks). 2 hr./wk.; 1 cr.

**Molecular, Cellular, and Developmental Biology**

**BIO A4250: Cancer Biology**

Introduction to the fundamental principles of the cellular and molecular biology underlying cancer. Lectures will include principles of cell division and growth, and role of growth factors, oncogenes, tumor suppressor genes, and angiogenesis on the development of cancer. Discussions will include cancer epidemiology, health disparities, cancer prevention, and cancer treatment. Prereq: Cell Biology Course. 3 hr./wk.; 3 cr.

**BIO A8300: Laboratory in Biotechnology**

Introduction to modern molecular biological techniques in the context of solving biological questions. The techniques to be taught include DNA isolation, restriction enzyme mapping, subcloning of DNA fragments into plasmids, polymerase chain reaction, and other techniques of gene manipulation. Emphasis will be on the application of recombinant DNA technology. 2 lect. hr./wk., 6 lab hr./wk.; 5 cr.

**BIO V0005: Genetics**

Prokaryotic and eukaryotic genetics; organization of DNA, replication, repair, mutagenesis, recombination, control of gene expression, genetic engineering and molecular techniques. Prereq: undergraduate genetics and molecular biology or biochemistry. 4 lect. hr./wk.; 4 cr.

**BIO V0103: Microbial Genetics**

Microbial genetic systems will be examined with respect to their contributions to the understanding of molecular mechanisms of recombination, repair of genetic material, and regulation of gene expression. Emphasis will be placed on the procedures and the role of the new biotechnology. Prereq: BIO V0005 or equivalent. 3 lect. hr./wk.; 3 cr.

**BIO V0803: Molecular Evolution**

Principles of evolution at the level of DNA and proteins; gene families, concerted evolution of genes, codon bias, and other genetic processes will be discussed. 3 lect. hr./wk.; 3 cr.

**BIO V1401: Cell Biology**

Cells will be studied with special emphasis placed on organization, molecular structure/function relationships of organelles, and energetics and metabolism. Prereq: a course in organic chemistry and a course in biochemistry or permission of the instructor. 4 lect. hr./wk.; 4 cr.

**BIO V1800: Immunology**

Introduction to the basic concepts in immunology including innate and adaptive immunity, development and function of the cells of the immune system, antigen receptor diversity and the basic methods used to induce and measure immune responses. Selected research topics in immunology with an emphasis on current primary literature will also be covered. Prereq: Cell and Molecular Biology & undergraduate genetics. 3 lect. hr./wk.; 3 cr.

**Neuroscience**

**BIO A4510: Movement and Muscle: The Neuroscience of Motor Control**

The function and organization of motor systems. Topics include biomechanics, muscle, organization and physiology, the neural activation of muscle, spinal and brainstem reflexes, locomotion, the control of arm and eye movements, motor planning, and motor learning. Not open to students who have taken BIO 40000 or BIO 31311. Prereq: BIO 35400 or BIO 20700 or permission of instructor. 3 hr./wk.; 3 cr.

**BIO B4540: Sensory Perception**

Different types of sensory systems with their functional modalities will be presented. The biological bases for how these functions are generated and modified will then be described. As vision is the principal means of perception, we will focus in this course most on visual processing. Scientific data will be integrated into the lectures, such that students develop critical skills in analyzing data and proposing hypotheses. Prereq: Intro neurobiology course. 3 hr./wk.; 3 cr.

**BIO B4640: Laboratory in Neurobiology**

Laboratory course in which techniques used in cellular and systems neurobiology are taught in the context of solving biological problems. Techniques to be covered include basic histological, molecular biological, electrophysiological, and behavioral techniques used in modern neurobiology. Prereq: Cell Biology Course. 6 hr./wk.; 3 cr.

**BIO V2301: Neuroscience I**

This course and V2302 comprise an introduction to the neurosciences. The first semester covers neuronal cell biology (structure and trophic functions), cellular neurophysiology (membrane physiology, action potentials), synapses (neurotransmitters and physiology), neuroendocrine mechanisms, local neuronal circuits (integrative anatomical organization of the vertebrate nervous system). The second semester will cover the sensory and motor systems, as well as neurochemical pathways. Receptor physiology and infor-
motion processing are discussed in brief for the somatosensory system and in detail for the visual and auditory systems. The vertebrate motor systems are discussed with respect to spinal, supraspinal and cortical mechanisms. Prereq: students with no background in physiology must meet instructor before course begins. 4 lect. hr./wk.; 4 cr.

**BIO V2302: Neuroscience II**
Building upon materials covered in Neuroscience I, this course provides an introduction to sensory processing for several sensory systems, outlines the important developmental processes with a specific focus on the functional differentiation of the brain. 4 hr./wk.; 4 cr.

**BIO V2403: Animal Behavior I**
Lectures and discussions of selected major areas in modern animal behavior research. Included among the topics are conceptual issues in methodology, orientation and navigation, and development of behavior. A modern eclectic approach is emphasized. Students read and lead discussion of papers from the original literature. Prereq: an undergraduate course in animal behavior/comparative psychology or permission of the instructor. 3 lect. hr./wk.; 3 cr.

**BIO V2407: Animal Behavior II**
Lecture and discussion of the selected major areas in modern behavioral research. Topics include behavioral genetics, the evolution of behavior, and behavioral ecology. Prereq: an undergraduate course in animal behavior, evolution or ecology. 3 hr./wk.; 3 cr.

**BIO V9101: Colloquium in Ecology, Evolution and Behavior**
AMNH (Alternate weeks). 2 lect. hr./wk.; 1 cr.

**General**

**BIO B9700: Special Topics**
3 lect. hr./wk.; 3 cr.; 6 lab hr./wk., 3 cr.

**BIO V7200: Biological Electron Microscopy**
Preparation of materials and their examination by means of Transmission and Scanning electron microscopes. Techniques include methods of fixation and embedment for TEM; thin sectioning, staining, critical point drying, sputter coating, microscope operation, photography, and dark room procedures. Students will complete a project of their choosing to demonstrate their ability to use their new skills. 2 lect., 4 lab hr./wk., plus 3 hr. TBA; 4 cr.

**BIO V8101: Mathematical Biology**
3 lect. hr./wk.; 3 cr.

**BIO V8201: Biostatistics I**
Univariate statistics of biological systems (theory and application). Topics include: probability, descriptive statistics, correlation, analysis of variance, and regression. Prereq: permission of instructor. 3 lect., 6 lab hr./wk.; 6 cr.

**BIO V9100: Colloquium**
Recent developments and trends in the field of biology. Required of all candidates for the M.S. degree. Repeatable with a maximum of 4 credits with dept permission. 2 hr./wk.; 1 cr.

**BIO V9200: Tutorial**

**BIO V9201 – V9204: Advanced Study**
Study in an area where formal course work is not given. Subject matter may vary from assigned current readings in a specialized area with reports to special laboratory or field work. This set of courses is repeatable to a maximum of 12 credits total with dept. permission. The topics vary with each professor and each offering, and are customized to each student. Prereq: permission of instructor. 1-4 cr.

**BIO V9302: Molecular Biology Journal Club**
1 cr.

**BIO V9303: Seminar Special Topics**
Specialized seminars in diverse fields, depending upon the needs of specific students. 2 hr./wk., plus conf.; 3 cr.

**Graduate Courses Open to Undergraduates**
The following graduate courses are available to undergraduate students who have completed the appropriate prerequisites. Permission to take these courses must be obtained from the Biology Department Graduate Deputy Chairman and course instructor.

- V0901/02: Population Genetics Lecture, Laboratory
- V2800: Field Studies in Animal Behavior
- V5303: Molecular Basis of Development
- BIO V6003/04: Community Ecology Lecture, Laboratory
- BIO V6005/06: Population Ecology
- V6107/08: Marine Microbiology Lecture, Laboratory
- BIO V7200: Biological Electron Microscopy
- BIO V8101: Mathematical Biology
- BIO V2403: Animal Behavior I
- BIO V2407: Animal Behavior II
- BIO V2301: Neuroscience I
- BIO V2302: Neuroscience II

**Faculty**

Robert P. Anderson, Professor
B.A., Kansas State University; Ph.D., University of Kansas

Amy Berkov, Assistant Professor
BFA., University of Colorado; Ph.D., CUNY

Avrom Caplan, Professor
BSc., University of Sussex (U.K.); Ph.D., University of London (U.K.)

Ana Carnaval, Associate Professor
B.S., Universidade Federal do Rio de Janeiro (Brazil), M.S.; Ph.D., University of Chicago

Jay A. Edelman, Associate Professor
A.B., University of California (Berkeley), Ph.D. University of California (Berkeley)/University of California (San Francisco)

Mark Emerson, Assistant Professor
B.A., Oberlin College; Ph.D. Harvard University

Fardad Firooznia, Lecturer
B.S., Yale University; Ph.D. Cornell University

Jane C. Gallagher, Professor
B.S.–A.M., Stanford University; Ph.D., University of Rhode Island

Shubha Govind, Professor
B.S., M.S., Delhi University (India); Ph.D., University of Illinois (Urbana-Champaign)

Yevgeniy Grigoryev, Lecturer
B.S., Hunter College, CUNY; Ph.D., Scripps Research Institute

Michael Hickerson, Associate Professor
B.S., The Evergreen State College; M.S., Western Washington University; Ph.D., Duke University

Sally Hoskins, Professor
B.S., University of Illinois (Urbana-Champaign); Ph.D., University of Chicago

Karen Hubbard, Professor and Chair
B.A., Barat College; Ph.D., Illinois Institute Of Technology

Anuradha Janakiraman, Associate Professor
B.Sc., Presidency College (India); M.S. University of Calcutta (India); M.S. Kent State University; Ph.D. University of Illinois (Urbana-Champaign)

John J. Lee, Distinguished Professor
B.S., Queens College; M.A., University of Massachusetts; Ph.D., New York University

Daniel Lemons, Professor
B.A., Goshen College; M.S., Portland State University; Ph.D., Columbia University Medical School

Jonathan B. Levitt, Professor
B.A., University of Pennsylvania; M.A., Ph.D., New York University

Christine Li, Professor
A.B., Columbia University; M.S.; Ph.D., Harvard University

David Lohman, Assistant Professor
B.S., Bradley University; A.M., Ph.D., Harvard University

Hysell V. Oviedo, Assistant Professor
B.A., B.S., Richard Stockton College; Ph.D., New York University

Mark Pezzano, Associate Professor
B.S., William Paterson University; Ph.D., CUNY

Robert Rockwell, Professor
B.S., Wright State University; M.S., Ph.D., Queen’s University, Kingston (Canada)

Adrian Rodriguez-Contreras, Assistant Professor
B.Sc., Universidad Nacional Autonoma de Mexico; Ph.D., University of Cincinnati

Shireen Saleque, Assistant Professor
B.Sc., M.Sc., Calcutta University (India); M.A., M.Phil., Columbia University; Ph.D., Albert Einstein College of Medicine

Tadmiri R. Venkatesh, Professor
B.S., Univ. of Mysore (India); M.S., Ph.D., Birla Institute of Technology and Science (India)

Bao Q. Vuong, Assistant Professor
B.S., Cornell University; M.A., M. Phil., Ph.D., Columbia University
Professors Emeriti
Donald Cooper
Robert P. Goode
Joseph Griswold
Jerry Guyden
Linda H. Mantel
Olivia McKenna
James A. Organ
Joseph Osinchak
Janis Roze
Carol Simon
John H. Tietjen
Aaron O. Wasserman
Ralph C. Zuzolo
Program in Biotechnology

(Division of Science)
Professor Christine Li, Advisor • Office: CDI 13384 • Tel: 212-650-8450

General Information
The City College offers the following Master's Degree in Biotechnology: M.S.

Programs and Objectives
The Division of Science offers an interdisciplinary biotechnology program that provides a firm foundation and understanding of the biological sciences through a series of core courses. Additional required courses will build on this biological foundation to expose students to the multidisciplinary approaches used in biotechnology. Hence, the curriculum involves faculty from Biology, Chemistry, and Physics. The coursework will be integrated with research experiences in the laboratories performing cutting-edge research within the Division of Science. The MS degree in Biotechnology will prepare students for entrance into industry, governmental service, the health-oriented professions, or further graduate education.

For students wishing to pursue advanced studies, the Doctor of Philosophy degree is offered by The City University of New York. The office of the Ph.D. program is at The City University of New York Graduate Center, 365 Fifth Avenue, New York, N.Y. 10016.

Degree Requirements

Required Courses
BIO A8300: Laboratory in Biotechnology 5
BIO V0005: Genetics 4
BIO V1401: Cell Biology 4
BIO 71013: Molecular Biology 4
PHIL 77900: Medical Ethics 4
BIO/CHEM/PHYS V9100: Colloquium (to be taken twice) 2
BIO/CHEM/PHYS B9901: Thesis Research 3
BIO/CHEM/PHYS B9902: Thesis Research 3

Elective Courses
Graduate courses in an approved area of specialization 7

Total Credits for Thesis Option 36

Additional Requirements
Elective courses are to be chosen in consultation with the advisor and are subject to the approval of the Divisional Science Graduate Studies Committee.

Thesis: Candidates must complete a thesis based on independent laboratory or field investigation and pass an oral defense of the thesis. The faculty member selected by the student as research sponsor subsequently will serve as advisor and chairman of an Advisory Committee of at least three faculty members, three of whom must be from the Biology Department. This committee will serve in the preparation and approval of the thesis proposal, the thesis, and defense of the thesis.

Residency Requirements: Some elective courses offered by other departments at CUNY or equivalent required courses offered by other departments at CUNY can be credited toward the M.S. degree. However, students are cautioned that a minimum of 60% of the credits required for the M.S. degree (i.e., 18 credits) must be taken from courses offered directly by the faculty in the Division of Science at CCNY.

TOEFL Requirements: Foreign students must submit a minimum TOEFL score of 75th percentile.

Foreign Language Proficiency: Not required.

Application Deadlines: Completed applications must be received by the CCNY Graduate Admissions deadlines (May 1 for the Fall semester, and Nov 15 for the Spring semester).

Affiliated Programs
City College has an affiliation with Memorial Sloan-Kettering Cancer Center for performing research. Interested students are encouraged to contact Professor Karen Hubbard to discuss potential research projects.

Advisement
Students interested in entering the M.S. Program should contact:

Master’s Advisor
Program in Biotechnology
Department of Biology
The City College of New York
New York, NY 10031
Telephone: (212) 650-6800

M.S. Candidates
Dr. Christine Li
Loc: CDI 13384
Tel: 212-650-8450

Required Courses for Biotechnology MS students

Biotechnology Course Descriptions

BIO A8300: Laboratory in Biotechnology
Introduction to modern molecular biological techniques in the context of solving biological questions. The techniques to be taught include DNA isolation, restriction enzyme mapping, subcloning of DNA fragments into plasmids, polymerase chain reaction, and other techniques of gene manipulation. Emphasis will be on the application of recombinant DNA technology. 2 lect. hr./wk., 6 lab hr./wk.; 5 cr.

BIO V0005: Genetics
Prokaryotic and eukaryotic genetics; organization of DNA, replication, repair, mutagenesis, recombination, control of gene expression, genetic engineering and molecular techniques. Prereq: undergraduate genetics and molecular biology or biochemistry. 4 lect. hr./wk.; 4 cr.

BIO V1401: Cell Biology
Cells will be studied with special emphasis placed on organization, molecular structure/function relationships of organelles, and energetics and metabolism. Prereq: a course in organic chemistry and a course in biochemistry or permission of the instructor. 4 lect. hr./wk.; 4 cr.

BIO 71013: Molecular Biology
Structure and function of biomolecules; enzyme mechanisms; replication, transcription, translation; regulation of macromolecular biosynthesis; energy transformations. 4 hr./wk.; 4 cr

PHIL 77900: Medical Ethics
This course examines “classic” and emerging issues in biomedical ethics paying particular attention to the history of medicine and the nature of scientific thought as it relates to medical ethics. While many issues in biomedical ethics seem timeless such as our concerns about the withholding of treatment, abortion, truth-telling—others have arisen out of the development of an increasingly scientific medicine beginning in the 1700s. It is the availability of well confirmed effective treatments that forces us to wrestle with such questions as the propriety of medical intervention over the objection of the patient, the treatment of children over the objection of their parents, the right of all citizens to health care, the regulation of the sale of body parts for transplantation, and numerous circumstances arising out of assisted reproduction. 2 hr./wk.; 4 cr.

Required Research Courses

BIO/CHEM/PHYS V9100: Colloquium
Recent developments and trends in the field of biology. Required of all candidates for the M.S. degree. 2 hr./wk.; 1 cr. Colloquium must be taken twice.

BIO/CHEM/PHYS B9901: Thesis Research
3 cr.

BIO/CHEM/PHYS B9902: Thesis Research
3 cr.
Elective Courses

Other elective courses are acceptable in consultation with the Biotechnology Advisor and/or advisory committee.

**BICM 71010 - Advanced Biochemistry I (Enzymology/Metabolism)**
Protein structure, enzymology, and immunology; metabolism of carbohydrates, lipids, amino acids, and nucleotides; regulation of these processes. Prereq: CHEM A8005. 3 hr./wk.; 3 cr.

**BICM 71020: Advanced Biochemistry II**
Topics of current importance in biochemistry, including bioenergetics, membrane biochemistry, and synthesis of nucleic acids and proteins. Prereq: CHEM A8005. 3 hr./wk.; 3 cr.

**BIO A2000: Virology**
Introductory survey of diverse genera of animal viruses and bacteriophages and methods used in the classification, detection, and quantification of viruses. The course emphasizes an understanding of the mechanisms of DNA/RNA replication, expression, and macromolecular assembly into functional, infectious units (virions) in different viruses. Selected examples are presented in detail, including oncogenic RNA/DNA viruses and HIV/AIDS. 3 hr./wk.; 3 cr.

**BIO V5003: Developmental Biology**
Principles of evolution at the level of DNA and proteins; gene families, concerted evolution of genes, codon bias, and other genetic processes will be discussed. 3 lect. hr./wk.; 3 cr.

**BIO V1800: Immunology**
Introduction to the basic concepts in immunology including innate and adaptive immunity, development and function of the cells of the immune system, antigen receptor diversity and the basic methods used to induce and measure immune responses. Selected research topics in immunology with an emphasis on current primary literature will also be covered. Prereq: Cell and Molecular Biology & undergraduate genetics. 3 lect. hr./wk.; 3 cr.

**BIO V8201: Biostatistics I**
Univariate statistics of biological systems (theory and application). Topics include: probability, descriptive statistics, correlation, analysis of variance, and regression. Prereq: permission of instructor. 3 lect., 6 lab hr./wk.; 6 cr.

**BIOL 79049: Computational Molecular Biology**
Biomedical research is becoming a high-throughput science. As a result, information technology plays an increasingly important role in biomedical discovery. Bioinformatics is a new interdisciplinary field formed between molecular biology and computer science. This course will introduce both bioinformatics theories and practices. Topics include database searching, sequence alignment, molecular phylogenetics, structure predication, and microarray analysis. The course is held in a UNIX-based instructional lab specifically configured for bioinformatics applications. Prereq: CSCL132 Practical Unix and Perl Programming and BIOL 300 Biochemistry (or equivalent) or permission of instructor. 3 lect./lab hr./wk.; 3 cr. Given at Hunter College.

**CHEM A8005: Biochemistry II**
Molecular basis of enzyme action, membranes (transport and signal transduction), protein structure, signal transduction, virology, bioinformatics, genomics, proteomics, molecular basis of replication, transcription of genetic information, immunology. Prereq: a one semester undergraduate biochemistry course. Spring semester only. 3 hr./wk.; 3 cr.

**PHYS V3800: Biophysics**
Introduction to the structure, properties and function of proteins, nucleic acids, lipids and membranes. In depth study of the physical basis of selected systems including vision, nerve transmission, photosynthesis, enzyme mechanism and cellular diffusion. Introduction to spectroscopic methods for monitoring reactions and determining structure including light absorption or scattering, fluorescence NMR and X-ray diffraction. The course emphasizes reading and interpretation of original literature. 3 hr./wk., plus conf.; 4 cr.

**Faculty**

Zimeiz Bu, Associate Professor
B. Engineering, Chengdu Univ. of Science & Technology (China); Ph.D., Louisiana State Univ.

Mark Emerson, Assistant Professor
B.A., Oberlin College; Ph.D. Harvard University

Kevin Gardner, Einstein Professor of Chemistry, Director of the ASRC Structural Biology Initiative
B.S., Univ. of California, Davis; Ph.D., Yale Univ.

Ranajeet Ghose, Professor
B.Sc., Presidency College (India); M.S., Yale Univ., Ph.D. Yale Univ.

Shubha Govind, Professor
B.S., M.S., Delhi University (India); Ph.D., University of Illinois (Urbana-Champaign)

Marilyn Gunner, Professor
B.A., SUNY (Binghamton); Ph.D., Univ. of Pennsylvania

Karen Hubbard, Professor
B.A., Barat College; Ph.D., Illinois Institute Of Technology

Anuradha Janakiramam, Associate Professor
B.S., Presidency College (India); M.Sc. University of Calcutta (India); M.S. Kent State University; Ph.D. University of Illinois (Urbana-Champaign)

David Jeruzalmi, Professor
B.S., Univ. of Cincinnati; M. Phil., Univ. of Cincinnati; Ph.D., Yale University

George John, Professor
B.S., Univ. of Kerala (India), Ph.D. Univ. of Kerala

Reza Khayat, Assistant Professor
B.S., Univ. of California, Irvine.; M.S., Ph.D., Columbia University

Ronald Koder, Associate Professor
B.S., Univ. of Missouri-Columbia, Ph.D., John Hopkins

Themis Lazaridis, Professor
Diploma in Chemical Engineering, Aristotle Univ. (Greece); Ph.D., Univ. Of Delaware

Christine Li, Professor
A.B., Columbia University; M.S.; Ph.D., Harvard University

Mark Pezzano, Associate Professor
B.S., William Paterson University; Ph.D., CUNY

Adrian Rodriguez-Contreras, Assistant Professor
B.Sc., Universidad Nacional Autonoma de Mexico; Ph.D., University of Cincinnati

Kevin Ryan, Associate Professor
B.S., Providence College; M.S., Univ. of Rochester, Ph.D. Univ. of Rochester

Shireen Saleque, Assistant Professor
B.Sc., M.Sc., Calcutta University (India); M.A., M.Phil., Columbia University; Ph.D., Albert Einstein College of Medicine

Ruth Stark, Distinguished Professor
A.B., Cornell University; Ph.D., Univ. of California (San Diego)

Tadmiri R. Venkatesh, Professor
B.S., Univ. of Mysore (India); M.S., Ph.D., Birla Institute of Technology and Science (India)

Bao Q. Vuong, Assistant Professor
B.S., Cornell University; M.A., M. Phil., Ph.D., Columbia University
Department of Chemistry and Biochemistry

(Division of Science)

Professor Daniel L. Akins, Chair • Department Office: MR 1024 • Tel: 212-650-8402

General Information

The City College offers the following Master’s Degree in Chemistry:

M.S.

Programs and Objectives

The Department of Chemistry and Biochemistry, established in 1849, offers rigorous and up-to-date graduate level instruction and research training in the following areas:

• Analytical Chemistry
• Biochemistry
• Environmental Chemistry
• Inorganic Chemistry
• Organic Chemistry
• Physical Chemistry

The M.S. curriculum is flexible, and programs of study are available for students planning to go into industry, governmental service, the health-oriented professions, and secondary school education.

For students wishing to pursue advanced studies in the above areas, the Doctor of Philosophy degree is offered by The City University of New York. The office of the Ph.D. program is at The City University of New York Graduate Center, 365 Fifth Avenue, New York, N.Y. 10016.

Degree Requirements

Graduate courses from other departments may be taken if approved by the advisor.

Chemistry Option

Required Courses

CHEM B1000: Inorganic Chemistry 5
CHEM B5000: Organic Mechanisms 5

Elective Courses

Twenty credits chosen from the following: 20
CHEM A1100: Environmental Chemistry (3 cr.)
CHEM A1101: Environmental Chemistry Lab (2 cr.)
CHEM A1200: Environmental Organic Chemistry (3 cr.)
CHEM A1400: Chemical Information Courses (1 cr.)
CHEM A8200: Chemistry-Physics-Engineering Seminar I (1 cr.)
CHEM A8300: Chemistry-Physics Engineering Seminar II (1 cr.)
CHEM B3000: Polymer Chemistry (5 cr.)
CHEM B5100: Organic Synthesis (5 cr.)
CHEM B5200: Spectroscopy and Structure Proof in Organic Chemistry (5 cr.)
CHEM B5300: Organometallics (5 cr.)
CHEM B6000: Quantum Chemistry (5 cr.)
CHEM B7200: Surface Chemistry and Colloids (5 cr.)
CHEM B7300: Computers in Chemistry (5 cr.)
CHEM B8900: Introduction to Research Methodology (5 cr.)
CHEM B9100: Basic Lab Techniques (5 cr.)

Total Credits 30

Additional Requirements:

Thesis: There is also the possibility of doing a thesis (offered as CHEM B9901-8905, 10 credits). The thesis must be approved by the Graduate Committee. Students choosing to do a thesis will take ten credits of elective Chemistry courses in addition to CHEM B9901-8905.

Comprehensive Examination: A comprehensive examination is required of all students except those who have completed a thesis.

Advisement

All students wishing to pursue master’s work in Chemistry should consult with one of the program directors listed below:

Chemistry

Professor Barbara Zajc
Location: MR 1234
Tel: 212-650-8926

Biochemistry

Professor Kevin Ryan
Location: MR 1337
Tel: 212-650-8132

Seminars

The Department of Chemistry and Biochemistry sponsors weekly seminars on topics of current interest. Advance abstracts of these seminars will be posted in the vicinity of MR 1024, and all interested students are invited to attend.

Awards, Scholarships and Prizes

Each year the department presents a number of awards to its outstanding students.

Ernest Borek Scholarship
Albert and Frances Hochman Scholarship
Sol and Bettina Kornbluh Award

Doctoral Courses Open to Master’s Students

Qualified students may take or substitute, with the approval of the Graduate Committee, courses available in the doctoral program in Chemistry. Those courses are described in the bulletin of The Graduate School of The City University of New York.

Chemistry Course Descriptions

Basic Courses in Chemistry

CHEM A1100: Environmental Chemistry
Intended to broaden the student’s understanding of chemical processes taking place in our environment. The relationship between atmospheric, soil and water chemistry will be underlined. This course draws upon general, analytical and organic chemistry experience. 3 hr./wk.; 3 cr.

CHEM A1101: Environmental Chemistry Lab
Introduction to environmental analysis. Samples of water, air, soil, food, etc. will be obtained and analyzed both qualitatively and quantitatively for pollutants. The effects of these pollutants on the environment will be discussed and linked to urban problems. Analytical techniques will include titrations, separations (GC, HPLC, GC/MS) and polarography. 3 hr./wk.; 2 cr.

CHEM B1000 and Chemistry B5000.
CHEM A1200: Environmental Organic Chemistry
Examination of processes that affect the behavior and fate of anthropogenic organic contaminants in aquatic environments. Chemical properties influencing transfers between hydrophobic organic chemicals, air, water, and sediments, based on a fundamental understanding of intermolecular interactions, will be studied. Mechanisms of important thermochemical and photochemical reaction reactions will also be briefly investigated. 3 hr./wk.; 3 cr.

CHEM A1400: Chemical Information Sources
An introduction to the retrieval of chemical information. Topics covered: primary, secondary and tertiary literature, including the major abstract journals, data sources, compendia, patents, current awareness, and computer readable sources. Spring semester only. 3 hr./wk.; 1 cr.

CHEM A8000-A8999: Special Topics in Chemistry
Special topics not covered in the usual department offerings. Topics will vary from semester to semester depending on student and instructor interest. Each course will have a designated list of prerequisites. These depend on the central topic of the course and will be decided by the instructor. Credits and hours will be determined by the instructor and the department. 1-5 hr./wk.; 1-5 cr.

CHEM A8200: Chemistry-Physics-Engineering Seminar I
Topics in physical chemistry, inorganic chemistry and organic chemistry. Fall semester only. 1 cr.

CHEM A8208: RNA Biochemistry and Molecular Biology
Chemistry, structure and function of the ribonucleic acids (RNA), and the increasingly important role this ancient biopolymer is recognized to play in Biochemistry and other life sciences, including medicine. Theoretical and methodological concepts will be explored in lectures and in class discussion of classic and contemporary RNA research papers. Pre-requisite(s): Admission into the chemistry MS program and CHEM A8005 (Advanced Biochemistry), or equivalent. 3 hr./wk.; 4 cr.

CHEM A8300: Chemistry-Physics-Engineering Seminar II
Topics in physical chemistry, inorganic chemistry and organic chemistry. Spring semester only. 1 cr.

CHEM B1000: Inorganic Chemistry
Theories of chemical bonding and molecular structure applied to inorganic compounds; stereochemistry; compounds of the non-transition elements; transition metal complexes. Spring semester only. 5 hr./wk.; 5 cr.

CHEM B3000: Polymer Chemistry
Fundamentals of polymer science: polymerization, solution properties, and solid state properties. 5 hr./wk.; 5 cr.

CHEM B5000: Organic Mechanisms
The basic methods of studying organic reaction mechanisms and their application to specific reactions. Fall semester only. 5 hr./wk.; 5 cr.

CHEM B5100: Organic Synthesis
A critical and mechanistic evaluation of methods and concepts in organic synthesis. Spring semester only. Prereq: CHEM B5000. 5 hr./wk.; 5 cr.

CHEM B5200: Spectroscopy and Structural Proof in Organic Chemistry
Principles and concepts in spectroscopic methods such as infrared and ultraviolet-visible spectrophotometry, proton and carbon nuclear magnetic resonance spectroscopy including techniques such as decoupling, 2-dimensional correlated spectroscopy, mass spectrometry and elemental analyses. 5 hr./wk.; 5 cr.

CHEM B6000: Quantum Chemistry
An introduction to quantum chemistry. A mathematical development of the theories which explain atomic and molecular behavior with applications to chemical bonding and spectroscopy. 5 hr./wk.; 5 cr.

CHEM B8900: Introduction to Research Methodology
An introduction to methods of doing research; students are required to submit a research notebook and a short paper. With approval, may be converted to the first half of thesis research. Hrs. TBA/2 cr.

CHEM B9100: Basic Laboratory Techniques for Research in Physical, Analytical and Inorganic Chemistry
Electronics, principles of instrumention, application of some modern instruments, and instrumental techniques. Spring semester only. 2 lect., 6 lab. hr./wk.; 5 cr.

Basic Courses in Biochemistry
BICM courses are offered through the Biochemistry Program of the Graduate School of the City University of New York.

CHEM A8005: Biochemistry II
Molecular basis of enzyme action, membranes (transport and signal transduction), protein structure, signal transduction, virology, bioinformatics, genomics, proteomics, molecular basis of replication, transcription of genetic information, immunology. Prereq: a one semester undergraduate biochemistry course. Spring semester only. 3 hr./wk.; 3 cr.

CHEM B9800: Seminar in Biochemistry
Presentation and discussion of current problems in biochemistry. Includes presentations of recent research findings by invited speakers and requires registered students to make at least one presentation based on published work or their own research results. 1 hr./wk.; 1 cr.

BICM 71010: Advanced Biochemistry I
Topics of current importance in biochemistry, including protein structure, enzymology, immunology and regulation of metabolism. Prereq: CHEM A8005. 3 hr./wk.; 3 cr.

BICM 71020: Advanced Biochemistry II
Topics of current importance in biochemistry, including bioenergetics, membrane biochemistry, and synthesis of nucleic acids and proteins. Prereq: CHEM A8005. 3 hr./wk.; 3 cr.

BICM 71110: Research Techniques in Biochemistry I
Laboratory work dealing with modern approaches in the solution of biochemical problems. The specific laboratory is arranged by mutual agreement between the student and a Chemistry Department professor. Pre-Co-requisite(s): CHEM A8005. 1 Class, 7 Lab hr./wk.; 4 cr.

BICM 72010: Basic Seminar in Biochemistry I
Each student will make at least one presentation of published work. The course complements and supplements the Advanced Biochemistry I lecture (BICM 71010). Prereq: CHEM A8005. 1 cr.

BICM 72020: Basic Seminar in Biochemistry II
Each student will make at least one presentation of published work. The course complements and supplements the Advanced Biochemistry II lecture (BICM 71020). Prereq: CHEM A8005. 1 cr.

BICM 75000: Bioorganic Chemistry
Organic reaction mechanisms with emphasis on biochemical reactions. Chemistry of amino acids, sulfur compounds, and phosphates. Catalysis: acid-base, nucleophilic, electrophilic, metal-ion, intramolecular, multiple and complexion. 3 hr./wk.; 3 cr.

BICM 77000: Physical Biochemistry
Kinetics, thermodynamics and spectroscopy as applied to biochemical systems. 3 hr./wk.; 3 cr.

BICM 81000: Seminar in Biochemistry
(see CHEM B9800)

Additional Courses

CHEM B5300: Organometallics
5 hr./wk.; 5 cr.

CHEM B7200: Surface Chemistry and Colloids
5 hr./wk.; 5 cr.

CHEM B7300: Computers in Chemistry
5 hr./wk., 5 cr.

CHEM B8000: Special Topics in Chemistry
4 hr./wk.; 5 cr.

CHEM B8001: Special Topics in Inorganic Chemistry

CHEM B8002: Special Topics in Analytical Chemistry

CHEM B8003: Special Topics in Organic Chemistry

CHEM B8004: Special Topics in Physical Chemistry

CHEM B9901-B9905: Thesis Research
Students choosing thesis research will prepare a thesis under the personal guidance of a faculty advisor. The research must be completed in two years from the initial date of registration for the thesis course, continuing registration until completed. 10 cr.

BICM 71120: Research Techniques in Biochemistry II
Laboratory work in one biochemical research laboratory. Prereq: BICM 71110. 1 class, 7 lab hr./wk.; 4 cr.
Faculty

Daniel L. Akins, Professor and Chair  
B.S., Howard Univ.; Ph.D., Univ. of California, Berkeley

Valeria Balogh-Nair, Professor  
B.Sc., Univ. of Louvain (Belgium); Ph.D. Univ. of Louvain

Teresa Bandosz, Professor  
B.S., Univ. of Mining Metallurgy (Cracow, Poland); M.S. Univ. of Mining  
Metallurgy (Cracow, Poland); Ph.D., Technical Univ. of Cracow

Ronald Birke, Professor  
B.S., Univ. of North Carolina; Ph.D., M.I.T.

Mark Biscoe, Assistant Professor  
B.A., Wesleyan Univ.; Ph.D., Columbia Univ.

Sean Boson, Lecturer  
B.S., Jahangirnagar Univ., (Bangladesh); M.S. Jahangirnagar Univ. (Bangladesh);  
Ph.D., Univ. of Cambridge (U.K.)

Zimei Bu, Associate Professor  
B. Engineering, Chengdu Univ. of Science & Technology (China); Ph.D., Louisiana  
State Univ.

David H. Calhoun, Professor  
B.A., Birmingham-Southern College; Ph.D., Univ. of Alabama

Dorthe Eisele, Assistant Professor  
Dip-Phys (MS equiv), Technical Univ. of Berlin; Dr.rer.nat (Ph.D. equiv), Humboldt  
Univ. of Berlin

Kevin Garner  
Kevin Gardner, Einstein Professor of Chemistry, Director of the ASRC  
Structural Biology Initiative

Ranajeet Ghose, Professor  
B.Sc., Presidency College (India); M.S., Yale Univ., Ph.D. Yale Univ.

David K. Gosser, Professor  
B.S., St. Joseph’s Univ.; Ph.D., Brown Univ.

Michael E. Green, Professor  
A.B., Cornell Univ.; M.S., Yale Univ., Ph.D. Yale Univ.

Edward Hohenstein, Assistant Professor  
B.S., Washington College; Ph.D., Georgia Institute of Technology

Urs Jans, Associate Professor  
Diploma in Chemistry, Swiss Federal Institute of Technology, Ph.D. Swiss Federal  
Institute of Technology

David Jeruzalmi, Professor  
B.S., Univ. of Cincinnati; M. Phil., Univ. of Cincinnati; Ph.D., Yale University

George John, Professor  
B.S., Univ. of Kerala (India); Ph.D. Univ. of Kerala

Reza Khayat, Assistant Professor  
B.S., Univ. of California, Irvine.; M.S., Ph.D., Columbia University

Glen Kowach, Associate Professor  
B.S., Univ. of Wisconsin, Madison; Ph.D., Cornell Univ

Mahesh Lakshman, Professor  
B.S., University of Bombay (India); M.S. University of Bombay; Ph.D., University of  
Oklahoma

Themis Lazaridis, Professor  
Diploma in Chemical Engineering, Aristotle Univ. (Greece); Ph.D., Univ. Of  
Delaware

John R. Lombardi, Professor  
A.B., Cornell Univ.; M.A., Harvard Univ., Ph.D.

Stephen O’Brien, Associate Professor  
B.Sc., Sussex Univ. (UK); D.Phil., Oxford Univ. (UK)

Kevin Ryan, Associate Professor  
B.S., Providence College; M.S., Univ. of Rochester, Ph.D. Univ. of Rochester

Issa Salame, Lecturer and Master Teaching Fellow  
B.S., The City College; M. Phil., CUNY, Ph.D. CUNY

Simon A. Simms, Associate Professor  
B.S., The City College; Ph.D., Princeton Univ.

Ruth Stark, Distinguished Professor  
A.B., Cornell University; Ph.D., Univ. of California (San Diego)

Mark L. Steinberg, Professor  
B.A., Univ. of Michigan; Ph.D., Univ. of Pennsylvania

Maria Tamargo, Professor  
B.S., Univ. of Puerto Rico; M.S., Johns Hopkins Univ., Ph.D. John Hopkins Univ.
(Division of Humanities and the Arts)

Professor Carlos Riobó, Chair • Department Office: NA 5/223 • Tel: 212-650-6731

General Information

The City College offers the following master's degree in Classical and Modern Languages and Literatures:

M.A. in Spanish

Degree Requirements

Required Courses
One of the following two:  
SPAN V0100: History of the Spanish Language (3 CR.)  
SPAN V0600: Morphology and Syntax (3 CR.)

Plus:
SPAN V0300: Introduction to Methods of Research  
Graduate Electives  
Total Credits

The graduate electives (27 credits) are to be taken from among the courses offered by the department. With the permission of the Departmental Graduate Committee, a maximum of nine graduate credits may be taken in another Department or Division of the College.

Additional Requirements

Essay in Lieu of Thesis: A term essay approved by two members of the graduate faculty is required.

Comprehensive Examination: A written comprehensive examination is required.

Foreign Language Proficiency: Students must demonstrate their ability to read, write and speak Spanish. In addition, they must show a reading knowledge of a second foreign language by passing the Foreign Language Qualifying Examination.

Advisement

It is essential that all students consult with the Director of the M.A. Program in Spanish, at the beginning of each semester.

Angel Estevez  
MA Program Director  
NA 5/223 - H  
212 - 650 - 6377  
aestevez@ccny.cuny.edu

Spanish Languages and Literatures Course Descriptions

SPAN V0100: History of the Spanish Language
Traces the development of the Spanish language from its Latin origins to the present. The course provides a survey of historical grammar with emphasis on phonology and morphology and/or the evolution of Spanish in the Americas. 2 hr./wk. plus conf.; 3 cr.

SPAN V0300: Introduction to Methods of Research
Aims to develop proficiency in literary and bibliographical research through traditional and on-line methods. The course offers an overview of recent critical theories and requires library assignments applied to an individual research project. 2 hr./wk. plus conf.; 3 cr.

SPAN V0600: Spanish Morphology and Syntax
An advanced review of Spanish morphology and syntax with the purpose of allowing graduate students to explore analytically the structure of the Spanish language. The course will make frequent comparisons and contrasts between the target language and English grammatical structures. 2 hr./wk. plus conf.; 3 cr.

SPAN V0700: Spanish Stylistics
Analyzes the language used in literary texts through a study of representative Hispanic authors. The course will also consider how different patterns of style affect the writing and reading of a text. 2 hr./wk. plus conf.; 3 cr.

SPAN V1000: Medieval Epic and Lyric Poetry
Survey of prose, poetry and theater of the Middle Ages in the Iberian Peninsula from the earliest literary manifestations to the end of the 15th Century. 2 hr./wk. plus conf.; 3 cr.

SPAN V2000: Spanish Novel of the Golden Age
Study of the representative works characterizing the various narrative traditions that developed in Spain during the 16th and 17th centuries in light of their ideological and sociocultural contexts. 2 hr./wk. plus conf.; 3 cr.

SPAN V2200: Cervantes
Explores Cervantes' Don Quixote taking into account his life, ideology, as well as the philosophical, social and aesthetic contexts in which the author produced his masterpiece. 2 hr./wk. plus conf.; 3 cr.

SPAN V2400: Poetry of the Golden Age
Analysis of the work of the most representative Spanish poets from the late 15th century through the 17th century taking into account the philosophical and aesthetic currents in vogue at the time. 2 hr./wk. plus conf.; 3 cr.

SPAN V2500: Theatre of the Golden Age
Examination of the evolution of Spanish theater emphasizing theory of drama in the works of Lope and Calderón as well as their influence on other playwrights of the period in the Iberian Peninsula and the Americas. 2 hr./wk. plus conf.; 3 cr.

SPAN V3100: Enlightenment and Romanticism in Spain
A review of the impact of French Enlightenment and European Romanticism on Spanish thought and literature through readings of representative Spanish works from several genres. 2 hr./wk. plus conf.; 3 cr.

SPAN V4200: Spanish Novel of the Nineteenth Century
Study of the development of the Spanish novel from Romanticism through Realism and Naturalism. Particular attention will be given to works of key figures of the period such as "Clarin" and Galdós. 2 hr./wk. plus conf.; 3 cr.

SPAN V5200: Contemporary Spanish Drama
Review of the most influential trends of the 20th century world drama that affected the Spanish stage and its major playwrights. 2 hr./wk. plus conf.; 3 cr.

SPAN V5600: Contemporary Spanish Novel
Analysis of the representation of Spanish history and culture in fiction. Issues such as identity, change and authoritarianism will be explored through the examination of major novels. 2 hr./wk. plus conf.; 3 cr.

SPAN V5800: Contemporary Spanish Poetry
Analysis of recent poetic trends taking into account the influence of key voices from the "Generación del 27." Readings of representative works by major writers. 2 hr./wk. plus conf.; 3 cr.

SPAN V6600: Spanish-American Colonial Literature
Study of major literary figures and issues of the period in their cultural context and in light of how contemporary issues and critical debates have affected our perception of the colonial world. 2 hr./wk. plus conf.; 3 cr.

SPAN V6400: Romanticism in Spanish-American Literature
Survey of the major trends in Spanish-American literature of the 19th century with emphasis on "romanticismo," "costumbrismo," and the transition to "realismo" and "naturalismo." Readings of representative works of major writers and genres. 2 hr./wk. plus conf.; 3 cr.

SPAN V6600: Spanish-American Novel I
Analysis of the Spanish American novel in the first half of the 20th century, including the "novela de la tierra," "indigenismo" and the "novela psicológica." Readings of representative works of major writers and trends. 2 hr./wk. plus conf.; 3 cr.

SPAN V6800: Spanish-American Novel II
Study of the development of the Spanish-American novel beginning with the "Boom" to present-day trends. Readings of representative works of major writers. 2 hr./wk. plus conf.; 3 cr.

SPAN V7000: Modernism in Spanish-American Poetry
Study of the writings of Martí, Najera, Dario and other great figures of "modernismo," and their impact on Hispanic literature in Europe and the Americas. 2 hr./wk. plus conf.; 3 cr.

SPAN V7200: Contemporary Spanish-American Poetry
Examination of poetic trends through the reading of representative works of Huidobro, Guillén, Mistral, Neruda and Paz, among others. 2 hr./wk. plus conf.; 3 cr.
SPAN V7400: Spanish-American Essay
Study of the essay as a major genre in the development of Spanish-American social thought. Readings of representative works from the period of Independence through the 20th century. 2 hr./wk. plus conf.; 3 cr.

SPAN B7600: Spanish-American Theatre
Study of representative plays reflecting significant literary trends and social developments in contemporary Spanish America. 2 hr./wk. plus conf.; 3 cr.

SPAN B7700: Spanish-American Short Story
Examination of the short story emphasizing its literary, cultural, and social impact. Reading of representative works from the period of independence through the current century. 2 hr./wk.; 3 cr.

SPAN B7800: Seminar in Spanish-American Literature
Study of topics such as "indianista" and "indigenista" novels, the novel of the Mexican Revolution, and literary trends reflecting popular culture. 2 hr./wk. plus conf.; 3 cr.

SPAN B9800-B9805: Special Topics in Language and Literature
1-3 hr./wk.; 1-3 cr.

SPAN B9900: Hispanic Literature of the United States
Focus on contemporary Cuban-American, mainland Puerto-Rican and Mexican-American literature with an emphasis on poetry and narrative. Scores how the literary production of the minority group reflects its place in mainstream American Society. 2 hr./wk. plus conf.; 3 cr.

Faculty

Maxime Blanchard, Associate Professor  
B.A., Univ. de Montreal; M.A., Univ. of Minnesota; D.E.A., Univ. de Paris-IV (Sorbonne); Ph.D., Harvard

Silvia Burunat, Professor  
B.A., M.A., Boston University; Ph.D., City University of New York

Richard F. Calichman, Professor  
B.A., Colby College; M.A., Ph.D., Cornell University

Laura Callahan, Professor  
B.A., M.A., San José State University; Ph.D., University of California at Berkeley

Regina Castro McGowan, Lecturer  
B.A., City College of New York; Ph.D., City University of New York

Raquel Chang-Rodríguez, Distinguished Professor  
B.S., Montana State University; M.A., Ohio University; Ph.D., New York University

Elazar Elhanan, Assistant Professor  
B.A., Tel Aviv University; Ph.D. Columbia University

Angel Luis Estévez, Associate Professor  
B.A., Hunter College; Ph.D., City University of New York

Isabel Estrada, Assistant Professor  
B.A., University of Seville; Ph.D. Columbia University

Dulce M. García, Associate Professor  
B.A., Barry University; M.S., Ph.D., Georgetown University

Amr Kamal, Assistant Professor  
B.A., University of California, Irvine; Ph.D., University of Michigan, Ann Arbor

Amy Kratka, Lecturer  
B.A., Queens College; M.A., Ph.D., Boston University

Edwin Lamboy, Associate Professor  
B.A., Universidad de Puerto Rico (Rio Piedras); MS.Ed., Lehman College; Ph.D., Pennsylvania State Univ.

Bettina Lerner, Assistant Professor  
B.A., Ph.D., Yale University

Jaime Manrique, Distinguished Lecturer  
B.A., Univ. of South Florida (Tampa)

Juan Carlos Mercado, Professor and Dean, Division of Interdisciplinary Studies (CWE)  
B.A., Univ. del Comahue (Argentina); M.A., Queens College; Ph.D., City University of New York

Corinna Messina-Kociuba, Lecturer  
B.A., S. Pio V Univ. of Rome; M.A., City College of New York

Roy Mittelman, Lecturer  
B.A., University of Pennsylvania; M.A., Ph.D., Temple University

Devid Paolini, Assistant Professor  
M.A., University of Bologna; Ph.D., City University of New York

Carlos Riobó, Associate Professor and Chair  
B.A., Columbia University; M.A., M. Phil, Ph.D., Yale University

Jennifer Roberts, Professor  
B.A. Yale College; M.A., Ph.D., Yale University

Nelly D. Saint-Maurice, Lecturer  
B.T.S., CNAM, Paris; B.F.A., M.A., City College of New York; M.Phil., City University of New York

Mary Ruth Strzeszewski, Associate Professor and Executive Director of Academic Affairs/Student Success  
B.A., M.A., Ph.D., Columbia University

Araceli Tinajero, Professor  
B.A., M.A., Ph.D., Rutgers University

Vanessa K. Valdés, Associate Professor  
B.A., Yale University; M.A., Ph.D., Vanderbilt University

Hsien Wu, Assistant Professor  
B.A., Boston University; M.A., Ph.D., Columbia University

Professors Emeriti

Carole Berger  
Gisele Corbiere-Gille  
Stephen G. Daitz  
Gabriella de Beer  
Antonio de la Campa  
Manuel de la Nuez  
Adriana Garcia-Davila  
Françoise Dorenlot  
Janette Gatty  
Marshall S. Hurwitz  
Theodore Litman  
Antonio Sacoto  
Eve Sourian  
Elizabeth Starčević  
Zvi Henri Szubin  
Renée Waldinger  
Sharifa M. Zawawi  
Jacques Zéphir
The City College offers the following master’s degree in Earth and Atmospheric Sciences:

M.S. in Geology

Programs and Objectives

The Department of Earth and Atmospheric Sciences has developed a unique version of the Earth Systems Science (ESS) model, the proposed national curriculum in earth sciences. The focus of ESS is to integrate the chemical and physical principles which interlink earth processes and features. The integrated curriculum gives us the flexibility to offer research training in the following areas:

Environmental Studies
Earth Systems Science
Remote Sensing/Geographic Information Systems

EAS Departmental Facilities

The EAS Department houses a Weather/Remote Sensing Laboratory with computer links to Unidata. The IBM RISC 6000 and Sun Sparc workstations permit access to national data banks and are networked via direct satellite link to Internet Sources. Through collaboration with the NOAA CREST Center, EAS has access to the 2.4m Dual X/L-Band Satellite Acquisition.

System operating from the North Academic Center rooftop, with capabilities to download data from various satellites (Terra; Aqua; OceanSat-1) and sensors (MODIS; AIRS; AMSU; AMSR-E; Ocean Color Monitor) from X-band. The Satellites on L-Band include; NOAA Polar Orbiters; FY-1D and Orbview-2 and sensors are; AVHRR; DCS; ATOV; TOV; SeaWIFS; MVIRI. Additional EAS satellite data archives include 14 years of cross-Atlantic aircraft and CloudSat data. The Department also maintains well equipped hydrogeology, geophysics and geochemistry laboratories. Equipment includes Thermo Scientific X-Series II ICP MS, Thermo Scientific flame and graphite furnace atomic absorption instruments, Thermo Finnigan Trace DSQ Gas Chromatography/Mass Spectrometry when coupled with chemical ionization and auto-sampler, Glas-Col Soxhlet extraction system, Milestone Microwave digestion unit, Dionex Summit HPLC with gradient pump and UV detector, and a Dionex ASE 100 Accelerated Solvent Extraction System and an Applied Biosystems Q-TRAP 4000LC/MS/MS. For digital imaging, the Department owns a high performance Multi-Modal Kodak Image Station 2000MM for quantitative hydrology and its applications. Weather station operation and visits to other weather stations are scheduled.

The American Meteorological Society is for students interested in meteorology and its applications. Weather station operation and visits to other weather stations are scheduled.

A student chapter of the Society of Exploration Geophysicists (SEG) has recently been formed, with a focus on the use of geophysics for environmental and engineering applications.

Degree Requirements

Thesis Option: Most candidates for the master’s degree complete 24 credits in Earth and Atmospheric Sciences in a program of study organized in cooperation with the graduate advisor and submit a thesis for a maximum of six credits. The thesis will consist of an independent theoretical, laboratory or field investigation supervised by a faculty advisor. The thesis option totals 30 credits.

Credit Option: Students selecting the credit option will be required to complete 36 credits of approved course work. The option will be selected with the consent of the student’s advisor and must be approved by the Graduate Studies Committee. Students selecting the credit option must pass a written comprehensive examination during the final semester of study.

For students with an interest in Environmental Studies, the following sequence of courses is recommended:

- EAS A1300: Environmental Geochemistry
- EAS A2300: Subsurface Remediation
- EAS B4500: Hydrology
- EAS B4600: Ground Water Hydrology
- EAS B6500: Environmental Geophysics
- EAS B8800: Climate and Climate Change
- EAS B4400: Global Environmental Hazards
- EAS A7200: Environmental Project or A2400: GIS

Additional Requirements

Any basic courses must be completed with at least a grade of B before the student is permitted to register beyond 15 credits, depending on the specialization.

All courses are to be chosen in consultation with the student’s advisor and are subject to the approval of the Departmental Graduate Studies Committee. A maximum of nine credits in other departments or divisions of the College or units of CUNY may be taken toward the M.S. degree.

Foreign Language Proficiency: Not required.

Basic Skills: All graduate students in the Department are expected to acquire basic skills in computer science and numerical data analysis.

Advisement

For general advisement for all program options:

Professor Steven Kidder
MR 831; 212-650-8431.

Doctoral Courses Open to Master’s Students

Qualified students may take or substitute, with the approval of the Graduate Committee, courses available in the doctoral program in Earth and Environmental Sciences. Those courses are described in the bulletin of The Graduate School of the City University of New York.

Earth and Atmospheric Science Course Descriptions

A0000-Level Courses

EAS A1300: Environmental Geochemistry
Shallow earth interactions in ESS emphasizing; groundwater geochemistry; elemental cycles linked to biological activity in the oceans; geochemistry and global climate cycles; geo-bioremediation; and applied analytical techniques including X-ray diffraction, potentiometric titrations, and aspects of UV/visible spectroscopy. 3 lect., 1 lab hr./wk.; 3 cr.

EAS A2300: Subsurface Remediation
Application of scientific and engineering principles in the remediation of contaminated soils and groundwater. Topics include environmental regulations and toxicology, soil-vapor extraction and bioventing, air sparging, pump and treat, bioremediation, surfactant-enhanced extraction, and permeable reactive barriers. Class project involves design of remediation sys-
tems for a hypothetical site. Prereq: EAS 41300 and EAS 44600 or equivalent or permission of instructor. 3 hr./wk.; 3 cr.

EAS A4170: Satellite Meteorology
This class teaches the use of satellite techniques in meteorology and climate research. Prereq: PHYS 20700, 20800; MATH 20100, MATH 20200, MATH 20300. 3 hr./wk.; 3 cr.

EAS A6700: Weather Analysis
Synoptic analysis of surface and upper-air meteorological observations, including satellite, radar, and aircraft measurements. Diagnostic calculations of vorticity, divergence and vertical motions in mesoscale, synoptic scale, and large scale weather systems. 5 hr./wk.; 4 cr.

EAS A7200: Environmental Project
Advanced-level project utilizes field data to solve an urban environmental problem. Can be taken in the spring semester or in the summer. Also open to postgraduates in environmental fields, by permission. Can be applied to thesis credit. 4 weeks in field plus lab. analyses; 4 cr.

B0000-Level Courses

EAS B1000: Structural Geology
Physical properties of rocks in different tectonic environments; deformation; petrofabric analysis. Geotectonics; orogenesis, earthquakes, interpretation of geologic maps and mapping techniques. 3 lect., 2 lab. hr./wk.; 4 cr.

EAS B1100: Geotectonics
Detailed discussions of the concepts of mantle convection, continental drift, seafloor spreading, and subduction. Applications of these concepts to selected areas around the globe. The relationship of plate tectonics to earth history and to the global distributions of geologic hazards and mineral deposits. Implications of plate tectonics for other parts of the earth system. Prerequisite: An introductory course in physical geology or earth science. 3 lect. hr./wk. 3 cr.

EAS B1300: Earth and Environmental Science Seminar
Presentations and discussions by faculty and guest speakers on current topics in the area of earth and environmental science; can be taken twice for credit. 1 hr./wk.; 1 cr.

EAS B1400: Geophysics
This course covers the physical principles that govern the behavior and techniques used to infer the earth's internal structure, composition, and mineral resources. It provides earth scientists and engineers with the techniques to determine earth structures, locate environmental pollutants, and prospect for natural resources from remote locations. Topics include: Seismology, geodesy, gravity, magnetic, and thermal properties of the earth. Prerequisite: Two semesters of college physics and an introductory course in earth science. 3 lect. hr./wk.; 3 cr.

EAS B2400: Igneous Petrology
Minerals in Earth Systems Science; principles of mineral stability and mineral associations; identification and recovery of earth resources. Mineral issues on human terms: toxic waste sites, climate change, and slope stability. Course introduces mineral optics and x-ray diffraction. 2 lect., 4 lab hr./wk.; 4 cr.

EAS B3000: Fundamentals of Atmospheric Science
This course is an introductory survey to the field of Atmospheric Science, with special attention given to atmospheric thermodynamic, dynamics, and weather systems. Atmospheric science is a complex field of study that builds on physics, chemistry, and math, hence the prerequisites. This course is intended to provide a solid foundation for masters students studying earth sciences and/or environmental remote sensing. Prerequisite: Vector Calculus, CHEM 10401 (or equivalent), and PHYS 20700 (or equivalent) or instructor's permission. 3 lect. hr./wk.; 3 cr.

EAS B3300: Phase I Environmental Site Assessments
The purpose of this course is to introduce students to good commercial and customary practices in the US for conducting Phase I environmental site assessments (ESA) of commercial or residential properties with respect to hazardous substances and petroleum products. A Phase I ESA is the process for determining the presence of an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into the ground, ground water, surface water of the property, or into structures on the property. Graduate students receive extensive training on mainstream quality review and assessment methods of completed Phase I ESAs in preparation to enter the workforce in upper level management positions in the environmental engineering consulting industry. 3 hr./wk.; 3 cr.

EAS B3400: Phase II Environmental Site Assessments
The purpose of this course is to introduce students to good commercial and customary practices in the United States of America for conducting Phase II environmental site assessments (ESA). A Phase II ESA is an evaluation process for confirming and quantifying the presence of hazardous substances or petroleum products in environmental media (i.e., soil, rock, groundwater, surface water, air, soil gas, sediment) throughout a contaminated site. A Phase II ESA typically includes a determination through field screening and chemical testing of the geological, hydrogeological, hydrological, and engineered aspects of the site that influence the presence of hazardous substances or petroleum products (e.g., migration pathways, exposure points) and the existence of receptors and mechanisms of exposure. Students are automatically enrolled in the 40-hour OSHA HAZWOPER (Hazardous Waste Operations and Emergency Response Standard) certification program which applies to employees who are engaged in clean-up operations that are conducted at uncontrolled hazardous waste sites.

Graduate students receive extensive training on mainstream quality review and assessment methods of completed Phase I ESAs in preparation to enter the workforce in upper level management positions in the environmental engineering consulting industry.

Students are automatically enrolled in the 40-hour OSHA HAZWOPER (Hazardous Waste Operations and Emergency Response Standard) certification program which applies to employees who are engaged in clean-up operations that are conducted at uncontrolled hazardous waste sites. Prerequisite: EAS B3300 or permission of instructor. 3 hr./wk.; 3 cr.

EAS B4400: Global Environmental Hazards
Study of important, naturally-occurring destructive phenomena, such as earthquakes, volcanic eruptions, landslides, and coastal flooding. Long-term causes and remediation of these problems. Topics will focus on consequences to urban environments. 3 hr./wk.; 3 cr.

EAS B4500: Hydrology
Introduction to hydrological data, the hydrologic cycle, Precipitation, streamflow, evaporation, and runoff. Emphasis is on their interactions and processes. Prerequisite: Two semesters of Calculus, and two semesters of general physics or permission of the instructor. 3 lect. hr./wk.; 3 cr.

EAS B4600: Groundwater Hydrology
Occurrence of ground water. Basic equations and concepts of groundwater flow. Flow nets. Methods of ground water investigation. Prerequisite: two semesters of general chemistry, and two semesters of entry level earth science, or permission of instructor. 3 lect. hr./wk.; 3 cr.

EAS B4800: Sustainability of Terrestrial, Aquatic and Atmospheric Systems
Overview of critical earth systems and their interrelationships with emphasis in sustainability; Lecture component places environmental issues in an ecological framework; Hands-on laboratory component introduces concepts and methods used in Earth system analysis with emphasis in sustainable management of aquatic, terrestrial and atmospheric systems. Data set analysis tasks are assigned and student presentations are given throughout this class. Prerequisite: An introductory course in Earth Science, or permission of instructor. 3 lect. 3 lab hr./wk.; 4 cr.

EAS B5100: Remote Sensing of Ocean Processes
A comprehensive introduction to ocean remote sensing, covering aspects of both physical and biological oceanography, ocean dynamics, mesoscale phenomena, biogeochemical processes, marine ecosystem resources, human impacts, climate change, and coastal hazards. The course focuses on development of skills in underwater radiative transfer modeling and ocean remote-sensing data analysis and visualization. Prerequisite: An introductory course in Earth Science, or one semester of college biology, or one semester of introductory Remote Sensing, or permission of instructor. 3 hr./wk.; 3 cr.

EAS B6500: Environmental Geophysics
Advanced work in the application of geophysics to environmental and engineering problems. Hands-on work and demonstrations of seismic, electrical, and magnetic instrumentation and interpretation. Computer analysis of survey results. Prerequisite: EAS B1400 or permission of instructor. 3 hr. lect., demonstration, or group fieldwork/wk.; 3 cr.

EAS B6800: Physical Oceanography
Principles governing the atmosphere-ocean interactions. The course utilizes the department's Weather Station and Geosciences Computer Laboratory where oceanographic and atmospheric data are remotely sensed from space. The role of the world's oceans to current global warming/cooling models will be examined. Topics also include: bathymetric features, origin of the hydrosphere, sea-level change, wave formation, temperature, salinity, and density of the ocean water. 3 lect. hr./wk.; 3 cr.

EAS B7500: Sedimentology
Composition, texture, classification, depositional, provenance and correlation of sediments and sedimentary rocks. Study of global and local
formations to explore stratigraphic nomenclature, facies relationships and correlation of sedimentary sequences. Course includes a field trip to local outcrops to observe sedimentary rocks and facies and identify depositional paleoenvironments. Four partial exams, one comprehensive final exam and one 15-page term paper. Prerequisites: Permission of instructor. 3 hr./wk.; 3 cr.

**EAS B8800: Climate and Climate Change**
This course links processes and interactions of the atmosphere, ocean and solid earth and their impact on climate and climate change. Topics include the physical principles of climate; climates of the past and present; Ice Age theories; the Greenhouse Effect; and human impact on climate. Prereq: One semester of calculus, and one semester of physics, and one semester of introductory earth science, or permission of instructor. 3 lect. hr./wk.; 3 cr.

**EAS B9001, B9002, and B9003: Selected Topics in Earth Systems Science**
Current topics and problems with emphasis on aspects not treated in regular courses. Department permission required. 1-2 lect. and/or lab. hr./wk.; 1-3 cr./sem.

**EAS B9103: Special Topics in Meteorology I**
Review and critical analysis of selected research publications in meteorology. Students are expected to prepare and participate in discussions on topics of current interest. 1-3 hr./wk.; 1-3 cr./sem.

**EAS B9205: Special Topics in Oceanography I**
Reviews and critical analysis of selected research publications in oceanography. Students are expected to prepare and participate in discussions on topics of current interest. 1-3 hr./wk.; 1-3 cr./sem.

**EAS B9500: Thesis Research**
Preparation of a thesis under the guidance of a faculty mentor. Hrs. to be arranged. 1-3 cr./sem. May be taken for total of 6 cr.; Cr. applied on completion of the thesis option.

**EAS B9600: Independent Study**
Individual laboratory, field, or library investigation of a problem in Earth Systems Science. Approval of instructor required. 1-3 cr./sem. Up to 6 cr. can be applied to master’s degree.

**Faculty**
Karin Block, Associate Professor
A.B., University of Michigan; M. Phil., CUNY, Ph.D.

Benjamin Black, Assistant Professor
A.B., Harvard University; M.F.A., New York University; Ph.D., Massachusetts Institute of Technology

James Booth, Assistant Professor
B.S., Univ. of North Carolina, Chapel Hill; M.S., Univ. of Kentucky; Ph.D., Univ. of Washington

Patricia Kenyon, Associate Professor
B.S., Renselaer Polytechnic Inst.; Ph.D., Cornell Univ.

Steven Kidder, Assistant Professor
B.S., Univ. of Minnesota; M.S., Univ. of Arizona; Ph.D., California Inst. of Technology

Angelo Lampousis, Lecturer
B.S. Aristotle University of Thessaloniki (Greece); M.Phil., CUNY, Ph.D.

Z. Johnny Luo, Associate Professor
B.S., Peking Univ. (China); M.Phil., Columbia Univ., Ph.D.

Kyle McDonald, Terry Elkes Professor
B.E.E., Georgia Institute of Technology; M.S. Johns Hopkins Univ.; M.S.Ph.D., Univ. of Michigan, Ph.D.

Maria Tzortziou, Associate Professor
B.S., Aristotle Univ. (Greece), M.Sc.; M.S., Univ. of Maryland, Ph.D.

Zhengrong Wang, Associate Professor
B.S., Univ. of Science and Technology of China, M.S.; Ph.D., California Inst. of Technology

Pengfei Zhang, Professor and Chair
B.S. Univ. of Science & Technology of China; M.S., Montana Tech of the Univ. of Montana; Ph.D., Univ. of Utah

**Professors Emeritus**
Stanley Gedzelman
Edward Hindman
Margaret Anne Winslow
Department of Economics and Business

(The Colin Powell School for Civic and Global Leadership)

Professor Kevin Foster, Chair • Department Office: NA 4/121 • Tel: 212-650-5403

General Information

The City College offers the following master’s degree in Economics:

M.A.

Degree Requirements

Students may complete the degree in one of two ways: with a thesis (ECO B9900 plus additional MA Thesis practicum, 3 credits each) and 30 additional credits, or without a thesis with 36 credits. For course prerequisites relating to all program courses, please consult the Course Descriptions section.

Required (Core) Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ECO B0000: Microeconomic Analysis</td>
<td>3</td>
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<tr>
<td>ECO B1000: Macroeconomic Analysis</td>
<td>3</td>
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<tr>
<td>ECO B2000: Econometrics I</td>
<td>3</td>
<td></td>
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<tr>
<td>ECO B2100: Research Methods in Economics</td>
<td>3</td>
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<tr>
<td>Total Credits</td>
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Specialization Requirements:

Students are generally required to specialize in one of the four areas listed below. A specialization consists of 4 courses from among the courses listed under the relevant specialization area, except in the case of Chinese Economy, for which a specialization consists of 8 courses (or 6 if the student writes a thesis in Chinese Economy). Additional courses may be selected from among any of the program courses in order to complete the 36 credits requirement. Under special circumstances, subject to approval by the Graduate Advisor, a student may take the required courses and a set of additional courses with no particular area of specialization.

Finance

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ECO B9510: Corporate Finance</td>
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<tr>
<td>ECO B7900: Advanced Financial Economies</td>
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<tr>
<td>ECO B8000: Advanced Options and Futures</td>
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<tr>
<td>ECO B8100: International Finance</td>
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<tr>
<td>ECO B9511: Money and Banking</td>
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<td>ECO B9512: Investments</td>
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<td>ECO B9520: Accounting</td>
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<tr>
<td>ECO B8200: International Financial Management</td>
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Business and Management

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<tr>
<td>ECO B9510: Corporate Finance</td>
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<tr>
<td>ECO B9513: Managerial Economics</td>
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<tr>
<td>ECO B9514: Organization and Management</td>
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<tr>
<td>ECO B9516: Operations and Production</td>
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<td>ECO B9517: Marketing</td>
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<td>ECO B9518: Government Regulation and Executive Decision</td>
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<td>ECO C0016: Strategic Management</td>
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<td>ECO C0011: Organization Behavior</td>
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Public Economics

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<tr>
<td>ECO B4000: Labor Economics</td>
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<td>ECO B9502: Urban Economics</td>
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<td>ECO B9503: Labor (Seminar)</td>
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<td>ECO C0012: Environmental Economics</td>
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<td>ECO C0013: Law and Economics</td>
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<td>ECO C0014: Transportation Economics</td>
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<td>ECO B3100: Public Finance</td>
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<tr>
<td>ECO C0019: Public Investments</td>
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Chinese Economy

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<th>Course Code</th>
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<tr>
<td>ECO B8400: International Business Economic Policy</td>
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<tr>
<td>ECO B8200: International Financial Management</td>
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<tr>
<td>ECO B9514: Organization and Management</td>
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<td>ECO B9516: Operations and Production</td>
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<td>ECO B9517: Marketing</td>
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<tr>
<td>ECO B8600: Chinese Political Economy I</td>
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<tr>
<td>ECO B9400: Chinese Political Economy II</td>
<td>3</td>
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<tr>
<td>ECO B8700: Chinese Culture and Society</td>
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<tr>
<td>ECO B8800: Commercial Chinese Language</td>
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</table>

Additional Requirements/Notes:

1. Calculus and Statistics must be taken before or during the first year of the program.
2. For ECO B0000 and ECO B1000, no grade lower than B- will be accepted toward graduation from the program. A student getting a grade lower than B- must retake the class or be dropped from the program.
3. Program course work must be completed with a grade average of B (3.0) or better. If a student’s GPA slips below 3.0, he or she may be dropped from the program if this is not corrected within one (additional) semester.
4. With the consent of the Graduate Advisor, a student may also elect up to 3 courses from other MA programs such as Computer Sciences, Statistics, Mathematics, Political Science, PSM, Sustainability (MA level courses only).
5. Graduate courses from other institutions outside City College must be approved by the Graduate Advisor. No more than 3 Permit courses, taken outside of City College, will be accepted toward graduation from the program.

MA Thesis:

The emphasis of a thesis prepared for the MA in Economics is on an empirical application of theory, typically with a policy component. To this end it must include a substantial empirical, usually, an econometric section. The thesis must include:

1. Statement of the problem under study.
2. Formulation of operational hypotheses.
3. Clear description of the database used, including its sources.
4. Statement of Methodology. This must include a clear statement of the manner in which inferences will be drawn from the estimated statistical model (e.g. OLS, multivariate regression model, etc.).
5. Empirical Estimation:
   a. The computation of test statistics from the sample data.
   b. The inferential significance.
6. Discussion of empirical results.
7. Conclusions:
   a. Clear statement of conclusions that must relate the empirical findings to the stated hypothesis.
   b. If relevant, a clear statement of the policy (or other) relevance of the empirical findings.

Advisement

Graduate Advisor
Professor Marta Bengoa
NA 4/120C

Economics Course Descriptions

ECO B0000: Microeconomic Analysis
Supply and demand; economics of households and firms; determination of product and factor prices under varying market structures. 3 hr./wk.; 3 cr.

ECO B0200: Behavioral Economics
The course offers an introduction to the insights gained from incorporating psychology into economic modeling and analysis, an approach referred to as behavioral economics. We will gain an overview over the topics in this new and fast-growing field by sampling original contributions. Thus, the course is expected to involve a lot of reading, complemented by exams, presentations, and problem sets intended to drill students’ abilities to digest and communicate the content of the journal articles involved. Interested students may also be given the option to develop an original piece of research in behavioral economics. 3 hr./wk.; 3 cr.

ECO B0100: Advanced Microeconomic Theory
General equilibrium theory, capital theory, welfare economics, mathematical models in microeconomics, game theory. 3 hr./wk.; 3 cr.

ECO B1000: Macroeconomic Analysis
Factors determining level of national income, output and employment, business cycle theories and policies to stabilize employment and price level. 3 hr./wk.; 3 cr.
ECO B1100: Advanced Macroeconomic and Monetary Theory
Monetary theory, macroeconomic models, growth theory, capital markets, business cycle theory. 3 hr./wk.; 3 cr.

ECO B2000: Statistics and Introduction to Econometrics
Applications of statistical methods to economic research; description and inference; variance analysis and correlation; statistical induction and testing of hypotheses; time series; index numbers, simple regression analysis. 3 hr./wk.; 3 cr.

ECO B2100: Foundations of Empirical Research
Econometrics and regression analysis, use of computers in empirical research in economics. Basic knowledge of computer language, operations research methods. 3 hr./wk.; 3 cr.

ECO B3100: Public Finance
Sources of metropolitan area finance, desirable distribution of public services among different governments, revenue sharing, taxation effects on land use, cost-benefit analysis. Changing economic significance of government expenditures, taxation, and debt management. Macro- and micro-criteria for financial operations. Administrative problems and intergovernmental relations. 3 hr./wk.; 3 cr.

ECO B4000: Labor Economics
Problems and issues in wages, hours and working conditions; wage policy; relation of labor organizations to management decisions and economic change. Prereq: ECO B0000 and B2000. 3 hr./wk.; 3 cr.

ECO B4100: Health Policy
An introduction to the field of health policy with an emphasis on the economics of health. Health is arguably one of the most important areas of public policy where economic and political issues interact. The course can be divided into three broad parts – a) developing toolkit b) economic analysis of healthcare issues and c) policy implications of academic research. Having completed this course, students should be able to analyze some core economic issues of health like production and consumption of health, insurance and public health. 3 hr./wk. 3 cr.

ECO B4300: Economic Policies of Trade Unions
Evolution of trade unionism in the U.S. Analysis of union government, strategy, economic objectives and political action. 3 hr./wk.; 3 cr.

ECO B5000: Industrial Organization and Control
Structure of the American economy; governmental policies aiming at preservation of competition in industrial markets and regulation of trade practices. 3 hr./wk.; 3 cr.

ECO B5050: Administrative and Managerial Policy
The general management function. Organizational objectives and long-range forecasting. Implementation of organizational strategy for operations, control, expansion, recovery. Social responsibility of corporations. Term project required. Prereq: ECO B9514. 3 hr./wk.; 3 cr.

ECO B6000: Introduction to Economic Development
Theories, models, and strategic factors of development, domestic and international policy. 3 hr./wk.; 3 cr.

ECO B6100: Theories and Models of Economic Growth
Theories and models of economic growth under varying structural and behavioral assumptions. 3 hr./wk.; 3 cr.

ECO B6400: American Business Law
Studies the legal business environment, regulations on intellectual property rights and product safety related to international business, and the dispute settlement mechanism under the WTO trading framework. 3 hr./wk.; 3 cr.

ECO B7100: International Economics
Gains from trade; theory and practice of protection; nature, disturbance, and adjustment of the balance of payments; development of international economic institutions and the world economy. 3 hr./wk.; 3 cr.

ECO B7700: Banking and the Financial Services Industry
Contemporary practices, policies and issues involving commercial banks, other depository institutions and non-deposit financial intermediaries. Prereq: ECO B9511. 3 hr./wk.; 3 cr.

ECO B7900: Advanced Financial Economics
Expected utility maximizing, state preference theory, mean-variance analysis, capital asset pricing model, arbitrage pricing theory, pricing contingent claims and option pricing theory. Applications of agency theory and asymmetric information and game theory to finance. Prereq: ECO B9510 and ECO B2200. 3 hr./wk.; 3 cr.

ECO B8000: Advanced Options and Futures
Option pricing models; Binomial approach. Black-Scholes models, extensions, applications, and empirical work. Determination of future prices, relationship between spot and future prices, economic function and contribution of futures markets. Prereq: ECO B9510 and ECO B9512. 3 hr./wk.; 3 cr.

ECO B8100: International Finance
Macroeconomic theory and policy in the open economy. Issues associated with balance of payments disequilibrium, fluctuating currency values, international factor flows and international capital mobility. Extensions of the Keynesian model; monetary and fiscal policy for internal and external balance; macro policy coordination. Prereq: ECO B1100. 3 hr./wk.; 3 cr.

ECO B8200: International Financial Management
Studies the markets of foreign exchange and currency derivatives, risk management of foreign exchange exposure, international financial assets and the financial management practice for the multinational firm. Prereq: ECO 10100 or ECO 10300 or ECO 10400. 3 hr./wk.; 3 cr.

ECO B8400: International Business Economic Policy
Theories and institutional background of current interdependent world economies. Foreign exchange markets, balance of payments problems, multinational enterprise and international trade and investment. 3 hr./wk.; 3 cr.

ECO B8600: Chinese Political Economy I
This is the first course of a sequence that provides a complete introduction to the Chinese political system, economy, and geography. Topics include the governance structure of the contemporary Chinese political system, China's transition to a market economy, recent developments in China's economy, and the geographic setting of China. 3 hr./wk.; 3 cr.

ECO B8700: Chinese Culture and Society
ECO B8800: Commercial Chinese Language
Focusing not only on denotation but also connotation of Chinese business, this course prepares students for Chinese business environments and promotes their understanding of Sino-Western socio-cultural/political differences, including dining etiquette in Chinese business meals, Chinese copyright policy, Chinese product safety scandals, Shanghai stock market, Beijing real estate, communist governmental propaganda, Hong Kong as an international financial center, etc. 3 hr./wk.; 3 cr.

ECO B8900: Entrepreneurship
Emphasis on the identification and analysis of competencies to launch new ventures. Topics include: the study of entrepreneurial behavior, characteristics of successful entrepreneurs, scanning for unique ideas, methods and techniques for analyzing the competitive environment, writing a business plan, and understanding the challenges of managing a startup organization through various stages of growth. 3 hr./wk.; 3 cr.

ECO B9300: Area Seminar in Development
A research seminar for candidates specializing in development, with particular reference to a specific region or area. Prereq: permission of instructor. 2 hr./wk., plus conf.; 3 cr.

ECO B9501-B9522: Seminars
Oral reports and written exercises will be required.

ECO B9501: Economic Development and Economic History
3 hr./wk.; 3 cr.

ECO B9502: Urban Economics
Covers basic economic theories covering the existence and nature of cities. Examines urban issues related to housing, transportation, crime, segregation, rent control, and zoning. Course focuses on issues relevant to the New York region. 3 hr./wk.; 3 cr.

ECO B9503: Labor (Seminar)
Prereq: ECO B4000. 3 hr./wk.; 3 cr.

ECO B9504: Statistics and Mathematical Economics
3 hr./wk.; 3 cr.

ECO B9505: Geography
3 hr./wk.; 3 cr.

ECO B9506: Economic Thought
3 hr./wk.; 3 cr.

ECO B9507: International Economics
3 hr./wk.; 3 cr.

ECO B9508: Microeconomic Analysis
3 hr./wk.; 3 cr.

ECO B9509: Macroeconomic Analysis
3 hr./wk.; 3 cr.
ECO B9510: Corporate Finance
Overview of managerial finance: Capital budgeting techniques; capital structure and cost of capital; dividend policy; long and short term financing; working capital management, financial analysis, planning, and control; and mergers and acquisitions. 3 hr./wk.; 3 cr.

ECO B9511: Money and Banking
Analysis of organization and operation of U.S. financial system; money and capital markets, commercial banking; relationship between financial and economic activity, including monetary and fiscal policy. Prereq: ECO B1000. 3 hr./wk.; 3 cr.

ECO B9512: Investments
Meaning, measurements and relationship of risk. Portfolio analysis, alternative approaches to valuation, determination of asset values in open market, internal and external rates of return, objectives of investment decision. Prereq: ECO B9510. 3 hr./wk.; 3 cr.

ECO B9513: Managerial Economics
Integration of microeconomics and quantitative methods so as to make sound managerial decisions. Prereq: ECO B0000. 3 hr./wk.; 3 cr.

ECO B9514: Organization and Management
The modern corporation and its historic development: principal functions of management and its social role; structure of the management decision process; choice of management tools for analyzing decisions and coping with outcome uncertainty. 3 hr./wk.; 3 cr.

ECO B9516: Operations and Production
Investigation of production systems; application of analytical techniques to product and process design, optimal plant location, efficient plant design, inventory and production systems. Prereq: ECO B0000. 3 hr./wk.; 3 cr.

ECO B9517: Marketing
Distribution and sale of goods and services from production to final consumption; changing buying behavior; institutional structures; marketing channels; product life cycle; and merchandising. Prereq: ECO B0000. 3 hr./wk.; 3 cr.

ECO B9518: Government Regulation and Executive Decision Making

ECO B9519: Introduction to SAS Statistical Package
Drill applications to economic problems. 3 hr./wk.; 3 cr.

ECO B9520: Accounting
Concepts and techniques of accounting for business transactions and preparation of financial statements. 3 hr./wk.; 3 cr.

ECO B9521: International Business
ECO B9800: Independent Study
The student will pursue a program under the direction of a member of the Department with approval of the Chair. Credit may be from 1-4 credits, determined before the approval of the Department Chair. Students may repeat course up to 6 credits.

ECO B9900: Thesis Preparatory Course
In order to take this course, the student must have completed at least 27 MA level credits. (These must include the four core courses for the MA.) The student must meet with a faculty mentor and complete a form similar to the one required for Independent Study courses. The form must be signed off by the mentor, and reviewed and signed by the MA Program Director and the Department Chair. The faculty mentor will decide the minimal requirements that must be attained and completed before a grade may be granted for this course. These requirements will be explicitly stated in the form mentioned above. At a minimum, the requirements must include a clear statement of the title of the proposed thesis. The following must be provided:
1. A clear statement of hypothesis.
2. A clear statement of a methodology. Typically, this will include an explicitly articulated model.
3. A clear explanation of how inferences will be drawn from the model.
4. A clear statement of the data that will be used, including the source.

Faculty

Punit Arora, Assistant Professor
B.A., D.A.V. College Punjab Univ. (India); M.P.A., Syracuse Univ., Ph.D.

Marta Bengoa Calvo, Associate Professor
B.A., Univ. Cantabria, (Spain), M.A., Ph.D.

Joseph Berechman, Marvin Kristein Professor
B.A., Hebrew Univ., M.B.A.; Ph.D., Univ. of Pennsylvania

Maria C. Binz-Scharf, Associate Professor
M.A., Bocconi Univ.; Ph.D., Univ. of St. Gallen, Switzerland

Peter Chow, Professor
B.A., National Taiwan Univ.; M.S., Southern Illinois Univ., Ph.D.

Prabal Kumar De, Associate Professor
B.Sc., Presidency College (India); M.A., Jawaharlal Nehru Univ. (India); M.A., New York Univ., Ph.D.

Kevin Foster, Associate Professor and Chair
B.A., Bard College; M.A., Yale Univ., Ph.D.

Mitchell H. Kellman, Professor
B.A., Univ. of Pennsylvania, M.A., Ph.D.

Matthew G. Nagler, Associate Professor
B.A., Cornell Univ.; Ph.D., Univ. of California (Berkeley)

Glenford Patterson, Lecturer

Yochanan Shachmurove, Professor
B.A., Tel Aviv Univ. (Israel), M.B.A.; M.A., Univ. of Minnesota, Ph.D.

Kameshwari Shankar, Assistant Professor
B.A., Lady Shri Ram College (India); M.A., Delhi School of Economics (India); Ph.D., Cornell Univ.

Leonard Trugman, Lecturer
B.A., CUNY; M.A., Polytechnic Inst. of NY; D.Sc., Stevens Inst. of Tech.; M.B.A., Fairleigh Dickinson Univ.

Yan Zhao, Associate Professor
B.A., Peking Univ. (China); M.S., Univ. of Nottingham (UK); Ph.D., Brandeis Univ.

Professors Emeriti

Stanley L. Friedlander
Malcolm Galatin
Benjamin Klebaner
Morris Silver
The City College offers the following master’s degrees in English:

**MA in English**

**MFA in Creative Writing**

**MA in Language and Literacy**

## Degree Requirements

### Literature

#### Required Courses

- Literature courses: 27 credits
- ENGL B2800: Thesis Research: 3 credits

Total Credits: 30

### Additional Requirements

Courses are to be chosen in consultation with the advisor to prepare the student for general comprehensive examinations and the completion of the thesis. No more than six approved graduate credits may be taken outside the literature offerings of the Department of English.

### Foreign Language Proficiency:

A reading knowledge of Spanish, French, Latin, German or another approved language is required.

### Comprehensive Examination:

Students will be required to take one general examination, testing breadth of knowledge as a whole.

### Creative Writing

#### Required Courses

- Critical Practice courses: 9 credits
- Literature courses: 15 credits
- Workshops in creative writing: 15 credits
- ENGL B3800: Thesis Tutorial: 3 credits

Total Credits: 42

### Additional Requirements

**Thesis:** Degree candidates must submit a mature, substantial body of work (a collection of stories or poems, or a novel) to be so judged by their mentor and at least one other member of the faculty.

No more than six (6) approved graduate credits may be taken outside the Department’s graduate offerings, and all writing workshops must be taken within the program.

### Language and Literacy

#### Required Courses

- ENGL B6000: Introduction to Language Studies: 3 credits
- ENGL B6400: Theories and Models of Literacy: 3 credits
- ENGL B8100: Second Language Acquisition: 3 credits
- ENGL B8200: Teaching Adult Literacy: 3 credits
- Language and Literacy electives: 6 credits
- Four General Electives (in consultation with an advisor): 12 credits

Electives may be selected from English Department course offerings and from course offerings in other departments.

All course enrollments are subject to the program director’s approval.

Total Credits: 30

### Additional Requirements

No more than 12 approved graduate credits may be taken outside the Department of English. No more than six credits may be transferred from another college.

Students who have limited teaching experience are strongly encouraged to enroll in ENGL B5100: Supervised Team Teaching.

### Foreign Language Proficiency:

A reading knowledge of an appropriate foreign language is required.

### Activities

### Publications

Fiction, edited by Professor Mark Mirsky, is published at The City College, and anyone is welcome to submit material. *Promethean*, the official City College journal, publishes the prose, poetry, and art of students, faculty, and alumni. *Basic Writing Electronic (BWe)* journal, edited by Professor Barbara Gleason, is published at The City College of New York.

### Readings

A monthly reading series highlights the work of students, faculty, and alumni of the MFA and MA Programs. Additional readings by prominent authors are presented throughout the year.

### Professional Series

A monthly Masters Series provides students with the opportunity to learn from and network with established writers, academics, and publishing professionals.

### Advisement

Deputy Chair for Graduate Studies
Professor Keith Gandal
NA 6/229; 212-650-7532

Director of the MA in Literature Program
Professor Harold Aram Veeser
NA 6/247; 212-650-6315

Director of the MFA in Creative Writing Program
Professor Linsey Abrams
NA 6/210: 212-650-6694

Director of the MA in Language and Literacy Program
Professor Barbara Gleason
NA 6/333A; 212-650-6329

### Awards

#### Creative Writing Awards

- The Doris Lipman Prize in Creative Writing
- The David Dortart Prize in Creative Writing
- The Jerome Lowell DeJur Award in Creative Writing
- The Henry Roth Memorial Scholarship
- The Adria Schwartz Award in Women’s Fiction
- The Goodman Fund Grants
- The Graduate Children’s Writing Award

#### The Irwin and Alice Stark Awards

- The Stark Award in Drama in Memory of Ross Alexander
- The Irwin and Alice Stark Short Fiction Prize
- The Stark Poetry Prize in Memory of Raymond Patterson

#### Essay Awards

- The Meyer Cohn Graduate Essay Award in Literature

#### Awards for General Excellence

- The Albert Friend Award for Excellence in Medieval Studies
- The Marilyn Sternglass Writing Award
- The Marilyn Sternglass Overall Merit Award
- The Sydney Jacoff Graduate Fellowship

#### Teaching Awards

- The Norman Levine Outstanding Teaching Award
- The Teacher-Writer Award

### English Course Descriptions

#### Major Authors

**ENGL B0000: Chaucer: The Canterbury Tales**

2 hr./wk., plus conf.; 3 cr.

**ENGL B0001: Chaucer II**

Troilus and other writings. 2 hr./wk., plus conf.; 3 cr.

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Department of English

(Division of Humanities and the Arts)

Professor Renata Kobetts Miller, Chair • Department Office: NA 6/219 • Tel: 212-650-5407
Period Courses In English And American Literature
Courses in all major periods of English and American literature will be offered as seminars of specialized study. The exact emphasis of each seminar will vary from semester to semester. See regularly published description of graduate English offerings. Recent offerings:

**ENGL B0700: The Sixteenth Century in England**
Literary currents from the accession of Henry VII to the death of Elizabeth (1485-1603). Figures studied include Skelton, More, Wyatt, Surrey, Ascham, Elyot, Sidney, Marlowe, Nash, Lyly, Daniel, and Drayton. 2 hr./wk., plus conf.; 3 cr.

**ENGL B0900: English Literature of the Restoration and Early Eighteenth Century**
Studies in Defoe, Dryden, Pope, Swift and others. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1000: English Romantic Poetry and Prose**
Studies in Blake, Wordsworth and Coleridge; the Shelleys, Byron, Keats and DeQuincey. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1100: English Literature of the Nineteenth Century**
Studies in the Brontes, Hardy, Dickens, Eliot, Tennyson, Browning, etc. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1200: Literature of the Twentieth Century**
2 hr./wk., plus conf.; 3 cr.

**ENGL B1300: Twentieth Century Irish Literature**
2 hr./wk., plus conf.; 3 cr.

**ENGL B1400: American Literature from its Beginnings to 1890**
Literary documents of Puritanism and the Enlightenment including the works of the Mathers, Edwards, Franklin, Freneau, and Brown, as well as Irving, Bryant, Cooper, Longfellow and Poe. Attention will be given to the writings of African-Americans and women. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1500: American Literature from 1890 to the Present**
Textual analysis, with collateral study of the social, psychological and philosophical context. 2 hr./wk., plus conf.; 3 cr.

Seminars In Special Subjects
Seminars on a variety of special topics. Subjects will vary from semester to semester. See the description of graduate offerings.

**ENGL B1600: The History of Ideas**
2 hr./wk., plus conf.; 3 cr.

**ENGL B1700: Literary Criticism**
2 hr./wk., plus conf.; 3 cr.

**ENGL B1800: Studies in Major Authors**
2 hr./wk., plus conf.; 3 cr.

**ENGL B1900: Literary Genres**
2 hr./wk., plus conf.; 3 cr.

**ENGL B2000: Studies in Literary and Historical Backgrounds**
2 hr./wk., plus conf.; 3 cr.

**ENGL B2100: Studies in Themes and Motifs**
2 hr./wk., plus conf.; 3 cr.

**ENGL B2200: Tutorials in English and American Literature**
Students may take reading tutorials with the approval of the literature advisor if they find the ordinary rotation of seminars and lectures unsatisfactory for the needs of their programs of study. 3 CR.

**ENGL B2800: Thesis Research Tutorial**
Independent research for the Master’s thesis under the supervision of a mentor. 3 cr.

Courses In American Studies

**ENGL B7300: Studies in American Literature I**
Trends and issues in American literature from its origins to the rise of realism and naturalism. The development of a national literary consciousness and the relationship of literature to American political, intellectual and social life. 2 hr./wk., plus conf.; 3 cr.

**ENGL B7400: Studies in American Literature II**
Trends and issues from the last decade of the nineteenth century to the present. How American writers reacted to the rise of industrialism, to the movement from a rural to an urban society, and to the emergence of new political, social and intellectual forces. The writers to be studied will include both creative figures and social and intellectual critics. 2 hr./wk., plus conf.; 3 cr.

Creative Writing Workshops
Students may not register for more than one writing workshop per semester.

**ENGL B3000: Workshop in Fiction**
Intensive work in the genre. May be taken four times for credit. Minimum 2 hr./wk., plus individual conf.; 3 cr.

**ENGL B3200: Workshop in Poetry**
Intensive work in the genre. May be taken four times for credit. Minimum 2 hr./wk., plus individual conf.; 3 cr.

**ENGL B3100: Workshop in Drama**
Intensive work in drama. May be taken twice for credit. Minimum 2 hr./wk., plus individual conf.; 3 cr.

**ENGL B3600: Workshop in Nonfiction**
Intensive work in the genre. May be taken four times for credit. Minimum 2 hr./wk., plus individual conf.; 3 cr.

**ENGL B3800: Thesis Tutorial**
Writing of a mature, substantial body of work (a collection of stories or poems, or a novel) under the supervision of a mentor. Required for the M.F.A.; 3 cr.

**ENGL B3901: Workshop in Translation**
Intensive work in translation from other languages into English. May be taken twice for credit. Minimum 2 hr./wk., plus individual conf.; 3 cr.

**ENGL B3901: Workshop in Fiction to Scripts**
Intensive work in the genre. May be taken twice for credit. 2 hr./wk., plus conf.; 3 cr.

**MFA Critical Practice Courses**

**ENGL C0825: Short Story I--Critical Practice**
Formal analysis of published work and writing in the genre from the mid-19th to the early-21st century. May be taken once for credit. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1920: Short Story II--Critical Practice**
A continuation of Short Story I, this course examines the contemporary short story through formal analysis of published work and writing in the genre. May be taken once for credit. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1933: Narrative Structure--Critical Practice**
Formal analysis of published work and writing in the genre. This course examines writers’ use of structure, form, perspective/point-of-view, time, and place in published fiction. Students produce both creative work and analysis utilizing the various topics covered. May be taken once for credit. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1955: Writing for the Culture--Critical Practice**
This course is intended to help student to establish themselves as professional poets or fiction writers and to enable them to contribute their writing to the cultural conversation. Students explore different types of writing, including personal essays, reviews, interviews, literary criticism, and journalism, in addition to work in their own genre. May be taken once for credit. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1942: Poetry--Critical Practice**
This craft course examines the historical conversation between poets and other artistic genres, including visual art, music, as well as politics, the environment, and spirituality. The intent is to consider the source of poetic inspiration. May be taken once for credit. 2 hr./wk., plus conf.; 3 cr.

**ENGL B1948: Children’s Literature--Critical Practice**
Formal analysis of published work and writing in the genre. This course explores the art and craft of writing for children. Both classic and contemporary works are examined for their approaches and the elements of the genre. May be taken twice for credit. 2 hr./wk., plus conf.; 3 cr.

**ENGL C0862: The Teaching of Composition and Literature--Critical Practice**
Study of the techniques, theory, and issues involved in the teaching of composition and literature. Designed for students currently teaching at City Col-
language for the first time. May be taken once for credit. Only students who have been approved to teach for the English Department are eligible to take the course. Students are required to take the course in their first semester of teaching. 2 hr./wk., plus conf.; 3 cr.

**Language And Literacy**

**ENGL B0500: History of the English Language and Modern Linguistic Theory**
The history of the language, together with an introduction to recent theoretical developments in linguistics. 2 hr./wk., plus conf.; 3 cr.

**ENGL B5000: Introduction to Teaching Writing and Literature**
Explorations of pedagogical theories and practical strategies for classroom use. 2 hr./wk., plus conf.; 3 cr.

**ENGL B5100: Supervised Team Teaching**
Work with a master teacher of basic writing or ESL; auditing a basic writing course, teaching, preparing syllabi. 3 cr.

**ENGL B5200: Thesis Research**
Independent research for the Master's thesis under the supervision of a mentor. 3 cr.

**ENGL B5300: Examining Reading and Writing Processes**
Designed to make students more aware of reading and writing strategies. 2 hr./wk., plus conf.; 3 cr.

**ENGL B5500: TESOL: Methods**
Introduction to different methodologies in the field and the contribution of each to methods in second language instruction; focuses on reading, writing and speaking for second language students. 2 hr./wk., plus conf.; 3 cr.

**ENGL B6000: Introduction to Language Studies**
An introduction to various current language issues. 2 hr./wk., plus conf.; 3 cr.

**ENGL B6100: Sociolinguistics**
Variation in language from a social, linguistic and cultural orientation. 2 hr./wk., plus conf.; 3 cr.

**ENGL B6300: Contrastive Written Language**
Focuses on the relationship between language background and production of written text, with particular emphasis on contrastive analysis, discourse analysis, and second language learning. 2 hr./wk., plus conf.; 3 cr.

**ENGL B6400: Theories and Models of Literacy**
Current theories and models of literacy in various linguistic communities and cultures, with particular emphasis on contrasts between orality and literacy in cognitive, linguistic and social dimensions. 2 hr./wk., plus conf.; 3 cr.

**ENGL B8000-8500: Special Topics in Language and Literacy**
Variable credits, 1-4.

**Faculty**

Salar Abdoh, Associate Professor  
B.A., U.C. Berkeley; M.A. City College  
Linsey Abrams, Professor  
B.A., Sarah Lawrence College; M.A. The City College  
Doris Barkin, Lecturer  
B.A., Queens College; M.A., CUNY  
Felicia Bonaparte, Professor  
Richard Braverman, Lecturer  
B.A., Hamilton College; M.A., Columbia University, Ph.D.  
Carla Cappetti, Professor  
B.A., Torino; M.A., Univ. of Wisconsin; M. Phil., Columbia Univ., Ph.D.  
Gladys Caro, Associate Professor  
B.A., Manhanttanville College; M.S., Fordham Univ., Ph.D.  
Mikhail Dekel, Associate Professor  
Tel Aviv School of Law; M.A., The City College; Ph.D., Columbia University  
Lyn Di Iorio, Professor  
B.A., Harvard Univ.; M.A., Stanford Univ.; Ph.D., Univ. Of California (Berkeley)  
Grazyna Drabik, Lecturer  
M.A., Univ. of Warsaw; M.A., Columbia Univ., M. Phil.  
Keith Gandal, Professor  
B.A., Amherst College, M.A.; Ph.D., Univ. of California (Berkeley)  
Barbara Gleason, Associate Professor  
B.S., Univ. of Missouri (Columbia); M.A., Oklahoma State Univ.; Ph.D., Univ. of Southern California  
Daniel Gustafson, Assistant Professor  
B.A., Kenyon College; M.A., Yale University, Ph.D.  
Jo-Ann W. Hamilton, Assistant Professor  
B.A., Univ. of Pennsylvania; M.F.A, The City College; Ed.D., Teachers College, Columbia University  
Laura Hinton, Professor  
B.A., Univ. of Arizona, M.A.; Ph.D., Stanford Univ.  
András Kiséry, Assistant Professor  
M.A., Univ. of Bristol (U.K.); M.Phil., Columbia Univ., Ph.D.  
Pamela Laskin, Lecturer  
B.A., Harper College, M.A.  
Jane Marcus, Distinguished Professor  
A.B., Radcliffe College; M.A., Brandeis Univ.; Ph.D., Northwestern Univ.  
Elizabeth Mazzola, Professor  
B.A., Univ. of Virginia, M.A., New York Univ., Ph.D.  
Renata Kobetts Miller, Associate Professor  
B.A., Princeton; M.A., Indiana University, Ph.D.  
Mark Jay Mirsky, Professor  
Geraldine Murphy, Professor  
B.A., Boston Univ.; M.A., Columbia Univ., Ph.D.  
Paul Oppenheimer, Professor  
Emily Raboteau, Associate Professor  
B.A., Yale Univ.; M.F.A, New York Univ.  
Fred Reynolds, Professor  
B.A. Midwestern State Univ.; M.A, M.A. (Speech), Univ. of Oklahoma, Ph.D.  
Gordon Thompson, Associate Professor  
B.A., The City College; M.A., Yale Univ., Ph.D.  
Michelle Valladares, Lecturer  
B.A., Bryn Mawr College; M.F.A., Sarah Lawrence College  
Harold Aram Veesser, Professor  
B.A., Columbia Univ., M.A., Ph.D.  
Michele Wallace, Professor  
B.A., CCNY, M.A.; Ph.D., NYU (Cinema Studies)  
Joshua Wilner, Professor  
B.A., Cornell Univ.; M. Phil., Yale Univ., Ph.D.  
Cynthia Zarin, Distinguished Lecturer  
A.B., Harvard College; M.F.A. Columbia University  

**Professors Emeriti**

Marcia Allentuck  
Ilona Anderson  
Nathan Berall  
Saul N. Brody  
David P. Buckley  
Roger Boxill  
Arthur K. Burt  
Alice Chandler  
Morton Cohen  
James de Jongh  
James A. Emanuel  
Barbara Fisher  
Byrne R. S. Fone  
Arthur Ganz  
Robert Ghiradella  
Arthur Golden  
Frederick Goldin  
Arthur Ganz  
Ralph Gordon  
Theodore Gross  
Leon Guilhamet  
Marilyn Hacker  
James Hatch  
William Herman  
Mary V. Jackson
Norman Kelvin
Leonard Kriegel
Valerie Krishna
Patricia Laurence
Daniel Leary
Irving Malin
Karl Malkoff
Philip Miller
Robert K. Morris
Stephen Merton
Nathaniel Norment, Jr.
William L. Payne
Beatrice Popper
Irving Rosenthal
Earl Rovit
Paul Sherwin
Robert Silber
Frederic Tuten
Geoffrey Wagner
Arthur Waldhorn
Barry Wallenstein
Barbara Bellow Watson
Department of History

(Division of Humanities and the Arts)
Professor Anne Kornhauser, Chair • Department Office: NA 5/144 • Tel: 212-650-7137

General Information

The City College offers the following master’s degree in History:

M.A.

We offer a dual track Master’s program. We provide a non-thesis track for secondary school teachers looking to broaden their horizons and maintain their state certification, and a thesis track for students interested in applying to competitive doctoral programs.

Degree Requirements

To fulfill the requirements for the MA degree in History, students must accumulate a total of 30 credits of approved graduate coursework.

All students must take HIST B0000: Historical Methods and Historiography. Of the remaining eight or nine courses (depending on which track is pursued), students are encouraged to take four courses (12 credits) in a chosen area of concentration: American History, European History, Latin American History, Asian History, African History, Middle Eastern History, etc.

Up to nine (9) credits of course work in other graduate programs may be accepted for the MA degree in History at the City College. Approval for such credit transfer must be secured from the Graduate History Committee.

Thesis Track, Additional Requirements

In addition to 27 credits of approved graduate coursework, students must complete a thesis, which accounts for 3 of the total 30 credits necessary for the degree (HIST 89900: Thesis Research). The thesis is a 40 to 60-page research paper on a topic worked out in consultation with the student’s advisor.

The candidate for the MA in History on the thesis track is required to write a thesis prospectus and to gain the approval of that prospectus by their thesis advisor. A thesis prospectus is a 10-15 page thesis proposal, in which the student not only identifies their topic and its sources but also locates their work within the larger historical literature of their field, broadly defined. The prospectus should include a bibliography of the historical literature on the student’s topic and within the student’s field that was drafted in consultation with their advisor. The completion of an approved prospectus is required for qualification for History 89900, Thesis Research.

There is no foreign language proficiency requirement. However, it is strongly suggested that all students with foreign language skills who intend to apply to Ph.D. programs in History demonstrate foreign language proficiency in their field of study by taking a foreign language exam.

Non-thesis Track, Additional Requirements

In addition to thirty (30) credits of course work, students must submit two field papers of twenty (20) pages each. These papers are normally written, either entirely or in part, as assignments for coursework. One paper should be in a major area of concentration and one in a minor area.

Advisement

All students accepted into the program should consult with the Director of Graduate Studies, Professor Barbara Naddeo

Secondary School Teaching

Students wishing to teach History in secondary schools must be certified in the area of Social Studies. Certification requirements are listed under the Secondary Education department listings in this bulletin. Please consult Professor Shira Epstein, Department of Secondary Education. History M.A. candidates must consult with the History departmental advisor about their programs.

History Course Descriptions

A publication describing the graduate program is available in December for spring semesters and in May for fall semesters.

HIST B0000: Historical Methods and Historiography

Focus on the methods that have shaped the conceptualization and writing of professional history over the past few decades. Methods studied may include those of the Marxists, the French Annales school, social-scientific history, anthropological history, historical sociology, the history of material culture and consumption, the history of nationalism and cosmopolitanism, global and transnational history, environmental history. Area readings will vary with instructor. 2 hr./wk.; 3 cr.

Lecture/Discussion Courses

All courses are 3 hr./wk.; 3 cr.

Studies in Ancient and Medieval History

HIST B0101: The Ancient Near East and Greece

The cultural legacy of the Egyptian, Mesopotamian, Hebrew and Hellenic civilizations in classical antiquity.

HIST B0102: The Hellenistic World and Rome

Classical antiquity from the conquests of Alexander the Great to the fall of the Roman Empire in the West.

Studies in Modern European History

HIST B0301: Life, Art and Learning in the Renaissance

Using original works (in translation), the course examines early modern European conceptions of love, culture, politics and destiny in the context of major social, intellectual and artistic developments of the period; humanism and the formation of the state; individualism in life, letters and arts.

HIST B0302: Europe in the Revolutionary Era: 1760–1815

The rapid transformation of political, legal and social institutions, as well as of attitudes and ideas under the pressure of war, revolution and economic change. The crisis of the Old Regime; development and spread of the Revolution; the Napoleonic system and its legacy.

HIST B0303: Europe, 1815-1914

The political triumphs of the middle classes and their troubled hegemony; the factory system, free trade parliamentarians; the transformation of 1848; the Second Empire; Italian and German unifications; movements of reform; democratic currents; socialism; the new imperialism.

HIST B0304: 20th Century Europe

Political, social, economic, and intellectual developments in fin de siécle Europe, the coming of the First World War, the War and Peace, the Russian Revolution, Italian Fascism, the Weimar Republic and Nazism, the Democracies between the wars, the diplomacy of appeasement, the Second World War, the Cold War and Détenelle, and the emergence of East and West Europe as vital forces in the world today.

Studies in American History

HIST B0401: The Colonial and Revolutionary Period to 1783

European discovery and exploration of America; origins and peopling of the English colonies; colonial life; imperial innovations and American protest; the Revolution.

HIST B0402: The New Nation, Slave and Free, 1783 to 1840

Republicanism and the democratization of politics, industrialization of an American working class, social reform and the making of the middle class, westward expansion and the removal of the Native Americans, sectional conflict and slave culture.

HIST B0403: The Era of Civil War and Reconstruction, 1840–1877

The causes and consequences of the American Civil War, focusing especially on the reasons for sectional conflict, emancipation, the role of Abraham Lincoln, the conflict over Reconstruction and the new status of emancipated slaves.

HIST B0404: The Response to Industrialization to 1900

The political, economic and social phases of the development of the United States from Reconstruction to the First World War. Populism and Progressivism; the industrialization of society and the emergence of the labor movement.

HIST B0405: The United States in the Twentieth Century

America and World War I, the roaring twenties, the Depression and New Deal, Roosevelt’s leadership, World War II, and the beginnings of the Cold War.
HIST B0406: Immigration and Ethnicity in American Life
Topical and chronological treatment of the American immigration experience, with emphasis on the ghetto, culture and community, patterns of work, social mobility, assimilation, the relation of class and ethnicity, and America’s reception of immigrants. Comparative analysis of different ethnic groups.

HIST B0408: African-American History from Emancipation to the Present
The post-slavery experience of African-Americans: the creation and destruction of a black peasantry, the growth of a black working class, and the resulting change in black politics and culture.

HIST B0412: The American Legal Tradition
Examines the basic features of English Common Law, then shifts to America to explore how our nation (1) dealt with this inheritance and (2) formed its own legal structure. A broad range of topics, with emphasis upon eighteenth and nineteenth century legal developments.

HIST B0415: History of New York City
Several problems in the history and culture of New York City: slavery and the city’s origins as a multi-ethnic mercantile community, post-revolutionary commercial port; rise of working class; the Harlem Renaissance; social welfare and planning in the twentieth century. Emphasis on reading in original sources.

Studies in Latin American History

HIST B0501: Colonial Latin America
A study of the impact and meaning of colonial rule in Latin America and the Caribbean, focusing on the interaction between European goals and institutions, and indigenous American and African strategies of socio-cultural survival.

HIST B0502: Modern and Contemporary Latin America
Contemporary economic, social and political problems of Latin America and the Caribbean studied in historical perspective. Themes include: foreign economic and political intervention; labor systems and patterns of land ownership; class, ethnic and racial relations; the politics of reform, revolution and authoritarianism.

Studies in Asian History

HIST B0601: Traditional Civilization of China
The early formation of the Chinese State, the intellectual foundation that has sustained its long history, the shaping of the Confucian way of life, and the cultural sophistication and its decline on the eve of the modern world.

HIST B0602: Modern China
Change and continuity in the Chinese tradition across the nineteenth and twentieth centuries. The encounter with the West, social and political disruptions, efforts to industrialize, and especially the evolution and outcome of the Chinese revolution will be stressed.

HIST B0604: Traditional Civilization of Japan
Japanese history from its origins to the nineteenth century, i.e., the “classic” Heian period, “medieval” Kamakura to Sengoku periods and the “early modern” Tokugawa world. Topics: Japan’s contacts and borrowings from other civilizations, especially China; Shinto and Buddhism; women and the family; the rise and transformation of bushi or warriors; artistic traditions.

HIST B0605: Modern Japan
Survey of the building of the modern Japanese state, society and economy from 1868 to the present, with focus on continuity and change, the social costs of rapid industrialization and the emergence of Japan in the global economy.

HIST B0606: Traditional Civilization of India
The history and culture of Indian civilization before modern times; major emphasis will be on its formation and classical age, its continuity and change, and the coming of Islam.

HIST B0607: History of Modern India
Surveys the elements which have shaped the characteristic institutions of India; the disintegration of the Mogul empire and the rise of the British to dominance; political, economic, cultural, and social developments during the British period and the changes wrought by the republic.

Studies in African History

HIST B0703: Africa and the Modern World
A social history of Africa from the nineteenth century to the present, with emphasis on state formation, impact of the slave trade, and resistance to colonialism.

Studies in Middle Eastern History

HIST B0801: The Middle East Under Islam
The rise of Islam and Arab conquests of the Middle East and North Africa through the Crusades and Mongol invasion. Covers the period 600 to 1500, focusing on politics, culture, and society.

Comparative History

HIST B0901: Comparative History of Revolutions
A study of major modern revolutions, stressing the literature and problems of each, for the purpose of learning to what extent they follow similar patterns. New and unusual insights for historical inquiry, prompted by a comparative approach.

HIST B0903: Nationalism in the Modern World
The meaning, origin, development, and growing significance of nationalism in the nineteenth and twentieth centuries. Nationalism discussed as (1) a stabilizing and destabilizing factor, (2) a challenge to multi-national empires, and (3) a major factor in the anti-colonial movements.

HIST B0904: Modern Imperialism
The building of empires during the nineteenth and twentieth centuries in the name of national and international principles as well as economic and political interests. The extension of power over weaker regions by England and France, the U.S.A, the U.S.S.R. and China. Rivalries among imperial powers.

HIST B0905: The Theory and Practice of Genocide in the Twentieth Century
Comparison of several instances of systematic mass killings, including Armenians, European Jews, Kurds, American Indians, and Hereros and Hutus in Africa. Emphasis on historical circumstances, national sentiment, the state apparatus, and the contemporary implications of genocide.

Colloquia and Seminars

All courses 2 hr./wk., plus conf.; 3 cr.

HIST B2302: The Age of Enlightenment
The eighteenth century’s project of applying reason to experience and to the improvement of social existence. Main topics: retrieval of exotic cultures; meditation on happiness and pleasure; problem of luxury; discovery of the market; secular society and its history; the French Revolution; reform and violence.

HIST B2303: Major Developments in Western European History Since 1918
Emphasis on overall trends as well as specific national developments in Western Europe. After considering the Versailles Peace Conference, attention directed to Western Europe between the two World Wars: the Weimar Republic, France, British economic and imperial problems, Fascist Italy, Nazi Germany, and the small states. The remote and immediate causes, events and results of World War II are treated, as well as developments since 1945.

HIST B2304: The Third Reich
Hitler, Nazism and Nazi Germany. Topics include: social, political and economic preconditions to the Nazi takeover; anti-Semitism; cultural and artistic policies of Nazi Germany; the churches; the film industry; varieties of resistance; concentration camps; the conquest of Europe; mass murder; fall of the Third Reich.

HIST B2404: Markets and Mansions: the Material World of Nineteenth Century Americas
The commercialization of culture in Nineteenth century U.S. through an examination of historical artifacts. These objects, such as silk portraits, popular prints and books, and vernacular houses. Studies in the context of historical change, using theories of material culture.

HIST B2502: Seminar: Latin America in World Affairs
Treats the growth of Latin America’s world contacts, with special emphasis on the twentieth century and the Latin American viewpoint. Economic, political, religious, social, and diplomatic matters considered.

HIST B2701: A Social History of Modern South Africa
From the mineral revolution, 1871 to the present. Focus on the special forces that created modern South Africa, with special attention to the creation of the Black working class, the decline/collapse of the Black peasantry, the evolution of the privileged white working class and Afrikaner ideology, the introduction of East Indian and Chinese labor, and the evolution of social movements of women, workers, squatters, and peasants to resist the apartheid system.
HIST B2906: Seminar: Imperialism in World Affairs
Research in selected case studies of imperialist contacts and conflicts; patterns of control; native acquiescence and discontent; achievements and failures.

HIST B4100–5900: Independent Studies
Sequence of directed readings and tutorials, available only with the Chair’s permission. Interested students should inquire, usually after having completed 15 credits.

HIST B9900: Thesis Research
Students electing to complete the thesis option will prepare it under the guidance of a faculty advisor. Completion of the comprehensive exam and the foreign language requirement is advisable prior to starting work on the thesis.

Faculty
Beth Baron, Professor
B.A., Dartmouth College; M.A., Univ. of London; Ph.D., Univ. of California (Los Angeles)

Susan K. Besse, Associate Professor
Certificate, Institut d'Etudes du Developpement, Geneva, Switzerland; B.A., Smith College; Ph.D., Yale Univ.

John Blanton, Assistant Professor
B.A., SUNY (Albany); M.Phil., CUNY Graduate Center, Ph.D.

Lale Can, Assistant Professor
B.A., M.A., New York Univ., Ph.D.

Craig Daigle, Associate Professor
B.A., Univ. of Maryland; M.A., James Madison Univ.; Ph.D., George Washington Univ.

John Gillooly, Lecturer
B.A., Univ. of California (Los Angeles); M.A., Columbia Univ., Ph.D.

Emily Greble, Associate Professor

Danian Hu, Associate Professor
B.E., Beijing Jiaotong Univ.; M.A., Case Western Reserve Univ.; Ph.D., Yale Univ.

Ravi Kalia, Professor
B.A., Univ. of Delhi, M.A., M.B.A, Univ. of California (Los Angeles), Ph.D.

Andreas Kilen, Professor
B.A., Reed College (English); M.A., New York Univ., Ph.D.

Anne M. Kornhauser, Associate Professor and Chair
B.A., Barnard College; M.A., Columbia Univ., Ph.D.

James Lewis, Lecturer
B.A., American Univ.; M.A., Washington Univ. in St. Louis, Ph.D.

Barbara Naddeo, Associate Professor
B.A., Princeton Univ.; M.A., Univ. of Chicago, Ph.D.

Adrienne Petty-Roberts, Associate Professor
B.S., Northwestern Univ.; M.A., Columbia Univ., Ph.D.

Gerardo Renique, Associate Professor
B.S., Universidad Nacional Agraria (Peru); M.A., Columbia Univ., Ph.D.

Clifford Rosenberg, Associate Professor
B.A., Carleton College; M.A., Princeton Univ., Ph.D.

Andrea Seligman, Assistant Professor
B.A. Univ. of Pennsylvania; M.A. Northwestern Univ., Ph.D.

Seiji Shirane, Assistant Professor
B.A. Yale Univ.; M.A., Princeton Univ., Ph.D.

Darren Staloff, Professor
B.A., Columbia College; M.A., Columbia Univ., Ph.D.

Judith Stein, Distinguished Professor
B.A., Vassar College; Ph.D., Yale Univ.

Barbara Syrrakos, Lecturer
B.A. Univ. of Wisconsin, M.A.; M.A., New School for Social Research, Ph.D.

Matthew Vaz, Lecturer
B.S., Cornell Univ.; M.S. Brooklyn College; M.A., Columbia Univ., Ph.D.

Eric Weitz, Distinguished Professor
B.A., SUNY Binghamton; M.A., Boston Univ., Ph.D.

Laurie Woodard, Assistant Professor
B.A. Columbia Univ.; M.A, Yale University, Ph.D.

Professors Emeriti
Harriet Alonso
Bernard Bellush
David Johnson
Fred L. Israel
Lawrence Kaplan
Thomas H.C. Lee
Radmila Milentijevic
Dante A. Puzzo
George Schwab
Conrad M. Schirokauer
Richard Skolnik
Herbert A. Strauss
Walter Struve
Arthur Tiedemann
Robert Twombly
Martin Waldman
Joel Weiner
Irwin Yellowitz
Oscar Zeichner
Department of Interdisciplinary Arts and Sciences

Division of Interdisciplinary Studies
Professor Juan Carlos Mercado, Dean
Professor Kathlene McDonald, Chair
25 Broadway 7th Floor
New York, New York
Telephone: 212-925-6625
http://www.citycollegeamericasma.org/

General Information

The City College offers the following master’s degree in the Study of the Americas:

M.A.

The Master of Arts in the Study of the Americas offers students a liberal arts degree, in step with the most cutting-edge trends in interdisciplinary education. The program seeks to address new questions and concepts about the Americas as it focuses on topics such as racial and ethnic identities, migration and immigration, popular culture, politics, gender relations, and human rights. Our explorations move beyond a focus on identity politics to examine the historical, political economic and socio-cultural formations of the Americas. As the name of the program suggests, our curriculum pays attention to both methodology and content, where “study” emphasizes our faculty’s expertise in conducting interdisciplinary research, and the “Americas” points to our gesture to look comparatively at spaces across the hemisphere and to consider, interrogate, and reevaluate the impact that concepts such as nation, race, ethnicity and gender have had on regional and historical formations of family, community, governance, and civil society. The focus of the program is timely and joins an emerging field of study, that among its concerns, breaks apart notions about what the “Americas” are, how they are connected historically, politically and culturally across national boundaries and transnational spaces. We call attention to how certain areas continue to be disenfranchised and examine the reasons for such marginalization.

Mission Statement of the M.A. in the Study of the Americas

One of the practical goals of our program is to nourish a collaborative space within which students may develop their intellectual engagement, applying diverse and myriad disciplinary approaches to investigate the intersection between education, policy, government, society, history, culture, and the arts. For students who already have careers, we offer a scholarly space in which they may engage their current professional responsibilities and interests using theoretical frameworks. For students who are preparing for a first career or career change, our program offers varying perspectives from which to explore potential paths.

A second concrete objective of our program is to provide students with a rigorous, well defined curriculum that not only grounds them in an interdisciplinary perspective, but one that also allows them to explore more individual interests. Our 30-credit program enables students, with approval, to take up to three 3-credit courses at another division within The City College or at another CUNY campus, or even benefit from the study abroad programs whose content areas complement that of the MA in the Study of the Americas.

One of the historical missions of The City College of New York has been to serve the educational needs of the working people of the city. The college’s Division of Interdisciplinary Studies represents the heart of this mission, and our MA program enhances our ability to serve working students more fully and successfully. Our program is intended to accommodate the busy schedules of professional students. The majority of our courses are taught in the evenings. As with all of The City College’s curricula, our program is extremely rigorous, preparing students to master both academic and professional environments. Although only in existence since 2010, graduates and students in the program have gone on to work in the diplomatic sector, have been accepted to PhD programs, and have complemented their current careers in communications, education, health, law, human resources, or marketing.

To this end, our program is housed at the Division of Interdisciplinary Studies at the Center for Worker Education, which is located at 25 Broadway. Our facilities are state-of-the-art (Wi-Fi, smart classrooms, computer lab) and our infrastructure is extremely personalized: we have an in-house library and award-winning librarian, writing center and tutors, a student services coordinator with experience in career counseling, and a clinical psychologist. The Center for Worker Education also houses the Frances S. Patai Program in

Holocaust, Genocide, and Human Rights Studies, the Americas Poetry Festival of New York, and the Americas Film Festival of New York. The Center regularly hosts lecture series organized around themes that bring in outside scholars to share their research, such as “Human Rights,” “Aesthetic and Cultural Expressions of African-Derived Religions,” and “The Child.”

Degree Requirements

Requirements for the M.A. degree in the Study of the Americas are as follows:

Required Courses

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tr>
<td>IAS A5000: Inventing the Americas</td>
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</tr>
<tr>
<td>IAS A5010: Graduate Research Methodology</td>
<td>3</td>
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</table>

Elective Courses

<table>
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<tr>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Approved graduate courses in disciplinary or interdisciplinary fields</td>
<td>21</td>
</tr>
<tr>
<td>Capstone Seminar OR Thesis Credits</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits |

30

Student may take up to nine credits of relevant graduate coursework outside of the program. For graduate courses from other departments or schools within CUNY, approval of the MA Program Director is required. For graduate coursework outside of CUNY, approval of the MA Director and the College is required.

Additional Requirements

Completion of a Thesis or the Capstone Seminar required

Students will need to meet a foreign language reading proficiency requirement in French, Haitian Kreyòl, Spanish, or Portuguese. This requirement may be fulfilled either by passing an exam, or completing a language proficiency course with the passing grade of C or above. For students apprehensive about foreign-language acquisition, please do not be discouraged. We have a very supportive faculty.

Advisement

For registration and program planning, graduate students must meet with the MA Program Director: 212-825-0210; ma.americas@ccny.cuny.edu

Awards

Students at the Center are eligible for a variety of awards and prizes at the College. Some are specifically designated for students at the Center. For students who seek nationally recognized awards and scholarships to further academic studies and burnish their credentials, The City University of New York has created a consolidated website and expanded campus-based guidance for major national scholarships and fellowships available at distinguished foreign and U.S. universities.

Scholarship information can be found at www.cuny.edu.

Frances S. Patai Essay Prize

Albert A. Blum Award in Labor Studies

Study of the Americas Course Descriptions

IAS A5000: Inventing the Americas

This course offers an interdisciplinary introduction to the study of the Americas. Whether defined by geography, culture, language, ethnicity, history, politics, or literature, the Americas have been a contested space for hundreds of years. We will examine some of the ways in which the Americas have been constructed, defined, and redefined since the time of Columbus (and before). We will pay particular attention to the ways in which the Americas served as both a terminus and a turning point for what is generally known as the ‘western tradition’; in other words, we will examine the residues of the old world in the new world, as well as the importation of the new world into the old. Touching upon some of the topics that have come to define the history of the Americas, we will discuss the science(s) of exploration; the imaginaries of the new world and the old; the politics and economics of empire and colonialism; the cruelties of invasion, conquest, and slavery; the transformations of ecology and biology; the contours of nationalism and transnationalism; as well as the more recent phenomenon of globalization. As a foundational course in the study of the Americas, this course highlights
some of the more important topics in the history of the Americas, but it also offers a serious introduction to interdisciplinary learning at the masters-level. Requirements include seminar participation, scholarly response papers, and the execution of an extended research assignment.

IAS A5010: Graduate Research Methodology
The course’s focus is to explore the process of interdisciplinary, comparative research. More specifically, the class will introduce students to the field of “New American Studies” and teach them how to bring together disciplinary and transnational context think, argue, research, and write. First, students will trace the changing definition of American Studies: Originating as a field of study with a focus primarily on the United States, the field has expanded to encompass research spanning all of the Americas, which include the disparate and often marginalized cultural zones within. Second, they will trace the shifts in the field’s century course. This approach will include an analysis of decolonization, economical “imperialism” as well as the emergence of current transnational and racial identities and values. The study of cultural changes as a result of migrations, hybridizations and technological-economic dependency is a main focus in this course. Being by definition part of an inclusive program, this course contrasts the experiences of Native, African and Latin American writers and their critical approaches in the Americas. Students will develop the methodological and methodological foundations that have marked the transnational relations in the Americas. Students will discuss in a short paper (5 pages) the issue of cultural colonialism and its consequences in the uneven or failed development in some regions of the Americas. Based on the study of political and economical migrations, the students will create their own assessment of transnational and racial identities in the Americas. Based on this assessment, students will implement the research methodologies discussed over the course of the semester. They will choose a topic, develop a research agenda, conduct interdisciplinary research, and write a final research proposal, with an annotated bibliography.

IAS A5020: Society and Culture of the Americas from the 19th to the 21st Centuries
This course intends to answer the question: “What are the Americas today?” Addressing that question, the course takes an interdisciplinary approach in the study of the diverse postcolonial Americas. The Americas are in a period of extraordinary change. This approach will include an analysis of decolonization, economical “imperialism” as well as the emergence of current transnational and racial identities and values. The study of cultural changes as a result of migrations, hybridizations and technico-economic dependency is a main focus in this course. Being by definition part of an inclusive program, this course contrasts the experiences of Native, African and Latin American writers and their critical approaches in the Americas. Students will develop the methodological and methodological foundations that have marked the transnational relations in the Americas. Students will discuss in a short paper (5 pages) the issue of cultural colonialism and its consequences in the uneven or failed development in some regions of the Americas. Based on the study of political and economical migrations, the students will create their own assessment of transnational and racial identities in the Americas. Based on this assessment, students will implement the research methodologies discussed over the course of the semester. They will choose a topic, develop a research agenda, conduct interdisciplinary research, and write a final research proposal, with an annotated bibliography.

IAS A5030: Geopolitics and Diplomacy Across the Americas
This course serves as an introduction to the geopolitics, that is the spatial expressions of power, that have shaped the geographic boundaries, cultural and racial representations and political and economic relations among the nations of the Americas. David Slater, writes in Geopolitics and the Post-colonial State: “It can be argued that US imperialism has always followed a double movement: Westward territorial expansion and policing boundaries, and breaking down borders both internally and externally so as to open up new spaces of unfettered expansion” (30). We will examine the construction of US hegemony in the Americas, exploring continuities and critical conjunctures that have shaped relations among the nations of the Americas; we will also examine specific countries more closely through the close reading of primary and secondary sources. As a class, we will also attempt to extend the idea of geopolitics as it relates to protect, resistance and the structuring of people’s everyday life.

IAS A6000: Literature of the British West Indies
Both Henry James and James Baldwin were known for claiming that it was only through the experiences of becoming estranged American ex-patriots traveling in Europe that they finally found their “American-ness.” Likewise, many authors grouped within the so-called literature of the British West Indies had to leave home and migrate to Canada, the United States, and/or England in order to make a living and pursuing their literary careers. We will examine specific countries more closely through the close reading of primary and secondary sources. As a class, we will also attempt to extend the idea of geopolitics as it relates to protect, resistance and the structuring of people’s everyday life.

IAS A6010: Race and Gender Across the Americas
This course takes up a comparative approach rooted in the anthropology of race and gender. Students will build a theoretical framework from grounded studies of people’s everyday lives in particular historical and cultural contexts across the Americas. We will engage with topics ranging from the role of science in perpetuating and then dismantling inequalities predicated on race, the forced sterilization of women of color, to relationships of power emergent in increasingly diasporic lives. While the course focuses on ethnographic readings, students will be able to develop an interdisciplinary perspective for analyzing race, gender, and sexuality. We cannot “do it all” in this class, but you should seize this as an opportunity to push yourselves to engage with a field that crosses Black studies, ethnic studies, gender studies.

IAS A6020: Comparative Slaveries of the Americas
This course will explore the rise and fall of African slavery in the Americas from the 15th to the 19th centuries. Through readings discussions and films/documentaries, we shall analyze how slavery became the predominant mode of production in the Americas until the late 19th century. This course surveys the history, cultures and political economy of the Atlantic slave trade and its ongoing legacies in the Americas. In many ways, the themes of this course mirror the development of research interests and sensibilities concerning the definitions of modernity and the emergence of new world transformations of European and African identities and transnationalisms. While we will concentrate on the Americas, there is little doubt that this forced migration was one element in an intertwined set of global exchanges and trade circuits. The consequences of extending new forms of labor, technology and capital alongside colonial exploration and expansion were germane in the development of ideologies of race and nationality on three continents. In this sense the Atlantic system conjures multiple social practices, languages, and religions into new narratives of globalized identities. One of the goals of this course is to explore African Diasporic cultural expression and slave resistance in all of its manifestations. Another important objective of this course is to read and reflect upon the historical underpinnings of race relations and the legacies of racism across the Americas and internationally.

IAS A6035: Latin American Writers in Translation (to English)
This course reviews the Latin American Literary production from the late 18th to the last decade of the 20th century. The program follows the development of two literary genres: verse (poetry) and narrative (short stories) along with some short novels. It begins with an overview of Latin American history and its literary productions. The connections between literature and power will be underlined and questioned from a cultural materialist approach. Later, the students will analyze poems written in the heart of the avant-garde and explore the anti-colonial and anti-racist aims and strategies of the so-called Bonanza. Brazilian writers are included and their production contrasted with that of Spanish-speaking America, both historically and aesthetically.

IAS A6040: Crossing Borders in the 21st Century
This course offers an ethnographic perspective on the ongoing movement of bodies, technologies, and commodities throughout the Americas in the 21st Century. Over the last two decades, anthropologists have offered a series of theoretical and ethnographic interventions on what was originally characterized as transnational processes. Students will examine various frameworks for understanding what is emerging as a “post-911” model for understanding the regimes of power, formal and informal, that organize border crossings as “transborder,” “extraterritorial,” transnational, global, and so on, in what can be broadly defined as a political and economic context of neoliberalism. In doing so, we will interrogate the place of the nation-state, and the ways in which territorial, ethnic, racial, gendered, postcolonial borders are crossed or not. While clearly U.S. hegemony is at the core of this discussion, significant attention will be placed on decentering the U.S. as the axis of interpretation. Through ethnographic case studies, students will be introduced to topics such as the links between structural, gendered, and everyday violence, the politics of clandestinity, to questions on the privileging of mobility as a problematic trope of the 21st Century.

IAS A6050: Across the Americas: The Literature of Immigration and Migration
This graduate-level seminar focuses on the migration and immigration of people to and from the Americas since the early 20th century. We begin the course by reading critical theory on the topic, from anthropology to economics, to the law. Then we explore the literature of migration and immigration, to and from the Americas, from the dawn of the twentieth century to the present. We first will investigate subtle and not-so-subtle shifts in the law and language of migration at the turn of the twentieth century, as the customary influx of northern European migration to the Americas mitigates and is complemented by the Southern Europe Jewish and Puerto Rican and Cuban immigration. Next, we study the mid-century, particularly the continued immigration and emigration of Puerto Ricans and Cubans. Finally, we look at population movement through the Americas late
in the century, with special attention paid to Mexican, Caribbean and South American migration and immigration, and an unusual look at indigenous 'migration.'

IAS A6051: Markets, Power, and People
Privatization, devolution, and decentralization in many ways define neoliberal governance; these processes of shifting government services and political participation to the local level have redefined the role of the public sector not only in the US but internationally. We will raise questions about the public values we associate with the provision of government services as well as how the notion of "citizenship" changes as it becomes reframed within a "consumer-citizen" model. We will ask how the increasing emphasis on efficient and competitive "market-driven governance" has structured economic as well as political access and exclusion. The course readings will cover the following themes: encouraging development; neoliberalism and the Washington consensus; governance, privatization, decentralization, and devolution; neoliberalising citizenship, consumer citizens; defining and decentering neoliberal urbanism; selling cities, culture, leisure and the production of urban space; fractured cities, fortress cities.

IAS A6060: Music in the Americas
Music in the Americas will present a survey of selected styles of Latin American music including the classical and popular traditions and considering its native, African, and European heritage. Each session will be dedicated to discussing genres and styles (cumbia, tango, bolero, samba, corrido, Latin jazz etc.) through guided listening of relevant recordings, pertinent readings, and screening of videotapes. In addition, the course will present the relevant theoretical issues pertinent to those musical styles including perspectives that shed light on ethnic identities, gender issues, migration, and diaspora questions. Weekly assignments will include listening and readings. A term paper and a class presentation will also be required.

IAS A6075: Women's Revolutionary Fiction of the Americas
This course examines literature by women writers from Grenada, the Dominican Republic, Argentina, Chile, and the United States. Specifically, we explore the following questions: How do women respond to political violence? How do women participate in nation building? How does the legacy of colonialism shape women's political organizing? How is women's labor in revolutionary movements marginalized? What particular organizing strategies do women draw upon? How does gender shape women's experience of revolution, both within and across cultures? (How) do women's revolutionary activities contribute to a transnational feminist movement?

IAS A6080: Gated Cities, Gated Communities, Gated Minds
This course explores the global phenomenon of "gating" and privatizing urban spaces to create residential and commercial areas that offer a sense of heightened security and seclusion, a respite from the perceived chaos, violence and anonymity of the ever encroaching city. Gated communities are no longer to be found in the suburbs but are fracturing city space as fortified enclaves become sanitized, re-imagined, branded and sold. In this course we will explore the contours and content of this physical gating of urban and metropolitan spaces through divergent lenses, taking an interdisciplinary journey into some of the "cities of walls" that have been emerging in the Americas. We will read ethnographic and sociological studies and urban theory as well as literary works that examine how the privatization of the city is redefining urban life in the Americas - from Buenos Aires and Sao Paolo to Los Angeles and New York. What does this reconfiguration by class, race, ethnicity and gender imply in terms of our day-to-day encounters and relationships as well as our roles as citizens? Are we just gating our lives or our minds as well? We will cover some of the theoretical debates on gated communities, thinking about the reasons behind gating and the typologies associated with these different motivations, assessing the impact on the urban fabric as well as investigating the implications of increasing privatization of neighborhood and commercial spaces in terms of social segregation and exclusion. We will also explore the historical continuities of gating, looking at the private practices and legal mechanisms by which communities have cordoned themselves off from others in the name of security, property values and "life style" choices to create segregated urban landscapes. We will be examining the formation of "American Apartheid" in the US, scrutinizing the "City of Walls" of Sao Paolo and "excavate the "fortress cities" of Los Angeles and New York. We will also read several novels, such as T.C. Boyle's Tortilla Curtains set in the California, The Thursday Wives by Claudia Piñeiro set in Argentina and The Parable of the Sower by Octavia E. Butler.

IAS A6090: Labor Strategies in the Americas
Labor movements across the Americas are revising strategies, deepening cooperation across borders and drawing inspiration from each other's struggles in difficult times for workers everywhere. While closer economic integration across the hemisphere may call for more internationalist union perspec-
International Relations Program

(Colin Powell School for Civic and Global Leadership)

Professor: Jeffery Kucik, Director • Program Office: NA 6/293 • Tel: 212-650-5844

General Information

The City College offers the following master’s degree in International Relations:

M.I.A.

Programs and Objectives


Degree Requirements

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR B6100</td>
<td>Theories of International Relations</td>
<td>3</td>
</tr>
<tr>
<td>IR B6200</td>
<td>International Organization</td>
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</tr>
<tr>
<td>IR B6300</td>
<td>International Law</td>
<td>3</td>
</tr>
<tr>
<td>IR B6800</td>
<td>Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>IR B9900</td>
<td>Thesis Research</td>
<td>3</td>
</tr>
<tr>
<td>IR B6927</td>
<td>International Political Economy</td>
<td>3</td>
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Elective Courses

During the first semester, each student must select five courses from the following to complete a total of 18 credits. The remaining credits will be chosen with the guidance of the professors and the graduate advisor.

<table>
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<th>Course Code</th>
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<th>Credits</th>
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<td>IR B6925</td>
<td>Contemporary International Conflict</td>
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<td>IR B6927</td>
<td>International Political Economy</td>
<td>3</td>
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<tr>
<td>IR B6928</td>
<td>Human Rights in World Politics</td>
<td>3</td>
</tr>
<tr>
<td>IR B6929</td>
<td>Negotiation and Peacekeeping</td>
<td>3</td>
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</table>

Additional Requirements

Thesis: Required.

Foreign Language Proficiency: Students must demonstrate reading proficiency in a language approved by the graduate advisor.

Advisement

Professor Jeffrey Kucik
Professor Nicholas Smith
Professor Sherri Baver
Professor Jacqueline Braveboy-Wagner
Professor Bruce Cronin
Professor Jean Krasno

International Relations Course Descriptions

IR B2502: Latin America and the Caribbean in World Affairs

Examines inter-American relations and the foreign policies of selected countries in the region. It also explores various themes such as democratization, populism, military authoritarianism, economic development, and the relations of Latin America and the Caribbean with the United States. 2 hr./wk. plus conf.; 3 cr.

IR B6100: Theories of International Relations

Offers an introduction to contemporary theories and concepts in the discipline of international relations. In particular, the course examines the competing paradigms offered by realism, liberalism, globalization, the English School, and constructivism. The course is designed to advance students’ knowledge of international relations by focusing on the ways in which theory can help them grasp the complexities of relationships among states and other international actors. 2 hr./wk. plus conf.; 3 cr.

IR B6200: International Organizations

Analyzes the major global and regional organizations and institutions that provide for cooperation among states, with an emphasis on the United Nations system. In particular, the course examines how these organizations attempt to address problems of peace and security, economic and social development, human rights, and humanitarian assistance. 2 hr./wk. plus conf.; 3 cr.

IR B6300: International Law

Examines the role and function of public international law in regulating the relations among sovereign states. Among other areas, the course focuses on the rights and duties of states, multilateral treaties, sovereignty, human rights, the laws of warfare, the use of force, refugees, and international criminal tribunals. 2 hr./wk. plus conf.; 3 cr.

IR B6600: Internship

Students may earn three credits for an internship with an international organization, non-governmental organization, government agency or policy think tank involved in the practice of international relations. Those doing so must get permission from the Program Director and work seven hours per week at the agency, keep a journal, and write a paper. The student must provide to the MPIR office a letter from the agency/organization confirming his or her appointment and outlining his or her duties. Prereq: IR B6100, IR B6200, IR B6300 and permission of the program director. 3 cr.

IR B6800: Research Methods

Provides an introduction to social science research and writing as it applies to the study of international relations. This course helps prepare students to write their master’s thesis. As part of this class, each student develops a research proposal for his or her thesis. Prereq: successful completion of 18 credits, including IR B6100, IR B6200, IR B6300. 2 hr./wk. plus conf.; 3 cr.

IR B6902: Contemporary International Conflicts

Explores the political, psychological, sociological, cultural, and economic sources of international conflict. Topics include contemporary regional and global conflicts, and methods of conflict resolution such as negotiation, coercion, diplomacy, and war. 2 hr./wk. plus conf.; 3 cr.

IR B6915: Asia in World Affairs

Explores the political dynamics that define Asia as a region, with a particular focus on the East Asian areas of China, Japan, South Korea and Singapore. Topics include the rise of nations and the formation of modern states, the impact of imperialism, political economy, and the growing role of China and Japan in world politics. 2 hr./wk. plus conf.; 3 cr.

IR B6917: Africa in World Affairs

Analyses the political relations among black African states and between such states and the Western powers. Topics include: imperialism, slavery, and colonialism; wars of independence; inter-state relations and economic cooperation; and the role of international organizations in promoting human rights and the resolution of conflicts. 2 hr./wk. plus conf.; 3 cr.

IR B6918: The Practice of Diplomacy

Examines how international relations are conducted at the dawn of the 21st century, from both a theoretical and empirical perspective. In doing so, the course provides students with an understanding of the principles that underlie the practice of diplomacy in bilateral and multilateral settings and the concrete tools and processes utilized by diplomats in the course of their work. 2 hr./wk. plus conf.; 3 cr.

IR B6920: The Middle East in World Affairs

Analyzes the relations among Middle East states and between the region as a whole and the rest of the world. The course pays special attention to the Israeli-Palestinian conflict, relations among Arab states and the role of the United States and Europe in the region. 2 hr./wk. plus conf.; 3 cr.

IR B6925: Peacemaking and Negotiation

Examines efforts by regional and international organizations to facilitate negotiation and peacekeeping in the pursuit of international peace and security. It covers the period from the U.N.’s first inception up to current operations in the field, focusing on the Middle East, Africa, Central America, the former Yugoslavia, Cambodia, East Timor, and elsewhere. 2 hr./wk. plus conf.; 3 cr.

IR B6927: International Political Economy

Explores the theories that attempt to explain the dynamics of the international economy, and examines the institutions that provide for cooperation in facilitating international trade, monetary exchange, and investment. It pays particular attention to the role of the World Trade Organization, the World Bank, the International Monetary Fund, and U.N. development agencies. Finally, it examines the debates around globalization. 2 hr./wk. plus conf.; 3 cr.

IR B6928: Human Rights in World Politics

Explores the development and implementation of human rights norms within the international system. It also discusses the debates surrounding the concept of human rights in world politics and investigates efforts by states,
international organizations, and non-governmental organizations to implement such norms at the national, regional, and international levels. 2 hr./wk., plus conf; 3 cr.

**IR B6930: Europe in World Affairs**
Examines the role of the European community and its major states in world politics. In particular, the course explores the development of European politics from the Napoleonic period in the early nineteenth century through the creation of the European Union in the late twentieth century. Topics will include interstate war, security, economic integration and political relations among the states. 2 hr./wk. plus conf; 3 cr.

**IR B6931: Alternative Conceptions of International Security**
Explores the various conceptions of international security offered by scholars, policy analysts, journalists, and activists from different parts of the world. The class includes traditional concepts such as deterrence, arms races and arms control, alliances, warfare, and balance of power as well as more contemporary notions such as human security, environmental security, community violence, civil war and weapons of mass destructions. 2 hr./wk. plus conf; 3 cr.

**IR B6933: Decision-Making and Foreign Policy**
Examines the theory and practice of decision making and how it affects the formation of foreign policy. Grounded in the literature on political psychology, it explores personality, group dynamics, and perception and misperception, and investigates how belief systems establish a framework for how policymakers make decisions. 2 hr./wk. plus conf; 3 cr.

**IR B6934: State-Building and Democratization**
Examines questions of state power, democratic institutions, and their relationship in contemporary comparative and international relations. The course is divided into three sections: (1) origins, definitions and theories of the state and of democracy; (2) dynamic changes in state and democratic politics, particularly those that have occurred over the past several decades; (3) world of policy, investigating prescriptions that have emerged in an effort to produce broader and more complete democracies. 2 hr./wk. plus conf; 3 cr.

**IR B9800: Independent Study**
Students may pursue a program of independent study under the direction of a faculty member, with the approval of the Program Director. Such a program may not be pursued in lieu of a course that is already offered by the program. 1-3 cr.

**IR B9900: Thesis Research**
Prereq: successful completion of 24 credits, including IR B6100, IR B6200, IR B6300, IR B6800 and approval of the program director.
Juris Doctor/Masters in International Affairs (JD/MIA) Program

Professor Jeffrey Kucik, Director • Program Office: NAC 6/293 Telephone: 212-650-5844

General Information

The City College of New York, in conjunction with the CUNY School of Law, offers the following dual degree in law and international affairs:

JD/MIA

Programs and Objectives

The JD/MIA program capitalizes on the CUNY School of Law’s nationally renowned expertise in Public Service and Public Interest Law with the Colin Powell School’s internationally recognized scholarship addressing critical topics of societal concern from multiple intellectual perspectives. The dual program prepares lawyers to understand the political, economic, social and cultural dynamics of international affairs preparing them for careers working for governments, international organizations and international non-government organizations and enhancing their ability to function as social justice lawyers in an increasingly globalized environment.

The MIA portion of the program, housed at the Colin Powell School on CCNY’s campus, focuses on core issues in international policy, including: theories of international relations; international political economy, international law & organization; and security.

Degree Requirements:

To complete the MIA within the joint degree, students in this program will complete 24 credits in international affairs, thereby enabling them to develop expertise in international economic, political, scientific and cultural issues relevant to contemporary policy debates; an additional 9 credits of transfer credits from courses taken at the CUNY School of Law are required. Students are responsible for fulfilling their JD requirements as specified by CUNY School of Law. The requirements for the MIA portion of the degree are as follows:

Required Courses

IR B6100: Theories of International Relations 3
IR B6200: International Organization 3
IR B6300: International Law 3
IR B6927: International Political Economy 3
PSM B1877: Introduction to Quantitative Methods 3

Elective Courses

9

Three classes chosen from the list of graduate level courses offered under International Relations course codes.

Total Credits of CCNY courses 24*
Credits transferred from CUNY School of Law 9
Total Credits for MIA degree within the MIA/JD 33

Advisement:

Jeffrey Kucik, Director MIA, JD/MIA

Course Descriptions

Course offerings include, but are not limited to, the following:

**B6100 Theories of International Relations**

Offers an introduction to contemporary theories and concepts in the discipline of international relations. It examines the competing paradigms offered by realism, institutionalism, the English School, and constructivism. The course is designed to advance students’ knowledge of international relations by focusing on the ways in which theory can help them grasp the complexities of relationships among international actors. 3 hrs./wk.; 3 cr.

**B6200 International Organization**

Analyses the major global and regional organizations and institutions that provide for cooperation among states with an emphasis on the United Nations system. In particular, the course examines how these organizations attempt to address problems of peace and security, economic and social development, human rights, and humanitarian assistance. 3 hrs./wk.; 3 cr.

**B6300 International Law**

Examines the role and function of public international law in regulating the relations among sovereign states. Among other areas, the course focuses on the rights and duties of states, multilateral treaties, sovereignty, human rights, and the laws of warfare, the use of force, refugees, and international criminal tribunals. 3 hrs./wk.; 3 cr.

**B6927 International Political Economy**

Explores the theories that explain the dynamics of the international economy, and examines the institutions that provide for cooperation in international trade, monetary exchange, and investment. It focuses on the World Trade Organization, World Bank, International Monetary Fund, U.N. development agencies, and globalization. 3 hrs./wk.; 3 cr.

**B6931 Alternative Conceptions of International Security**

Explores the various conceptions of international security offered by scholars, policy analysts, journalists, and activists from different parts of the world. The class includes traditional concepts such as deterrence, arms races and arms control, alliances, warfare, and balance of power as well as more contemporary notions such as human security, environmental security, communal violence, civil war and weapons of mass destruction. 3 hrs./wk.; 3 cr.

**B6933 Decision-Making and Foreign Policy**

Examines the theory and practice of decision making and how it affects the formation of foreign policy. Grounded in the literature on political psychology, it explores personality, group dynamics, and perception and misperception, and investigates how belief systems establish a framework for how policymakers make decisions. 3 hrs./wk.; 3 cr.

**B6928 Human Rights in World Politics**

Explores the development and implementation of human rights norms within the international system. It discusses the debates surrounding human rights in world politics and investigates efforts by states, international organizations, and non-governmental organizations to implement such norms at the national, regional and international levels. 3 hrs./wk.; 3 cr.

**B6917 Africa in World Affairs**

Analyzes the political relations among African states and nation-states outside the region. Topics include: imperialism, slavery, and colonialism; wars of independence; inter-state relations and economic cooperation; intra-state conflicts; and the role of international organizations in promoting human rights and the resolution of conflicts. 3 hrs./wk.; 3 cr.

**B6918 Practice of Diplomacy**

Examines how international relations are conducted at the dawn of the 21st century, from both a theoretical and empirical perspective. The course provides students with an understanding of the principles that underlie the practice of diplomacy in bilateral and multilateral settings & the concrete tools utilized by diplomats in their work. 3 hrs./wk.; 3 cr.
Department of Mathematics

(Martin and Michele Cohen Professor Michael Shub, Chair • Department Office: NA 8/133 • Tel: 212-650-5346
Professor Ralph Kopperman, Chair • Department Office: NA 8/201 • Tel: 212-650-5173

General Information

The City College offers the following master's degree in Mathematics:

M.S.

Prerequisites

Students who have not completed undergraduate real analysis or upper-division proof-based advanced calculus courses deemed equivalent to MATH 32300 and MATH 32404 will be required to complete this sequence immediately upon admission; students who have not completed a satisfactory course in linear algebra will be required to complete MATH 34600 or its equivalent during their first semester. No credit toward the M.S. is given for any of these courses.

Degree Requirements

M.S. degree in Mathematics:

Required Courses

Three B-level courses in Mathematics

Additional graduate courses in Mathematics

Graduate courses in other mathematically based disciplines*

Total Credits

30

* Prior approval for such courses must be secured from a Graduate Mathematics Advisor.

Additional Requirements

Thesis: None required.

Comprehensive Examination: A written or oral examination is required on all or part of the work counting toward the degree unless waived by the Graduate Advisor.

Foreign Language Proficiency: None required.

Advisement

Professor Sean Cleary, Graduate Advisor
NA 8/134; (212) 650-5122

Professor Benjamin Steinberg, Graduate Advisor
NA 8/134a; 212-650-5482

Scholarships

The Dr. Barnett and Jean Hollander Rich Mathematics Scholarships
Awarded annually to talented graduate students who have demonstrated superior ability in mathematics.

Ph.D. Level Courses

With the approval of the Graduate Advisor students may register for Ph.D. level courses. Refer to the bulletin of The City University Graduate School for a description of courses and prerequisites.

Mathematics Course Descriptions

Group I

MATH A3200: Theory of Functions of a Complex Variable I
Cauchy-Riemann equations, conformal mapping, elementary, entire, meromorphic, multiple-valued functions, Cauchy integral theorems, series expansion. Prereq: MATH 32500 or 32404. 4 hr./wk.; 4 cr.

MATH A3400: Theory of Functions of a Real Variable I
Lebesgue measure and integration on the real line, differentiation of real functions and the relation with integration, classical Lp spaces. Prereq: MATH 32500 or 32404. 4 hr./wk.; 4 cr.

MATH A3500: Partial Differential Equations I
First order equations, shock waves; classification and canonical forms of higher order equations, characteristics, the Cauchy problem for the wave equation: Huygens' principle; the heat equation; Laplace's equation; the Dirichlet and Neumann problems; harmonic functions; eigenvalue expansions; Green's functions. Prereq: (MATH 32500 or 32404) and MATH 39100. 4 hr./wk.; 4 cr.

MATH A4300: Set Theory
Axioms of Zermelo-Fraenkel set theory; relations, functions, equivalences and orderings, cardinal numbers and cardinal arithmetic; well-ordered sets, ordinal numbers, transfinite induction and recursion, The Axiom of Choice and the Continuum Hypothesis. Prereq: MATH 32300. 4 hr./wk.; 4 cr.

MATH A4400: Mathematical Logic
The propositional calculus, the sentential calculus, normal forms, first order theories, consistency, categoricity, decidability, Godel's incompleteness theorem, the Loewenheim-Skolem theorem. Prereq: MATH 32300 and either MATH 34700 or MATH 44900. 4 hr./wk.; 4 cr.

MATH A4500: Dynamical Systems
Dynamical systems in one and more dimensions, symbolic dynamics, chaos theory, hyperbolicity, stable manifolds, complex dynamics. Prereq: MATH 32404 or its equivalent. 4 hr./wk.; 4 cr.

MATH A4600: Linear Algebra
Linear systems, matrix decompositions, inner product spaces, self-adjoint transformations, spectral theory, discrete Fourier Transforms. Prereq: C or better in MATH 34600 or departmental permission. 4 hr./wk.; 4 cr.

MATH A4900: Modern Algebra I
Groups, rings, fields. Prereq: MATH 32300 and MATH 34600. 4 hr./wk.; 4 cr.

MATH A6100: Differential Geometry
The theory of curves and surfaces in three-dimensional space: frames, fundamental forms, geodesics, curvature of surfaces, surface area, surfaces with boundary, the Gauss-Bonnet Theorem, introduction to Riemannian metrics. Prereq: MATH 32500 or 32404. 4 hr./wk.; 4 cr.

MATH A6300: Topology I
A course in general topology. Sets of points on the real line and in general abstract spaces, relations between sets of points and between a set and the space containing it, operations with sets, open sets, countability, compactness, connectedness, maps, continuity, metric spaces, general topological spaces. Prereq: MATH 32500 or 32404. 4 hr./wk.; 4 cr.

MATH B7800: Advanced Topics in Statistics
The general decision problem, decision-making principles, application to hypothesis testing and estimation, minimax and Bayes solutions, utility theory, sequential procedures. Prereq: MATH A7800 4 hr./wk.; 4 cr.

MATH A6800: Combinatorial Analysis
Permutations, combinations, generating functions and recurrence relations, inclusion and exclusion, applications to matching theory, linear and dynamic programming, Polya's theory of counting, introduction to graph theory and coloring theory. Prereq: MATH 30800 or MATH 32300. 4 hr./wk.; 4 cr.

MATH A7700: Stochastic Processes I
Special topics in probability such as stochastic processes, Markov chains. Prereq: MATH 32300, MATH 34600 and MATH 37500. 4 hr./wk.; 4 cr.

MATH B3200: Theory of Functions of a Complex Variable II
A continuation of MATH A3200, including such topics as analytic continuation, conformal mapping, Dirichlet problem, meromorphic functions, entire functions, Picard's Theorem, elliptic functions. Prereq: MATH A3200. 4 hr./wk.; 4 cr.

MATH B3400: Theory of Functions of a Real Variable II
Abstract measure and integration theory, abstract Lebesgue measure and integral, signed measures, Radon-Nikodym derivative, Lp spaces, product spaces, Daniell integral. Special topics such as Stieltjes integrals, Denjoy integral, Haar measure, measure rings, applications to probability. Prereq: MATH A3400. 4 hr./wk.; 4 cr.

MATH B3500: Partial Differential Equations II
First order quasi-linear and nonlinear equations, Cauchy-Kowalewsky Theorem, well-posed problems, Cauchy problem for hyperbolic systems, the wave equation in n-dimensions, boundary value problems for elliptic equations, Laplace's equation, parabolic equations, heat equation. Prereq: MATH A3500. 4 hr./wk.; 4 cr.
MATH B4900: Introduction to Modern Algebra II
Field extensions, Galois theory, vector spaces and modules, category theory, special topics. Prereq: MATH A4900. 4 hr./wk.; 4 cr.

MATH B6300: Topology II
An introduction to algebraic topology, following a review of general topology. Homoeomorphism, compactness, connectedness, arcwise connectedness, new topological properties in terms of groups, homotopy, homotopy classes, fundamental group, homology groups, simplicies, boundaries, cycles, barycentric subdivision, excision theorem, exact sequence, complexes. Prereq: MATH A4900 and MATH A6300. 4 hr./wk. 4 cr.

MATH A7800: Advanced Mathematical Statistics
The multivariate normal distribution, multiple and partial correlation, regression and least squares, the analysis of variance. Prereq: MATH 32300, MATH 34600 and MATH 37600. 4 hr./wk.; 4 cr.

MATH B7700: Stochastic Processes II
Markov chains, limit theorems, renewal equations, random walks, Brownian motion, branching processes, queuing theory. Prereq: MATH A7700. 4 hr./wk.; 4 cr.

Group II
Courses in this group will be offered on the basis of student interest. These courses may be substituted for courses in the same subject area listed under Group I.

MATH A1200: Topics in Mathematics
Topics to be chosen from graduate mathematics and related fields. This course can be repeated at most 2 times for a maximum of 12 credits total. 4 hr./wk.; 4 cr.

MATH B1100: Selected Topics in Pure Mathematics
Topics to be chosen from the areas of algebra, analysis, topology, geometry, and logic. This course can be repeated at most 2 times for a maximum of 12 credits total. 4 hr./wk.; 4 cr.

MATH B1200: Selected Topics in Classical Analysis
Topics to be chosen from applied mathematics and related fields. Typical subjects are: asymptotic methods, wave propagation, mathematical biology. This course can be repeated at most 2 times for a maximum of 12 credits total. 4 hr./wk.; 4 cr.

MATH B1300: Selected Topics in Probability and Statistics
Topics to be chosen from the areas of probability, statistics, game theory, combinatorial analysis, etc. This course can be repeated at most 2 times for a maximum of 12 credits total. 4 hr./wk.; 4 cr.

MATH B9800: Independent Study
A program of independent study under the direction of a member of the Department, with approval of the Graduate Advisor. Variable credit.

MATH B9801: Independent Study
Independent Study. This course can be repeated at most 2 times for a maximum of 3 credits total. 1 hr./wk. 1 cr.

MATH B9802: Independent Study
Independent Study. This course can be repeated at most 2 times for a maximum of 6 credits total. 2 hr./wk. 2 cr.

MATH B9803: Independent Study
Independent Study. This course can be repeated at most 2 times for a maximum of 9 credits total. 3 hr./wk. 3 cr.

MATH B9804: Independent Study
Independent Study. This course can be repeated at most 2 times for a maximum of 12 credits total. 4 hr./wk. 4 cr.

Ph.D. Level Courses
With the approval of the Graduate Advisor students may register for Ph.D. level courses. Refer to the bulletin of The City University Graduate School for a description of courses and prerequisites.

Faculty
Ethan Akin, Professor
B.S., CCNY; Ph.D., Princeton Univ.

Asohan Amarasingham, Associate Professor
B.S. Univ. of Virginia; M.S., Ph.D. Brown Univ.

Matthew Auth, Doctoral Lecturer
B.A., Brandeis Univ.; Ph.D., Univ. of Massachusetts

Ph.D., Univ. of Chicago

Gautam Chinta, Professor
B.S., Yale Univ.; Ph.D., Columbia Univ.

Sean Cleary, Professor
A.B., Cornell Univ.; Ph.D., Univ. of California (Los Angeles)

Zajj Daugherty, Assistant Professor
B.S., Harvey Mudd College, M.A., Ph.D. Univ. of Wisconsin-Madison

Blair Davey, Assistant Professor
B.Math, Univ. of Waterloo, M.S., Ph.D. Univ. of Chicago

Brooke Feigon, Associate Professor
B.S., Stanford Univ.; M.A., Ph.D. Univ. of California (Los Angeles)

Jack Hanson, Assistant Professor
B.S. Rutgers Univ., Ph.D. Princeton Univ.

W. Patrick Hooper, Assistant Professor
B.S., Univ. of Maryland (College Park), M.A.; Ph.D., SUNY (Stony Brook)

Jay Jorgenson, Professor
B.S., Univ. of Minnesota; M.S., Stanford Univ., Ph.D.

Tamara Kucherenko, Assistant Professor
Dipl., Kharkov National Univ.; Ph.D., Univ. of Missouri

Alice Medvedev, Assistant Professor
Ph.D. Univ. of California (Berkeley)

Sergiy Merenkov, Professor
M.S. Kharkov State Univ., Ph.D. Purdue Univ.

Stanley Ocken, Professor
A.B., Columbia Univ.; M.A. Princeton Univ., Ph.D.

Chun Sae Park, Lecturer
B.S., CCNY, M.A.

Thea Pignataro, Associate Professor
B.S., Polytechnic Inst. of New York; M.A., Princeton Univ., Ph.D.

Rochelle Ring, Associate Professor
B.S., CCNY; M.S., New York Univ., Ph.D.

Bianca Santoro, Associate Professor
B.S., Pontifícia Universidade Católica do Rio de Janeiro, M.S.; Ph.D., M.I.T.

Vladimir Shpilrain, Professor
M.A., Moscow State Univ., Ph.D.

Michael Shub, Martin and Michele Cohen Professor
Ph.D. Univ. of California (Berkeley)

Benjamin Steinberg, Professor
B.A. Rice Univ.; Ph.D. Univ. of California (Berkeley)

Christian Wolf, Professor
Dipl.-Math., Univ. of Munich; Ph.D, Technical Univ. of Munich

Professor Emeritus
Jack Barshay
Mark Brown
Isaac Chavel
Harvey Cohn
Morton Davis
Michael Engber
Jacob Eli Goodman
Edward Grossman
Alberto Guzman
Raymond Hoobler
Karel Hrbecek
Ralph Kopperman
John Landolfi
Jonah Mann
Michael Marcus
Jack Miller
Niel Shell
William Sit
Fred Supnick
Norman Wagner
Department of Media and Communication Arts

(Division of Humanities and the Arts)

Professor Jerry W. Carlson, Chair • Department Office: SH 470 • Tel: 212-650-7167

General Information

The City College offers the following master’s degrees in Media and Communication Arts:

M.F.A. in Media Arts Production

The Master of Fine Arts in Media Arts Production (MAP) is designed to train the next generation of independent media-makers, through the creation of intelligent, informed and visually stimulating short digital films in documentary or fiction.

M.P.S. in Branding and Integrated Communications

The Master of Professional Studies in Branding + Integrated Communications (BIC) is a portfolio-driven graduate program that uniquely combines three critical disciplines in a collaborative and cross-disciplinary environment. BIC students gain shared foundational knowledge as well as specialization depth in one of three areas (Public Relations, Management/Planning, and Creative) in order to determine how communication creates meaning and adds value to a company, for the consumer, and in society.

Media Arts Production Admission Requirements

Applicants to the M.F.A. program must have a 4-year bachelor’s degree (preferably in area of film/video) with a minimum 3.0 GPA in the major, and must demonstrate experience in film/video production through an online portfolio reel as part of the application. The GRE is not required. Applicants may apply for the concentrations of Documentary Production or Fiction Production. The program is for full-time matriculation only. Admission is only offered for the fall semester. Minimum TOEFL score of 575 (or 91 iBT based) required for International Students.

Applications, supporting material and URL’s(http://) to online portfolio reels must be submitted online via: https://app.applyyourself.com/?id=CUNYCCNYG

Branding and Integrated Communications Admission Requirements

Candidates for the three areas of specialization (Public Relations, Account Management/Planning, and Creative) must have a BA or BFA degree, with a minimum 3.00 GPA (or equivalent). Minimum TOEFL score of 575 (or 91 iBT based) required for International Students. Professional expertise is a plus.

Candidates interested in the Public Relations or Management/Planning track must also have completed prerequisite coursework in Statistics by the time of their enrollment.

Candidates for the Creative track must also submit a spec portfolio consisting of 2 print campaigns consisting of 3 ads each submitted on a DVD as PDFs or JPGs. The clients/products are of the students’ choosing. The campaigns must reveal conceptual thinking as well as executional finesse. Proficiency in Adobe InDesign and Photoshop is expected and should be demonstrated in their submission.

All students must submit at least three writing samples and/or work related to the specialization they are interested in studying.

The M.P.S. in Branding + Integrated Communication is a full-time program and will only admit part-time students on a limited basis. It does not offer courses for non-matriculated students. Admission is only offered for the fall semester. Specific requirements for graduate admissions along with supplemental material must be submitted online via: https://app.applyyourself.com/?id=CUNYCCNYG

Advisement

Media Arts Production

Professor Andrea Weiss & Professor Antonio Tibaldi
M.F.A. Program Co-Directors
Office: SH 286
Tel: 212-650-7235
info@city-film.org

Branding and Integrated Communications

Professor Nancy R. Tag
BIC Program Director
Office SH 102
Tel: 212-650-6562
http://www.ccny.cuny.edu/bic

Media Arts Production Degree Requirements

Required Courses

Media and Communication Arts

Plus one of the following concentration sequences (9 cr.):

Required for students in Fiction Production:
MCA B0100 Independent Media Arts: Structure and Realization 3
MCA B2100 Camera I 3
MCA B2200 Camera II 3
MCA B2800 Production Techniques—Fiction 3
MCA B3000 Digital Production—Fiction 3
MCA B3100 Fiction Screenwriting I 3
MCA B3200 Fiction Screenwriting II 3
MCA B5100 Editing 3
MCA B6100 Producing 3
MCA B6200: Directing Fiction 3
MCA B7100 Seminar in Independent Media Arts 3
MCA B7200: Media Distribution and Marketing 3
MCA B9200: Thesis Post-Production 6
MCA B9500: Advanced Fiction Workshop 3

Required for students in Documentary Production:
MCA B2600: Digital Production—Documentary 3
MCA B2700: Production Techniques—Documentary 3
MCA B2900: Research and Writing for Documentary I 3
MCA B3300: Research and Writing for Documentary II 3
MCA B5100: Editing 3
MCA B6100: Producing 3
MCA B6300: Producing and Directing the Documentary 3
MCA B7100: Seminar in Independent Media Arts 3
MCA B7200: Media Distribution and Marketing 3
MCA B9200: Thesis Post-Production 6
MCA B9400: Advanced Documentary Workshop 6

Plus one of the following electives in the 4th semester only (3 cr.):
MCA B5300: Sound Design 3
MCA B9303: Graduate Internship 3
MCA B9803: Graduate Independent Study 3

Total Credits: 51

Students may also request to take additional elective Graduate Internship, Independent Study, or Selected Topics courses [MCA B9301, MCA B9302, MCA B9801, MCA B9802, MCA B9601-9699] with the permission of the M.F.A. Director.

Branding and Integrated Communications Degree Requirements

Required Courses

Foundational Courses
B2000: Research & Awareness 3
B2001: Strategy & Measurement 3
B2002: Idea Development 3
B2003: Brand Experience 3

Specialization Requirements: Students Choose One of Three Tracks

Track One: Management & Planning
B3001: Relationship Building 3
B3002: Consumer Behavior & Persuasion 3
B3003: Internal Management 3

Track Two: Creative
B3010: Creative Concepts 3
B3011: Multi-Media Executions 3
B3012: Design & Portfolio Development 3
MCA B2900: Production Techniques—Documentary
This course provides an introduction to the technical aspects of sound and editing related to fiction filmmaking and is intended as a corequisite to B3000 Digital Production / Fiction. The emphasis of this course is on hands-on technical and practical training, complemented by relevant theoretical aspects in sound and editing for fiction. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, B2100, B3000, B3100. 3 hr./wk.; 3 cr.

MCA B2900: Production Techniques—Documentary

MCA B3000: Digital Production—Fiction
This course promotes students’ critical and practical understanding of the role of editing in the filmmaking process. Through lectures, screenings, and discussions students are exposed to the art and craft of film editing. Three main components will be addressed: Discussions in aesthetics and techniques, screenings and analysis of different editing styles, and follow-through with all students’ program-related projects (Fiction and Documentary). Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, B2100, B2600, B2700, B2900. 3 hr./wk.; 3 cr.

MCA B3100: Fiction Screenwriting I
Focuses on finding meaningful stories on which short fiction screenplays will be based. Through a series of oral and written exercises, students explore how personal experience and memory can inform their fiction. Required for Fiction Production Students. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, B2100, B2800, B3000. 3 hr./wk.; 3 cr.

MCA B3100: Fiction Screenwriting II
Students work on refining thesis screenplays by analyzing their story's tension devices, dialogue, action lines, and the visual components of the story. Each student will complete a screenplay of approximately twenty pages. Required for Fiction Production Students. Prereq: MCA/M.F.A. matriculated status, B0100, B2100, B2800, B3000, B3100; Coreq: B2200, B5100, B6100, B6200. 3 hr./wk.; 3 CR.

MCA B3300: Research and Writing for Documentary II
Conceptualizing, researching, developing, and writing advanced projects in documentary and cross-genre work with documentary elements. Required for students whose thesis projects will be in documentary or cross-genre with significant documentary elements. Required for Documentary Production Students. Prereq: MCA/M.F.A. matriculated status, MCA B0100, B2100, B2600, B2700, B2900. 3 hr./wk.; 3 cr.

MCA B5100: Directing Fiction
This course is intended as a corequisite to B2600 Digital Production / Documentary. The emphasis of this course is on hands-on technical and practical training, complemented by relevant theoretical aspects in sound and editing. In addition students gain practical understanding of emerging formats, workflows and troubleshooting techniques in the digital age. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, MCA B2100, MCA B2600, MCA B2900. 3 hr./wk.; 3 cr.

MCA B5200: Producing
This course provides an introduction to the technical aspects of sound and editing related to fiction filmmaking and is intended as a corequisite to B3000 Digital Production / Fiction. The emphasis of this course is on hands-on technical and practical training, complemented by relevant theoretical aspects in sound and editing. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, B2100, B2800, B3000, B3100. 3 hr./wk.; 3 cr.

MCA B5200: Producing
This course is intended as a corequisite to B2600 Digital Production / Documentary. The emphasis of this course is on hands-on technical and practical training, complemented by relevant theoretical aspects in sound and editing. In addition students gain practical understanding of emerging formats, workflows and troubleshooting techniques in the digital age. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, MCA B2100, MCA B2600, MCA B2900. 3 hr./wk.; 3 cr.

MCA B5200: Production Techniques—Documentary

MCA B3300: Research and Writing for Documentary II
Conceptualizing, researching, developing, and writing advanced projects in documentary and cross-genre work with documentary elements. Required for students whose thesis projects will be in documentary or cross-genre with significant documentary elements. Required for Documentary Production Students. Prereq: MCA/M.F.A. matriculated status, MCA B0100, B2100, B2600, B2700, B2900. 3 hr./wk.; 3 cr.

MCA B5100: Directing Fiction
This course is intended as a corequisite to B2600 Digital Production / Documentary. The emphasis of this course is on hands-on technical and practical training, complemented by relevant theoretical aspects in sound and editing. In addition students gain practical understanding of emerging formats, workflows and troubleshooting techniques in the digital age. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, B2100, B2800, B3000, B3100. 3 hr./wk.; 3 cr.

MCA B5200: Producing
This course provides an introduction to the technical aspects of sound and editing related to fiction filmmaking and is intended as a corequisite to B3000 Digital Production / Fiction. The emphasis of this course is on hands-on technical and practical training, complemented by relevant theoretical aspects in sound and editing. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, B2100, B2800, B3000, B3100. 3 hr./wk.; 3 cr.

MCA B5200: Production Techniques—Documentary
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MCA B3300: Research and Writing for Documentary II
Conceptualizing, researching, developing, and writing advanced projects in documentary and cross-genre work with documentary elements. Required for students whose thesis projects will be in documentary or cross-genre with significant documentary elements. Required for Documentary Production Students. Prereq: MCA/M.F.A. matriculated status, MCA B0100, B2100, B2600, B2700, B2900. 3 hr./wk.; 3 cr.

MCA B5100: Directing Fiction
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MCA B5200: Producing
This course provides an introduction to the technical aspects of sound and editing related to fiction filmmaking and is intended as a corequisite to B3000 Digital Production / Fiction. The emphasis of this course is on hands-on technical and practical training, complemented by relevant theoretical aspects in sound and editing. Prereq: MCA/M.F.A. matriculated status. Coreq: MCA B0100, B2100, B2800, B3000, B3100. 3 hr./wk.; 3 cr.
MCA B6300: Producing and Directing the Documentary
An advanced workshop examining the unique combination of skills required for the Director/Producer of documentary and cross-genre work with documentary elements. Students carry out exercises that hone skills in logistics and aesthetics of creative documentary that test the assumptions of the documentary proposals they create in Researching and Writing Documentary II. Required for students whose thesis projects will be reality-based. Prereq: MCA/M.F.A. matriculated status, MCA B1000, B2100, B2600, B2700, B2900. 3 hr./wk.; 3 cr. Materials fee: $50.

MCA B7100: Seminar in Independent Media Arts
Students and faculty evaluate the current state of media arts production, and potential roles for our graduates in that domain. Sessions are augmented by guest seminars conducted by working media artists from all areas of the independent community, site visits and internet conferences. Prereq: MCA/M.F.A. matriculated status, MCA 2200, B6100, B3200 or B3300, B6200 or B6300. Coreq: MCA B5100, MCA B9100, MCA B9400 or MCA B9500. 3 hr./wk.; 3 cr.

MCA B7200: Media Distribution and Marketing
A practical approach to distribution with a concentration on short fiction and documentary films. Students develop strategies for how to get work seen by distributors, festivals and the public. Exploration of different markets including Theatrical Educational, Specialty, Television, DVD, Electronic and new models such as VOD. Prereq: MCA/M.F.A. matriculated status, B5100, B9100, B7100, B9400 or B9500; Coreq: B5200, B3300 or B3903 3 hr./wk.; 3 cr.

MCA B9100: Thesis Project I – Production
The coordinating course for all logistics related to documentary and fiction thesis production. Thesis directors present production packages for critique, create schedules, review permitting, insurance and rights issues, as well as the auditioning process and location scouting. First cuts of thesis films are screened in the final month of the course. Coreq: MCA B5100, B7100, B9400 or B9500. 9 hr./wk.; 9 cr.

MCA B9200: Thesis Project II – Post Production
Culminating course required of all candidates in the major. Candidates complete their thesis production and present at the annual student media arts showcase. Productions are expected to be original and represent a contribution to the field of media arts. Prereq: MCA B5100, B7100, B9100, B9400 or B9500; Coreq: MCA B7200, B9200 and one of the following B5300, B9803, B9303, B9601 to B9699. 6 hr./wk.; 6 cr.

MCA B9351 B9352 B9353 Graduate Internships
Designed to build bridges to the student’s chosen field through work experience. A limited number of positions may be made available through the MCA department, but students are encouraged to research their own internships. Students are evaluated in writing by their field supervisors and produce a report summarizing and evaluating the internship. Prereq: MCA/M.F.A or MCA/BIC Matriculated Status, and permission from Program Director. 1-3 hr./wk.; 1-3 cr.

MCA B9400: Advanced Documentary Workshop
Building on the skills acquired in the first year of the MFA program, this course challenges documentary students to practice and perfect their craft as they work toward the realization of their thesis projects. The course is run as a workshop in that students prepare initial scenes from their film in which they find weaknesses as well as strengths. These scenes are presented for critique of structure, narrative intent, and technical viability in preparation for possible additional shooting and for First Cut screenings for the entire class in B9100 Thesis Project I. Prereq: MCA/M.F.A matriculated status. MCA B2200, MCA B6100, MCA B3300, MCA B6300 Coreq: MCA B5100, MCA B9100, MCA B7100. 3 hr./wk.; 6 cr.

MCA B9500: Advanced Fiction Workshop
Building on the skills acquired in the first year of the MFA program, this course enables fiction students to practice and perfect their craft as they work toward the realization of their thesis projects. The three benchmarks of the course are, 1. Screenplay presentation and discussion, where each student is required to present the project orally in class to receive final feedback in class from faculty and peers, and 2. Workshop, based on a selected scene and 3. Screening and critique of selects from dailies. Prereq: MCA/M.F.A. matriculated status. MCA B2200, MCA B6100, MCA B3200 or MCA 3300, MCA B6200. Coreq: MCA B5100, MCA B6100, MCA B7100. 3 hr./wk.; 6 cr.

MCA B9601-9699: Selected Topics in Media Arts Production
Series of graduate-level elective courses exploring advanced topics in the rapidly changing field of Media Arts Production that are outside of the required course sequence. Prereq: MCA/M.F.A Matriculated Status, and permission from M.F.A Director. 3 hr./wk.; 3 cr.

MCA B9851, B9852, B9853: Graduate Independent Study
The purpose of this course is to introduce students to the principles and practices of teaching in a student’s chosen field. Students are assigned a faculty mentor and work closely with them on all instructional aspects of a particular course. Students will learn how to structure a syllabus, supervise student production teams, provide instructional support and teach a minimum of one course session, which will be evaluated by the faculty mentor. Prereq: MCA/MFA or MCA/BIC Matriculated Status, and permission from Program Director. 1-3 hr./wk.; 1-3 cr.

Branding and Integrated Communications Course Descriptions

MCA B2000: Research & Awareness
In order to formulate a strategic message for use in an integrated communications campaign, some basic questions need to be answered: Who are we trying to reach? What environment will we be communicating in? How can we better understand our client and the challenges at hand? This course teaches students the quantitative and qualitative research methods to best answer these questions with a special focus on online resources – including electronic databases, blogs and other ways of tracking grassroots market intelligence. Students will become familiar with library resources and develop the skills, practices, and mindset required for graduate studies in the communications field. Smaller papers throughout the semester will be the basis of a larger, final analysis & individual presentation of an actual brand or public relations case study. Prereq: MCA/BIC matriculated status. 3 hr./wk.; 3 cr. Materials fee: $100.

MCA B2001: Strategy & Measurement
The focus of this course is to teach students how to utilize market research, demographic and other data in the development of dynamic strategies for building and sustaining brand identity. Students will not only learn how to construct incisive strategies for advertising and integrated communications campaigns, but appreciate the value of long-term scenario planning as a necessity of brand management. Tools to evaluate the viability of strategies before implementation will be examined. Case studies will be analyzed to determine how well existing brands differentiate themselves in the marketplace. Prereq: MCA/BIC matriculated status. 3 hr./wk.; 3 cr.

MCA B2002: Idea Development
Students will learn how to transform a strategic message into a “big idea” that helps to create and nurture a brand’s essence as it captures the consumer’s imagination. This process- and critique-based course explores the distinction between strategic language and creative expression. Case studies as well as self-generated content will be used to teach students the basics of idea generation, how to recognize “big ideas,” and how to critique them in order to keep the message on strategy and make the work better. Prereq: MCA/BIC matriculated status. 3 hr./wk.; 3 cr. Materials fee: $100.

MCA B2003: Brand Experience
By using the strategic message as the anchor, today’s digital world enables communication to create a 360 degree experience. This survey class explores methods of visualization, production, and immersion in the coordinated application of mass, personal, and social media. Traditional as well as experiential forms of communication will be considered as synergy helps to achieve strategic ubiquity. Emphasis will be given to how effective benchmarks and outcomes can be measured. Topics include: elements of good design, basic principles of digital production for broadcast, meaningful use of social and Internet media, and creating rich sensory environments. Prereq: MCA/BIC matriculated status. 3 hr./wk.; 3 cr.

MCA B3001: Relationship Building
To understand an advertising client’s business needs, one must understand how the client does business. Students will learn about advertising from within the context of marketing, business and commerce. An emphasis will also be placed on vendors/suppliers beyond the client, group dynamics, various selling and negotiation techniques as well as dynamic new ways to package client presentations. 3 hr./wk.; 3 cr.

MCA B3002: Consumer Behavior & Persuasion
This course is one part psychology and one part communication theory. It aspires to answer the questions: What makes people tick? How does communication work? Readings may include such seminal thinkers as BF Skinner, Marshall McLuhan, Neil Postman, Malcolm Gladwell, Harold Innis, Everett Rogers as well as to most recent developments in the scientific field of demography. 3 hr./wk.; 3 cr.

MCA B3003: Internal Management
Despite the collaborative nature of creating advertising, this course focuses on ways to play a leadership role within the agency. As an industry of “idea development” and not the manufacture of goods, students learn the special
challenges of evaluating creative work from strategy to concept development to execution. They will also learn about commercial production, overseeing media planning, the art of persuasion, and understanding the various roles and functions at play in developing successful communications programs. 3 hr./wk.; 3 cr.

MCA B3010: Creative Concepts
An advanced studio course for creative development of advertising concepts. Based on strategic thinking, students will have the opportunity to create a number of campaign concepts for print executions with an eye towards further development and inclusion in a spec book – or pre-professional portfolio. 3 hr./wk.; 3 cr.

MCA B3011: Multi-Media Executions
An advanced studio course that allows copywriting students to further refine rough campaign concepts in the creation of multi-media executions – from traditional print and broadcast to new media hybrids and more interactive advertising. Emphasis will be placed on developing a writer’s “voice” as students explore the confluence of brand and page personality in a series of individual projects. 3 hr./wk.; 3 cr.

MCA B3012: Design & Portfolio Development
An advanced studio course in the BIC Creative Track where students work in teams as art director/copywriter to apply design skills, polish writing, and utilize design software basics in order to digitally produce their existing campaigns for inclusion in their spec book and to upload to an online portfolio. Final critiques will include a formal portfolio review with industry professionals. 3 hr./wk.; 3 cr. Materials fee:$50.

MCA B3020: Stakeholder Analysis and Issues Management
This course examines how organizations manage people and issues in the context of integrated communication’s decision making and resource allocation. Students are introduced to the process by which issues are chosen as corporate priorities, and to the discipline of project management. The roles of legal and ethical mandates, risk perception, crises and organizational responsibility are reviewed and then tied to the overall maintenance of an organization’s reputation, the ultimate goal of issues and stakeholder management. 3 hr./wk.; 3 cr.

MCA B3021: Corporate Brand Communications
This course examines how companies and businesses use corporate communications to create and communicate brand value as an extension of their business objectives and marketing. Through case studies, students analyze factors that create a “Corporate Brand,” what differentiates corporate brands, and how to extend brand value through corporate programs, corporate social responsibility, sponsorships. Students will examine various target audiences (consumer, business-to-business, government, investors, media, community, public affairs, multicultural audiences, global, employees) and the role each plays to achieve company objectives. 3 hr./wk.; 3 cr.

MCA B3022: Public Relations Branding Campaigns
This class familiarizes students with planning and implementing public relations communications strategies for branding campaigns. Students will learn how to use research to set objectives, drive strategy and effectively communicate through a broad range of tactics. Topics include creating brand value through public relations, integrated marketing communications, media relations, and crisis communications. The course will explore a framework for successful integrated campaign construction, including relationship management, strategic communication, integrated communication, advertising and social media. 3 hr./wk.; 3 cr.

MCA B2050: Strategic Media
While Marshall McLuhan may have stated that “the medium is the message” back in 1964, achieving communication goals in today’s media landscape has never been more challenging. This course will examine the convergence of media and creative solutions to meet strategic ends as students study media outlets, planning, and buying. 3 hr./wk.; 3 cr. Materials fee:$100.

MCA B2051: Leadership, Ethics, and Legal Issues
Students advancing careers in business, government and non-profits benefit from a thorough understanding of leadership, its theories, its techniques and its lurking ethical traps. This course examines the interplay between management and leadership, empowerment, mentoring, negotiation, change management and the special role of leadership in volunteer organizations. Rapidly changing dynamics growing from flattening organizations, instantly available information and round-the-clock communication are considered. 3 hr./wk.; 3 cr. Materials fee:$50.

MCA B2053: Integrated Communications in a Shrinking World
Integrated communications in a multi-language, multicultural context is becoming the norm rather than the exception. This course examines the challenge of communications and advertising across linguistic, cultural, geographic, perceptual and national boundaries. This course also focuses on working with global actors beyond nation-states, including NGO’s, private standard initiatives, value chain certification, transnational entities and activists groups. 3 hr./wk.; 3 cr. Materials fee:$50.

MCA B3201: BIC Campaign Practicum – Not-for-Profit
Working in teams as competing, fully functioning “communications firms,” students take this course in their penultimate semester to work on a semester-long project: an integrated marketing communications campaign for a non-profit organization (selected and coordinated by the instructor). Final projects will act as content for student portfolios required for completion of the program. Prerequisites: B2000, B2001, B2002, B2003. 3 hr./wk.; 3 cr. Materials fee:$50.

MCA B3202: BIC Campaign Practicum – Corporate
Working in teams as competing, fully functioning “communications firms,” students take this course in their final semester to work on a semester-long project: an integrated marketing communications campaign for an actual client either directly or in partnership with a NYC agency (selected and coordinated by the instructor). Final projects will act as content for student portfolios required for completion of the program. Prerequisites: B2001. 3 hr./wk.; 3 cr. Materials fee:$50.

Faculty
Chantal Akerman, Distinguished Lecturer
INSAS Film School, Brussels; Université Internationale du Théâtre, Paris
Lynn Appelbaum, Professor
B.M., Ithaca College; M.A., Indiana Univ.
Gerardo Blumenkrantz, Assistant Professor
BFA, School of Visual Arts; MFA, School of Visual Art
Jerry W. Carlson, Professor and Chair
B.A., Williams College; A.M., Univ. of Chicago, Ph.D.
Angela Chitkara, Assistant Professor
BA, Seton Hall University, MA, City University (London), MIA, Columbia University
Campbell Dalglish, Associate Professor
B.A., Univ. of Colorado; M.F.A., Yale School of Drama
David Davidson, Professor
B.A., Univ. of Illinois; M.F.A., New York Univ.
Dierdre Fishel, Associate Professor
B.A., Brown University; M.F.A., Hunter College CUNY
Annie Howell, Distinguished Lecturer
Andrzej Krakowski, Professor
M.F.A. (Equiv.), Polish State Film School, American Film Institute
Babak Rassi, Associate Professor
B.A., George Mason Univ.; M.F.A., Florida State Univ.
Nancy Tag, Associate Professor
B.A., Univ. of Pennsylvania; M.F.A., New School Univ.
Antonio Tibaldi, Associate Professor
B.A., Univ. of Florence; M.F.A., California Institute of the Arts
Andrea Weiss, Professor
B.A., State Univ. of New York at Binghamton; Ph.D., Rutgers Univ.
Professor Emeritus
Dennis DeNitto

Department of Media and Communication Arts  |  63
**Department of Music**

(Division of Humanities and the Arts)

Professor Shaun O'Connell, Chair • Department Office: SH 72 • Tel: 212-650-5411

**General Information**

The City College offers the following master’s degree in Music:

M.A.

The graduate program is designed to award the Master of Arts degree to those interested in acquiring the academic foundation for careers in musicology (history and theory), classical or jazz performance, and composition.

**Degree Requirements**

**Requirements for All Students**

MUS V0000: Bibliography and Research Techniques 3
MUS V2100: Tonal Harmony 3
MUS V2200: Post-Tonal Theory 3

**Core Credits** 9

**Specialization Requirements**

Musicalogy (21 additional credits)

MUS B1900: Thesis Research 3
Courses in Group II (History) 9
Courses in Group III (Composition/Theory) 9

**Total Credits** 30

**Composition (21 additional credits)**

MUS V3100: Composition (4 semesters) 8
MUS V3200: Composition Thesis 1
Courses in Group II (History) 6
Courses in Group III (Composition/Theory) 6

**Total Credits** 30

**Performance (23 additional credits)**

MUS V8100: Private Instruction (4 semesters) 8
MUS V8200: Recital 2
MUS V8300, MUS V8400: Ensemble (4 semesters) 4
Graduate Music Electives (three courses) 9

**Total Credits** 32

**Additional Requirements**

The Graduate Committee may waive or modify some of these required courses for students with equivalent training. In addition, up to 6 credits may be taken in related fields with permission of the Graduate Director.

**Thesis:** Students majoring in Music History and in Theory submit a thesis based on original research. Students majoring in Composition submit an original composition of substantial length together with a detailed explanation of its structure and devices. Guidelines for the format of these theses are available from the Director of Graduate Studies.

**Recital:** Students majoring in Performance present a full-length recital, accompanied by an essay concerning an aspect of their recital program.

**Comprehensive Examinations:** The examinations cover history, theory, source materials, and style analysis.

**Foreign Language Requirement:** Proficiency requirements may be met in one of the following: French, Italian, German or Spanish.

**Advisement**

Graduate students meet with the Director of Graduate Studies, Professor Chadwick Jenkins (SH 78B; 212-650-7666; gradmusic@ccny.cuny.edu) at registration each semester to review their progress and to plan their programs.

**Music Course Descriptions**

**Group I. Required Courses**

MUS V0000: Bibliography and Research Techniques
The study and evaluation of sources and bibliographical methods. 3 hr./wk.; 3 cr.

MUS V2100: Tonal Harmony
Intensive study of common-practice tonal harmony and voice leading, as well as common formal designs, through compositional and analytical exercises. 3 hr./wk.; 3 cr.

MUS V2200: Post-Tonal Harmony
An introduction to the theoretical concepts of post-tonal music through compositional, analytical and ear-training exercises. The seminar emphasizes early 20th – century repertoire, as well as secondary literature by contemporary theorists. 3 hr./wk.; 3 cr.

MUS V2300: Jazz Theory
Advanced concepts in jazz harmony, jazz improvisation and composition. Topics include reharmonization, functional and nonfunctional techniques, bitonality, and post-tonal theory. Principles of modal and free jazz will be explored through transcription and analysis. Classroom performance required. 3 hr./wk.; 3 cr.

**Group II. Courses in History and Critical Research**

MUS V6000–6800: Special Topics in the History of Music/Music History Seminars
Seminars in various historical periods of music. Specific topics offered in a given semester will vary according to the needs of students and the availability and interest of faculty. 3 hr./wk.; 3 cr.

MUS V6900: Jazz History Seminar
An in-depth examination of the work of a seminal artist, or time period, critical to the development of jazz. 3 hr./wk.; 3 cr.

**Group II. Course in History of Chamber Music**

MUS V7100: History of Chamber Music
Examination of the evolution of various chamber music combinations from the Baroque trio sonata to modern times. Emphasis on the stylistic history of the string quartet. 3 hr./wk.; 3 cr.

MUS V9100: Tutorial
Independent study under guidance of a faculty member. Hours and credits vary.

**Group III. Courses in Composition and Theory**

MUS V3100: Composition
Individual projects. May be taken up to 4 times. 1 hr./wk.; 2 cr.

MUS V3200: Composition Thesis
Preparation of the substantial musical composition required for the degree. Work to be done under the guidance of a faculty advisor, whose approval is required prior to registration. Prereq: three semesters of Music V3100. May be taken along with a fourth semester of MUS V3100. 1 hr./wk.; 1 cr.

MUS V5200: Counterpoint II: 18th Century Counterpoint
Composition of tonal and/or modal counterpoint according to style models. Analysis of tonal and/or modal counterpoint. 3 hr./wk.; 3 cr.

MUS V5300: Tonal Composition: The Pedagogy of Great Composers
Concentration on tonal pitch structures in analysis and/or composition. Prerequisite: V5200 or Departmental permission. 3 hr./wk.; 3 cr.

MUS B2800: Advanced Orchestration
Modern practices in scoring. Projects in orchestrating original works. Arranging and scoring of piano and vocal materials for special groups. 3 hr./wk.; 3 cr.

MUS B3100: Advanced Score Reading and Conducting
Playing from score using old clefs, transposition. Preparing piano reductions from orchestral scores. Developing baton techniques to deal with the problems of 20th century music. Rehearsal techniques for work with instrumental and vocal groups at various levels of proficiency. 3 hr./wk.; 3 cr.
Group IV. Courses in Performance

MUS V8101: Private Instruction in Piano or Voice, and Performance Seminar
One-hour lesson per week. May be taken only by graduate students with a specialization in performance. May be taken four times. 3 hr./wk.; 2 cr.

MUS V8102: Private Instruction on Instrument
One-hour lesson per week. May be taken only by graduate students with a specialization in performance. May be taken four times. 1 hr./wk.; 2 cr.

MUS V8200: Recital
Recital performed at the college. The program will be chosen in consultation with the faculty advisor, and approved by the graduate advisor during the semester prior to that in which the recital is performed. Historical-analytical background material will be prepared by the student prior to the performance. This course stands in lieu of MUS B1900 (thesis research) as a requirement for students with a specialization in performance. 2 cr.

MUS V8300: Chamber Music
Rehearsal and performance preparation of works from the 18th century to the present. May be taken up to four times. 2 hr./wk.; 1 cr.

MUS V8400: Ensemble
Rehearsal and performance participation in various ensembles, according to major instrument. For performance specializations only. May be taken up to four times. 2 hr./wk.; 1 cr.

Group V. Thesis
See also MUS V3200, MUS V8200

MUS B1900: Thesis Research
Preparation of the thesis or composition required for degree candidates with specializations in Musicology and Theory. Work to be done under the guidance of a faculty advisor, whose approval is required prior to registration. Hrs. to be arranged; 3 cr.

Ph.D. Courses
Courses with V numbers may be credited toward the Ph.D. in Music for students matriculated at The City University Graduate School. For further information on the Ph.D. in Music, refer to the Bulletin of The City University Graduate School.

Graduate Faculty

Daniel Carillo, Assistant Professor
B.A., The City College, M.A.

Alison Deane, Associate Professor
B.M., Manhattan School of Music, M.M.

David Del Tredici, Distinguished Professor
B.A., UC Berkeley; M.F.A., Princeton Univ.

Ray Gallon, Lecturer
B.F.A., The City College, M.A.

Michael Holober, Associate Professor
B.A., SUNY Oneonta; M.M., SUNY Binghamton

Chadwick Jenkins, Associate Professor
B.A. Towson State Univ., M.A., Univ. of Maryland, College Park; Ph.D., Columbia Univ.

Shaung O'Donnell, Associate Professor
B.A., Queens College, M.A.; Ph.D., CUNY Graduate Center

Jonathan Pieslak, Associate Professor
B.A., Davidson College; M.A., Univ. of Michigan, Ph.D.

Scott Reeves, Associate Professor
B.M., Indiana Univ., M.M.

Ira Spaulding, Assistant Professor
B.M., Westminster Choir College; M.M., Eastern Kentucky University

Steve Wilson, Associate Professor

Professors Emeriti

David Bushler
Ronald L. Carter
Constantine Cassolas
John Graziano
Barbara R. Hanning
Jack Shapiro
Roger Verdesi
Department of Physics

(Division of Science)

Professor Alexios Polychnakos, Chair - Department Office: MR 419 - Tel: 212-650-6832

General Information

The City College offers the following master's degree in Physics:

M.S.

Degree Requirements

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS V0100: Mathematical Methods in Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS V1100: Analytical Dynamics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS V1500-1600: Electromagnetic Theory</td>
<td>8</td>
</tr>
<tr>
<td>PHYS V2500-2600: Quantum Mechanics</td>
<td>8</td>
</tr>
<tr>
<td>Elective Courses</td>
<td>6</td>
</tr>
<tr>
<td>Total Credits</td>
<td>30</td>
</tr>
</tbody>
</table>

Additional Requirements

No more than nine credits taken in 60000-level (U-level) courses (see PHYS 55100-55500, PHYS 58000, PHYS 58100 in the Undergraduate Bulletin) may be counted toward the graduate degree. Nine credits may be taken in graduate courses in subjects other than Physics, upon approval of the Graduate Committee.

Thesis: Not required.

Comprehensive Examination: A written comprehensive examination is required unless waived by the Graduate Committee.

Foreign Language Requirement: Not required.

Additional Requirements

Superior students in the Master's Program at The City College can usually transfer to the Ph.D. program by taking and passing the "First Examination" at the doctoral level. See the Graduate Advisor.

Advisement

Graduate Advisor

Prof. Timothy Boyer

Location: MR-331

T: 212-650-5585

Doctoral Courses Open to Master's Students

The City College is a major participant in the University Ph.D. program in Physics and offers extensive research facilities for experimental and theoretical research. Both master's and undergraduate students often take part in these research efforts. For more details please see the Bulletin of The Graduate School of the City University of New York.

Some of the courses offered regularly on the advanced level include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<td>PHYS W1200: Continuum Mechanics (4 cr.)</td>
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<td>PHYS W5100-5900: Selected Topics in Advanced Physics (4 cr.)</td>
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Physics Course Descriptions

Master's Level Courses

PHYS U3500: Introduction to Quantum Physics I

Introductory material, 2-slit experiment, matter waves and addition of amplitudes. Superposition principle, Uncertainty principle, properties of matter waves. Boundary conditions and energy level quantization and Schrodinger interpretation. Wave equation, application to one-dimensional problems, barrier penetration, Bloch states in solids and how bands form in solids. The universality of the harmonic oscillator potential, simple harmonic oscillator and applications. One-electron atoms, spin, transition rates. Identical particles and quantum statistics. Beyond the Schrodinger equation: variational methods; and WKB. Required for Physics majors. Prereq: MATH 39100, MATH 39200; Pre/Coreq: PHYS 35100, PHYS 35400. 4 hr./wk.; 4 cr.

PHYS U3600: Introduction to Quantum Physics II

Review of Schrodinger equation, Uncertainty principle. Formalism: Observables, Operators, etc. Application to simple cases: 2-level systems, electron in magnetic field; Angular momentum-Bohr model revisited; Magnetic properties of solids; Time-independent perturbation theory and applications; Time-dependent perturbation theory; Lasers, Masers, etc. Adiabatic processes: Berry's phase, when does phase matter? Quantum entanglement, Bell's theorem and recent experiments. Required for Physics majors. Prereq: PHYS 55100, or PHYS U3500, MATH 39100, MATH 39200. 4 hr./wk.; 4 cr.

PHYS U4500: Solid State Physics (same as Physics 55400)

3 hr./wk.; 3 cr.

PHYS U5300: Photonics I - Laser Physics

Theory and application of lasers and masers. Physical principles underlying the design of lasers, coherent optics, and non-linear optics. Prereq: A course in modern physics (Phys 55100 or Phys 32100 or Phys 32300) and a course in electricity and magnetism (Phys 35400 or EE 33200). 3 hrs. wk.; 3 cr.

PHYS V1100: Analytical Dynamics

The Lagrangian formulation, including Hamilton’s principle; Lagrange’s equations; central force motion; Kepler problem, scattering; rigid body motion; transformation matrices. Eulerian angles, inertial tensor. The Hamiltonian formulation including canonical equations; canonical transformations; Hamilton-Jacobi theory. Small oscillations. Continuous systems and fields. Relativistic dynamics. All master’s students will generally be required to take PHYS V1100. 3 hr./wk.; plus conf.; 4 cr.

PHYS V1500-1600: Electromagnetic Theory

Electrostatics, magnetostatics, and boundary value problems; Maxwell’s equations; multipole radiation from accelerated charges; scattering theory; special theory of relativity. All master’s students will generally be required to take PHYS V1500-1600. 3 hr./wk.; plus conf.; 4 cr./sem.

PHYS V2500-2600: Quantum Mechanics


PHYS V3800: Biophysics

Introduction to the structure, properties and function of proteins, nucleic acids, lipids and membranes. In depth study of the physical basis of selected systems including vision, nerve transmission, photosynthesis, enzyme mechanism and cellular diffusion. Introduction to spectroscopic methods for monitoring reactions and determining structure including light absorption or scattering, fluorescence NMR and X-ray diffraction. The course emphasizes reading and interpretation of original literature. 3 hr./wk., plus conf.; 4 cr.

PHYS V4100: Statistical Mechanics

Probability theory, ensembles, approach to equilibrium, quantum and classical ideal and non-ideal gases, cooperative phenomena, density matrices, averages and fluctuations, and other selected topics, such as the time-temperature Green’s functions, non-zero temperature variational and perturbation methods. Prereq: PHYS V2500. 3 hr./wk., plus conf.; 4 cr.

PHYS V4500: Solid State Physics

Principles of crystallography; crystal structure; lattice vibrations, band theory, defects; study of ionic crystals, dielectrics, magnetism, and free electron theory of metals and semiconductors. Topics of current interest such as high temperature superconductivity, quantum Hall Effect, and fullerene will be
PHYS V7100, V7200: Graduate Physics Laboratory I, II
The concepts and tools of experimental physics. Basic analog apparatus and digital electronics; the use of minicomputers for data acquisition, the control of experiments and data analysis; discussion of intrinsic noise and error analysis. Execution of several advanced experiments, including statistics of radioactive decay, Raman spectroscopy, temperature dependence of resistivity, and others. The second semester of this course is PHYS W5901. 2 lect., 2 lab. hr./wk.; 4 cr.

PHYS W1200: Continuum Mechanics
4 cr.

PHYS W2500-2600: Quantum Field Theory
4 cr.

PHYS W3400: Theory of Relativity
4 cr.

PHYS W4500-4600: Quantum Theory of Solids
4 cr.

PHYS W5100-5900: Selected Topics in Advanced Physics
4 cr.

Faculty
Robert R. Alfano, Distinguished Professor
B.S., Fairleigh Dickinson Univ., M.S.; Ph.D., New York Univ.

Joseph L. Birman, Distinguished Professor
B.S., The City College, M.S., Columbia Univ., Ph.D.; Doc-es-Sciences

Timothy Boyer, Professor
B.A., Yale Univ.; M.A., Harvard Univ., Ph.D.

Ngee-Pong Chang, Professor
B.S., Ohio Wesleyan Univ.; Ph.D., Columbia Univ.

Harold Falk, Professor
B.S., Iowa State Univ.; Ph.D., Univ. of Washington

Swapan K. Gayen, Professor
B.Sc.(Honors), Univ. of Dacca, M.Sc.; M.S., Univ. of Connecticut, Ph.D.

Sebastian Franco, Associate Professor
B.S., Universidad de Buenos Aires; M.S., Instituto Belseiro, Univ. National de Cuyo, Argentina; Ph.D., Massachusetts Institute of Technology

Joel Gersten, Professor
B.S., The City College; M.A., Columbia Univ., Ph.D.

Pouyan Ghaemi, Assistant Professor
B.Sc., Sharif Univ. of Technology, Tehran, Iran; Ph.D., Massachusetts Institute of Technology

Daniel M. Greenberger, Distinguished Professor
B.S., M.I.T.; M.S., Univ. of Illinois, Ph.D.

Marilyn Gunner, Professor
B.A., SUNY (Binghamton); Ph.D., Univ. of Pennsylvania

James Hedberg, Lecturer
B.A., St. John’s College, Santa Fe, NM; M.S., Portland State University, Portland, OR; Ph.D., McGill University, Montreal, QC, Canada

Michio Kaku, Semat Professor
B.A., Harvard Univ.; Ph.D., Univ. of California (Berkeley)

Ronald Koder, Associate Professor
B.S., Univ. of Missouri-Columbia, Ph.D., John Hopkins

Joel Koplik, Professor
B.S., Cooper Union; Ph.D., Univ. of California (Berkeley)

Lia Krusin-Elbaum, Professor
Ph.D., New York Univ.

Michael S. Lubell, Mark W. Zemansky Professor
A.B., Columbia Univ.; M.S., Yale Univ., Ph.D.

Hernan Makse, Professor
Licenciatura (Physics), Univ. of Buenos Aires; Ph.D., Boston Univ.

Vinod Menon, Professor
M.S., University of Hyderabad, India; Ph.D., Princeton University

Carlos Andres Meriles, Professor
B.Sc., FaMAF, Universidad Nacional de Cordoba, Argentina, Ph.D.

V. Parameswaran Nair, Distinguished Professor
B.S., Univ. of Kerala; M.Sc., Syracuse Univ., Ph.D.

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PHYS W5901: Graduate Physics Laboratory II
Vladimir Petricevic, Professor
Dipl. EE., Univ. of Belgrade; M.S. Miami Univ.; Ph.D., CUNY

Alexios P. Polychronakos, Professor and Chair
Dip. E.E., National Technological Univ. of Athens; M.Sc., California Institute of Technology, Ph.D.

Alexander Punnoose, Associate Professor
B.S., Indian Institute of Technology, Kharagpur, India; M.Sc., Indian Institute of Science, Bangalore, India; Ph.D., Indian Institute of Science, Bangalore, India

Myriam P. Sarachik, Distinguished Professor
A.B., Barnard College; M.S., Columbia Univ., Ph.D.

David Schmeltzer, Professor
B.Sc., Hebrew Univ.; M.Sc., Technion, D.Sc.

Mark Shattuck, Professor
B.A., Wake Forest Univ., M.S.; Ph.D., Duke Univ.

Brian Tiburzi, Assistant Professor
B.A., Amherst College; M.S., Univ. of Washington, Ph.D.

Jiufeng J. Tu, Associate Professor
A.B., Harvard Univ., A.M.; M.S., Cornell Univ., Ph.D.

Sergey A. Vitkalov, Professor
M.S., Moscow Institute of Physics and Technology; Ph.D., Institute of Solid State Physics, Russian Academy of Sciences

Participating Faculty
Morton M. Denn, Albert Einstein Professor
B.S.E. (Ch.E.), Princeton Univ.; Ph.D., Univ. of Minnesota

Richard N. Steinberg, Professor
B.S., SUNY Binghampton, M.S., Yale Univ., Ph.D.

Professors Emeriti
Adolf Abrahamson
Michael Arons
Alvin Bachman
Robert Callender
Victor Chung
Erich Erlbach
Hiram Hart
Robert M. Lea
Marvin Mittleman
David Shelupsky
Frederick W. Smith

Martin Tiersten
Department of Psychology

(The Colin Powell School for Civic and Global Leadership)

Professor Robert D. Melara, Chair • Department Office: NA 7/120 • Tel: 212-650-5442

General Information

The City College offers the following Master’s degrees in Psychology:

M.A. in General Psychology

M.A. in Mental Health Counseling

Admissions

General Psychology

The Psychology Department offers a Master of Arts degree in General Psychology. The program is designed for students who need to enhance their background and credentials in psychology, either for the job market or to advantage themselves in applying to doctoral programs. Students may enter the program with an undergraduate major either in Psychology or in another field. Acceptance is based on assessment of the student’s overall record and promise. Special attention is given to the student’s performance in undergraduate courses in statistics and experimental psychology; students who have earned less than a B in either of these courses, or who have not taken them, are advised to contact the graduate advisor before applying.

Mental Health Counseling

The Masters of Arts degree in Mental Health Counseling is a New York State approved program. Students who complete the program will be eligible to sit for the state licensing exam once they complete the state required 3000 post graduate supervised hours of experience (equivalent to two years of full time employment). Our approach to counseling integrates modern dynamic, cognitive behavioral, person centered, and family systems approaches. The curriculum provides a thorough foundation in the theory and practice of counseling for the prevention and amelioration of psychological distress. We provide an opportunity for entry in a high demand, high growth career area. Sixty graduate credits are required to complete the program.

Applicants must have an undergraduate degree with a GPA of 3.2 or better, especially in psychology. An undergraduate major in psychology is preferred. However, students with another major who have completed courses in introduction to psychology, developmental psychology, abnormal psychology, psychological statistics and experimental psychology (or an equivalent course in psychological research) will be considered. Applicants should also have had some type of hands-on experience working with others in a helping capacity, either through paid work or by volunteering; applicants should include in the application at least one letter of reference from someone familiar with the way they performed in that capacity.

Other requirements include an individual and/or group interview and two additional letters of recommendation. The deadline for submitting an application for fall admission is February 15th. Students are not admitted mid-year.

Advisement

General Psychology

Professor Vivien Tartter, Program Director
NA 7/209; Tel: 212-650-5709

Mental Health Counseling

Professor William King, Program Director
NA 7/323; Tel: 212-650-5689

Department Activities

Psi Chi

Psi Chi is the National Honor Society in Psychology, founded in 1929 for the purposes of encouraging, stimulating, and maintaining excellence in scholarships, and advancing the science of psychology. Psi Chi provides national recognition for academic excellence in psychology, an honor that can be noted on employment applications, vitae, and resumes. Psi Chi also provides over $250,000 annually in awards and grants to its student members and chapters. The City College of New York chapter of Psi Chi was chartered in 1961, and has supported both undergraduate and graduate students pursuing research interests in such areas as clinical, cognitive, social, and developmental psychology. Membership in Psi Chi is recognized at departmental honors ceremonies. Psi Chi also publishes a journal of undergraduate research that includes useful information for students in psychology. Membership in Psi Chi is open to qualified candidates of any age, sex, sexual orientation, race, handicap or disability, color, religion, and nation and ethnic origin. Membership is for life. The national registration fee of $49 is the only payment ever made to the national organization, which does not charge dues. Students qualify for membership in Psi Chi if they: (1) are recommended by a faculty member, (2) have taken 9 credits of psychology beyond PSY 10200, (3) have a minimum 3.0 grade point average in Psychology and in cumulative grades, and (4) have completed 3 semesters of college courses. Interested students should contact Dr. Brett Silverstein (bsilverstein@ccny.cuny.edu), NAC 7/120A, 212-650-5700.

Department Colloquium Series

Throughout the year, the Psychology Department sponsors lectures on various topics in psychology, including cognitive neuroscience, clinical psychology, and health psychology, given by prominent members of the scientific community. The lectures are free and open to the public. Majors are encouraged to attend.

Degree Requirements

M.A. in General Psychology

Students may complete the degree in one of two ways: with a thesis (PSY 89900) and 28 credits of coursework or without a thesis with 40 credits of coursework.

REQUIRED COURSES

PSY V0100: Advanced Experimental Psychology I 4
PSY V0500: Statistical Methods in Psychology I 3
One course from the areas of cognition, sleep, neuroscience, psychometrics, psycholinguistics, psychopharmacology, or else achieve a score in at least the 65th percentile of the advanced psychology section of the Graduate Record Examination.

A student must maintain a minimum grade point average of 3.0.

Thesis Option: Students choosing the thesis option are required to enroll in PSY 89900 for which they receive 3 credits with no grade until they complete their thesis. Most students enroll in PSY 89900 for two semesters (6 credits total) to develop their thesis plans and complete the proposal. They are required to complete 31 credits for their degree. A maximum of 12 credits may be transferred from other graduate institutions.

Non-Thesis Option: Students not completing a thesis must complete 40 graduate credits, including the 11 required credits and minimum 3.0 GPA listed above. The other degree requirements are identical as for the thesis students. Up to 16 graduate credits are eligible for transfer from other approved institutions.

M.A. in Mental Health Counseling

The Two-Year Sequence

Semester 1

PSY V2000: Developmental Psychology 3
PSY V6532: Theories and Techniques of Counseling 3
PSY V6536: Group Dynamics and Group Counseling 3
PSY V6584: Professional Orientation and Ethics 2
PSY V6583: Recognition and Reporting of Child Abuse 1
Elective 3

Semester II

PSY V5500: Psychopathology 3
PSY V6587: Clinical Instruction 3
PSY V6593: Family and Couples Counseling 3
PSY V7000: Substance Abuse Assessment and Treatment 3
Planning Elective 3

Semester III

PSY V6560: Multicultural Issues in Counseling 3
PSY V6575: Assessment and Appraisal of Individuals, Couples, Families and Groups 3
PSY V6591: Lifestyle and Career Development 3
PSY V6589: Practicum in Counseling I 3
Elective 3
Semester IV
PSY V6582: Counseling Adolescents 3
PSY V6563: Research and Program Evaluation 3
PSY V6597: Foundations of Mental Health Counseling and Consultation 3
PSY V6590: Practicum in Counseling II 3
PSY V6564: Psychoeducational and Community Interventions 3
Total: 60

Students are required to complete nine credits of elective courses in addition to the 51 required credits. The electives must be approved by the Program Director.

Registration
All students should have their courses approved by the M.A. Program Director every semester. Failure to do so may result in the student being deregistered, either because of the lack of background or because the course is oversubscribed with properly registered students.

Pre-registration for the following semester is generally held toward the end of each semester. Students should check with the department for the dates.

Students wishing to take credits outside the department need approval from the Program Director. Courses with grades less than B are not eligible for transfer credit.

Training Opportunities
Credentialed Alcohol and Substance Abuse Counselor (CASAC) Program
Majors are able to complete the undergraduate coursework in psychology required for a CASAC training certificate awarded by the New York State Office of Alcoholism and Substance Abuse Service (OASAS), the official state authority that awards credentials for addiction counseling. In addition to the required courses for all psychology majors, OASAS has approved eight 3-credit psychology courses as meeting the NY State education requirements for the addiction counselor-trainee credential. A CASAC-Trainee certificate is used by NY State OASAS-registered education and training courses have been satisfactory completed at the CCNY. For further information and to register in the CASAC program, contact Denise Hien (dhien@ccny.cuny.edu), NAC 8/131, 212-650-5666.

Psychological Center and the Counseling Center
The Department’s Psychological Center and Counseling Center offer psychological testing and short- and long-term therapy to CCNY students with mood, anxiety, and interpersonal problems. Married and unmarried couples, single-parent and two-parent families, students of all ages and their parents are welcome. The Psychological Center is part of the doctoral training program in Clinical Psychology. Treatment is provided by advanced doctoral students under the supervision of the clinical faculty, licensed clinical psychologists from other programs, and external licensed clinical supervisors. All services are completely confidential. For further information and to request an application for services, visit the Psychological Center’s front desk, which is located in NAC 8/101, 212-650-6602. The Center staff is available on Tuesdays, Wednesdays, and Thursdays from 8:30-11:30 AM and from 2:00-7:00 PM. Counseling services are also available to students free of charge at the Counseling Center, located in the Marshak Science Building, Room J-15. This Counseling Center provides internship opportunities for several students each semester.

Ph.D. Electives
In addition to the M.A. Program, City College houses a Ph.D. program in Clinical Psychology. Several Ph.D. courses are open to M.A. students. Students interested in taking courses at the Ph.D. level should contact the M.A. program directors.

Psychology Course Descriptions

PSY V0000: History of Psychology
The historical development of modern psychology. Among the topics to be considered are: (1) psychological problems as they developed in philosophy; (2) psychological problems as they developed in natural science; (3) the early psychological systematists; (4) modern schools of psychology. 3 hr./wk.; 3 cr.

PSY V0100: Advanced Experimental Psychology I
Lectures deal with experimental methodology and research design, and with related problems such as the ethics of psychological experimentation. Laboratories work includes independent research, which may be conducted individually or by a group of students. Required for General Psychology M.A. students. 2 lect., 4 lab. hr./wk.; 4 cr.

PSY V0500: Statistical Methods in Psychology I
Probability and statistical inference; estimation of parameters in survey research; analysis of variance and design for experimental research; correlation methods for psychometrics. Required for General Psychology M.A. and Ph.D. students. 2 rec., 2 lab. hr./wk.; 3 cr.

PSY V0600: Statistical Methods in Psychology II
A continuation of Psychology V0500. Also, multivariate analysis of correlation matrices and the use of computers for data analysis. Required for Ph.D. students. 2 rec., 2 lab. hr./wk.; 3 cr.

PSY V1000: Advanced Physiological Psychology
Considers the interrelationship of structure and behavior of the organism, and the physiological background of various psychological processes. The structure and function of the nervous system are surveyed. Various problems relating to the concept of “reflex,” the organization, development and coordination of motor activities, and the physiological basis of emotions are discussed in detail. 3 hr./wk.; 3 cr.

PSY V1200: An Introduction to Neuropsychology
This course provides an overview of the field of neuropsychology, focusing on what is known about the functional organization of brain systems. No prior knowledge of psychophysics or cognition is required but would be helpful. 3 hr./wk.; 3 cr.

PSY V1402: Psychopharmacology
Science of drugs and their actions. Study of neuronal membranes and potentials, synaptic communication, neurotransmitters, receptor pharmacology, brain chemical circuits, neuroendocrine systems, hormones and neuropeptides. Primary is the goal of providing mental health professionals with a core knowledge of the biological bases and treatment of individuals with mental and addictive disorders. 3 hr./wk.; 3 cr.

PSY V2000: Developmental Psychology I
The development of children, from infancy to adolescence, will be discussed from a wide variety of theoretical perspectives, including Piagetian, psychoanalytic, behavioral, and cross-cultural viewpoints. 3 hr./wk.; 3 cr.

PSY V2500: Developmental Psychology II
Psychology of maturity, with emphasis on the later years. Social and cultural determinants of aging. Age-related changes in biological structure and function, perceptual processes, psychomotor skills, cognition, learning, and memory. Emotional and social adjustment during the later years. Maintaining the effectiveness of the older adult. 3 hr./wk.; 3 cr.

PSY V3000: Psychology of Learning
Analysis of contemporary research and theory in the area of behavior modification. 3 hr./wk.; 3 cr.

PSY V3300: Psychological Aspects of Learning Disabilities
This course provides a broad overview of the psychological and educational problems encountered by children and adults with learning disabilities during their inevitably altered developmental trajectory. While it is not a course in the neuropsychology of learning disabilities, some background is essential and will be covered in the presentation of the three syndromes to be covered. The syndromes are: 1) developmental language disorders, 2) attention deficit hyperactivity disorder, and 3) right hemisphere learning disorders. Diagnosis and evaluation are a central component of the course, and a case presentation format is used to flesh out our understanding of each disorder. Prereq: Doctoral Students must have completed at least one semester of Diagnostic Testing. 3 hr./wk.; 3 cr.

PSY V3500: Psychology of Perception
This course reviews basic psychophysics, psychophysiology and signal detection theory before an in-depth study primarily of vision and audition, with some comparisons from the touch systems and small and taste. Examination of the visual system will comprise both modern structuralist receptive field approaches and behavioral approaches from the Gestalt psychologists through Gibson and visual scene building and attention. Classes are primarily lecture and demonstration. 3 hr./wk.; 3 cr.

PSY V3800: Psychology of Cognition
Cognitive Psychology is the study of human thinking from behavioral, artificial intelligence and neuropsychological perspectives. The course touches on neural basics and brain organization, to focus on pattern recognition, attention, memory, imagery, language and problem-solving processes. Research in these areas to be reviewed will come from classic cognitive behavioral studies, neuroimaging studies and computer modeling studies. 3 hr./wk.; 3 cr.

PSY V4200: Health Psychology
This course is an introduction to health psychology. Health psychology brings the corpus of psychological knowledge to bear on understanding physical health. Many prevalent diseases are under the control of the individual both in terms of risk behaviors elevating the probability of disease and...
with respect to adherence to health promoting behaviors or treatment regimens that aim to control, reduce, or eliminate the disease cause agents. Health psychology is concerned with understanding the psycho–behavioral factors that explain physical disease. It also focuses on designing, implementing, and evaluating preventive interventions to reduce or eliminate the behaviors that place the individual at risk for poor health. Prereq: PSY 70500.

3 hr./wk.; 3 cr.

PSY V4300: Positive Psychology
An introduction to the scientific study of optimal human functioning. Focus is on the factors that allow individuals and communities to thrive. In this course, students will critically assess primary readings in the field, covering topics such as optimism, happiness, resilience, spirituality, wisdom, and positive emotions. Prereq: Master’s level Statistics or Experimental Psychology or permission from the instructor. 3 hr./wk.; 3 cr.

PSY V4600: Advanced Social Psychology
among the topics to be covered are: methodology; social motivation; social or person perception; group processes; and attitude change. 3 hr./wk.; 3 cr.

PSY V4800: Occupational Health Psychology
This course introduces students to occupational health psychology (OHP). OHP involves the application of psychology to the study of the relation of the work organization to the physical and mental health and well-being of individuals who work. The primary focus of OHP is the prevention of ill health by creating healthy work environments. Prerequisites: Undergraduate courses in statistics and experimental psychology. 3 HR./WK.; 3 CR.

PSY V5200: Psychology of Language
What is language, is it unique to humans conferring special cognitive power to us, and how is it shaped by human social, perceptual, and cognitive constraints? What role does biology play in shaping language structure? This course explores basic linguistic issues in semantics, syntax, phonology, language acquisition, literacy and pragmatics, and the cognitive processes underlying them. In addition, we look at sociolinguistics, bilingualism, secondary language processes, and second language reading and writing. While considering the neural underpinnings and nativist hypotheses, we also strongly emphasize the role of social processes in constructing meaning, in language and literacy acquisition, and in language change. 3 hr./wk.; 3 cr.

PSY V5500: Psychopathology I
Covers the entire field of clinical expression of psychodynamics of the total personality as demonstrated in various forms of the psychoses and neuroses. It stresses the evolution of modern psychiatric thought. It is substantially supported by demonstrations of patients at a psychiatric hospital and clinic. The course stresses the functional psychoses. 3 hr./wk.; 3 cr.

PSY V6100: Measurement of Abilities
Topics covered include the psychometric principles of testing and assessment, with an emphasis upon intelligence testing and the measurement of cognitive abilities. Hands-on experience with psychodiagnostic tests in a workshop format is an integral part of the course. 2 lect., 2 lab. hr./wk.; 3 cr.

PSY V6532: Theories and Techniques of Counseling
Theoretical foundations of major contemporary approaches to counseling and psychotherapy and their applications are critically examined. Basic counseling skills are developed through lectures, demonstrations, small-group discussions and experiential activities. 3 hr./wk.; 3 cr.

PSY V6556: Group Dynamics and Group Counseling
This course provides the essential knowledge and skills necessary for understanding, organizing, and working with groups within the counseling field. Students gain knowledge and competencies in these areas through a combination of traditional didactics and optional participation in an in-class personal growth group. 3 hr./wk.; 3 cr.

PSY V6560: Multicultural Issues in Counseling
An introduction to the role of political and socio-cultural factors such as ethnicity, race, social class, religion, gender, and age in the delivery of culturally relevant and psychologically appropriate mental health services. Students develop the appropriate skills relevant to working with diverse communities in the United States. 3 hr./wk.; 3 cr.

PSY V6563: Research and Program Evaluation
This course reviews the fundamentals of research methods and evaluation methods. Students are introduced to some aspects of evaluation theory, basic research methods used in applied research and evaluation, and to practical approaches to conducting and interpreting research. Students are introduced to research design and assessing program implementation. Students are expected to apply previous statistics and introductory research methods course content. 3 hr./wk.; 3 cr.

PSY V6564: Psychoeducational and Community Interventions
This course is designed to provide students with the fundamental concepts and skills needed to create, evaluate, and disseminate prevention-oriented programs in communities. Students learn how to utilize qualitative and quantitative research, along with the interpersonal skills and sensitivity to a diversity issues needed to implement and sustain community programs. 3 hr./wk.; 3 cr.

PSY V6575: Assessment and Appraisal of Individuals, Couples, Families and Groups
The interview is the core technique for conducting a thorough clinical assessment that includes a diagnosis and formulation as well as an assessment of the clients’ resources and strengths, and is the first step in creating a therapeutic relationship. In this course, students hone their interviewing and assessment skills. 3 hr./wk.; 3 cr.

PSY V6582: Counseling Adolescents
Adolescent counseling is examined with emphasis on the issues unique to the period of life. These include cognitive development, identity, dating and sexuality, family, peer relationships, school, and work all within a multicultural context. 3 hr./wk.; 3 cr.

PSY V6583: Recognition and Reporting of Child Abuse
This course provides the knowledge and skills necessary to recognize signs and symptoms of physical abuse, sexual abuse, psychological abuse, and neglect. Students acquire knowledge of the ethical and legal issues pertinent to the role of counselors, and the required steps for reporting child abuse. 1 hr./wk.; 1 cr.

PSY V6584: Professional Orientation and Ethics
This course provides knowledge of the ethical, legal, and professional standards relevant to the counseling field. It provides an overview of the history of the counseling field and an introduction to the roles, responsibilities, and identity of the professional counselor. Professional organizations, preparation and credentialing are addressed. 2 hr./wk.; 2 cr.

PSY V6587: Clinical Instruction
This course introduces students to the assessment and diagnosis of mood and anxiety disorders and evidence-based treatments for these disorders. Students learn how to administer the Structured Clinical Interview for DSM-IV and reliable self-report measures. Students learn how to conceptualize and treat cases utilizing a Cognitive-Behavioral Treatment model. 3 hr./wk.; 3 cr.

PSY V6589: Practicum in Counseling I
Students serve as counselors-in-training at pre-arranged practicum sites providing an integration of on-site counseling experiences with theories, treatment interventions, and legal/ethical issues learned in previous courses. Site and department supervisors provide formal evaluations of students’ performance upon completion of the practicum experience. 3 hr./wk.; 3 cr.

PSY V6590: Practicum in Counseling II
Students serve as counselors-in-training at pre-arranged practicum sites providing an integration of on-site counseling experiences with theories, treatment interventions, and legal/ethical issues learned in previous courses. Site and department supervisors provide formal evaluations of students’ performance upon completion of the practicum experience. 3 hr./wk.; 3 cr.

PSY V6591: Lifestyle and Career Development
This course examines the major theories of career development. The course examines the effect of depression, anxiety and substance abuse in a work environment. The effects of ethnicity, socio-economic status, age, gender and sexual orientation on career development are also examined. 3 hr./wk.; 3 cr.

PSY V6593: Family and Couples Counseling
The capacities and difficulties of individuals are best understood in context of family functioning, and the broader systems within which families exist. This course covers the major approaches to family and couples therapy, including theories and research on family organization, affect and communication, development, culture, problem formation, resilience, and intervention. 3 hr./wk.; 3 cr.

PSY V6597: Foundations of Mental Health Counseling and Consultation
Prepares students in essential clinical and professional competencies. Students gain further experience with Psychodynamic, Person-Centered, Cognitive-Behavioral, and other approaches through readings and working with videotaped demonstrations, and in-class exercises with client cases from a wide range of cultural and ethnic backgrounds. Special emphasis is given to suicide assessment and intervention, professional ethics and HIPAA requirements. 3 hr./wk.; 3 cr.

PSY V6602: Theories of Individual Psychotherapy
Theories of individual psychotherapy from behavioral, client centered, cognitive, gestalt, existential and psychoanalytical perspectives are contrasted
using written materials and films. The central place of value and cultural perspective is emphasized. 3 hr./wk.; 3 cr.

**PSY V7000: Drug and Alcohol Abuse: Diagnosis and Treatment**
Examines the stages and processes of addiction to alcohol and other drugs from the initiation of substance use through abuse and dependence, to treatment, recovery, and relapse prevention. Primary focus is on theories and techniques of substance abuse treatment. The range of treatment settings and services are examined for their relative benefits and limitations in treatment. Overview of short-term and long-term effects of major categories of abused drugs on abuser and community. 3 hr./wk.; 3 cr.

**PSY V7100: Chemical Dependency and Mental Health**
This course aims to help students to understand the challenges to mental health caused by chemical dependency. A particular focus of the course will be on the concept of “dual diagnosis” and how it affects treatment. A number of specific (especially behavioral) techniques for the treatment of chemical dependency is examined. Prereq: Undergraduate courses in substance abuse and/or abnormal psychology. 3 hr./wk.; 3 cr.

**PSY V7500: Psychopathology of Childhood**
An introductory course designed to explore issues of normal and pathologi
cal emotional development during the school age years. Review of basic psychoanalytic notions of development during this period; classical analytic as well as object relations in attachment theories will be discussed. A number of specific syndromes and their possible etiologies; depression, additional situational disturbances, personality disorder, borderline syndromes and childhood schizophrenia are also reviewed. Discussion of major diagnostic classifications systems, including DSM-III and the GAP manual. Prereq: permission of the instructor. 3 hr./wk.; 3 cr.

**PSY B9700: Special Topics in Psychology**
Prereq: approval of the appropriate faculty sponsor. Hrs. to be arranged; 3 cr.

**PSY B9800: Tutorial**
Prereq: approval of the appropriate faculty sponsor. May be taken twice for credit. Hrs. to be arranged; 3 cr.

**PSY B9900: Psychological Research and Seminar**
Psychological research and seminar for candidates for the General M.A. degree who are engaged in thesis research. Offered each semester. Required for M.A. students on thesis track. Hrs. to be arranged; 3 cr.

**Faculty**

Adeyinka Akinsure-Smith, Associate Professor

Deidre M. Anglin, Associate Professor
- B.S., Cornell Univ., Fordham University, Ph.D.

Sophia A. Barrett, Lecturer
- B.A., City College, M.A. City College

William Crain, Professor
- A.B., Harvard Univ.; Ph.D., Univ. of Chicago

Diana Diamond, Professor
- B.A., Wesleyan Univ.; M.A., Univ. of Massachusetts, M.S., Ph.D.

Timothy Ellmore, Associate Professor
- B.A., George Washington Univ.; Ph.D., Univ. of Arizona

Adriana Espinosa, Assistant Professor
- B.A. City College; Univ. of California at Berkeley, Ph.D.

Eric Fertuck, Associate Professor
- B.S., Michigan State Univ.; Ph.D., Adelphi Univ.

Tiffany Floyd, Assistant Professor
- B.A. SUNY (Binghamton); M.A., Temple Univ., Ph.D.

Peter Fraenkel, Associate Professor
- B.A., Boston Univ.; Ph.D., Duke Univ.

Benjamin Harris, Clinical Professor
- B.A., Wesleyan Univ.; M.E., Lesley Univ.; Ph.D., CUNY

Denise Hien, Professor
- B.A., Cornell University, M.S. Teachers College, Columbia Univ., M.Phil., Ph.D.

Jon C. Horvitz, Professor
- B.A., Haverford Univ.; Ph.D., Univ. of California (Santa Barbara)

Elliot Jurist, Professor
- B.A., Harvard College; Ph.D. (Philosophy) Columbia Univ.; Ph.D., CUNY

William L. King, Professor
- B.A., Rutgers Univ.; M.A., Univ. of Colorado, Ph.D.

Teresa Lopez-Castro, Assistant Professor
- B.A., Columbia Univ.; Ph.D. CUNY

Karen Langsam, Lecturer
- M.A., Ph.D., Stony Brook Univ.

Arthur D. Lynch, Associate Professor
- B.A., Univ. of Texas, Ph.D.

Robert D. Melara, Professor and Chair
- B.A., Stony Brook Univ.; M.A., New School, Ph.D.

Glen Milstein, Associate Professor
- B.A., Brandeis Univ.; Ph.D., Teachers College (Columbia Univ.)

Sarah O'Neill, Assistant Professor
- B.S.C., Univ. of Otago (NZ); Ph.D. Univ. of Otago (NZ)

Richard Paino, Lecturer
- B.A., Rutgers Univ.; M.A., Fairleigh Dickenson Univ.

Tony Ro, Professor
- B.A., Univ. of California (Berkeley); Ph.D., Univ. of California (Davis)

Margaret Rosario, Professor
- B.A., Princeton Univ.; Ph.D., New York Univ.

Jeffrey J. Rosen, Professor
- B.A., George Washington Univ.; M.A., Clark Univ., Ph.D.

Millicent Roth, Professor
- B.A., Brooklyn College, M.S.W., D.S.W., New York Univ.

M. Sasha Rudenstine, Assistant Professor
- B.A., Haverford College; M.A., CUNY; Ph.D., CUNY

Lesia Ruglass, Assistant Professor

Irvin S. Schonfeld, Professor
- B.S., Brooklyn College; M.A., New School; Ph.D., CUNY

Ann Marie Yali, Associate Professor
- B.A., State Univ. of New York (Stony Brook); Ph.D., Columbia Univ.

John J. Peatman
- Ratna Sirca, Professor
- B.S., Univ. of Delhi (India); M.Sc., All-India Institute of Medical Sciences (New Delhi, India), Ph.D.

Arietta Slade, Professor
- B.A., Sarah Lawrence College; Ph.D., New York Univ.

Ellen E. Smiley, Associate Professor
- B.S., Denison Univ.; A.M., Univ. of Illinois, Ph.D.

Arthur J. Spielman, Professor
- B.A., The City College; Ph.D., CUNY

Vivien C. Tartter, Professor
- B.A., Brown Univ., M.A., Ph.D.

Steven B. Tuber, Professor
- B.A., Yale; M.A., Univ. of Michigan, Ph.D.

Deborah Vietze, Professor
- B.S., Univ. of Redlands; M.S., Univ. of Southern California; Ph.D., Columbia Univ.

Paul Wachtel, Distinguished Professor
- A.B., Columbia Univ.; M.S., Yale Univ., Ph.D.

Lissa Weinstein, Associate Professor
- B.A., SUNY (Stony Brook); M.A., The City College; Ph.D., CUNY

Ann Marie Yali, Associate Professor
- B.A., Eckerd College; M.A., SUNY (Stony Brook), Ph.D.

**Professors Emeriti**

John Antrobus
- Anderson J. Franklin
- Eugene L. Hartley
- Douglas C. Kimmel
- Vera Paster
- Herbert Nechin
- Lawrence Nyman
- Irving H. Paul
- John J. Peatman
- Jerry Siegel
- Arietta Slade
- Ann Rees
- Harold Wilensky
Public Service Management Program

(Colin Powell School for Civic and Global Leadership)

R. Mark Musell, Director • Program Office: Shepard Hall room 1* Tel: 212-650-5095

General Information

The City College offers the following master’s degree in public administration:

M.P.A.

Program and Objectives

This program is designed to prepare students for management-level positions in government agencies and non-profit organizations. The program combines course work in management, economics, policy, and research, with opportunities to gain real-world experience.

Degree Requirements

Required Courses:

PSM B1600: Strategic Management of Public Organizations 3 cr.
PSM B1610: Public Budgeting and Finance 3 cr.
PSM B1620: Advanced Quantitative Methods 3 cr.
PSM B1640: MPA Internship 3 cr.
PSM B1700: Public Policy 3 cr.
PSM B3105: Leadership on Public Service 3 cr.
PSM B1820: Economics for Public Policy 3 cr.
PSM B1830: Communication in Public Service 3 cr.
PSM B1805: Governance and Public Administration 3 cr.
PSM B1810: Human Resources Management 3 cr.
PSM B1816: Program and Policy Evaluation 3 cr.
PSM B1877: Quantitative Methods 3 cr.
PSM B9900: Capstone/Thesis in Area of Specialization 3 cr.

Total credits 39

Total Elective Credits 6

Total Credits 45

Advisement

Faculty and staff review each student’s progress every semester. As part of that process, students are advised about remaining program requirements and available courses. The Director of Public Management Programs coordinates any additional advising or assistance requested by students.

Mark Musell 212-650-6809

Public Service Management Course Descriptions

PSM B1600: Strategic Management of Public Organizations

Covers the analytical techniques that public and non-profit managers use to increase the value their organizations produce. Topics include: planning, decision making, leadership, organizational behavior, and resource management. The course will also cover performance management, human resource practices, technology management, and ethics in public service. 3 hr./wk.; 3 cr.

PSM B1610: Public Budgeting and Finance

Covers the methods, terminology, and processes associated with the management of financial resources at the federal, state, and local levels. Topics include the politics of budgeting, budget reform, budget structure, cash and debt management, government accounting, tax evaluation, and financial reporting. Students will examine and evaluate a variety of budgets and financial reports. 3 hr./wk.; 3 cr.

PSM B1620: Advanced Quantitative Methods

Covers the basic elements of how to find, synthesize, and interpret different types of data, both quantitative and qualitative. The course will provide an introduction to the use of statistical software such as Microsoft Excel, and SPSS. By the end of the course, students will be able to create a simple database, run basic statistical analysis, and prepare and analyze univariate and multivariate regressions. Prereq: PSM B1877- Quantitative Methods. 3 hr./wk.; 3 cr.

PSM B1640: MPA Internship

Students complete 400 hours of professional-level work in a government agency or non-profit organization. 3 cr.

PSM B1700: Public Policy

Introduces public policy and many of the important issues in its formulation and implementation. Also covers the ways in which academics and practitioners evaluate the effectiveness of public policies. Topics covered include approaches to governance, and the politics, ethics, economic, and sociology of attempts to mobilize public power around an area of concern. Students apply what is learned to models of policy making and analysis. 3 hr./wk.; 3 cr.

PSM B1710: Policy Frameworks and Target Populations: Race, Ethnicity, Gender, and Class

Focuses on reading policy critically, and on understanding the assumptions that underlie policies at the point of their formulation and execution. The course also covers the trade-offs and political compromises in policy history that may affect the ways in which political adversaries frame or publicly portray policies and target populations. 3 hr./wk.; 3 cr.

PSM B1720: The Economics for Public Policy

Teaches the basic economic models that underlie most economic discussions of public policy and that are common knowledge to those in the field. Examines how scarce resources are allocated within or in lieu of markets. 3 hr./wk.; 3 cr.

PSM B1730: Communication in Public Service

Covers methods and principles of effective communication in public service. Students learn about strategic communication and about writing press releases, policy memos, grant applications, and testimony. 3 hr./wk.; 3 cr.

PSM B1801: Environmental Sustainability in Urban Systems

This course covers what sustainability and sustainable development mean for urban and urbanizing areas. Topics covered include land-use, environmental justice, greening initiatives, quality of life, urban geography, environmental psychology and behavior, transportation systems, and related topics. 3 hr./wk.; 3 cr.

PSM B1802: Urban Youth Policy Development

This course examines cities and the impact of policy making on urban youth. Topics covered include public space, community organizing, the influence of the street, the growth and demise of urban landscape, education, justice, nutrition. 3 hr./wk.; 3 cr.

PSM B1805: Governance and Public Administration

Focuses on the structure and processes of governments in the US and the US political system. Covers constitutional theory, federalism and the role of the media, the president, and the Congress. Examines the role of political participation. Also examines the history, theories, concepts, and practice of public administration in the US. 3 hr./wk.; 3 cr.

PSM B1808: The Economics of Urban Areas

Covers the application of economic analysis to urban policy problems. It describes the economic forces that led to the rise of cities and urban areas, the economic functions they serve and the role of local government in addressing urban problems. The course will look at leading problems, the economics behind them, and how economic analysis helps in understanding alternative policy solutions. 3 hr./wk.; 3 cr.

PSM B1810: Human Resources Management

The course focuses on the knowledge and practical skills that public managers need in managing employees. Topics include managing teams, discrimination and labor law, working with unions, motivating employees, privatization, recruitment, the aging workforce, and performance evaluations. Particular emphasis is given to developing human resources practices that support core organizational objectives. 3 hr./wk.; 3 cr.

PSM B1811: Environmental Policy

Looks at the background and context of environmental politics and policy. Examines the rise of environmental issues to prominence, and offers a detailed analysis of key environmental concerns, as well as the current structures and policies designed to resolve problems. 3 hr./wk.; 3 cr.

PSM B1815: The Politics of Urban Areas

Examines the actors and institutions of city government, political behavior, and the process of urban development. Focuses on the major aspects of urban politics: how the politics, demographic and socioeconomic environ-
ments of US cities are changing. Examines changes in population, political power, political culture, public policies and moral issues in cities. 3 hr./wk.; 3 cr.

**PSM B1816: Program and Policy Evaluation**
This course covers the techniques and methods used in public administration for evaluating the effectiveness of programs and policies. Topics covered may include: performance measures, cost-benefit analysis, cost-effectiveness and efficiency analysis, surveys and working with survey data, case study, experimental design, present value analysis, and indexes. 3 hr./wk.; 3 cr.

**PSM B1877: Quantitative Methods**
The course prepares students for PSM B1620: Advanced Quantitative Methods. It focuses on the knowledge and practical skills that public managers need in working with data and basic methods of quantitative analysis. The course will cover descriptive statistics, inferential statistics and math models with management applications. Specific topics include: measures of central tendency and variation, probability distributions, estimation, rations, percentages, and randomness. 3 hr./wk.; 3 cr.

**PSM B3105: Leadership in Public Service**
This course assumes that leadership can be learned through the practice of skills, through guided reflection and discussion, and through observation and analysis of everyday leaders in everyday situations. By the end of the course, students will understand models and theories of leadership and leadership development learn to identify leadership skills in themselves and in others, and understand how leadership operates in different professional settings and context. 3 hr./wk: 3 cr.

**PSM B9900: Capstone/Thesis**
The Capstone course requires students to apply what they have learned in other courses to the analysis and evaluation of real-world problems. Course is taken during the last semester of the PSM program. Alternatively, students may choose to write a thesis. 3 hr./wk.; 3 cr.

**Faculty**

Maria Binz-Scharf, Associate Professor, Economics
Kamilah Brisco, Director of Student Success, Adjunct Lecturer Political Science
Adriana Espinosa, Assistant Professor, Economics and Business
Kevin Foster, Associate Professor, Economics
Arturo Garcia-Costas, Adjunct Assistant Professor, Political Science
Jean Krasno, Lecturer, Political Science
John Kinsky, Associate Professor, Political Science
R. L'Heureux Lewis, Associate Professor, Sociology
George Mitchell, Assistant Professor, Political Science
Danielle Moss-Lee, Adjunct Assistant Professor, Political Science
R. Mark Musell, Director, PSM Program
Leslie Paik, Associate Professor, Sociology
Andrew Rich, Adjunct Professor, Political Science
Charles B. Rangel Center for Public Service

R. Mark Musell, Deputy Director • Office: Shepherd Hall 1 • Tel. 212 650-5095

General Information

The Charles B. Rangel Center sponsors research and coordinates various educational programs designed to increase diversity at the management level of non-profit organizations and federal, state, and local government agencies. Additional programs are under development, and new facilities for the center are planned.

Support for CCNY’s Master’s Degree Program in Public Administration (MPA)

The MPA program focuses on preparing students, particularly those from under-served communities, for management-level positions in government agencies and non-profit organizations. The Rangel Center coordinates various internship programs designed to offer students first-hand experience in public service. It also offers scholarships designed to promote participation in the program among under-served groups. The Rangel Center also sponsors a speakers series, writing program, and math boot camp in support of the MPA program. Eventually, the center will offer a mid-career fellows program that will bring experienced professionals to campus to mentor students, and to participate in professional development workshops and seminars.

Research at the Charles B. Rangel Center

The Rangel Center provides small grants to faculty for research on diversity in public service. It also sponsors paid research opportunities for students in the Public Service Management program.

Archives of Congressional Documents

The Rangel Center will help support an archive of important documents pertaining to the public service careers of members of groups underrepresented in many aspects of public service. The core of the collection will be the Congressional papers and other materials donated by Congressman Charles B. Rangel. The archives will serve as a resource for students, faculty and scholars interested advancing research on US politics in general, as well as on the particular topic of diversity in US public service.
(Colin Powell School for Civic and Global Leadership)

Associate Professor Maritsa Poro, Chair • Department Office: NA 6/125 • Tel: 212-650-5485

General Information

The City College offers the following master’s degree in Sociology:

M.A.

Degree Requirements

Required Courses

SOC B1002: Qualitative Methods 3
SOC B1003: Analyzing Evidence 1 3
SOC B1004: Analyzing Evidence 2 3
SOC V0100: Development of Sociological Theory 3
SOC V0200: Sociological Thinking 3
SOC V0300: Capstone Seminar (or, for thesis students, two independent studies) 6
Elective Courses 12
Total Credits 33

Additional Requirements

The student may take up to twelve (12) elective credits of graduate courses in other Divisions and at other CUNY Colleges, subject to the approval of the MA Program Director.

Required Comprehensive Examination: The candidate must pass a written comprehensive examination.

Capstone Paper: Required.

Thesis Option: A student may request, under certain circumstances, to write a thesis instead of a capstone paper.

Advisement

Graduate students must see the graduate advisor each semester to review their progress and plan their programs.

Sociology Course Descriptions

SOC B1002: Qualitative Methods
Concepts and methods of qualitative research will be discussed for their relevance and utility in sociological analysis. Representative studies will be examined for the adequacy of their procedures and techniques, as well as the kind of knowledge which they provide. Prereq: SOC B1004 OR Departmental permission. 3 hr./wk.; 3 cr.

SOC B1003: Analyzing Evidence 1
This course introduces the science and craft of social research. Partly this is a class about the scientific method, partly this is about learning the basic statistics that sociologists most often use, but there will also be an emphasis on doing research, and learning the tricks and traps of the trade. We will focus on learning quantitative research methods and survey design, but will also discuss experiments and qualitative research. Prereq.: Open only to program majors OR with Departmental permission. 3 hr./wk.; 3 cr.

SOC B1004: Analyzing Evidence 2
This course continues the introduction to research methodology, with a focus on qualitative research and the research process, examining the steps toward developing a sociological research project. A formal proposal for the capstone paper will be the final paper for the course. Prereq: SOC B1003 OR Departmental permission. 3 hr./wk.; 3 cr.

SOC B1100: Seminar in General Sociological Analysis
A comparative overview of various current models of sociological analysis, including functionalism, ethnomethodology, and evolutionary schools. 3 hr./wk.; 3 cr.

SOC B2100: Seminar in Marriage and the Family
Marriage and the family as social institutions. Changing family forms in Western civilization. Demographic trends and family size. The modern family and its relation to the total society. Marriage and divorce. Selected problems for discussion and research. Offered in cooperation with the School of Education. 3 hr./wk.; 3 cr.

SOC B3200: Research
Individualized research on specific projects, under the direction of a graduate professor. Conferences to be arranged. Approval of a faculty member and Chair of Graduate Committee required. Maximum of 6 credits. 3 cr./sem.

SOC B4100: Comparative Social Systems
Description and classification of whole societies viewed as dynamic social systems in the relevant environmental setting, geographic and historical. Case studies will be selected from the American Indian, African, Oceanic, Asiatic, and European fields. The course is designed to prepare students for an understanding of their own contemporary society. 3 hr./wk.; 3 cr.

SOC B5100: Urban Sociology
This course examines theories of urbanization and urban life and current policy issues. 3 hr./wk.; 3 cr.

SOC B5200: People of the City of New York
An analysis of the many subgroups that live in New York City. This includes but is not limited to African and Hispanic Americans, Italians, Jews, Irish, etc. Focus on how the city developed historically, its spatial structure, its expansion, and its political, social, and economic life. 3 hr. /wk.; 3 cr.

SOC B6100: Seminar: Problems in Criminology
Overview of criminology from the historical background to contemporary theories of criminological thought. Specific case studies will be used to illuminate the limitations and applicability of those theories. 3 hr./wk.; 3 cr.

SOC B8000: Seminar: Deviant Behavior
Overview of historical and contemporary approaches to defining and understanding deviance. Focus on development of those understandings and their repercussions for individuals and society. 3 hr./wk.; 3 cr.

SOC B8100: Sociology of Politics and Collective Behavior
The social bases of political participation and ideology will be explored within the context of modern industrial society. The problem of establishing, maintaining and dissolving political institutions will be examined as well as the relationships between the legitimacy and the effectiveness of political institutions. The social origins of democracy, authoritarianism, and totalitarianism. New approaches to the study of mass movements and collective behavior. 3 hr./wk.; 3 cr.

SOC B8300: Sociology of Generations
Socialization processes occurring and associated with infancy, childhood, adolescence, student status, and various stages of adulthood. Secularization of various benchmarks in the life cycle. Special characteristics of each age group, their potential for intergenerational conflict and accommodation, and their relationship to social institutions. Contemporary modifications of age-graded experiences by social structure. 3 hr./wk.; 3 cr.

SOC C0000: Series
Courses given on special issues in sociology, on a rotating schedule, such as public policy, ethnic issues, drug and alcohol problems, etc. 3 hr./wk.; 3 cr. Courses offered in other graduate programs are available to graduate students in Sociology with permission of the Graduate Sociology Committee.

SOC V0100: Development of Sociological Theory
Critical examination of the major classical theorists. Prereq.: SOC V0200 OR Departmental permission. 3 hr./wk.; 3 cr.

SOC V0200: Sociological Thinking
This course is an introduction to sociological thinking through readings of key texts in various social fields. It aims to enhance students’ understanding of how sociological research is conceptualized, the relationship between theory and method, and some of the considerations that inform sociological writing. Prereq.: Open only to program majors OR with Departmental permission. 3 hr./wk.; 3 cr.

SOC V0300: Capstone Seminar
Completion of capstone paper, which is the grade for the course and the final degree requirement. Intensive workshop format that requires extensive reading, writing, and revision of one’s own and others’ ideas and writing. Multiple structured deadlines, various oral and written assignments, collaborative critique, continuous revision toward completed capstone paper. Prereq.: SOC B1002, SOC B1003, SOC B1004, SOC V0100, and SOC V0200, OR Departmental permission. 6 hr./wk.; 6 cr.
Faculty

Mehdi Bozorgmehr, Professor  
B.S., California State Univ.; M.A., San Diego State Univ.; M.A., Univ. of California (Los Angeles) Ph.D.

Katherine K. Chen, Associate Professor  
B.A., Stanford Univ., M.A., Harvard Univ., Ph.D.

Gwendolyn Ann Dordick, Lecturer  
B.A., Univ. of California (Los Angeles), M.A.; M.Phil, Columbia Univ., Ph.D.

Norma Fuentes-Mayorga, Assistant Professor  
B.A., M.A., M.Phil, Ph.D., Columbia Univ.

William Helmreich, Distinguished Professor  
B.A., Yeshiva Univ., M.A.; Ph.D., Washington Univ. (St. Louis)

Ramona Hernandez, Professor  
B.A., Lehman; M.A., New York Univ.; Ph.D., CUNY

Lily M. Hoffman, Associate Professor  
B.A., Cornell Univ.; M.A., Univ. of Michigan; Ph.D., Columbia Univ.

Yana Kucheva, Assistant Professor  
B.A., Brown Univ.; M.A., Ph.D., Univ. of California (Los Angeles)

Jack Levinson, Associate Professor  
B.A., Wesleyan Univ.; Ph.D., CUNY

R. L’Héreux Lewis-McCoy, Associate Professor  
B.A., Morehouse College; M.A., Univ. of Michigan, Ph.D.

Iris Lopez, Professor  

Leslie Paik, Associate Professor  
B.F.A., Brown Univ.; M.A., Univ. of California, Ph.D.

Maritsa V. Poros, Associate Professor and Chair  
B.A., Goucher College; M.A., Columbia Univ., Ph.D.

Professors Emeriti

Milton L. Barron
Steven Goldberg
Gerald Handel
Gabriel Haslip-Viera
F. William Howton
Baidya Nath Varma
Charles Winick
Betty Yorburg
General Information

The Spitzer School of Architecture offers the following graduate degrees:

M. Arch.
M.L.A.
M.U.P. (Urban Design)

In addition, the School offers the following joint program with the Grove School of Engineering, the Division of Science, and the Colin Powell School for Civic and Global Leadership.

Sustainability in the Urban Environment (offering an M.S. in Sustainability degree)

Additional information about programs in Architecture may be found in the Bulletin of Undergraduate Programs.

Programs and Objectives

Master of Architecture Program (Program Director – Associate Professor Bradley Horn)

In keeping with the City College of New York’s long tradition of diversity and teaching excellence, the M Arch Program at the Spitzer School is a laboratory for experimental design committed to the betterment of our shared global community. Engaged in a dialogue with graduate programs in Landscape Architecture, Urban Design and Urban Sustainability in the only public school of architecture in New York City, the M Arch Program is uniquely positioned at the forefront of pressing urban and environmental debates. With a rigorous foundation in the core competencies of building design, history, theory, and technology, both our professional (M. Arch. I) and post-professional (M. Arch. II) programs aim to educate the next generation of innovators who will redefine the role of the architect in the twenty-first century.

Master of Architecture I

The Master of Architecture I program is open to students who have completed a baccalaureate in another field. It is an intensive three-year course of study progressing from fundamental to advanced education in architectural theory and practice. The curricular sequence is composed of a four-semester core followed by two final semesters that include advanced options studios and an array of elective offerings. Required core courses provide a rigorous foundation in design, digital representation, building technology and architectural history and theory, while our advanced studios and elective offerings challenge students to integrate this knowledge through research and speculation. Throughout the program students are trained to synthesize the theoretical underpinnings of architecture with the practical skills necessary to competently and responsibly construct buildings.

Master of Architecture II

The Master of Architecture II program is directed at students who already hold a first professional degree in architecture who wish to deepen their design abilities and expand their knowledge of contemporary theory, technology, and environmental systems. The three studios in the sequence provide in-depth studies of architectural problems that seek to integrate the formal, ideas, and technologies that anticipate construction. Projects may also explore the far boundaries of the discipline of architecture, participating in the research behind its continuing reinvention.

Students will have the opportunity to take a number of elective courses in areas of their own special interest. These may be selected from among those offered in the three programs of the Spitzer School as well as from other institutions in the CUNY system, including the Graduate Center. Students are strongly encouraged to seek these points of conjunction between architecture and related disciplines that are most meaningful to their individual development as practitioners.

Master of Landscape Architecture Program (Program Director – Associate Professor Denise Hoffman Brandt)

Landscape architecture plays an essential role in connecting social justice to environmental design and the planning of landscape systems in the urban realm. The Graduate Program in Landscape Architecture at the Spitzer School of Architecture, City College of New York prepares students to be leaders in the field of landscape architecture through innovative research and practice in urban ecological design, planning, and policy-making. The Program aims to meet the profession’s current and future challenges through the lens of environmental justice, including globalization, availability of natural resources, land management, and climate change. The curriculum engages critical thinking about complex systems, empowering students to work across multiple scales of the urban landscape.

Master of Landscape Architecture I

The Master of Landscape Architecture (first professional degree) program is intended for students who hold degrees in disciplines other than landscape architecture. This 90 credit, six-semester program leads to a first professional degree (M.L.A.) in landscape architecture. The principal medium of instruction is the design studio. Students undertake design and planning problems of growing complexity. The studio courses are supported by seminars in natural science, technology, history, and theory, and other related topics.

Master of Landscape Architecture II

A two-semester, 36-credit sequence leading to a graduate or second degree (M.L.A.) for students with a first professional undergraduate degree in Landscape Architecture (B.L.A. or B.S.L.A.). The program is of particular interest to those seeking a more extensive understanding of the theory of landscape architecture and for those interested in pursuing an academic career. There is a broad range of opportunities for students to engage in independent research and enroll in the full offerings of courses in the college and university.

Master of Urban Planning – Urban Design Program (Program Director – Distinguished Professor Michael Sorkin)

Applicants to the Urban Design program should hold a professional degree in either architecture or landscape architecture. Applicants from other backgrounds will be considered only in exceptional circumstances and on demonstration of a high level of design ability.

This program is focused on the design of new forms for the city and urban life. Committed to experiment, it seeks to investigate the effects on and prospects for the city arising from contemporary transformations in technology, culture, lifestyles, environment, economic organization, governance, and architecture. Drawing on the unparalleled resources of City University and the City of New York, the program aims to stimulate analytical rigor and formal creativity in a variety of media. The program seeks to play an active and ameliorative role in shaping futures for New York and cities around the world through both formal research and direct engagement with communities.

The program is designed to be completed in two full-time, sequential semesters. At its core is the design studio, taught by the Director, which moves, in a two-semester sequence, from an abstract consideration of urban morphologies and systems to a realistic, large-scale, project sited in New York City. The studio also travels annually to observe a city under unusual stress. To date these have included Nicosia, Havana, and Johannesburg. The curriculum also includes varying courses taught by distinguished CUNY and visiting faculty devoted to urban history, theory, analysis, and to natural and social urban ecologies.

Sustainability in the Urban Environment Program (Program Director – Professor Hillary Brown)

This innovative, interdisciplinary program draws upon emerging approaches in each of the disciplines of architecture, engineering and science, and prepares students for the burgeoning field of sustainability. The program’s goal is to train current, emerging and next-generation professionals to solve pressing local, regional and global sustainability problems. The curriculum is designed to prepare students to plan and implement strategies for sustainable development of buildings, open spaces and infrastructure, energy, water resources, air quality, land use, waste management, transportation, urban planning and construction. The curriculum enables students to acquire experience in interdisciplinary analysis of advanced concepts, principles and methodologies for solving a wide range of challenging sustainability problems. Graduates are trained to work in diverse professional settings involving collaboration, interaction and communication with teams of scientists, engineers, architects and others.

The Master’s program is geared to applicants with a bachelor’s degree in architecture, engineering or science from an accredited US college or university. Applicants with degrees in other fields may qualify for admission to the program depending on their experience and academic background. Courses will be taught by the faculties of The Bernard and Anne Spitzer School of Architecture, The Grove School of Engineering, the Division of Science, and the Colin L. Powell School for Civic and Global Leadership.
Each candidate for a master’s degree must complete at least 30 credits: 18 in the Core Curriculum, and 12 from a diverse collection of Architecture or, Engineering-Science, and Social Sciences elective courses. The core includes a key sequence of courses, the year-long Capstone Interdisciplinary Team Project I and II, which accounts for 6 credits and involves diverse teams of students, who will cooperate to solve real-world sustainability problems.

**Admissions**

The following information applies to the programs housed solely within the Spitzer School: Master of Architecture I and II, Master of Landscape Architecture I and II, and Urban Design (M.U.P.). (Candidates for the interdisciplinary MS Sustainability, including its architecture track, should refer to its application instructions.) Spitzer School applications for admission are completed online through the college website, www.ccny.cuny.edu. All applications must include a curriculum vitae, three letters of recommendation from persons familiar with the applicant’s intellectual and design abilities, an academic transcript, a 500-word personal statement, a hard-copy portfolio of creative work, and a non-refundable application fee.

As the program curriculum includes rigorous reading and writing requirements, students who were educated in non-English-speaking countries must submit current standardized test scores certifying English language ability. The IBT TOEFL minimum score is 79.

The deadline for the receipt of applications is January 15 (M.U.P., M.Arch. I and II and M.L.A. I and II), and March 1 (M.S. in Sustainability).

Transfer Students and Course Waivers for M. Arch I Program

Candidates who have completed the equivalent of any of our required courses in another accredited master’s level program may apply to transfer those credits. All credit transfers are at the discretion of the faculty heads in each curricular area and require a grade of B or greater.

Candidates who hold a B.A. or B.S. in Architecture (a pre-professional program from an NAAB-recognized school if from the U.S.) and who have completed the equivalent of any of our required courses (up to 36 credits) may qualify for a waiver of those courses. All students must still complete 108 graduate level credits at The City College in order to qualify for the Master of Architecture I degree.

Whether seeking transfer credits or a course waiver, all candidates will be asked to provide additional information including completed coursework and course syllabi as well as course descriptions and transcripts to determine eligibility. Design faculty will review portfolios to make a determination for studio and visual studies courses and will consult with the heads of each curricular area outside of design (such as history, technology, etc.) to determine if non-studio course work qualifies for a waiver. Granting of course waivers or transfer credit is at the discretion of the School and under no circumstances will any student be allowed to spend less than two full academic years of study in the program.

**Accreditation**

**Architecture Accreditation**

In the United States, most registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit professional degree programs in architecture offered by institutions with U.S. regional accreditation, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted an eight-year, three-year, or two-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may require a pre-professional undergraduate degree in architecture for admission. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

The City College of the City University of New York, Bernard and Anne Spitzer School of Architecture offers the following NAAB-accredited degree programs:

**B. Arch.** (160 undergraduate credits)

**M. Arch.** (non-professional degree + 108 credits)

Next accreditation visit for all NAAB-accredited programs: 2017

**Landscape Architecture Accreditation**

The CLARB registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The ASLA (American Society of Landscape Architects) is the sole agency authorized to accredit U.S. professional degree programs in Landscape Architecture. It recognizes two types of degrees: the Bachelor of Landscape Architecture and the Master of Landscape Architecture First Professional Degree. A program may be granted a 6-year, 3-year, or 2-year term of accreditation, depending on the extent of its conformance with established educational standards.

The City College of New York’s Master of Landscape Architecture first professional degree program (MLA I) received a 6-year term of accreditation in 2015. The next accreditation visit for the program will be in 2021.

The City College of New York Bernard and Anne Spitzer School of Architecture also offers the following non-accredited degree programs:

- M.U.P. Urban Design (32 credits)
- M Arch II (48 credits)
- MLA II (36 credits)
- M.S. in Sustainability in the Urban Environment (30 credits)

The M. Arch., M.L.A., and the M.U.P. have been registered by the New York State Education Department. They are also accredited, as are other graduate programs at The City College, by the Middle States Association of Colleges and Secondary Schools.

**Requirements for the M. Arch. Degree**

**Master of Architecture I**

**First Professional Degree**

**Semester 1**

ARCH 61001: Digital Techniques 3
ARCH 61100: Architecture Studio 1.1 6
ARCH 61201: Survey of World Architecture 1 3
ARCH 61301: Materials/Construction I 3
ARCH 73500: Site Design 3

**Semester 2**

ARCH 62001: Visual Studies 3
ARCH 62100: Architectural Studio 1.2 6
ARCH 62201: Survey of World Architecture 2 3
ARCH 62301: Materials/Construction II 3
ARCH 62401: Elementary Structural Analysis & Behavior 3

**Semester 3**

ARCH 73100: Architecture Studio 1.3 9
ARCH 73201: Survey of World Architecture III 3
ARCH 73401: Timber & Masonry Structures 3
ARCH 73600: Elective 3

**Semester 4**

ARCH 74100: Architecture Studio 1.4 9
ARCH 74401: Steel & Concrete Structures 3
ARCH 74501: Environmental Systems 3
ARCH 85201: Survey of World Architecture IV 3

**Total credits 108**

**Master of Architecture II**

**Post-Professional Degree**

**Semester 1**

ARCH 91102: Advanced Studio 6
ARCH 91202: Studio Seminar 1 3
Electives 3

**Semester 2**

ARCH 92202: Studio Seminar 2 3
ARCH 92102: Advanced Studio 6
Electives 9

**Semester 3**

ARCH 93103: Advanced Studio 6
Electives 6

**Total credits 48**
Requirements for the M.L.A. Degree

Master of Landscape Architecture I

First Professional Degree

Semester 1
- LAAR 61100: Landscape Architecture Studio I 6
- LAAR 61300: Landscape Technology I 3
- LAAR 61400: Digital and Traditional Drawing 3
- LAAR 61500: Physical Geography 3

Semester 2
- LAAR 62100: Landscape Architecture Studio II 6
- LAAR 62200: History/Theory of Landscape Architecture I 3
- LAAR 62300: Landscape Technology II 3
- LAAR 62700: Field Ecology 3

Semester 3
- LAAR 63100: Landscape Architecture Studio III 6
- LAAR 63200: History/Theory Landscape Architecture II 3
- LAAR 63300: Environmental Planning 3
- LAAR 65160 Botany for Landscape Architects 3

Semester 4
- LAAR 64100: Landscape Architecture Studio IV 6
- LAAR 64400: Planting Design 3
- LAAR 64150: Design Research 3
- Elective (History) 3

Semester 5
- LAAR 64700: Landscape Restoration 3
- LAAR 65100: Landscape Architecture Studio V 6
- ARCH 83600: Professional Management 3
- LAAR 65200: Urbanism 3

Semester 6
- LAAR 66100: Comprehensive Studio 9
- Professional Electives 3
- Electives 3

Total credits 90

Master of Landscape Architecture II

Second Professional Degree

Semester 1
- LAAR 64150: Design Research 3
- Electives in History/Theory of Landscape Architecture and/or Natural Systems 9
- Electives in Planning 6

Semester 2
- LAAR 65200: Urbanism 3
- LAAR 72100: Landscape Architecture Thesis 9
- Professional Electives 6

Total credits 36

Requirements for the M.U.P. Degree

Semester 1 (Fall)
- UD 61001: Urban Design Studio I 7
- UD 61002: History of Urban Space I 3
- UD 61003: Reading the City I 3
- UD 61004: Urban Ecologies I 3

Semester 2 (Spring)
- UD 62001: Urban Design Studio II 7
- UD 62002: History of Urban Space II 3
- UD 62003: Reading the City II 3
- UD 62004: Urban Ecologies II 3

Total Credits 32

Requirements for M.S. in Sustainability

Sustainability in the Urban Environment

Core Courses for All Students
- SUS 7100C: Cities and Sustainability 3
- SUS 7200C: Sustainable Aquatic, Terrestrial and Atmospheric Systems 3
- SUS 7300C: Industrial Ecology and Life Cycle Analysis 3
- SUS 7400C: Economics of Sustainability 3
- SUS 7501C & SUS 7502C: Capstone Interdisciplinary Team Project 6

Elective Courses in Architecture
- LAAR 63500/SUS 7100A: Environmental Planning 3
- ARCH 73200/SUS 7200A: Urbanism 3
- ARCH 63102/SUS 7300A: Low-Energy Buildings 3
- ARCH 61350/SUS 7400A: Case Studies in Sustainability 3
- ARCH 63122: Integrated Building Systems 3

Elective Courses in Engineering and Science
- SUS 7100B: Sustainable Transportation 3
- SUS 7200B (ChE 14000): Energy Systems Engineering for Global Sustainability 3
- SUS 7300B (EAS 88800): Climate and Climate Change 3
- SUS 7400B: Water Resources and Sustainability 3
- SUS 7500B: Green Chemistry 3
- SUS 7600B (ME 547): Design of Mechanical Systems for Sustainable Buildings 3
- SUS 7700B (G7800): Solid Waste Reuse & Recycling 3

Architecture, Urban Design and Landscape Architecture Course Descriptions

Architecture

ARCH 61001: Digital Techniques
Introduction to digital technology. Through lectures and laboratory assignments, students learn the basics of digital drawing, modeling, and rendering. Focus on software such as Rhino, AutoCAD, Adobe Illustrator, and Photoshop. 4 hr./wk.; 3 cr. Materials fee: $50.

ARCH 61100: Architectural Studio 1.1
The first in a sequence of four core design studios, this course introduces students to critical thinking, the fundamental principles of sustainable design, professional drawing conventions and model making techniques. The subject of domestic architecture is explored with special emphasis on the relationship between building and site in non-urban contexts. The investigation of landform and climate as well as the social dimensions of dwelling, students explore architecture as a negotiation between cultural and natural environments. All exercises are designed to develop the student’s abilities to translate spatial concepts into physical design proposals. 8 hr./wk.; 6 cr.

ARCH 61201: Survey of World Architecture 1
This is the first of a four-semester sequence that examines the physical forms of world architecture and related arts. It analyzes the built environment in response to place, politics, culture, and the people who use it. This semester students will study architecture from the Neolithic period to the 14th century in Europe, Asia, Africa and the Americas. Two lectures and an advanced seminar are required. 3 hr./wk.; 3 cr.

ARCH 62301: Materials/Construction 5
An investigation into the systems, techniques, and materials employed in the making of architecture. Focus on case studies in concrete, steel and other construction materials. 3 hr./wk.; 3 cr.

ARCH 74501: Environmental Systems
This course will focus on the performance of buildings relative to environmental impact and operational response. Starting with the building’s skin, systems will be understood as being in contact and in manipulated exchange with the thermal, luminous and acoustic environment surrounding them, to serve the ambiance and comfort of the interior. Basic knowledge of exchange, distribution and regulation will be related to construction and mechanical systems. The goal is to integrate structural, mechanical and spatial requirements to make appropriate choices during the design phase, allowing students to understand the building as a holistic regulated environment. 3 hr./wk.; 3 cr.

ARCH 62001: Visual Studies
Building upon the lessons learned in Digital Techniques, students sharpen their critical representation skills with a series of multi-media drawing and model-making exercises. Prereq: ARCH 61001. 4 hr./wk.; 3 cr.

ARCH 62100: Architectural Studio 1.2
The second core studio builds upon the experience of the previous studio through a series of increasingly complex design problems. Using Manhattan as a laboratory, students are introduced to the urban context and address a medium-scale institutional building with a nuanced and complex program. Through the rigorous study of building precedents and site visits, students address the role of architecture in the public realm. Prereq: ARCH 61100. 8 hr./wk.; 6 cr.
ARCH 6201: Survey of World Architecture 2
This is the second of a four-semester sequence that examines the physical forms of world architecture and related arts. It analyzes the built environment in response to place, politics, culture, and the people who use it. This semester students will study architecture from the 15th to the 20th centuries in Europe, Asia, Africa, and the Americas. Two lectures and an advanced seminar are required weekly. Prerequisite: ARCH 6201. 3 hr/wk.; 3 cr.

ARCH 61301: Materials/Construction L
An investigation into the systems, techniques, and materials employed in the making of architecture. Focus on case studies in wood, masonry, and other construction materials. 3 hr/wk.; 3 cr.

ARCH 62401 Elementary Structural Analysis & Behavior
The first of a three-semester sequence focusing on mechanics as an analytical subject, utilizing mathematics, including algebra, trigonometry and geometry. The principles of statics will be covered, with application to statically determinate structures such as beams, trusses and three-pin arches, enabling determination of reactions and internal moments. Strength of materials will include the properties of structural sections such as moment of inertia and radius of gyration leading to the calculation of axial, bending, shear stresses and deflections in beams. Approximate methods of analysis are presented for frames, continuous beams and statically indeterminate structures, allowing students to comprehend the broader sense of structural compositions of buildings. 3 hr/wk.; 3 cr.

ARCH 73100: Architecture Studio 1.3
The third core studio focuses on building systems integration, structural systems, and technical documentation. In this comprehensive design studio students develop a building from schematic design through design development, and finally through the construction documents phase. With an emphasis on energy efficiency, this studio provides students with an opportunity to synthesize the knowledge they have acquired in their first year of study with respect to program preparation, sustainable design and building technology. 12 hr/wk.; 9 cr.

ARCH 73201: Survey of World Architecture III
This is the third of a four-semester sequence that examines the physical forms of world architecture and related arts. It analyzes the built environment in response to place, politics, culture, and the people who use it. This semester students will study architecture in the 19th and early 20th centuries in Europe, Asia, Africa, the Americas, and Oceania. Two lectures and an advanced seminar are required weekly. Prerequisite: ARCH 6201. 3 hr/wk.; 3 cr.

ARCH 73401: Timber & Masonry Structures
The second course of a three-semester sequence that introduces the design of timber and masonry buildings. Masonry units made of concrete or clay, mortar, grout and reinforcing steel are the primary materials in reinforced masonry and combined with wood framing are a basic structural composition of buildings throughout the world. Students will develop an understanding of the nature and behavior of timber and masonry structures and learn contemporary methods of their design and engineering. Prerequisite: ARCH 62401. 3 hr/wk.; 3 cr.

ARCH 73500: Site Design
The study of environmental context and the natural environment, including climate, geology, landform, soil, hydrology and vegetation create a basis for an extensive investigation of the relationship between building and site. 3 hr/wk.; 3 cr.

ARCH 74100: Architecture Studio 1.4
The fourth and final studio in the four semester core sequence focuses on sustainable housing. In turn, the emergent scales and patterns of sustainable housing become the operative means to address and examine larger urban design concerns. Students work in teams and consider socio-economic factors, urban density and morphology in the design of housing solutions in complex and multi-layered urban contexts. Emphasis is placed on the research of urban and building precedents as well as on the use of environmental modeling and visualization tools to measure and integrate complex data into housing solutions. Prerequisite: ARCH 73100. 12 hr/wk.; 9 cr.

ARCH 74401: Steel & Concrete Structures
This course, the third of a three-semester sequence, is an introduction to the design of steel and concrete structures. Basic structural analysis of steel and concrete buildings and their components are discussed along with various building analyses and the behavior of structural systems. The methods to design structural members are presented as part of an overall building design that is safe, functional, economical, and aesthetic. Prerequisite: ARCH 73401. 3 hr/wk.; 3 cr.

ARCH 85101: Advanced Studio
Students will be placed in one of an array of diverse advanced studio offerings, developed to provide students opportunity to deeply engage topics within the expansive discipline of architecture, and reflective of the expertise and interests of the full design faculty. Studio project sizes, types and sites will vary, along with pedagogical methods. Course is taken two times in sequence to meet third year M Arch program requirements. Prerequisites: ARCH Studio 1.4. 8 hr/wk.; 6 cr.

ARCH 85200: Design Seminar 1
This required seminar course focuses on special topics of study that support and broaden the 3rd year M Arch design curriculum. Prerequisite: ARCH Studio 1.4. 3 hr/wk.; 3 cr.

ARCH 85201: Design Seminar 2
This required seminar course focuses on special topics of study that support and broaden the 3rd year M Arch design curriculum. Prerequisite: ARCH Studio 1.4. 3 hr/wk.; 3 cr.

ARCH 85201: Survey of World Architecture IV
This is the fourth in a four-semester sequence that examines the physical forms of world architecture and related arts. It analyzes the built environment in response to place, politics, culture, and the people who use it. This semester students will study architecture in the 20th and 21st centuries in Europe, Asia, Africa, the Americas, and Oceania. Two lectures and an advanced seminar are required weekly. Prerequisite: ARCH 73201. 3 hr/wk.; 3 cr.

ARCH 85300: Advanced Computing
Builds upon the digital skills students have acquired over the 4 semesters of the core and introduces them to advanced topics in computing. Emphasis is on scripting, parametric modeling, and data visualization and covers such software as Revit, Grasshopper, Solid Works, and Ecotect. 3 hr/wk.; 3 cr.

ARCH 85600: Professional Practice 1
This course introduces students to the professional practice of architecture with a special emphasis on the challenges facing architects that maintain a strong design emphasis. This course covers the general organization of the profession and its relation to client, community, and the construction industry; new management techniques, information organization and retrieval, project delivery, construction and construction documents, cost control, legal surety, contracts, and financial management. 3 hr/wk.; 3 cr.

ARCH 91102: Advanced Studio
Students will be placed in one of an array of diverse advanced studio offerings, developed to provide students opportunity to deeply engage topics within the expansive discipline of architecture, and reflective of the expertise and interests of the full design faculty. Studio project sizes, types and sites will vary, along with pedagogical methods. Students complete 3 Advanced Studios to meet program requirements. Prerequisite: None 8 hr/wk.; 6 cr.

ARCH 91202: Design Seminar 1
This required seminar course focuses on special topics of study that support and broaden the Advanced Studio design curriculum. Students complete 2 Design Seminars to meet program requirements. Prerequisite: None 3 hr/wk.; 3 cr. Repeatable 1 time.

ARCH 92102: Advanced Studio
Students will be placed in one of an array of diverse advanced studio offerings, developed to provide students opportunity to deeply engage topics within the expansive discipline of architecture, and reflective of the expertise and interests of the full design faculty. Studio project sizes, types and sites will vary, along with pedagogical methods. Students complete 3 Advanced Studios to meet program requirements. 8 hr/wk.; 6 cr

ARCH 92202: Design Seminar 2
This required seminar course focuses on special topics of study that support and broaden the Advanced Studio design curriculum. Students complete 2 Design Seminars to meet program requirements. Prerequisite: None 3 hr/wk.; 3 cr. Repeatable 1 time.

ARCH 93103: Advanced Studio
Students will be placed in one of an array of diverse advanced studio offerings, developed to provide students opportunity to deeply engage topics within the expansive discipline of architecture, and reflective of the expertise and interests of the full design faculty. Studio project sizes, types and sites will vary, along with pedagogical methods. Students complete 3 Advanced Studios to meet program requirements. Prerequisite: None 3 hr/wk.; 3 cr. Repeatable 1 time.

ARCH 61003: Independent Study
3 hr/wk.; 3 cr. Repeatable 4 times.

Landscape Architecture
LAAR 61003: Independent Study
3 hr/wk.; 3 cr. Repeatable 4 times.
LAAR 6100: Landscape Architecture Studio I
Studio I is the first of a six-course studio design sequence. The course is an introduction to the range of spatial and cognitive skills involved in shaping urban open space. Students are expected to bring both critical and creative dimensions to the analytical and inventive phases of their work. This studio addresses the culture and characteristics of urban recreation. In the first studio design problem, a single-purpose facility is spatially expanded and transformed from the mundane to the sacred. Students identify aesthetic and cultural issues, research recreational case studies and conduct photographic essays. Using art as a precedent for design exploration, they synthesize their analysis into a design expression that accommodates the requirements of the facility. The design problems increase in scale and complexity when the recreation environment or its environs are shared by other interest or age groups, adding the issue of conflict and conflict resolution to the problem. 10 hr./wk; 6 cr. Materials fee: $50.

LAAR 61300: Landscape Technology I
This course involves an understanding of the relationship of physical development to land forms. The course deals with small area and sites. It deals with the basic principles of site planning, environmental and ecological factors of siting, building, grading, drainage, site structures and material. Underlying issues of environmentally responsible design, zoning requirements and affordability are addressed. It reviews methods for site inventory, site analysis and site selection, and investigates their application through class exercises in the development of conceptual site designs for small sites. Grading, an environmental necessity, functional requisite and aesthetic expression is an important aspect of the course and is used as a focus to integrate other aspects, e.g., drainage and road alignment. 3 hr./wk; 3 cr.

LAAR 61400: Digital and Traditional Drawing
This course is the first graphic course leading to the understanding of basic computer programs and traditional professional representations in the field of landscape. 3 hr./wk; 3 cr. Materials fee: $50.

LAAR 61450: Fundamentals of CAAD
Students will acquire the basic skills of digital drawing and plotting with a Computer Aided Drafting program. The goal is to have each person develop drafting proficiency as well as a working knowledge of the program's use in the development of designs and construction documents. 3 hr./wk; 3 cr.

LAAR 61500: Physical Geography
Students will be introduced to the study of landforms and their evolution. Emphasis is placed on topographic expression of geologic structures and features, as well as on the relationships between properties of earth materials and the forces applied to them by all agents of erosion, including humans. 3 hr./wk; 3 cr.

LAAR 62100: Landscape Architecture Studio II
The second design studio focuses primarily on community and the residential environment. Using much of the knowledge and skill acquired in the previous studio, the student is confronted with more complex design problems. The student deals with the siting of residential buildings, the creation of domestic space, the design of a variety of open space facilities (e.g., walks, sitting areas, recreational areas, service areas, parking, circulation, etc.). Along with a critical understanding of the domestic landscape — involving issues of territoriality, the social contract, and other behavioral characteristics related to design — and the acquisition of skills for shaping that landscape, a major objective of this design studio is to provide an understanding of the complexity of a multi-component facility that is connected and integrated into a larger set of related components. In addition, students are expected to integrate into studio activity, advanced graphic skills involving drawing, model making and digital imaging, acquired in the first year graphic sequence. 10 hr./wk; 6 cr. Materials fee: $50.

LAAR 62200: History and Theory of Landscape Architecture I
This course investigates the theoretical and historical foundations of Landscape Architecture and reviews influences on the form of gardens, urban open space and city planning from prehistoric to the beginnings of contemporary precedents. Coverage includes a detailed review of early garden styles and public open space expressions in ancient Mesopotamia, Egypt, Greece and Rome, followed by examples of Medieval and Moorish gardens and their influences on later Italian and French Renaissance, and Baroque garden styles, and still later, the reactionary English Landscape garden style. Parallelising garden design, the course will also examine how social and environmental forces affected the planning and design of towns and cities during these same periods. The course ends with an examination of the theories and meaning informing 19th and 20th Century precedents of contemporary garden and open space expression, as well as describing the roots of urban planning during that period. 3 hr./wk; 3 cr.

LAAR 62300: Landscape Technology II
This course is a continuation of LAAR 61300 with problems increasing in scale, complexity and application. The course also involves an understanding of the relationship of physical development to land forms. Emphasis in the course is on large areas and sites. It continues to deal with the basic principles of siting, environmental and ecological factors of siting, building, grading, drainage, site structures and material. Underlying issues of environmentally responsible design, zoning requirements and affordability for larger sites are addressed. It reviews methods for site inventory, site analysis and site selection, and investigates their application through class exercises in the development of conceptual site designs for large sites. Grading, continues to be used as a focus to integrate other aspects, e.g., drainage and road alignment. Prereq: LAAR 61300. 3 hr./wk; 3 cr.

LAAR 62700: Field Ecology
This course in field ecology will explore the structure, function and dynamic processes of landscapes, at multiple scales, and in diverse contexts. This exploration will be aimed at the theoretical, technical and strategic knowledge that influences landscape planning, design, and management decisions. 3 hr./wk; 3 cr.

LAAR 63100: Landscape Architecture Studio III
The third design studio focuses on complex and dynamic public landscapes ranging from streets to waterfronts, plazas and neighborhoods. The physical structure of the landscape (its drainage, climate, morphology and archeology) is considered in relationship to the cultural structure of the site (its history and the ongoing experiences and memories of the people who live, work and play in the landscape). Students investigate the uniqueness and complexity of each urban site in terms of dynamic environmental processes, competing interests and uses, cultural diversity and communal memories. Site analysis and understanding involves active observation — hunting for clues, listening to stories, engaging in activities — and traditional methods utilizing drawing and photography. For each of the study projects, the student must articulate the design concepts and find ways to physically communicate and create meaning in place. In conjunction with each design project, the work of accomplished landscape architects is presented to expand the student's approach to conceptual development, design and presentation. 10 hr./wk; 6 cr. Materials fee: $50.

LAAR 63200: History and Theory of Landscape Architecture II
The course starts with a review of 20th Century garden precedents; establishing the aesthetic and cultural motivations that informed early expressions of the modern landscape garden, open space and urban development. The coverage then turns to a survey of the various styles and theoretical underpinnings that have influenced a wide spectrum of contemporary landscapes and designers, including the design of specialized urban and suburban open spaces, ecologically determined plant community restorations, corporate headquarter campuses, vest pocket parks, theme gardens and new city forms. The course ends with a discussion on possible future directions for landscape design and the current forces influencing them. 3 hr./wk; 3 cr.

LAAR 63300: Environmental Planning
This course provides an overview of the physical environment of the New York City metropolitan region including geology, soils, surface water, dominant weather systems, the changing climate, plant communities, wildlife habitat and regional design style trends. The students collectively undertake a layered site analysis applying all the topics to a real site. A transparent overlay technique is used to identify areas of the site with special concerns. Each student also prepares a colloquium presentation (short paper and slides) on a particular aspect of Hudson River Valley ecology, design, local materials or an historical feature, which are compiled into a notebook kept at the Architecture Library reserve desk as a reference document. The accompanying slides become part of the Program's permanent slide library collection. 3 hr./wk; 3 cr.

LAAR 64100: Landscape Architecture Studio IV
The fourth design studio provides a semester-long problem in which the student is assigned, or chooses a large area within an existing urban complex that is in need of examination due to deterioration, change of use, or the need for a comprehensive approach to urban landscape intervention. Within a larger urban context, each student selects her/his own study area, with the instructor reviewing the proposed project for appropriateness in complexity and scope. In addition to physical and aesthetic spatial recommendations, designs must respond to significant systemic influences, including economic and demographic conditions, pedestrian and vehicular circulation, service infrastructure, as well as cultural, educational and recreational needs. The end product of this studio is a publication in which, in both narrative and graphic form, the student explains the problem, the method of solution, the objectives, and the plan. This format offers an effective method for teaching students how to organize themselves graphically and verbally in the identification of a design problem and the presentation of its solution. It is also an
effective job interview tool for demonstrating the range of a student's organizational and graphic skills. 10 hr./wk.; 6 cr. Materials fee:$50.

**LAAR 64150: Design Research**
The activities of this course are focused on the development of a thoughtful and defensible proposal including the identification of a significant problem, a comprehensive analysis and preliminary solutions resolving identified cultural/ecological issues and needs. 4 hr./wk.; 3 cr.

**LAAR 64400: Planting Design**
Study of plants as elements of design on and with the land. Natural distribution and ecological considerations in planting design will be the underlying principles. However, issues of aesthetic and functional uses will also be explored. Various scales of planting design and the relationship to large scale landscape planning will be examined. 3 hr./wk.; 3 cr.

**LAAR 64700: Landscape Restoration**
Students will develop competence in the process of landscape restoration. This will include an understanding of planting design, soil remediation, bioengineering, and habitat restoration of several types of ecosystems. Topics will include: analyzing situations suitable for ecosystem restoration, developing and "selling" form-generating solutions to ecological problems, choosing compatible plants, design principles in planting, research methods for design solutions, and awareness of ecological implications of plantings. 3 hr./wk.; 3 cr.

**LAAR 65100: Landscape Architecture Studio V**
The fifth design studio provides a semester-long problem in which students are assigned a large existing urbanized area located within an ecologically sensitive context that is in need of examination due to deterioration, change of use, or the need for a comprehensive approach to urban landscape intervention. While the introduction of ecologically sensitive issues is a significantly new area of knowledge to integrate into the design process, issues involving the economic and demographic conditions, pedestrian and vehicular circulation, service infrastructure, as well as cultural, educational and recreational needs are similar to those identified in LAAR 64100-Landscape Architecture Studio IV. In addition, this studio will introduce the use of Geographic Information Systems (GIS) technology with special emphasis on a city's constantly evolving data base for accessing quantitative cultural and environmental data via internet conductivity. Within the larger urban context, each student selects her/his own study area, with the instructor reviewing the proposed project for appropriateness in complexity and scope. Each student conducts a thorough analysis of the individual study area, defines a set of social/environmental/ecological issues, and explores the resolution of these issues as a set of alternative open space design solutions. 10 hr./wk.; 6 cr. Materials fee:$50.

**LAAR 65160 Botany for Landscape Architects**
This course uses the environs of New York City as a living laboratory for the study and investigation of plant material. Students identify and observe local flora, seeking to understand function in natural systems and the potential for growth and propagation. Plants in native communities – as components of natural systems – are compared with plants in the designed landscape to ascertain functional changes in habitat and in soil/hydrology systems. The class is augmented by field trips to botanical gardens and arboretas.

**LAAR 65200: Urbanism**
(Also, UD 61004: Urban Ecologies I) The course involves the investigation of the place of the city in a variety of planetary and natural systems that seek to define the limits of urban sustainability. Using the concept of the urban "ecological footprint", the course will examine the practical boundaries of urban growth, the interaction of cities and the environment, the cycles of urban respiration and development, and the fundamentals of a sustainable urban economy. 3 hr./wk.; 3 cr.

**LAAR 66100/72100: Comprehensive Studio**
The final design studio includes the identification of a significant urban problem, a comprehensive analysis and design solutions resolving the identified cultural/ecological issues and needs developed in LAAR 65150 and a design/planning solution to the problem chosen. The final product will include a defensible rationale for the design approach, a series of diagrams, drawings depicting spatial interaction informed by the knowledge and skill gained through previous coursework in the program and will be reviewed by group of critics intervening at the end of the thesis preparation course. 12 hr./wk.; 9 cr. Materials fee:$50.

**Urban Design**
**UD 61001: Urban Design Studio I**
Working both collaboratively and individually, students will pursue the design of an autonomous city in an abstracted setting. The studio—utopian in mood—investigates principles and practices of city design at regional, urban, neighborhood, and architectural scales and engages a wide variety of analytical, representational, and expressive media. 10 hr./wk.; 7 cr. Materials fee:$50.

**UD 61002: History of Urban Space I**
An overview of the general process of modernization implicit in histories of city planning. The class traces the transformation of pre-modern “cities of faith” from a variety of cultures into the proto-modern cities of the Renaissance and the more controlled expressions of Baroque and Enlightenment urbanism. It examines the rise of the “city of machines” of the nineteenth century and concludes with the rise of the modernist urbanisms of Ebenezer Howard, Le Corbusier, and others. 3 hr./wk.; 3 cr.

**UD 61003: Reading the City I**
A reading course devoted to close analysis of a series of major texts in urban theory. These readings are broadly drawn from the fields of urbanism, geography, cultural studies, cinema studies and other disciplines. The course aims to show both the range and nuance of styles of reading the city as well as the presence of the city as a shifting trope in larger formats by which we understand and reproduce contemporary culture. 3 hr./wk.; 3 cr.

**UD 61004: Urban Ecologies I**
An investigation of the place of the city in a variety of planetary and natural systems that seeks to define the limits of urban sustainability. Using the concept of the urban "ecological footprint", the course examines the practical boundaries of urban growth, the interaction cities and the environment, the cycles of urban respiration and development, and the fundamentals of a sustainable urban economy. 3 hr./wk.; 3 cr.

**UD 62001: Urban Design Studio II**
The second urban design studio will incorporate strategies and methods developed in the first semester in the investigation of a large urban site in New York City. Drawing on a variety of "real world" influences and sources, students will produce viable designs that investigate the interplay of scale, site, program, and vision. 10 hr./wk.; 7 cr.

**UD 62002: History of Urban Space II**
A survey of urban design since 1945 in the context of post-war American suburbanization and the reconstruction of Europe. The course examines the impact of the growth of the globalized economy on urban form and development. It also considers theoretical styles—collagist, deconstructivist, phenomenological, etc.—and their impact on attempts to understand the contemporary city of fragments and layers. 3 hr./wk.; 3 cr.

**UD 62003: Reading the City II**
Drawing on insights and methods of the first semester, the course examines specific strategies for reading and analysis of urban sites. These will be used to reveal both the limits of different techniques of observation and the ways in which the contemporary metropolis overlays the social and imaginative spaces in the same physical place to produce the multiple and fragmentary territories that characterize the contemporary, plural metropolis. 3 hr./wk.; 3 cr.

**UD 62004: Urban Ecologies II**
The second semester of the ecology sequence is focused both on ways in which the city provides a setting and a medium for a variety of human interactions and organizations and on the ways in which the city collaborates in the invention of "people" and in teaching them how to be, how to exist, in the modern world. It explores some of the basic forms of metropolitan life—the crowd, the street, the park, the mass transit system, the store, the office, etc.—as well of forms of loneliness, mass-association, art, entertainment, and politics—via a variety of imaginative and critical texts. 3 hr./wk.; 3 cr.

**UD 64301-64305: Advanced Research in Urban Design**
Students in Urban Design, advanced undergraduates, and others may complete independent research projects under the supervision of the Director. Credits awarded will vary depending on the scope of the project. Variable credit.

**The J. Max Bond Center**
The J. Max Bond Center at the Bernard and Anne Spitzer School of Architecture is dedicated to the advancement of design and planning practice, education, research, advocacy and efficacy in ways that help to build and sustain resilient and just cities and regions. The Center seeks to foster collaboration and innovation by bringing together faculty, researchers, students, policy-makers and practitioners representing the four disciplines of the school—architecture, landscape architecture, urban design, and sustainability—in order to apply knowledge and expertise to a wide variety of contemporary problems, challenges, and opportunities facing urban America.
Faculty

Ahu Aydogan Akseli, Assistant Professor  
B. Arch., Uludag University; M. Arch., M.S. Izmir Institute of Technology; M.S., Ph.D. Rensselaer Polytechnic Institute

Jacob Alspector, Associate Professor  
B.Arch., The Cooper Union

Nandini Bagchee, Assistant Professor  
B. Arch., Cooper Union; M.S. in Architecture, M.I.T.; R.A.

Cesare Birignani, Assistant Professor  
Ph.D., Columbia University

Hilary Brown, Professor and Director of M.S. in Sustainability  
B. Arch, Oberlin College; M. Arch., Yale Univ.; FAIA, LEED AP

Lance Jay Brown, Professor  
B.Arch., Harvard Univ., M.Arch (Urban Design); R.A., A.I.A, A.C.S.A., D.P.

Mi-Tsung Chang, Assistant Professor  
B.Arch., Pratt Institute, M.Arch.; Ph.D., Union Institute

Jeremy Edmiston, Associate Professor  
B.Arch., Univ. of Technology (Australia); M.S., Columbia Univ.

Alan Feigenberg, Professor  
B.A., Univ. of Pennsylvania; M.Arch., Columbia Univ.; R.A.

Gordon A. Gebert, Professor and Interim Dean  
B.Arch., M.I.T.; M.Arch., Princeton Univ.; R.A.

Peter A. Gisolfi, Professor  
B.A., Yale Univ.; M.Arch., M.A.A., Univ. of Pennsylvania; R.A.; R.LA

Marta Gutman, Professor  
B.A., Brown Univ.; M.Arch., Columbia Univ.; Ph.D., Univ. of California (Berkeley)

Denise Hoffman-Brandt, Associate Professor and Director of Graduate Landscape Architecture Program  
B.A., Univ. of Pennsylvania; M.F.A., Pratt Institute; M.L.A., University of Pennsylvania

Bradley Horn, Assistant Professor and Director of Graduate Architecture Program  
B.Arch., The Cooper Union; M.Arch., Columbia Univ.; R.A.

Fran Leadon, Assistant Professor  
B.Arch., Univ. of Florida; M.Arch; Yale Univ.

Fabian Lionch, Associate Professor  
M.Arch., Univ. of Washington

Frank Melendez, Assistant Professor  
B.A., University of Arizona; M.Arch., Yale Univ.

Dominick Pilla, Associate Professor  
B.A., Rensselaer Polytechnic Inst.; M.S., Civil Engineering, New Jersey Institute of Tech.

George Ranalli, Professor  
B.Arch., Pratt Institute; M.Arch., Harvard Univ., R.A.

Julio Salcedo-Fernandez, Associate Professor and Chair  
B.A., Rice Univ.; M. Arch., Harvard Univ.

Catherine Seavitt Nordenson, Associate Professor  
B.S., University of Michigan; B.S. Landscape Architecture, CCNY; B. Arch., The Cooper Union; M. Arch., Princeton Univ.

Michael Sorkin, Distinguished Professor  
B.A., Univ. of Chicago; M.A., Columbia Univ.; M.Arch., M.I.T.

Elisabetta Terragni, Associate Professor  
M. Arch., Facolta di Architettura, Politecnico di Milano

Christian Volkmann, Associate Professor  
Dipl. Arch. ETH, Eidgenossische Technische Hochschule (Switzerland)

Sean Weiss, Assistant Professor  
B.A., Vassar College; Ph.D., Graduate Center, City University of New York

June P. Williamson, Associate Professor  
B.A., Yale Univ.; M.Arch., M.I.T.; M.U.P., CCNY

Visiting Faculty (2012 - Present)  
Karen Bausman

Ann Beha

Sara Caples

Yolande Daniels

Brian Healy

John Hong

Carla Juaçaba

Judith Leclerc

Audrey Matlock

Michael Meredith

Jinhee Park

Shawn Rickenbacker

Luis Rojo

Joseph Tanney

Claire Weisz

Professors Emeriti  
Jonathan Barnett

Carmi Bee

Horst Berger

R. Alan Cordingley

William Ellis

M. Paul Friedberg

David E. Guise

Ghislaine Hermanuz

James B. Jarrett

Hanque Macari

Garrison McNeil

M. Rosaria Piomelli

Labelle Prussin

William Roehl

Donald P. Ryder

Bernard P. Spring

Achva Benzinberg Stein

Lee Weintraub
The School of Education

Dr. Mary Erna Driscoll, Dean • NA 3/203 • Tel: 212-650-5471

The School of Education, an outgrowth of the extension courses organized in the fall of 1908 for teachers, librarians, and social workers, was established as a separate school of The City College in the spring of 1921. It is organized under its own faculty to prepare men and women for various educational services, teaching and non-teaching, in day care/preschool setting, as well as in the elementary and secondary schools. It is also open to in-service personnel who wish to take courses for professional improvement.

In collaboration with the other schools and divisions of The City College, the School of Education offers programs of study in a number of professional fields. Professional preparation for educational service is under the jurisdiction of the Board of the Trustees of The City University of New York and is coordinated by its Committee on Coordination of Teacher Education.

The graduate programs lead to the degrees of Master of Arts, Master of Science or Master of Science in Education. Initial, professional and advanced certificate programs are available in many professional fields. Advanced certification programs are designed to accommodate those who desire certification as a teacher or school leader but are not pursuing a degree. Some advanced certificate programs require a master’s degree for admission. For elementary and middle school teachers, a variety of programs are offered including bilingual and special education. For secondary school teachers, highly specialized professional courses are offered in the context of the discipline taught and supported heavily by course work in these content areas. For current and prospective school supervisors and administrators, programs that are designed to address school and district needs and priorities are offered. The college participates in offering the doctorate (Ph.D.) in both Educational Psychology and Urban Education at The Graduate Center of the City University of New York.

Mission and Shared Vision of The School of Education

In keeping with the historical mission of the College, the School of Education provides access to the field of education for all those who show promise of contributing to New York City schools and the education of the City’s children, regardless of national origin, home language, or economic condition.

The preparation of teachers in the United States is intended to meet the needs of a democratic society. In New York City, this is extended to preparing educators to work with students who are diverse in all respects. To that end, the School seeks to draw on the varied strengths of candidates while ensuring that they acquire the academic, pedagogical, technological, professional, and personal skills required of an educator in an urban setting. The School commits itself to ensuring that its graduates can demonstrate solid grounding in the liberal arts and sciences, a deep understanding of public purposes of education in a democracy, thorough training in effective teaching skills, and the professional and affective dispositions to work successfully with students, families, and colleagues in the field.

The School focuses on five themes to ensure coherence across its curriculum, instruction, field experience, and assessment:

- Content knowledge
- Pedagogical knowledge
- Diversity
- Leadership
- Building of caring communities.

Developing In-Depth Knowledge About the World

Candidates preparing to work in schools in teaching or supervisory roles demonstrate the content knowledge and skills necessary to help all students learn. All the College’s programs attempt to meet national and professional standards of content, rigor, and coherence. This knowledge is found in the liberal arts and sciences and is presented with the most up-to-date technology. Indeed, there is a consensus of educators, from progressives to traditionalists, that literature, history, philosophy, mathematics, natural science, foreign languages, and art and music must be part of a university curriculum.

To that end, the institution requires a core curriculum emanating from its College of Liberal Arts and Sciences. The School adopts and enhances this curriculum by requiring of its candidates additional math and science courses. Undergraduate candidates, in addition to their pedagogical courses, must complete an academic major or concentration. (In addition to these requirements, pedagogical courses echo the content of the liberal arts core and concentrations. Philosophy, history, mathematics, and English are part of these courses.)

Content knowledge is demonstrated in teaching methods courses; e.g. language arts, social studies, math and science. In these courses, candidates are introduced to State learning standards at the level appropriate to the certification they seek. Through use of content knowledge, candidates must be able to determine the widest and deepest potential knowledge base of each of their students with the accompanying strategies that range from direct instruction to inquiry so the student can, from textual and electronic sources, obtain, rehearse, recall, and transfer new knowledge to routine and new learning contexts. Knowledge of students and pedagogy goes hand-in-hand with content knowledge.

The seven knowledge areas of a university curriculum, listed above, have value in themselves, a value that education and liberal arts faculty communicate, deliberately and in passing, even in pedagogical courses. These faculties work together on curriculum and search committees. Only if they share and transmit the value of these knowledge areas will candidates develop a disposition to continue experiencing these and participate in lifelong learning. If they are not disposed to recognize this value they will not be able to pass it on to their students.

The target for teacher and other professional candidates with regard to content includes in-depth knowledge of the subject matter to be taught or supervised including the methods of the discipline that determine what becomes knowledge. Candidates demonstrate this knowledge through inquiry, critical analysis, and synthesis of the subjects they plan to teach. Some are able to meet target levels of performance by graduation from the programs of the School. Others, at that point in their development as educators, meet, at least, acceptable levels. But all graduates have the basic tools, technology, and necessary dispositions to continue their development as educational professionals as well as learners. In order to ultimately meet target levels of performance, our graduates will have to continue to develop their content as well as their professional knowledge.

Becoming Skilled, Reflective Practitioners

Teacher competence is obviously a primary influence on student learning. Critical dimensions of competence are pedagogical knowledge and skills. The School of Education adds to this the knowledge and skills to be a successful educator in urban schools that serve a diverse population of children and families and the disposition to use these to promote the learning of all children. In order to articulate the School’s purposes and goals, pedagogical competence is divided into six subcategories:


2. Knowledge of constructivism and inquiry learning. In coursework and fieldwork, candidates learn how to provide students with opportunities to explore, inquire, discover, and problem-solve. Candidates apply knowledge by gradually implementing a wider range of instructional practices in the field with diverse groups of students.

3. Knowledge of pedagogical (including behavioral) approaches to working with students with special needs. Candidates, whether in special education or not, recognize that they may be called upon to work in inclusion classrooms and engage in culturally responsive teaching. As well as experiencing constructivist and inquiry models, candidates investigate complementary models for students with special needs.

4. Knowledge of the use of instructional technology for teaching, learning, and assessment. The School promotes the skillful use of instructional and communications technology with a predominantly “across the curriculum” approach based on the recognition that technology must be used to support student learning.

5. The knowledge and ability to put into practice both multiple teaching strategies and approaches to assessment that build on the knowledge and strengths that students bring to school and allow for differentiated instruction for diverse learners. Based on their knowledge of diverse experiences with cultural differences, candidates integrate multiple strategies in the preparation of lessons and fieldwork. They are introduced to formal and informal assessment devices in foundation courses and, in suc-
ceeding course and fieldwork experiences, become comfortable with a wide range of assessment strategies.

6. Application of knowledge and skills through sequenced experiences in the field. Through sequenced fieldwork, candidates grow in their ability to apply the skills and knowledge learned. Fieldwork culminates in a carefully monitored semester of student teaching or, in the case of graduate students, a practicum in which they engage in a formal inquiry into their teaching practice.

Educating for and about Diversity

The great strength of City College is the diversity of its students and faculty. As a public institution, the College has in place a policy of nondiscrimination on the basis of age, color, disability, national or ethnic origin, race, religion, sex, sexual orientation, veteran or marital status. As a campus situated at the center of one of the world's most diverse metropolises, the College enjoys the opportunity of making that policy a living reality.

The School of Education subscribes wholeheartedly to the goal of full inclusion and so works continuously to ensure that the diversity of the New York City population, and particularly of the surrounding local community of upper Manhattan, is reflected in the make-up of the faculty and in the perspectives, concerns, and materials taken up throughout the curriculum. Access to education and to careers in teaching for the widest possible representation across the City's population is central to the School's mission but, at the same time, a wider variety of educational options is often available to the economically more advantaged. In this light, the School and the College seek especially to provide access to those who are economically disadvantaged.

Mechanisms to provide such access include low tuition, financial aid, academic support services, and scheduling of classes to accommodate students who work.

The School views the diversity of students and faculty, defined in its widest sense, not just as an obligation but as an educational resource. While an emphasis on multiculturalism does prepare learners for the diversity of the world outside the classroom, a diverse classroom actually brings that reality into the educational process itself. In a true community of learners, where each member contributes to the learning process, it must be the case that greater diversity of lived experience among the learners results in a richer understanding of themselves and the world around them. Where diversity is more than a fact of the world, something about which the learners need to learn, it is a fact of the candidate's own classroom, something through which the candidate can learn. It is the responsibility of faculty to draw upon the diversity of the school to enrich the learning processes of all candidates, a practice that serves as a model for candidates in their own teaching.

The School is continuously working towards finding ways to promote understanding across experiential divides. Particularly where native cultures, languages, and dialects differ from candidate to candidate, candidate to instructor, or faculty member to faculty member, it is a challenge to appreciate and accurately assess the value of another's contribution. It is also a challenge to prepare candidates to meet the demands of state and professional assessment instruments, which may not always be sufficiently sensitive to cultural and linguistic differences. The School strives to meet these demands without sacrificing either academic rigor or cultural and linguistic pluralism.

Nurturing Leadership for Learning

1. General preparation. Our goal is to develop the capabilities of candidates to assume leadership roles in their classrooms, schools, and communities. Whether or not candidates eventually assume formal leadership positions, the acquisition of the knowledge, skills, technology, and dispositions required for providing leadership serves to enhance their performance as teachers and in the classrooms, school, and community levels. Accordingly, developing the capacity to apply leadership skills that foster the development of community in multicultural, multilingual schools is a theme that is embedded and reinforced in the course content, fieldwork, research requirements, and internship experiences offered by all the programs in the School.

2. Candidates acquire the ability to lead and participate in decision-making bodies that address the academic content and management structure of the diverse programs in their schools. They are prepared to engage in collaborative processes that encourage the mutual efforts of teachers, administrators, and staff to work and learn together. They become skilled at collegial planning and evaluation, managing conflict, and reflecting and dialoging on their own professional practices. They seek to become stewards of best practice, which, by so doing, feel a responsibility for the whole school and not just the classroom.

3. Preparing candidates for formal leadership positions. Candidates learn to lead through the co-creation of a shared vision, values and goals. To accomplish this, they learn to build consensus, manage conflict, and clearly communicate the importance of the shared vision and values on an ongoing basis. They learn to create and maintain a culture of cooperation and collaboration which has teaching and learning as its central focus. They develop the value of empowering teachers and staff to act on their own ideas by involving them in decision-making processes and encouraging them to think of themselves as leaders. They demonstrate commitment to and sensitivity and respect for diverse cultures served by school communities.

4. Faculty in the leadership preparation programs utilize case study methodology, problem-based learning, and cooperative learning strategies to prepare candidates to understand the process of developing and articulating a vision and its related goals, to acquire the skills and dispositions needed to relinquish authority to teachers and staff, to appropriately involve others in decision-making processes, to delegate authority, and to share credit with others for the successes enjoyed by a school or other institutional unit.

Building Caring Communities

Community-building must be at the heart of any school improvement effort. Caring communities are places where teachers and children support and celebrate each other’s learning and general well-being. The School, in order to help candidates begin this career-long endeavor, focuses on the creation of democratic classrooms and schools and teachers’ roles as models of caring, values, and moral behavior. Where classroom and school cultures and schools look like and what values they have. Faculty strive to be examples, not as transmitters where their voices dominate, but as co-intentional learners, coaches, and facilitators. Beyond modeling, faculty explore with candidates the dynamics of democratic classrooms and emphasize why they are important. They emphasize the connection between public education and caring citizens equipped to make judgments as they participate in the decision-making processes of society.

1. Democratic classrooms and schools. Candidates come to understand what democratic classrooms and schools look like and what values they have. Faculty strive to be examples, not as transmitters where their voices dominate, but as co-intentional learners, coaches, and facilitators. Beyond modeling, faculty explore with candidates the dynamics of democratic classrooms and emphasize why they are important. They emphasize the connection between public education and caring citizens equipped to make judgments as they participate in the decision-making processes of society.

2. Teachers as models of caring, values, and moral behavior. All teachers need to know their students well and, to the extent possible, personalize instruction and provide advice, nurturing, and counseling when needed. Faculty of the School, therefore, need to know candidates well and help them identify ways to know their students and to express interest in and care for them. Candidates need to remember details about students’ lives, keep notes, call and visit their homes, respond authentically, and ask students what they think and care about. Most of all, candidates need to learn that being a caring teacher is not playing a role. They must be authentic persons before they are caring persons. To be authentic in front of students leaves one vulnerable and candidates need to be able to deal with that vulnerability.

3. Candidates, therefore, learn how classrooms and schools become caring communities and how they become more democratic. They understand behaviors and forces that militate against caring, democratic classrooms. They exhibit caring and democratic behaviors in their education classes. They develop the value of empowering teachers and staff to act on their own ideas by involving them in decision-making processes and encouraging them to think of themselves as leaders. They demonstrate commitment to and sensitivity and respect for diverse cultures served by school communities.

4. The School continually reviews and evaluates all undergraduate and graduate programs, including the objectives, content, and learning activities of individual courses. Experimentation is sought in all aspects of the program. Through required courses, counseling, experience in community agencies, and in affiliated and other schools, students are prepared to fill their role as urban teachers.

Accreditation and Certification

The City College is accredited by the Middle States Association of Colleges and Secondary Schools. The teacher education program of the College prepares pre-school, elementary, middle school, and secondary teachers and school service personnel with the master’s degree as the highest approved degree. Certificate programs beyond the master’s degree are also offered in several fields. The School of Education is accredited by the National Council for Accreditation of Teacher Education (NCATE) and all of its programs are state approved. The School of Education is affiliated with the American Association of Colleges for Teacher Education.

Programs of study are designed primarily to meet State certification requirements. Students who at the time of receipt of an advanced certificate or master’s degree and as a result of their studies at the College meet all the requirements of one of the College’s teacher education programs approved by the New York State Department of Education are recommended to that Department by the Certification Officer of the School of Education for state certification. However, State requirements change from time to time. Con-
New York State Certification Requirements

The graduate School of Education has programs leading to initial and professional certification in New York State. When students complete a certification program, the Certification Officer (NA 3/213) submits a recommendation to the New York State Department of Education using the TEACH system. Candidates are also required to apply online for their certificate. The Dean’s Office, in conjunction with the program director and department chair, determines that all program requirements have been met.

In addition to the academic requirements of the education program, candidates must also pass the New York State Certification Examinations (NYSTCE) appropriate to the certificate they seek. Candidates graduating prior to May 2014 are required to pass the Liberal Arts and Sciences Test (LAST), the Assessment of Teaching Skills Written (ATS-W), and the Content Specialty Test(s) (CST). Candidates graduating as of May 2014 are required to meet the new examination requirements. The new requirements for classroom teachers include a teacher performance assessment (edTPA), Educating All Students Test (EAS), Academic Literacy Skills Test (ALST), and the revised Content Specialty Test(s) (CST). The new examination requirements for the School Building Leadership (SBL) certificate consist of a revised School Building Leader Assessment (SBL) and Educating All Students Test (EAS). Information about the new exam requirements can be found on the CCNY certification website. In addition, students enrolled in bilingual programs are required to take the Bilingual Education Assessment (BEA).

Candidates qualify for the professional certificate after completing their master’s or advance degree if they have three years of full-time, legal, and paid teaching experience.

Graduate Programs

**Master of Science in Education**
- Bilingual Childhood Education
- Early Childhood Education
- Educational Leadership
- Educational Theatre
- Childhood Education
- Literacy (Birth-Grade 6) or (Grades 5-12)
- Mathematics Education (Grades 5-9)
- Science Education (Grades 5-9): Biology, Chemistry, Earth Science, Physics
- Teaching Students with Disabilities in Childhood Education
- Teaching Students with Disabilities Grades 7-12
- Teaching Students with Disabilities in Middle Childhood Education
- Bilingual Special Education

**Master of Science**
- Teaching English to Speakers of Other Languages (Grades P-12 and Adult)

**Master of Arts**
- Art Education (Grades P-12)
- English Education (Grades 7-12)
- Mathematics Education (Grades 7-12)

**Secondary Science Education (Grades 7-12): Biology, Chemistry, Earth Science, Physics**

**Social Studies Education (Grades 7-12)**

**Extensions to Certificate Programs**
- Bilingual Education

**Advanced Certificate Programs for Master’s Degree Holders**
- Childhood Education
- Early Childhood Education
- English Education
- Mathematics Education
- Science Education: Biology, Chemistry, Earth and Atmospheric Science, Physics
- Social Studies Education

**Post Master’s Advanced Certificate Program**
- Educational Leadership

**Officers of the Administration**

**Dean**
- Professor Mary Erina Driscoll
  NAC 3/203; 212-650-5471

**Acting Associate Dean**
- Professor Gretchen Johnson
  NAC 3/213; 212-650-5870

**Department of Teaching, Learning and Culture Chair**
- Professor Amita Gupta
  NAC 6/207B; 212-650-7897

**Department of Leadership and Special Education Chair**
- Professor Hazel Carter
  NAC 6/207B; 212-650-7262

**Department of Secondary Education Chair**
- Professor Edwin M. Lamboy
  NAC 6/207B; 212-650-7262

**School of Education Offices**

**Department of Education**
- NA 6/207B; 212-650-7262

**Office of Student Services**
- NA 3/223A; 212-650-52316

**Office of Clinical Practice**
- NA 6/207A; 212-650-6915

**Graduate Admissions**
- NA 3/223A; 212-650-6296

**Certification Office**
- NA 3/220; 212-650-5590

The Office of Graduate Admissions provides general information about the programs of study. All courses must be approved by the student’s major field advisor before they may be credited toward the degree of Master of Arts, Master of Science, Master of Science in Education, or Advanced Certificates.

**Advisors for Admissions, Courses, Programs, and Registration**

**Leadership**
- Dr. Robert Lubetsky, 212-550-5034

**Art Education**
- Professor Marit Dewhurst, 212-650-7433

**Bilingual Education**
- Professor Tatyana Kleyn, 212-650-5328

**Childhood Education**
- Professor Laura Geilert, 212-650-5796

**Early Childhood Education**
- Professor Beverly Falk, 212-650-5182
Matriculation with Conditions
A student who is otherwise qualified, but who has not completed the courses prerequisite to matriculation, may be admitted to matriculation with conditional status, provided that the deficiencies are not in excess of twelve credits of work in professional and subject matter courses combined. Students admitted to matriculation with conditions will be expected to remove all conditions within three semesters after their initial acceptance.

No credit toward the degree is allowed for courses taken to fulfill the requirements or conditions for matriculation.

Admissions Procedure for Matriculated Status
Students applying for admission to the master's degree, extension or advanced certificate programs in the School of Education must:

1. Complete an application for admission to the particular program. Applications are available on the website of the Office of Graduate Admissions, https://app.applyyourself.com/?id=cunyccnyg.
2. Possess a bachelor's degree from an accredited college or university.
3. Demonstrate an ability to pursue graduate study successfully.
4. Possess a grade point average of "B" or above.
5. Submit the application for admission and three letters of recommendation to the Office of Graduate Admissions by October 15th for the spring, and March 15th for the fall.
6. Complete an in-person written essay and interview.
7. Provide evidence of New York State initial certification, if applying to a program that leads to professional certification.

Decisions on admissions will be made by each graduate program after consideration of all admissions materials. Decisions will be announced in December for spring admissions and May for fall admissions.

The Advanced Certificate programs are designed to accommodate students who already have a master's degree.

Meeting Professional Standards
As a professional school with the responsibility of recommending students for New York State certification, the School of Education must conduct ongoing professional evaluation of students. Programs in the Department of Teaching, Learning and Culture do not recommend candidates for certification as a teacher if they receive less than a B grade in their student teaching or practicum experience. In cases where faculty determine that an individual is inappropriate for the teaching profession, they may recommend dismissal to the Committee on Course and Standing. The findings of the Committee are final.

Admission with Advanced Standing
Up to six credits in advanced standing may be allowed for graduate work satisfactorily completed at institutions other than The City College, provided that the program director deems the work appropriate to the student’s program of study and an official transcript is on file in the Office of the Registrar. The course or courses for which such credit is sought must have been completed within the three-year period prior to the date of matriculation in the graduate program.

Foreign Student Credentials
An applicant who files credentials from foreign institutions of higher learning in support of an application for admission to a graduate program in the School of Education must present:

1. The original of all academic records and certifications for all institutions attended.
2. Available bulletins and catalogs of the institutions attended and the curricula followed.
3. Original and copies of statements by the United States Office of Education or other agencies relative to standing, level, or validity of foreign records filed with such agencies for purposes of evaluation and certification or licensing.

Credentials filed in support of an application become part of the permanent file and the property of the college. When a student has presented both the original and a copy of a document, the registrar will return the original to the student after verification.

Non-Matriculant Admissions
The School of Education may allow degree and/or certification seeking students to take up to nine credits as non-matriculated students. If such students are accepted as matriculated students, the program director will
decide whether any of the credits taken as a non–matriculated student may be applied toward the program requirements.

Those who wish to attend as non–matriculated students may be admitted to courses for which they are qualified. Such students must file for admission as a non–matriculated student at the Office of Admissions and Student Services in NA 3/223A and present student copies of transcripts or other credentials proving graduation from an accredited institution at that time.

Non-Degree Admissions
The School of Education Graduate Division will accept non-degree students who seek professional growth. Taking one or a series of courses to improve teaching skills and to keep up with new developments in the student’s area of teaching is encouraged by the College.

Advisors in each of the several teaching and service fields are available for consultation at registration and during the regular semesters. Courses taken as a non–degree student are applicable neither to a certificate program nor to a master’s degree program.

Those who wish to attend as non-degree students may be admitted to courses for which they are qualified. Such students may file for admission at non-degree registration, which is described in the schedule of classes. Before registration, these applicants must present student copies of transcripts or other credentials proving graduation from accredited institutions. A student may file for admission as a non-degree student in the Office of Admissions and Student Services, NA 3/223A.

Non-degree students must follow the regular rules for registration and course requirements, including prerequisites. Schedules of classes are available online http://www.ccny.cuny.edu/registrar/index.cfm.

Grading and Course Information
Grades awarded in the School of Education are:

- A: Excellent (includes + and – grades)
- B: Good (includes + and – grades)
- C: Fair (includes + grades only) (lowest passing grade for graduate credit)
- F: No credit granted. If this grade is received in a required course, the course must be repeated.
- W: Withdrawed without penalty
- WN: Withdrawed Never Attending
- INC: Incomplete. This is a temporary grade, authorized only where unavoidable circumstances have prevented the completion of course assignments. Instructors may give this grade at their discretion, but it is expected that students will complete the requirements by the date agreed upon with their instructor, but no later than the published date the following year. If extraordinary situations require a further extension, it must be obtained through the Committee on Course and Standing. Graduating students must complete courses before the semester’s graduation date (September 1, February 1, and the official June commencement date) in order to graduate at the expected date.

An average grade of B (3.0) is required for graduation. Students whose academic status falls below this standard will be placed on probation. In special circumstances, with the approval of program faculty, students with a GPA between 2.75 and 3.0 may sit for a qualifying examination.

Normally, students are not permitted to repeat a course that they have already passed. If permitted to do so, the second grade is not counted in computing the scholarship average, unless the Committee on Course and Standing so authorizes.

Important Note on Restricted Courses
There are several kinds of courses which are limited in their enrollment to certain categories of students. These restrictions are noted in the course descriptions. Students who register contrary to these rules will be dropped from the course and may lose part or all of their tuition. Restrictions are as follows:

Special permission required. Permission is to be obtained in writing from the major advisor in the student’s field or program only. This may be done at the time of registration.

Open to matriculants only. This indicates that only those persons in an approved program leading to the master’s degree, post-master’s, or an advanced certificate may take the course. In some instances, the course may be open only to matriculants in a particular program; if so, this restriction is stated in the course listing.

Open only to... Certain courses are restricted to special groups of students (e.g., science majors or those with 10 credits of graduate work). In each case, the limitation is specified in the course listing.

Advanced approval required. Students must receive written permission from the appropriate advisor during the preceding semester, prior to the date listed in the collegiate calendar for obtaining such permissions. This date is normally about the middle of April or November.

Prerequisite or corequisite courses. In each instance where particular courses are listed as pre-or corequisite, equivalent courses may be presented for the advisor’s approval. Students registering without the necessary prerequisite or corequisites will be barred from such classes.

Prerequisite Education Courses
There may be courses in the foundations of education which should be taken before other education courses, unless special permission has been obtained from the program advisor to follow some other sequence. These courses differ by program.

Independent Study
Students can include up to 6 credits of independent study courses in their programs, as appropriate. Such work may only be embarked upon under the advisement of a program advisor. Students who wish to take an independent study course must do so with the agreement of the faculty member who will act as mentor for such work. This must be done in advance of registration.

Admission to Student Teaching/Practicum
Only students who are matriculated in graduate programs in the School of Education will be admitted to student teaching/practicum courses. Those matriculated students who wish to take student teaching courses must apply before the deadline announced in the preceding semester to the Office of Clinical Practice - Field Experiences and Student Teaching, NA 6/207A, 212-650-6915, www.ccny.cuny.edu/education/fieldexperiences/ for further information.

Admission Requirements for Student Teaching
To be admitted to student teaching, students must have:

1. A completed application submitted to the Office of Clinical Practice (Note: Childhood Ed and Ed Theatre have different procedures)
2. A completed recommendation form from their program advisor,
3. A successful interview with the Director of Clinical Practice,
4. All prerequisite courses and no INC grades,
5. GPA of 3.0 or higher,
6. Satisfactory results from the tuberculosis (TB) test (if not employed with the New York City Department of Education),
7. 100 hours of field experiences,
8. Passing score on the Academic Literacy Skills Test (ALST) or the English Literacy Proficiency Exam (ELPE) (for all applicants except those in Secondary Education)
9. Passing score on the applicable Content Specialty Test (CST) (for Secondary Education applicants)

Admission to student teaching requires satisfactory completion of academic requirements as well as the meeting of appropriate professional standards. Applications are reviewed by the School of Education Student Services Committee, which determines eligibility for admission to student teaching. Decisions of the Student Services Committee may be appealed to the School of Education’s Committee on Course & Standing, whose decisions are final.

Programs in the Department of Teaching, Learning and Culture do not recommend candidates for certification as a teacher if they receive less than a B grade in their student teaching experience.

Courses in the Graduate Division College of Liberal Arts and Science
Matriculants for advanced certificates or a master’s degree in the School of Education are afforded the opportunity of enrolling in the courses offered in the Graduate Division of the College of Liberal Arts and Science under the following conditions.

1. Not more than twelve credits taken in that division may be credited toward the graduate degree in the School of Education.
2. Each course included in a student’s program of study must be approved in writing by the student’s major field advisor and by the appropriate departmental advisor in the College of Liberal Arts and Science.

Except for the limitations cited above, students in a master’s program will receive the same privileges accorded them in courses offered in the School of Education. Further details about courses are contained in this Bulletin.

Courses in Other Divisions of The City College
Non-Degree Students. The School of Education cannot give permission to non-degree students to take courses in other divisions of the College. Such students must arrange their own registration in other divisions of the College and fulfill requirements of these divisions.

Matriculants. Matriculated graduate students who wish to take undergraduate courses must obtain the approval of their major field advisor and must complete enrollment in courses at the time and place of School of Education registration. (See schedule of courses of the Graduate School of Education for time of registration and further information http://www.ccny.cuny.edu/registrar/index.cfm http://www.ccny.cuny.edu/registrar/index.cfm)

Permission to register in courses of other divisions of the College is issued provisionally and subject to cancelation, if the courses have reached their maximum enrollment.

Courses at Institutions other than The City College
Advance Approval. A matriculated student who desires to take courses in an institution other than The City College must secure advance written approval for such courses from the major field advisor. If these courses are to be taken at one of the other colleges of the City University of New York, the student must file an e-permit https://cunyportal.cuny.edu/cpr/authenticate/portal_login.jsp prior to the registration period. No more than 6 credits of transfer courses may be applied to degree requirements.

Proof of Outside Work. The student is responsible for having an official transcript sent from the other institutions as soon as final grades are available. A student who expects to be graduated at the end of the current term should not register in courses at another institution.

Human Relations Courses Likely to be Accepted By the New York City Department of Education
It is expected that the following courses will be offered in such a manner as to comply with the regulations of the New York City Department of Education for teacher credit in meeting the “Human Relations” requirements. EDUC 7200A: Psychology of Teaching and Learning EDCE 1800K: Parent, Child, and the School EDCE 5700C: Education That Is Multicultural

Attendance
Attendance is credited from the first session of the course. Students who register late incur absences for all sessions held prior to their registration.

Students are expected to be punctual, and to attend every session of the classes for which they are registered. It is not permissible to register for courses which cannot under normal conditions be reached at the time scheduled for the opening of the class.

Provision is made for unavoidable absence due to illness or authorized conferences by permitting two absences in a fifteen session course, or four absences in a thirty session course.

No credit will be granted for a course in which a student has incurred excess absences except that, where circumstances warrant, instructors may accept special assignments in lieu of one or two unavoidable absences. In no case will credit be granted if five absences have been incurred in a fifteen session course.

If five absences occur prior to or by the midterm period, the instructor will forward a "W" grade to the Registrar. If the fifth absence occurs after the midterm period, the student must appeal to the School of Education Committee on Course and Standing in order to avoid the "F" grade.

Degree Requirements
Matriculated Status. Degree candidates are required to be matriculants and to complete the minimum number of graduate credits specified in an approved program of study (not less than 30), to pass a written Qualifying Examination (unless a "B" average is achieved at graduation), and to complete introduction to Educational Research (EDUC 7000I) and Individual Study in Educational Research (EDUC 7100I) or designated equivalent courses.

Approvals. All courses to be credited toward advanced certificates, the degree of master of arts, master of science, and master of science in education must be included in the program of study, approved by the major field advisor before students register for courses.

Enrollment Residence and Time Limitations. To be continued as a matriculant in a master’s degree program, a student is required to take at least one approved course in each semester beginning in September and to maintain academic standards established by the Committee on Course and Standing. All requirements for the degree must be completed within a five year period from the date of matriculation. When advanced standing has been granted, one year will be deducted from this five-year period for each six credits of such advanced standing.

Extension of Time Limitation. Requests for extension of the time for the completion of graduate work should be made in writing in advance of the termination of the four-year period and addressed to the School of Education Committee on Course and Standing. Extensions of time are given for compelling reasons.

Exceptions to Enrollment Residence. Exceptions to the above enrollment rules may be made in the case of students who apply in advance and are granted a maternity, military or medical leave, etc. Requests for such leaves should be made in writing and addressed to the Director of the Office of Admissions and Student Services.

Withdrawal from Courses. Students wishing to withdraw from courses must report to the Office of the Registrar to make formal application.

Credit Limitations. Graduates who are teaching or otherwise fully employed may not take more than six credits in any one semester, unless prior approval has been given by the program director. Full time student status is established at twelve credits. However, persons who are carrying a full schedule may not take more than sixteen credits in the semester, including all courses taken in the several divisions of the College, unless written permission has been secured from the School of Education Committee on Course and Standing.

Academic Requirements. The right is reserved to ask the withdrawal of any student who fails to maintain a satisfactory record in graduate courses.

Professional Requirements. The right is reserved to ask the withdrawal of any student who fails to display satisfactory professional attitudes and behavior in class or in a professional position.

Applying for Graduation. Candidates for degrees and advanced certificates must apply before November 1st or March 1st of their expected final semester (July 1st, if final semester is to be the summer session). Applications may be obtained at the Registrar’s Office or online at www1.ccny.cuny.edu.

Maintenance of Matriculation. See Academic Requirements and Regulations section of this bulletin.

Graduation Honors. Students graduating with a GPA of 3.7 and with no grade below “B” in courses applicable to the degree and who have exhibited high personal and professional qualities may be recommended to the dean to be awarded honors.

Academic and Professional Standards
Each graduate program establishes the academic and professional standards expected of its students. Traditional professional standards conform to but are not limited to the codes of ethics of professional educational associations.

The right is reserved to ask for the withdrawal of any student who fails to meet professional standards and/or fails to maintain a satisfactory academic record in courses. Offenses include, but are not limited to, cheating, plagiarism, inappropriate behavior, and unsatisfactory grade-point average.

Jurisdiction Over Academic and Professional Standards
Department chairs have jurisdiction over offenses regarding academic and professional standards for any student whose field of interest is in their department.

Procedure for Handling Violations
Violations of academic and professional standards shall be reported in writing to the department chair and a copy sent to the offender as soon as possible, but no later than one week after the offense is alleged to have taken place. In any appeal, the student must first arrange an appeal conference with the instructor who shall arrange a conference with the student as expeditiously as possible in order to settle the issue informally. The
decision agreed upon shall be reported in writing to all persons involved, including the director of the Office of Admissions and Student Services, the department chair, and the dean.

Appeals Procedures for Academic Judgments
The School of Education Committee on Course and Standing will review only appeals that pertain to the School of Education. Students who wish to appeal academic judgments, including grades, begin by discussing the grades with the instructor as soon as possible after the grade is issued. Grades in courses may not be changed after the first month of the following semester without the approval of the department chair and dean, and no grade may be changed after a student has graduated.

If, after discussing the grade or other academic judgment with the instructor, a student wishes to pursue an appeal, he or she must discuss it with the program director. The program director will make an independent recommendation and then forward it to the department Chair and to the Committee on Course and Standing.

The student may pursue the appeal further to the Committee on Course and Standing, which has final jurisdiction. Such appeals are transmitted to the Committee through the director of the Office of Admissions and Student Services (OA&SS) and, in general, students should discuss the appeal with the Director before submitting a formal appeal.

The Committee on Course and Standing considers appeals in writing and neither the student nor the instructor appears in person. The student’s appeal should be in the form of a detailed letter accompanied by any supporting evidence the student wishes to submit, including copies of papers or letters from other students or instructors.

The Committee normally asks the instructor and the department chair to comment, in writing, on the student’s appeal. On request, the OA&SS director will discuss these responses with the student before the Committee meets.

The Committee’s decision is sent to the student, in writing, by the OA&SS director. Other academic appeals, such as appeals from probation, academic dismissal, and failures for poor attendance may be appealed directly to the Committee on Course and Standing. In addition, requests for waivers of degree requirements, extensions for incompletes, limitations on registration, and similar matters should be made to the Committee. The Committee has delegated its authority to the Committee Chair for requests for extensions for incompletes, limitations on registration, and similar matters, but reserves appellate authority to itself.

Student Life and Services

Educational Placement
Educational Placement services are available to assist graduate students and alumni in locating and securing positions in local and out of town school systems. Further information may be obtained from the Office of Clinical Practice - Field Experiences and Student Teaching, NAC 6/207A, or the Career Services Office, NA 1/116.

Student Organizations
Education Club
Offers students interested in teaching careers an opportunity to explore issues of common interest; to promote professional growth; to act as a service group to the School of Education, The City College, and the community; and to maintain dialogue with the faculty in matters relevant to teaching.

Honor Society
Kappa Delta Pi, is an honor society in Education. City College constitutes the Gamma Iota Chapter. Graduate students and undergraduates in the junior or senior year who are preparing for the teaching profession, and who exhibit commendable personal qualities, sound educational ideals, and superior scholarship may be elected to membership if recommended by faculty.
**Bilingual Extension**

**Certification, student teacher candidates in the following graduate programs leading to initial certification:**

- Teaching English to Speakers of Other Languages
- Master of Science (M.S.)
- Extension Program
- Non-degree Certificate Programs

**Initial certification programs are available at the graduate level for students with a baccalaureate degree.**

**Professional certification programs leading to a master's degree are available to students who possess initial certification.**

**Students already holding a master's degree in a content-related area may enroll in an advanced certificate program in TESOL and theater education.**

**Students who are not seeking New York State certification may enroll in non-certification programs in childhood education, early childhood education, TESOL, and theater education.**

**The Department offers the following master's degrees and advanced certificates in education:**

**Master of Science in Education (M.S.Ed)**
- ESL General Education
- Bilingual Special Education (Grades 1-6)
- Childhood Education (Grades 1-6)
- Early Childhood Education (Birth-Grade 2)
- Educational Theatre (P-Grade 12)
- Literacy: (Birth-Grade 6; Grades 5-12)

**Master of Science (M.S.)**
- Teaching English to Speakers of Other Languages

**Extension Program**
- Bilingual Extension

**Student Teaching**
- Effective fall 2015, in order to be recommended for New York State teaching certification upon completion of a graduate program leading to initial certification, student teacher candidates in the following graduate programs (Early Childhood; Bilingual and TESOL; Childhood; Ed Theatre) must earn a final grade of B or better in their student teaching course (EDCE 7301G, 7302G, 7303G, 7502G, 7503G, 7401G, 7403G, 7201G, 7202G, 7703G)

**Non-degree Certificate Programs**
- Childhood Education (Grades 1-6)
- Early Childhood Education (Birth-Grade 2)
- Educational Theatre (P-Grade 12)
- Teaching English to Speakers of Other Languages

**Advisement**
- The Office of Admissions and Student Services (212-650-5316) or the Office of the Chair (212-650-7262) will be pleased to assist you in contacting the faculty member in charge of any of the programs above.

**Programs and Objectives**

**Bilingual Childhood Education**
- The aims of this program are to develop an academically, linguistically, and culturally enriching environment where the fields of bilingual and childhood education come together to develop skilled childhood education teachers, quality bilingual programs, and related exceptional teaching and learning practices; and to validate and build upon the linguistic and cultural strengths of diverse student populations.

**Professional Certification in Bilingual Childhood Education**
- This program is for graduate students who hold initial New York State certification and a bilingual extension, and who are seeking professional New York State certification.

**Required Courses:**
- EDCE 2300C: Social Studies Inquiry for Pre-K to 6 Teachers
- EDCE 2400C: Development and Evaluation of Materials in Bilingual Education
- EDCE 3200C: Science Inquiry for Pre-K to 6 Teachers
- EDCE 5201C: Teaching English Language to Bilingual English Language Learners (P-grade 6)
- EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students
- EDCE 5700C: Education That is Multicultural
- EDCE 6200C: Mathematics Inquiry for Pre K-6 Teachers

**Choose two of the following:**
- EDCE 7100E: Cultural Pluralism in Curriculum Development
- EDCE 7200F: Contemporary Problems in Bilingual Education
- EDCE 2600C: Linguistics for Teachers
- EDCE 4100C: Teaching Elementary Arts & Crafts in the Elementary School
- EDCE 5100C: Teaching Foreign Languages in Elementary Education
- EDCE 5202C: Teaching Language Arts (Spanish)
- EDCE 5203C: Teaching Language Arts (Haitian)
- EDCE 5204C: Teaching Language Arts (Chinese)
- EDCE 5400C: Methods of Teaching English to Speakers of Other Languages (P-grade 6)
- EDCE 5500C: Children of the Caribbean cultures and curriculum
- SPED 5000K: Introduction to Inclusive Education
- EDCE 6000K: Introduction to the Education of Emergent Bilingual Students with Disabilities
- EDCE 6100K: Assessing the Educational Needs of Language Minority Students with Disabilities
- EDCE 6700C: Phonology of English for Teachers
- EDCE 6800C: Grammar and its Pedagogy: English and Other Languages
- EDCE 7100C: Creative Movement & Music in Elementary School

**Research Sequence:**
- EDCE 2205I: Research Seminar I in Teaching Culturally and Linguistically Diverse Students
- EDCE 2905I: Research Seminar II in Teaching Culturally and Linguistically Diverse Students
- Total credits 31

*Candidates without a comparable special education course on their previous credential transcript must select EDCE 6600K or SPED 5000K to meet the state requirements regarding students with disabilities.

**Bilingual Extension Master’s Program for Students with NYSED Certification**
- This program is for graduate students who hold initial New York State certification and who are seeking professional certification and a bilingual extension.

**Required Courses:**
- EDCE 2600C: Linguistics for Teachers
- EDCE 5201C: Teaching English Language Arts to Bilingual English Language Learners (Pre K-Grade 6)
- EDCE 5202C: Teaching Language Arts (Spanish)
- EDCE 5203C: Teaching Language Arts (Haitian)
- EDCE 5204C: Teaching Language Arts (Chinese)
- EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students
- EDCE 5400C: Methods of Teaching English to Speakers of Other Languages I (Pre K-Grade 6)
- EDCE 6900C: Methods of Teaching English to Speakers of Other Languages (7-12)
- EDCE 5700C: Education That is Multicultural
- EDCE 6400C: Teaching Content (Math, Science, and Social Studies) Using Both English and a Native Language

**Choose two of the following:**
- EDCE 6700C: Phonology of English for Teachers
SPED 5000K: Introduction to Inclusive Education 3
EDCE 6000K: Introduction to the Education of Emergent Languages 3
Bilingual Students with Disabilities 3
EDCE 6100K: Assessing the Educational Needs of Language Minority Students with Disabilities 3
EDCE 6800K: Grammar and its Pedagogy: English and Other Languages 3
EDCE 5800C: Theories of Second Language Acquisition 3
Other electives in education or in the target language by permission only

Research Sequence:
EDCE 2205I: Research Seminar I in Teaching Culturally and Linguistically Diverse Students 2
EDCE 2905I: Seminar in Educational Research 2
Total credits 31

Initial Certification in Bilingual Childhood Education
This program is for graduate students who hold a bachelor's degree outside of education while seeking an initial New York State certification (childhood education) and a bilingual extension.

Prerequisite/Corequisite:
EDUC 7200A: Psychology of Teaching and Learning 3
EDUC 7300A: Child Development 3
EDCE 5950C: Mathematics Knowledge for Teaching (B-6) 3

Required Courses:
EDCE 2100C: Social Studies in Childhood Education 3
EDCE 2600C: Linguistics for Teachers 3
EDCE 3100C: Science in a Program of Childhood Education 3
EDCE 5201C: Teaching English Language Arts to Bilingual English Language Learners (Pre-K-6) 3
EDCE 5202C/5203C/5204C: Teaching Language Arts (Spanish/Haitian/Chinese) 3
EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students 3
EDCE 5700K: Education That Is Multicultural 3
EDCE 6000K: Introduction to the Education of Emergent Bilingual Students 3
EDCE 6200C: Mathematics Inquiry for Pre-K-6 Teachers 3
SPED 5000K: Introduction to Inclusive Education 3
EDCE 6400C: Teaching Content (Math, Science, and Social Studies) Using Both English and a Native Language 3
Total credits 15

Childhood Education
The master's degree program in childhood education (grades 1-6) is designed to meet the needs of four distinct groups of graduate students: (1) practicing teachers who have achieved provisional or initial teacher certification in grades 1-6 and who wish to pursue professional certification as a teacher, (2) students who have earned a bachelor's degree in a liberal arts or science area who wish to pursue initial certification as a teacher of childhood education (grades 1-6), (3) students who hold certification in an area other than childhood education, and seek both initial certification in childhood education and a master's degree and (4) students who are interested in a master's degree only without New York State certification.

Initial Certification Program

Required Courses:
EDUC 7100A: Urban Schools in a Diverse Society 3
One of the following three: 3
EDCE 2100K: Developmental Issues in Early Childhood/Childhood Education OR
EDUC 7200A: Psychology of Teaching and Learning 3
OR
EDUC 7300A: Child Development 3
EDCE 7500C: Emergent to Fluent Literacy 3
EDCE 7510C: Literacy Strategies Birth-Grade 6 3
One of the following two: 3
EDCE 1800K: Family, Child & School 3
EDCE 5700C: Education That Is Multicultural 3
EDCE 2900F: Inclusive Practices for the General Education Classroom (Grades 1-6) 3
EDCE 3000F: Curriculum Development in Childhood Education 3
EDCE 2100C: Teaching Social Studies in Childhood Education 3
EDCE 3100C: Science in a Program of Childhood Education 3
EDCE 5950C: Mathematics Knowledge for Teachers 3
EDCE 6100C: How Children Learn Mathematics: Grades 1-6 Teachers 3
EDCE 4100C: Teaching Arts and Crafts in Childhood Education 3
EDCE 4400C: Arts Integration: Theatre and Related Arts in the Curriculum (P-6) 3

One of the following options:
EDCE 7401G: Student Teaching in Childhood Education 4
EDCE 7403G: Supervised Teaching in Childhood Education I and Seminar (grades 1-6) 3
EDCE 7402G: Seminar in Student/Supervised Teaching 2
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
EDCE 2204I: Content Research Seminar in Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2
Total credits 40-46

Professional Certification Program

Required Courses:
One of the following two: 3
EDCE 2000C: First and Second Language and Literacy Acquisition OR
EDCE 2700C: Literacy for Struggling Readers and Writers 3
EDCE 2900F: Inclusive Practices for the General Education Classroom (grades 1-6) 3
Or
SPED 5000K: Introduction to Inclusive Education 3
EDCE 2300C: Social Studies Inquiry for Pre-K-6 Teachers 3
EDCE 5200C: Science Inquiry for pre-K-6 Teachers 3
EDCE 6200C: Mathematics Inquiry for Pre-K-6 Teachers 3
EDCE 7404F: Contemporary Problems and Issues in Childhood Education 3
EDCE 3000F: Curriculum Development in Childhood Education 3
One of the following options: 3
EDCE 7400C: Curriculum Development in Childhood Education 3

Bilingual Extension Certificate
Extension in Bilingual Education only - for graduate students who hold initial or professional certification in early childhood/middle or adolescent education while seeking a bilingual extension.

Required Courses:
EDCE 2600C: Linguistics for Teachers 3
EDCE 5202C/5203C/5204C: Teaching Language Arts (Spanish/Haitian/Chinese) 3
EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students 3
EDCE 5700C: Education That Is Multicultural 3
EDCE 6400C: Teaching Content (Math, Science, and Social Studies) Using Both English and a Native Language 3
Total credits 15

One of the following two:
EDCE 7401G: Student Teaching in Childhood Education 4
Or
EDCE 7403G: Supervised Teaching in Childhood Education I and Seminar (grades 1-6) 3
EDCE 7402G: Seminar in Student/Supervised Teaching 2
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
EDCE 2204I: Content Research Seminar in Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2
Total credits 40-46
EDCE 2204I: Content Research-Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2
Or
EDUC 7000I: Introduction to Educational Research 2
EDUC 7100I: Individualized Study in Education 2
Electives (to be approved by advisor) 9
Total credits 31

Certification in Childhood Education for Graduate Students Certified in Another Area

Prerequisite (one of the following three):
EDCE 2100K: Developmental Issues in Early Childhood/Childhood Education
OR
EDUC 7200A: Psychology of Teaching and Learning
OR
EDUC 7300A: Child Development

Required Courses:
One of the following two:
EDCE 2900F: Inclusive Practices for the General Education Classroom (Grades 1-6) 3
OR
SPED 5000K: Introduction to Inclusive Education 3
EDCE 7500C: Emergent to Fluent Literacy 3
EDCE 3000F: Curriculum Development in Childhood Education 3
EDCE 2100C: Teaching Social Studies in Childhood Education 3
EDCE 3100C: Science in a Program of Childhood Education 3
EDCE 5900C: Mathematics Knowledge for Teachers 3
EDCE 6100C: How Children Learn Mathematics: Grades 1-6 3
EDCE 7603N: Practicum in Childhood Education (grades 1-6) 1
EDCE 7402G: Seminar in Childhood Education (co-req: EDCE 7603N) 2
Research Seminars:
EDCE 2204I: Content Research Seminar in Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2
Total credits 31

Master's in Education without Certification Program

Prerequisites:
EDCE 2100K: Developmental Issues in Early Childhood/Childhood Education
OR
EDUC 7300A: Child Development
AND
EDCE 5950C: Mathematics Knowledge for Teachers

Required Courses:
One of the following two:
EDCE 2900F: Inclusive Practices for the General Education Classroom (Grades 1-6) 3
OR
SPED 5000K: Introduction to Inclusive Education 3
EDCE 7500C: Emergent to Fluent Literacy 3
EDCE 3000F: Curriculum Development in Childhood Education 3
EDCE 2100C: Teaching Social Studies in Childhood Education 3
EDCE 3100C: Science in a Program of Childhood Education 3
EDCE 6100C: How Children Learn Mathematics: Grades 1-6 3
EDCE 7603N: Practicum in Childhood Education (grades 1-6) 1
EDCE 7402G: Seminar in Childhood Education (co-req: EDCE 7603N) 2
Research Seminars:
EDCE 2204I: Content Research Seminar in Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2
Electives selected by advisement 9
Total credits 31

Early Childhood Education

The graduate program in early childhood education prepares teachers to meet national standards of excellence in teaching by supporting children's understandings of the world through inquiry and active learning. The program emphasizes deep knowledge of human development, learning processes, instructional strategies, and subject matter. All courses use technology and focus on how teaching, learning, and assessment connect. Special attention is given to how issues of diversity—of culture, language, family, and learning style—can best be used to positively impact schools and schooling in urban settings. Both the initial and professional programs are designed to meet the New York State Education Department requirements for certification in early childhood education (birth-grade 2).

Initial Certification in Early Childhood Education (birth-grade 2)

This program leading to initial certification is for individuals who have earned a bachelor's degree in an area other than education and do not possess initial certification in early childhood education at the time of entry into the program. Up to nine credits can be waived at discretion of the advisor for equivalent coursework at the graduate or undergraduate level.

Required Courses:
EDUC 7100A: Urban Schools in a Diverse Society 3
EDCE 7300F: Contemporary Problems and Issues in Early Childhood Education 3
EDCE 7150C: Fundamentals of Teaching and Learning in Early Childhood Contexts 3
EDCE 7250C: Curriculum Development in Early Childhood Education 3
EDCE 7300C: Education in the Early Years: Infants, Toddlers & Preschoolers 3
EDCE 4200C: Including Young Children With Special Needs in The General Education Classroom 3
EDCE 2100K: Developmental Issues in Early Childhood/Childhood Education 3
EDCE 7500C: Emergent to Fluent Literacy 3
EDCE 1900C: Language and Literacy Development in Young Children 3
EDCE 2101C: Social Studies in the EC Classroom 3
EDCE 3300C: How Young Children Learn Science 3
EDCE 6000C: How Young Children Learn Mathematics: Implications for Teaching 3

One of the following two:
EDCE 1800K: Family/Child/School 3
EDCE 5700C: Education That Is Multicultural 3

One of the following three:
EDCE 4300C: Art and Expressive Activities in ECE 3
EDCE 4400C: Arts Integration: Theatre and Related Arts in the Curriculum (P-6) 3
EDCE 7300C: Music and Movement for Young Children 3

One of the following options:
EDCE 7301G: Teaching Practice in Early Childhood Education I and Seminar 3
EDCE 7302G: Teaching Practice in Early Childhood Education II and Seminar 3
OR
EDCE 7301G: Teaching Practice in Early Childhood Education I and Seminar 3
EDCE 7303G: Supervised Teaching in Early Childhood Education Seminar And
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
EDCE 2202I: Content Research Seminar in Early Childhood Education 2
EDCE 2900I Seminar in Educational Research 2
Total credits 49

Professional Certification in Early Childhood Education (birth-grade 2)

This program leading to professional certification is for individuals who already possess initial certification in early childhood. It emphasizes ongoing inquiry and learning and the evolving nature of the professional teacher.

Required Courses:
EDCE 7150C: Fundamentals of Teaching and Learning in Early Childhood Contexts 3
EDCE 7250C: Curriculum Development in Early Childhood Education 3
EDCE 7300F: Contemporary Problems and Issues in Early Childhood/Childhood Education 3
EDCE 2100K: Developmental Issues in Early Childhood/Childhood Education (ancillary) 3
EDCE 3500C: Education in the Early Years: Infants, Toddlers & Preschoolers 3
Preschoolers
EDCE 4200C: Including Young Children with Special Needs in the ECE Classroom 3

One of the following three:
EDCE 1900C: Language and Literacy Development in Young Children 3
EDCE 2000C: First and Second Language and Literacy Acquisition 3
EDCE 2700C: Literacy for Struggling Readers and Writers 3

One of the following two:
EDCE 2101C: Social Studies in ECE 3
EDCE 2300C: Social Studies Inquiry for Pre-K-6 Teachers 3

One of the following two:
EDCE 3200C: Science Inquiry for Pre-K-6 Teachers 3
EDCE 3300C: How Young Children Learn Science 3

One of the following two:
EDCE 6000C: How Young Children Learn Math 3
EDCE 6200C: Mathematics Inquiry for Pre-K-6 Teachers 3

One of the following two:
EDCE 2202I: Content Research Seminar in Early Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2

Total credits 31-34

Initial Certification in Early Childhood Education (birth-grade 2)
This program is for individuals who hold initial certification in childhood education or a related field in education and who are seeking a master’s degree leading to initial certification in early childhood education.

Required Courses:
EDCE 7100A: Urban Schools in a Diverse Society 3
EDCE 7150C: Fundamentals of Teaching and Learning in Early Childhood Contexts 3
EDCE 7250C: Curriculum Development in Early Childhood Education 3
EDCE 2100K: Developmental Issues in Early Childhood/Childhood Education (ancillary) 3
EDCE 3500C: Education in the Early Years: Infants, Toddlers & Preschoolers 3
EDCE 1900C: Language and Literacy Development in Young Children 3
EDCE 6000C: How Young Children Learn Math: Implications for Teaching 3
EDCE 4300C: Art and Expressive Activities in ECE 3
EDCE 4400C: Integrating Theatre and Related Arts Into The Curriculum 3
EDCE 7300C: Music and Movement for Young Children 3

Student Teaching/Supervised Teaching (in the range of grades for which the candidate has no prior experience):
One of the following two:
EDCE 7301G: Teaching Practice in Early Childhood Education I and Seminar 3
EDCE 7303G: Supervised Teaching in Early Childhood Education and Seminar 3

EDCE 2202I: Content Research Seminar in Early Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2

Total credits 34-37

Non-Degree Certificate Program in Early Childhood Education for Holders of an M.S.Ed. and Certification in Childhood Education from CCNY
This program is for individuals who earned initial certification at the master’s degree level in Childhood Education (grades 1-6) at CCNY who want to extend their certification to include early childhood education (birth-grade 2).

Required Courses:
EDCE 7250C: Curriculum Development in Early Childhood Education 3
EDCE 1900C: Language and Literacy Development in Young Children 3
EDCE 3500C: Education in the Early Years: Infants, Toddlers & Preschoolers 3
EDCE 4200C: Including Young Children with Special Needs in the General Education Classroom 3

One of the following two:
EDCE 7301G: Teaching Practice in Early Childhood Education I and Seminar 3
EDCE 7303G: Supervised Teaching in Early Childhood Education and Seminar 3

Total credits 15

M.S.Ed. in Early Childhood Education (Non-certification)
This program is for individuals interested in learning about how to support the learning and development of young children but who do not want to get certified as a teacher in New York State.

Required Courses:
EDUC 7100A: Urban Schools in a Diverse Society 3
EDCE 7150C: Fundamentals of Teaching and Learning in ECE 3
EDCE 7250C: Curriculum Development in Early Childhood Education 3
EDCE 8300C: Young Children's Education in Diverse Non-School Settings 3
EDCE 1900C: Language and Literacy Development in Young Children 3
EDCE 2101C: Social Studies in the EC Curriculum 3
EDCE 4200C: Including Young Children with Special Needs in the General Education Classroom 3
EDCE 6000C: How Young Children Learn Math 3

One of the following three:
EDCE 2100K: Developmental Issues in Early Childhood/Childhood Education 3
EDCE 3500C: Education in the Early Years: Infants, Toddlers & Preschoolers 3
EDUC 7300A: Urban Schools in a Diverse Society 3

ELECTIVES: (3) credits of electives or any other courses by advisement 3
EDCE 7500C: Emergent to Fluent Literacy 3
EDCE 3300C: How Young Children Learn Science 3

Student Teaching/Supervised Teaching (in the range of grades for which the candidate has no prior experience):
One of the following two:
EDCE 7301G: Teaching Practice in Early Childhood Education I and Seminar 3
EDCE 7303G: Supervised Teaching in Early Childhood Education and Seminar 3

EDCE 4300C: Art and Expressive Activities in ECE 3
EDCE 4400C: Arts Integration: Theatre and Related Arts in the Curriculum 3
EDCE 7300C: Music and Movement for Young Children 3

EDCE 2202I: Content Research Seminar in Early Childhood Education 2
EDCE 2900I: Seminar in Educational Research 2

Total credits 31

Educational Theatre
The program endeavors to prepare candidates to do work that both enriches participants’ lives and provides them with the skills necessary to realize performances. The program will provide students with the training,
knowledge, skills and dispositions needed to be successful as: theatre classroom teachers (grades PreK-12), classroom teachers who desire to integrate theatre into their curriculum for content knowledge and literacy development, teaching artists and theatre resource personnel working out of professional theatres and cultural arts institutes.

**Initial Certification in Theater**

This program is for graduate students with an undergraduate degree (B.A. or B.F.A.) or graduate degree (M.A. or M.F.A.) in theatre or equivalent (comprised of a minimum of 30 credits in any facet of the study of theatre).

**Prerequisites:** Liberal arts distribution requirements.

**Required Courses:**
- EDCE 7700A: Drama in Education (must be taken during the first semester of enrollment in program coursework)
- EDCE 3600C: Theater for Youth and Young Audiences
- EDCE 3100F: Curriculum Development in Educational Theatre
- EDCE 2260I: Content Research Seminar in Educational Theatre I
- EDCE 2900I: Seminar in Educational Research II
- EDCE 7201G: Student/Supervised Teaching in Educational Theatre (P-6)

**EDCE 7202G: Student/Supervised Teaching in Educational Theatre (7-12)**

- EDCE 7204G: Seminar in Educational Theatre (P-6)

**EDCE 7205G: Seminar in Educational Theatre (7-12)**

- EDCE 7600A: Artistic Lab I (must be taken in conjunction with Drama in Education)
- EDCE 7601A: Artistic Lab II (must be taken in conjunction with 2900I)
- EDCE 3700C: Fundamentals of Teaching Theatre
- EDCE 4500C: Fundamentals of Teaching Technical Theatre
- EDCE 7800A: Exploring the History of Theatre
- EDCE 3100F: Curriculum Development in Educational Theatre

**Choose One Integrated Arts Course:**
- EDCE 4400C: Arts Integration: Theatre and Related Arts in the Curriculum (P-6)
- EDCE 4000F: Arts Integration: Theatre and Related Arts in the Curriculum (Grades 7-12)

**Choose Two Applied Theatre Courses:**
- EDCE 7500F: Special Topics in Educational Theatre
- EDCE 4600C: Applied Theatre
- EDCE 7600F: Conflict Resolution Through Theatre
- EDCE 7900A: Devising Theatre
- EDCE 4100F: Developing Arts Curriculum in Nontraditional Settings
- EDCE 4500K: Inclusive Practices for the Arts*
- SPED 5000K: Introduction to Inclusive Education*
- EDCE 7400C: Teaching Literary Through Drama

*Candidates without a comparable Special Education course from their previous certification must select either EDCE 4500K or SPED 5000K in this category to fulfill state requirements.

**Total credits: 34**

**Professional Certification in Theater**

Professional certification in Theatre for graduate students who hold initial certification in Theatre and have three years teaching experience. This sequence of courses will provide requisite advanced coursework in Educational Theatre and all requisite content pedagogy courses for professional certification. No student teaching is required.

**Required Courses:**
- EDCE 7700A: Drama in Education (must be taken during the first semester of enrollment in program coursework)
- EDCE 3600C: Theater for Youth and Young Audiences
- EDCE 4100F: Developing Arts Curriculum in Nontraditional Settings
- EDCE 7800A: Exploring the History of Theatre
- EDCE 4500C: Applied Theatre

**Choose Three Applied Theatre Courses:**
- EDCE 7500F: Special Topics in Educational Theatre
- EDCE 4600C: Applied Theatre
- EDCE 7600F: Conflict Resolution Through Theatre
- EDCE 7900A: Devising Theatre
- EDCE 4100F: Developing Arts Curriculum in Nontraditional Settings
- EDCE 4500K: Inclusive Practices for the Arts*
- SPED 5000K: Introduction to Inclusive Education*
- EDCE 7400C: Teaching Literary Through Drama

*Candidates without a comparable Special Education course from their previous certification must select either EDCE 4500K or SPED 5000K in this category to fulfill state requirements.

**Total credits: 37-46**

**Initial Certification in Theater for Graduate Students Certified in Another Area**

For graduate students who hold initial teacher certification in a subject area other than Theatre. This sequence of courses will lead to professional certification in the area of their initial certification, and initial certification in Theatre. These students are exempt from the Generalized Pedagogical Core. They are required to hold 30 credits in Theatre or equivalent course of study.

**Required Courses:**
- EDCE 7700A: Drama in Education (must be taken during the first semester of enrollment in program coursework)
- EDCE 3600C: Theater for Youth and Young Audiences
- EDCE 2260I: Content Research Seminar in Educational Theatre I
- EDCE 2900I: Seminar in Educational Research II

**EDCE 7201G: Student Teaching in Educational Theatre (P-6)**

**EDCE 7202G: Student Teaching in Educational Theatre (7-12)**

**EDCE 7204G: Seminar in Educational Theatre (P-6)**

**EDCE 7205G: Seminar in Educational Theatre (7-12)**

**EDCE 7600A: Artistic Lab I (must be taken in conjunction with Drama in Education)**

**EDCE 7601A: Artistic Lab II (must be taken in conjunction with 2900I)**

**EDCE 3700C: Fundamentals of Teaching Theatre**

**EDCE 4500C: Fundamentals of Teaching Technical Theatre**

**EDCE 7800A: Exploring the History of Theatre**

**EDCE 3100F: Curriculum Development in Educational Theatre**

**Choose One Integrated Arts Course:**
- EDCE 4400C: Arts Integration: Theatre and Related Arts in the Curriculum (P-6)
- EDCE 4000F: Arts Integration: Theatre and Related Arts in the Curriculum (Grades 7-12)

**Choose Two Applied Theatre Courses:**
- EDCE 7500F: Special Topics in Educational Theatre
- EDCE 4600C: Applied Theatre
- EDCE 7600F: Conflict Resolution Through Theatre
- EDCE 7900A: Devising Theatre
- EDCE 4100F: Developing Arts Curriculum in Nontraditional Settings
- EDCE 4500K: Inclusive Practices for the Arts*
- SPED 5000K: Introduction to Inclusive Education*
- EDCE 7400C: Teaching Literary Through Drama

*Candidates without a comparable Special Education course from their previous certification must select either EDCE 4500K or SPED 5000K in this category to fulfill state requirements.

**Total credits: 34**

**Professional Certification in Theater**

Professional certification in Theatre for graduate students who hold initial certification in Theatre and have three years teaching experience. This sequence of courses will provide requisite advanced coursework in Educational Theatre and all requisite content pedagogy courses for professional certification. No student teaching is required.

**Required Courses:**
- EDCE 7700A: Drama in Education (must be taken during the first semester of enrollment in program coursework)
- EDCE 3600C: Theater for Youth and Young Audiences
- EDCE 4100F: Developing Arts Curriculum in Nontraditional Settings

**Choose Three Applied Theatre Courses:**
- EDCE 7500F: Special Topics in Educational Theatre
- EDCE 4600C: Applied Theatre

*Candidates without a comparable Special Education course from their previous certification must select either EDCE 4500K or SPED 5000K in this category to fulfill state requirements.

**Total credits: 37-46**
EDCE 7600F: Conflict Resolution Through Theatre 3
EDCE 4500K: Inclusive Practices for the Arts 3
EDCE 7400C: Teaching Literacy Through Drama 3
EDCE 7800A: Exploring the History of Theatre 3

Total credits 31

**M.S.Ed. in Educational Theater (Non-certification)**

Master’s in Educational Theatre for graduate students who do not wish to obtain certification in Theatre. This sequence of courses will provide advanced coursework in Educational Theatre and all requisite content pedagogy courses for a master’s level program. Students in this track will be prepared to work as teaching artists, in higher education, after school programs, community-based organizations, or other related arts field and non-profit organizations.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDCE 7700A</td>
<td>Drama in Education (must be taken during first semester of enrollment in the program)</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 3600C</td>
<td>Theater for Youth and Young Audiences</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 2266I</td>
<td>Content Research Seminar in Educational Theatre I</td>
<td>2</td>
</tr>
<tr>
<td>EDCE 2900I</td>
<td>Seminar in Educational Research</td>
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<tr>
<td>EDCE 7600A</td>
<td>Artistic Lab I (must be taken in conjunction with Drama in Education)</td>
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<tr>
<td>EDCE 7601A</td>
<td>Artistic Lab II (must be taken in conjunction with 29000I)</td>
<td>0</td>
</tr>
<tr>
<td>EDCE 4100F</td>
<td>Developing Arts Curriculum in Nontraditional Settings</td>
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<tr>
<td>EDCE 4500K</td>
<td>Inclusive Practices for the Arts</td>
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</tr>
<tr>
<td>EDCE 7203G</td>
<td>Capstone Field Experience in Educational Theatre</td>
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**Choose One Integrated Arts Course:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EDCE 4400C</td>
<td>Arts Integration: Theatre and Related Arts in the Curriculum (P-grade 6)</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 4000F</td>
<td>Arts Integration: Theatre and Related Arts in the Curriculum (Grades 7-12)</td>
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**Choose One Production Course:**

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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDCE 3700C</td>
<td>Fundamentals of Teaching Theatre*</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 7900A</td>
<td>Devising Theatre</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 4500C</td>
<td>Fundamentals of Teaching Technical Theatre</td>
<td>3</td>
</tr>
</tbody>
</table>

**Choose one from the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDCE 7500F</td>
<td>Special Topics in Educational Theatre</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 4600C</td>
<td>Applied Theatre</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 7600F</td>
<td>Conflict Resolution through Theatre</td>
<td>3</td>
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**Choose two electives:**

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<tr>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EDCE 7800A</td>
<td>Exploring the History of Theatre</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 7400C</td>
<td>Teaching Literacy Through Drama</td>
<td>3</td>
</tr>
</tbody>
</table>

Total credits 34

**Advanced Certificate in Educational Theatre**

Initial Certification in Theatre for graduate students who are currently enrolled in, or have completed the M.A. in Applied Theatre at Creative Arts Team (CAT)/School of Professional Studies (SPS) CUNY or an equivalent degree, who wish to be initially certified in theatre, or for those who hold an MFA in theatre performance or related area. These students do not currently hold any certification.

*Pre-Prerequisite: 3700C Fundamentals of Teaching Theatre*

**Required Courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 7100A</td>
<td>The Urban School in a Diverse Society</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 3100F</td>
<td>Curriculum Development in Educational Theatre</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 7201G</td>
<td>Student/Supervised Teaching in Educational Theatre (P-6)</td>
<td>2</td>
</tr>
<tr>
<td>&amp;</td>
<td>EDCE 7204G: Seminar in Educational Theatre (P-6)</td>
<td>1</td>
</tr>
<tr>
<td>&amp;</td>
<td>EDCE 7202G: Student/Supervised Teaching in Educational Theatre (7-12)</td>
<td>2</td>
</tr>
<tr>
<td>&amp;</td>
<td>EDCE 7205G: Seminar in Educational Theatre (7-12)</td>
<td>1</td>
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<tr>
<td>EDUC 1900G</td>
<td>Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues (0 cr.)</td>
<td>0</td>
</tr>
<tr>
<td>EDCE 7400C</td>
<td>Teaching Literacy Through Drama</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 7601A</td>
<td>Artistic Lab II (must be taken in conjunction with Seminar in Educational Theatre)</td>
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Total credits 35-41

**5th–12th Grade**

**Pre-requisites:**

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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EDUC 7600C</td>
<td>From Fluent to Experience Literacy</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 4500K</td>
<td>Inclusive Practices for the Arts</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 7800A</td>
<td>Exploring the History of Theatre</td>
<td>3</td>
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**Required Courses:**

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</thead>
<tbody>
<tr>
<td>EDCE 7610C</td>
<td>Conflict Resolution Through Theatre</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2000C</td>
<td>First and Second Language and Literacy Acquisition</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 1301E</td>
<td>Negotiating Curriculum Standards, Children’s Inquiries and appropriate Multicultural Materials</td>
<td>3</td>
</tr>
<tr>
<td>EDCE 1700G</td>
<td>Home-School Partnerships for Literacy Development</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits** 35-41
TESOL
The School of Education offers a master of science in the Teaching of English to Speakers of Other Languages (TESOL). The mission of the TESOL program is to successfully combine academic rigor with innovative pedagogical training that develops knowledge of and respect for the linguistic, social, and cognitive needs of all learners, and the complexity of the TESOL teaching and learning environment. The program aims to develop teachers who are committed to promoting equity and excellence in urban public education, particularly for emergent bilinguals. Students may enroll in one of four Streams.

Initial Certification in TESOL for Certified Teachers
This program is for graduate students who hold initial or provisional teaching certification in TESOL.

Required Courses:
- EDCE 2600C: Linguistics in a Multicultural Society 3
- EDCE 5201C: Methods of Teaching English Language Arts to Bilingual English Language Learners (Pre K-6) OR 3
- EDCE 6500C: Methods of Teaching English Language Arts to Bilingual English Language Learners (7-12/Adult) 3
- EDCE 5400C: Methods of Teaching English to Speakers of Other Languages I (Pre K-6) OR 3
- EDCE 6900C: Methods of Teaching English to Speakers of Other Languages (7-12) 3
- EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students 3
- EDCE 5800C: Theories of Second Language Acquisition 3
- EDCE 6800C: Grammar and its Pedagogy; English and Other Languages 3

One of the following five:
- EDCE 6400C: Teaching Content (Math, Science, and Social Studies) Using Both English and a Native Language 3
- EDCE 6000K: Introduction to the Education of Emergent Bilingual Students with Disabilities 3
- EDCE 6700C: Phonology of English and Other Languages For Teachers 3
- EDCE 6900C: Methods of Teaching English to Speakers of Other Languages II (7-12)* 3
* if not previously chosen

Field Experiences and Student Teaching – 30 hours of field experiences to be apportioned within the pedagogical core curriculum, and 20 hours in the research seminars. Each 3-credit practicum will require 10 days of work with students learning English as a second language.

EDCE 6600C: Practicum I in TESOL in Teaching a Second Language: Elementary 3
EDCE 6600C: Practicum II in TESOL in Teaching a Second Language: Secondary 1
Research Seminars:
- EDCE 2205I: Research Seminar I in Teaching Culturally and Linguistically Diverse Students 2
- EDCE 2905I: Research Seminar II in Teaching Culturally and Linguistically Diverse Students 2

Total credits 35-41

Non-Certification Program in TESOL
This program is for graduate students seeking employment outside the United States, in private schools, in adult education or in English language institutes.

Required Courses:
- EDCE 4500A: Teaching English to Adult Speakers of Other Languages 3
- EDCE 2600C: Linguistics for Teachers 3
- EDCE 6700C: Phonology of English and other languages 3
- EDCE 5800C: Theories of Second Language Acquisition 3

Choose two of the following:
- EDCE 5201C: Methods of Teaching English Language Learners (PreK-6) 3
- EDCE 6500C: Methods of Teaching English Language Arts to Bilingual English Language Learners (7-Adult) 3
- EDCE 6800C: Grammar and its Pedagogy: English and Other Languages 3

One of the following:
- EDCE 4400C: Arts Integration: Theatre and Related Arts in the Curriculum (P-6) 3
- EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students 3
- EDCE 5700C: Education That is Multicultural 3
- EDCE 5400C: Methods of Teaching English to Speakers of Other Languages I (Pre K-6) 3
- EDCE 6900C: Methods of Teaching English to Speakers of Other Languages (7-12) 3

Field experiences are apportioned within the pedagogical core curriculum, students complete the following practicum course, which will require 10 days of work with students learning English as a second language.

EDCE 6604C: Practicum (D) in Adult TESOL (10 days) 3

Research Seminars:
- EDCE 2205I: Research Seminar I in Teaching Culturally and Linguistically Diverse Students 2
- EDCE 2905I: Research Seminar II in Teaching Culturally and Linguistically Diverse Students 2

Total credits 31

Initial Certification in TESOL
This program is for graduate students holding a bachelor's degree outside Education who seek initial New York State certification in TESOL.

Prerequisite/Corequisites:
- EDUC 7200A: Psychology of Learning and Teaching 3
- One of the following two:
  - EDUC 7300A: Child Development 3
  - EDUC 7500A: Adolescent Learning and Development 3

Required Courses:
- EDCE 2600C: Linguistics for Teachers 3
- EDCE 5201C: Methods of Teaching English Language Arts to Bilingual English Language Learners (pre K-6) 3
- EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students 3
- EDCE 5400C: Methods of Teaching English to Speakers of Other Languages I (pre K-6) 3
- EDCE 5700C: Education That is Multicultural 3
- EDCE 5800C: Theories of Second Language Acquisition 3
- EDCE 6000K: Introduction to the Education of Emergent Bilingual Students with Disabilities 3
- EDCE 6500C: Methods of Teaching English Language Arts to English Language Learners (7-12/Adult) 3
- EDCE 6800C: Grammar and its Pedagogy: English and Other Languages 3
- EDCE 6900C: Methods of Teaching English to Speakers of Other Languages II (7-12/Adult) 3
- EDCE 6900C: Methods of Teaching English to Speakers of Other Languages (7-Adult) 3
- EDCE 7000C: Field-based Inquiry: TESOL 3
- EDUC 2205I: Research Seminar I in Teaching Culturally and Linguistically Diverse Students 2
- EDUC 2905I: Research Seminar II in Teaching Culturally and Linguistically Diverse Students 2
- EDUC 7503G: Student Teaching in TESOL (Pre-K-12) 4
- EDUC 7504G: Seminar in Teaching TESOL (7-13) 2
- EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0

Field experiences are apportioned within the pedagogical core curriculum, and in an additional course, Field-based Inquiry: TESOL (3 cr.), which requires 45 hours of fieldwork prior to student teaching. Candidates also complete 6
EDCE 7000A: Artistic Lab I
This course is an opportunity for new candidates in the program to collaborate artistically with veteran candidates. All candidates will facilitate their peers in an artistic experience as they reconnect to their artistry. Co-requisites: EDCE 0700A Drama in Education.

EDCE 7001A: Artistic Lab 2
This course is an opportunity for seasoned candidates in the program to collaborate artistically with new candidates. All candidates will facilitate their peers in an artistic experience as they reconnect to their artistry. Co-requisites: EDCE 7204G

EDCE 7700A: Drama in Education
This course explores how drama and theatre facilitate learning in educational, cultural, and community settings. Includes an examination of key aspects
child's individual development in the context of social interactions, and diversify the range of genres and materials available for their child. This class focuses on building candidates' strengths in utilizing multiple sign systems, exploring a range of literacies practices, connecting the word and the world, and building family/community relationships. Candidates are required to use a variety of assessment tools learned in other courses such as miscue analysis, writing sample analysis, observation, and note taking to record a child's literacy abilities, inform an instructional plan, analyze, and support child's literacy practices. Includes 18 hours practicum. Pre/coreq: EDCE 1501C 3 hr./wk.; 3 cr.

EDCE 1900C: Language and Literacy Development in Young Children
This course focuses on language and literacy development from birth to age 6 and on how to develop a well-balanced literacy program for young children. Special emphasis is placed on an exploration of research in the field, study and critical analysis of children's literature, the art of storytelling, and effective strategies for learning to read. 3 hr./wk.; 3 cr.

EDCE 2000C: First and Second Language and Literacy Acquisition
This course offers an in-depth look at current research and practical applications of first and second language/dialect acquisition and literacy learning, developmental stages of both, connections between oral and print literacies, and the strengths of first language/dialect literacy. The course also explores the integration of the many languages individuals use to communicate and make meaning. The readings and discussions address strategies to assess and support first and second language and literacy development, and include effective classroom activities and resources. Includes 8 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 2100C: Teaching Social Studies in Childhood Education
Integrated unit planning centered on a study of the community, cultural diversity and historical sequence; focuses on inquiry learning strategies and multicultural approaches to instruction. Includes introduction to Internet resources and software for classroom instruction in geography. Includes 10-15 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

EDCE 2101C: Social Studies in the Early Childhood Curriculum
How to develop and carry out experiences that help children inquire about the world, their history, and their backgrounds and integrate their understandings; how to utilize students' diverse ethno-cultural backgrounds and information technology as learning resources. Emphasis placed on the classroom as a democratic learning community. Required for initial certification. Includes 10-15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 2300C: Social Studies Inquiry for Pre-K to 6 Teachers
Focuses on two national and state social studies learning standards: geography and the history of New York State and the United States. Students experience an inquiry approach to social studies that will increase their content knowledge and model inquiry methods. Students plan learning experiences for children. Includes an instructional technology component. Required for professional certification. Prereq: EDCE 2100C or equivalent. 3 hr./wk.; 3 cr.

EDCE 2400C: Development & Evaluation of Materials in Bilingual Education
Production and evaluation of bilingual instructional materials using various media. Integration of instructional materials in a bilingual curriculum. Prereq: EDCE 5300C. 3 hr./wk.; 3 cr.

EDCE 2600C: Linguistics For Teachers
An introduction to basic concepts in linguistics, including phonology, lexicology, and grammar; language contact, variation, and prescriptivism; linguistic experience of bilingual and second-language communities and individuals. Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 2700C: Literacy for Struggling Readers and Writers
Candidates will examine the multiple dimensions that contribute to students’ literacy struggles. They will explore and critique theories and research regarding literacy practices and identify practical applications based on these insights. A significant aspect of this work will involve practice with methods to assess and support readers’ and writers’ competencies with cuing systems and engagement with texts. Candidates will explore how multimodal literacies can be used as a source of strength, confidence, and growth with print literacy. Throughout the course, candidates reflect on how they can support all students’ literacy growth through effective lesson design as well as advocacy for curricular and structural change. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 2905H: Research Seminar II in Teaching Linguistically and Culturally Diverse Students
Second semester of the research sequence. Students carry out their designed in the previous semester and learn how to analyze, write about, and present the data collected.

EDCE 3000C: Development of Laboratory Materials for Elementary Science
Construction and use of laboratory equipment and materials which implement the critical thinking and problem solving approach to the teaching of the new curricula in science in the elementary school. Pre/coreq: EDCE 3100C. 3 hr./wk.; 3 cr.

EDCE 3100C: Science in a Program of Childhood Education
Development of first-hand knowledge of standards-based science content, materials, and methods appropriate to the several growth levels of children in the primary and intermediate programs of the elementary school. Written reviews of scholarly literature, maintenance of written journals, and fieldwork on the study of teaching in a childhood education classroom. Includes 10-15 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

EDCE 3200C: Science Inquiry for Pre-K to 6 Teachers
Develops teachers' knowledge of the teaching and learning of science in childhood education. Focuses on three New York State science standards: scientific inquiry, application of scientific concepts and theories, and the historical development of ideas in science and common themes that connect mathematics, science and technology. First-hand experiences developing and analyzing knowledge gained through inquiry. Required for professional certification. Prereq: EDCE 3100C or equivalent. 3 hr./wk.; 3 cr.

EDCE 3300C: How Young Children Learn Science: Implications for Teaching
Workshop designed to deepen understanding of the active, investigative nature of science learning. Participants’ own explorations and experiences parallel the child's inquiry approach. Materials and resources (including information technology) appropriate for the diverse learning needs of young children are examined. Required for initial certification. Includes 10-15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 3400C: Focus on Inquiry in Education
Study of background literature and developmental theory; observing and recording children's growth; teacher's role. Special permission required. 3 hr./wk.; 3 cr.

EDCE 3500C: Education in the Early Years: Infants, Toddlers, and Preschoolers
How knowledge develops from infancy through the preschool years; with a focus on how to support learners' growth and development and how to structure appropriate learning environments for infants, toddlers, and preschoolers with diverse needs. Theoretical perspectives on learning are explored. Required for initial certification. Ancillary requirement for professional certification (on advisement). Includes 10-15 hours of fieldwork. Prereq: Child Development. 3 hr./wk.; 3 cr.

EDCE 3600C: Theatre/Performance For Young Audiences K – 12
This course aims to develop insight into artistic and practical decisions in producing work for young people. Through an exploration of techniques of acting, devising, directing, and production repertoire students will achieve an understanding of the practices of Theatre in Education (TIE) and Youth Theatre. Contemporary plays which have been produced for theatre for young audiences will also be studied. Additionally, learning how to use the city as a cultural resource will be discussed, in order to make a connection between theatre making and theatre performance. 3 hr./wk.; 3 cr.

EDCE 3700C: Fundamentals of Teaching Theatre
This course investigates methods and materials for exploring the process of teaching students about the elements of theatre, i.e., acting, directing, improvisation, and technical theatre, as well as how to guide students through the production process. There will be exploration of the application of drama structures and activities as tools for enlivening any curriculum, by building motivation, classroom community, and collaborative exchange. Participants will learn how to integrate and adapt strategies and activities for different age ranges, and investigate how drama can be scaffolded effectively in lesson planning, thus aiding in classroom management. 3 hr./wk.; 3 cr.

EDCE 3800C: Materials for a Flexible and Individualized Curriculum
The development, use, and evaluation of materials for individuals and small group instruction. 3 hr./wk.; 3 cr.

EDCE 4100C: Teaching Arts and Crafts in Childhood Education
Art principles, practices, and materials appropriate to the teaching of arts and crafts in childhood education; integrating arts and crafts into the content areas of the elementary curriculum. Includes 10-15 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

EDCE 4200C: Including Young Children with Special Needs in the General Education Classroom
This course will provide early childhood educators with a theoretical framework and practical applications for successfully including students with spe-
EDCE 4400C: Arts Integration: Theatre and Related Arts in the Curriculum (P-6)
This course explores the theories and practices of integrating theatre and related arts into the general curriculum in grades P-6. It will also discuss how theatre practitioners can use non-arts content as a source material in their theatre curriculum while strengthening the learning in their core subject areas. 15 hours of fieldwork required.

EDCE 4500C: Fundamentals of Teaching Technical Theatre
This class aims to develop basic understandings of resources, techniques and elements of a theatre production including: scenic work, costumes, props, lighting, sound, and stage and production management. Candidates will explore the teaching of each of these aspects of technical theatre for classes Pre-K-12 with particular focus on urban schools, and will have hands-on experiences in these areas.

EDCE 4600C: Applied Theatre
This course explores how theatre can be used and applied to various areas of interest. The course will offer techniques on applying theatre to the student’s particular area of interest or population (i.e., health care, childcare, prisons, museums, professional development). The main concepts, structures, and conventions of applied theatre will be investigated. Guidelines for devising and structuring applied drama/theatre programs and curricula will be explored. 3 hr./wk.; 3 cr.

EDCE 5100C: Teaching Foreign Languages in Elementary Education
Objectives, principles, and methods of teaching modern languages in the elementary school. Problems of organizing foreign language teaching. Study and evaluation of curricula, syllabi, textbooks, language tests, audio-visual aids, and the language laboratory and area-study materials. 3 hr./wk.; 3 cr.

EDCE 5201C: Methods of Teaching English Language Arts to Bilingual English Language Learners (Pre-K – 6)
This course is designed to help participants develop instructional experiences that provide for the acquisition of literacy in a second language (English) to non-native speakers (Pre-K – 6) whose cultural background differs from that of the majority culture. While focusing primarily on practical approaches to teaching literacy, the course will also discuss theoretical issues that underlie the development and implementation of effective strategies to support English language learners. Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 5202C: Teaching Language Arts & Reading to Bilingual-Bicultural Students (Spanish)
Methods and materials for the teaching of reading and language in Spanish to Spanish-dominant and English-dominant children. Includes 10 hours of fieldwork. Prereq: EDCE 5300C. 3 hr./wk.; 3 cr.

EDCE 5203C: Teaching Language Arts & Reading to Bilingual-Bicultural Students (Haitian)
Methods and materials for the teaching of reading and language in Haitian/Creole to Haitian/Creole-dominant and English-dominant children. Includes 10 hours of fieldwork. Prereq: EDCE 5300C. 3 hr./wk.; 3 cr.

EDCE 5204C: Teaching Language Arts & Reading to Bilingual-Bicultural Students (Chinese)
Methods and materials for the teaching of reading and language in Chinese to Chinese-dominant and English-dominant children. Includes 10 hours of fieldwork. Prereq: EDCE 5300C. 3 hr./wk.; 3 cr.

EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students
This course explores the historical background, policies, approaches and theoretical foundations of P-12 bilingual education and ESL programs for emergent bilingual students in the U.S. It also considers the social, cultural, political and economic context that surrounds the education of students in urban schools. 3 hr./wk.; 3 cr.

EDCE 5400C: Methods of Teaching English to Speakers of Other Languages I (Pre-K-6)
Methods and materials for teaching English to non-native speakers grades Pre-K-6, with a focus on communicative and content-based instruction; appropriateness of various techniques, resources, and assessments for different learning styles, language and cultural backgrounds; age and proficiency levels, including gifted and talented students and those with special developmental needs; history of ESL teaching, and the links between teaching practice and theories of language and language learning. The course includes attention to theories and practices involved in the teaching of ESL by means of instruction in the content areas of mathematics, science and technology, social studies, and the arts. Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 5401C: Methods of Teaching English to Speakers of Other Languages
This intensive introductory course provides practical information and experiences for teaching ESL, with particular attention to urban schools, language minority students, and the NYC school system. Part I focuses on introductory issues in education and instructional models. Open to first-semester TESOL Teaching Fellows only. 3 hr./wk.; 3 cr.

EDCE 5500C: Children of the Caribbean Cultures & Curriculum
The cultural background of these children and their parents, and the problems of adjustment to a complex urban society. Attention to learning behavior affected by the difficulty of communication and new school environments. 3 hr./wk.; 3 cr.

EDCE 5700C: Education That Is Multicultural
Analyzes the various components of a desirable education in a pluralistic society; provides opportunities for developing curriculum and strategies which reflect respect and dignity for all people; examines students’ needs within a humanistic framework; critically examines instructional materials for bias. Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 5800C: Theories of Second Language Acquisition
Designed to develop the students’ understanding of the different theories that have been developed to explain the process of acquisition of second languages and of the interaction between such theories and strategies for maintaining and developing bilingualism. Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 5900C: Development and Evaluation of Materials for Teaching Second Languages: English
Designed to familiarize students with commercial materials used in teaching second languages, and to increase their capacity to develop materials of their own. 3 hr./wk.; 3 cr.

EDCE 5950C: Mathematics Knowledge for Teachers (Birth to Grade 6)
Focuses on the mathematics content knowledge needed to teach mathematics from birth to Grade 6, and the development of children’s numerical and logical reasoning. Includes topics such as problem solving, sets, operations with sets, functions, numerical systems with different bases, and topics in number theory. All topics are connected to children’s developing mathematical understandings. Reasoning and proof, problem-solving, connections, communication, and representation are threaded through all instruction. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 6000C: How Children Learn Mathematics: Birth - Grade 2
Development of young children’s spatial, numerical, and logical reasoning as the basis for instructional decision-making in mathematics teaching. Teaching materials, developmentally-appropriate investigations, and pedagogical techniques that facilitate children’s different ways of constructing ideas, strategies, and models in mathematics. Includes 15 hours of fieldwork. Prerequisites: MATH 18000 and either MATH 18500 or EDCE 5950C, or equivalent courses (6 cr); 3 hr./wk.; 3 cr.

EDCE 6100C: How Children Learn Mathematics: Grades 1-6
Mathematical development of children from primary to upper elementary grades through their actions and exploration. Candidates plan for differentiated instruction and assessment of students with diverse abilities. Prerequisite: EDCE 5950C. Includes 15 hours of fieldwork. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 6200C: Mathematics Inquiry for Pre-K to 6 Teachers
Includes mathematics content and pedagogy; focuses on selected topics in number, geometry, algebra and probability; attention to National Council of Teachers of Mathematics content and process standards, analysis of students’ work; and analysis, design and assessment of mathematics curriculum. Technology used throughout to study grade-appropriate classrooms. For
professional certification candidates only. Prereq: EDCE 6000C or the equiva-

lent. 3 hr./wk; 3 cr.

EDCE 6400C: Teaching Content (Math, Science, Social Studies) using both English and a Native Language
Designed to develop an interdisciplinary approach to teaching Math, Sci-
ence, and Social Studies using both English and a native language (e.g., Chi-
nese, Haitian, and Spanish). Prospective bilingual teachers will be provided
with knowledge, interdisciplinary content skills, and specific language-
related skills on how to use available materials and resources (i.e., stan-
dard glossaries and curriculum guides) when planning and integrating
content-area learning experiences and/or interdisciplinary thematic units,
using both English and one native language (Chinese, Haitian, or Spanish).
Includes 10 hours of fieldwork. Prereq: EDCE 5300C 3 hr./wk.; 3 cr.

EDCE 6500C: Methods of Teaching English Language Arts to Bilingual English Language Learners (7-Adult)
This course is designed to help participants develop instructional experi-
ences that provide for the acquisition of second-language literacy (English) in
literacy and content area texts for students (Grade 7-Adult) whose cultural
background differs from that of the majority culture. While focusing primarily
on practical approaches to teaching literacy, the course will also address
theoretical issues that underlie the development and implementation of
effective strategies to support English language learners. Includes 10 hours of
fieldwork. 3 hr./wk.; 3 cr.

EDCE 6601C: Practicum I in TESOL
Teacher candidates investigate how theoretical foundations of teaching
English as a second language and additional language are implemented in classrooms. Under
field supervision, candidates will plan and teach in either P-6 or 7-12 class-
rooms. In the accompanying seminar, candidates critically analyze the
Teaching practices in their learning environments. 3 HR./WK; 3 CR. Fieldwork
requirement: 15 days. Pass/Fail course.

EDCE 6602C: Practicum II in TESOL
Teacher candidates investigate how theoretical foundations of teaching
English as an additional language are implemented in classrooms. Under
field supervision, candidates will plan and teach in either P-6 or 7-12 class-
rooms. 1 hr./wk.; 1 cr. Fieldwork Requirement: 5 days. Pass/Fail Course.

EDCE 6604C: Practicum in Adult TESOL
Teacher candidates investigate how theoretical foundations of teaching
English as an additional language are implemented in classrooms. Under
field supervision, candidates will plan and teach in adult ESL settings. In the
accompanying seminar, candidates critically analyze the teaching practices in
their learning environments. 3 HR./WK; 3 CR. Fieldwork requirement 10 days.
Pass/ Fail course.

EDCE 6700C: Contrastive Phonology of English and Other Languages for Teachers
Advanced study of the phonology of English and its contrasts with other
languages. Areas of difficulty for second-language learners. Pedagogical
strategies. Prereq: EDCE 2600C. 3 hr./wk.; 3 cr.

EDCE 6800C: Grammar and its Pedagogy: English and Other Languages
Advanced study of the grammar of English, with strategies for application in
bilingual and second-language classrooms. Students will be given the op-
portunity to contrast aspects of grammar of English with that of other lan-
guages. Includes 10 hours of fieldwork. Prereq: EDCE 2600C. 3 hr./wk.; 3 cr.

EDCE 6900C: Methods of Teaching English to Speakers of Other Lan-
guages II (Grade 7-12)
Methods and materials for teaching English to non-native speakers grades
7-Adult, with a focus on communicative and content-based instruction; ap-
propriateness of various techniques, resources, and assessments for different
learning styles, language and cultural backgrounds, age and proficiency levels,
including gifted and talented students and those with special develop-
mental needs; history of ESOL teaching, and the links between teaching
practice and theories of language and language learning. The course in-
cludes attention to the specific discourse and text formats in the content
areas of mathematics, science and technology, social studies, and the arts.
Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 7100C: Creative Movement and Music in Childhood Education
Integrating the expressive arts into all areas of the curriculum. Focus on crea-
tive expression as an effective modality for teaching. Strategies that allow
teachers to model creativity for their students in a supportive learning envi-
ronment. Students should come prepared for moderate physical activity.
Includes 10 hours of fieldwork at the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

EDCE 7150C: Fundamentals of Teaching and Learning in Early Childhood
Contexts
This course will offer a practical overview of the fundamentals of teaching
and learning in early childhood contexts. Linking research and theory about
how young children develop and learn, the course will present insights about
how to create developmentally appropriate/culturally responsive learning
environments, curriculum, instruction, assessment strategies, and teaching
attitudes that support young children’s optimal development through the
collection of direct evidence of children's behaviors and work and how to use
these data to inform and guide teaching. Ongoing studies of children will be
required throughout the course. 10-15 hours of fieldwork required. 3 hr./wk.; 3 cr.

EDCE 7200C: Field-based Inquiry: TESOL
Through supervised field-based investigations of the Teaching of English to
Speakers of Other Languages (TESOL) in grades pre-K through 12, teacher
candidates will investigate how theoretical and empirical foundations of the
teaching of English as a second language (ESL) are implemented in actual
classrooms, linking theory and practice. The course will involve focused
classroom observations and the creation of lesson plans and units of study as
teacher candidates apply and adapt methodologies and assist the cooperat-
ing ESL teacher in instruction. Students will spend 7 weeks in grade pre-K
through 6 and 7 weeks in grades 7-12 (3-4 hours per week). The course will
meet in a weekly seminar. Required of all students in the graduate initial
certification program in TESOL. Includes 45 hrs. in-school experience and
bi-weekly seminar. Prereq: EDUC 7200A, either 7300A or 7500A, EDCE 5400C.
3 cr.

EDCE 7250C: Curriculum Development in ECE
Critical examination of principles underlying curriculum development and
program planning for young children. How to prepare the environment,
integrate the day, differentiate instruction for students with varying needs,
discipline effectively, and use technology. To be taken with or after student
Teaching. Required for initial certification. Ancillary requirement for profes-
sional certificate (on advisement). Includes 10-15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 7300C: Young Children’s Education in Diverse Non-School Settings
This course explores the processes of teaching and learning as they occur for
young children in non-school settings in culturally diverse contexts. The
course will lead participants through a series of visits to institutions that
facilitate children’s learning (such as libraries, museums, hospital sett-
ings, playgrounds, cultural education programs, etc.). Candidates will compare
these to comparable institutions in their own or other countries. 3 hr./wk.; 3 cr.

EDCE 7400C: Teaching Literacy Through Drama
This course explores how teachers can help students develop literacy skills in
order to better articulate ideas and create a base for further learning in a broad
range of subjects. The course will also discuss strategies to support
English Language Learners (ELL). The main concepts, structures, and conven-
tions of the field of literacy and language acquisition through drama will also
be investigated. 3 hr./wk.; 3 cr.

EDCE 7500C: Emergent to Fluent Literacy
(Prereq, for Graduate Program in Literacy Acquisition and Development)
Emergent to fluent literacy acquisition for students with diverse cultural and
linguistic backgrounds and students with special needs; assessment of sem-
antic, syntactic, phonic, and phonemic awareness; strategies for children
having difficulties in acquisition of speaking, listening, reading, and writing
competencies; organizing shared, guided, and independent reading and
writing instruction; use of technology. Includes 15 hours of fieldwork in ex-
emplary setting. 3 hr./wk.; 3 cr.

EDCE 7510C: Literacy Strategies: From Birth to 6th grade
This course will offer an overview of the fundamentals of teaching and
learning in early childhood contexts. Linking research and theory about
how young children develop and learn, the course will present insights about
how to create developmentally appropriate/culturally responsive learning
environments, curriculum, instruction, assessment strategies, and teaching
attitudes that support young children’s optimal development through the
collection of direct evidence of children's behaviors and work and how to use
these data to inform and guide teaching. Ongoing studies of children will be
required throughout the course. 3 hr./wk. 3 cr.

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EDCE 7550C: Literacy Strategies: From Birth to 6th grade
This course will offer an overview of the fundamentals of teaching and
learning in early childhood contexts. Linking research and theory about
how young children develop and learn, the course will present insights about
how to create developmentally appropriate/culturally responsive learning
environments, curriculum, instruction, assessment strategies, and teaching
attitudes that support young children’s optimal development through the
collection of direct evidence of children's behaviors and work and how to use
these data to inform and guide teaching. Ongoing studies of children will be
required throughout the course. 3 hr./wk. 3 cr.
EDCE 7600C: Fluent to Experienced Literacy
(Prereq, for Graduate Program in Literacy Acquisition and Development)
Balanced literacy instruction for fluent readers and writers from a diversity of cultural and linguistic backgrounds and needs; becoming experienced in a variety of genres; literacy development, and curriculum design for inferential/ deep structure comprehension; content area literacies; word work; selection of appropriate materials; use of technology. Includes 15 hours of fieldwork in exemplary setting. 3 hr./wk.; 3 cr.

EDCE 7610C: Literacy Strategies and Resources in the Content Areas
(5th-12th)
This course will explore literacy practices in the different content areas, and support teachers in developing instructional strategies and learning activities for literacy learning across the curriculum. Special areas of concentration will be: crafting a culturally responsive curriculum; content area literacies; interdisciplinary and cross curricular connections; different dimensions of reading comprehension with different text types and disciplinary contexts; writing to learn strategies; the use of popular and multimodal texts to support academic literacies; and an analysis of the Regents exams. There will be a special emphasis on specific strategies to support literacy learning and growth, particularly learners of diverse cultural and linguistic backgrounds as well as the students with special needs. Candidates will explore how different identities emerge among age, gender, class, race, language, ethnicity, physical ability, sexual orientation, etc. are constructed through different literacy practices and cultural lenses. Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 7801C: Beginning Literacy Research Seminar
The first of a four semester course sequence designed to support candidates in conceptualizing a research project around literacy learning and teaching. In this first course, the focus is on the teacher as researcher and writer who discovers different ways of looking at literacy learning, formulates significant research questions, and pursues a line of inquiry. Candidates will investigate the ways in which their cultural backgrounds are connected to their research questions. Candidates will learn a variety of data collection tools for conducting teacher research and engage hands-on research techniques to further these theoretical understandings. Includes 8 hours of fieldwork. 2 hr./wk.; 2 cr.

EDCE 7802C: Literacy Research Seminar II
The second of a four semester course designed to support candidates in conceptualizing a research project around literacy learning and teaching. In this second semester, the focus is on the teacher as researcher and writer who discovers different ways of looking at literacy learning. They will develop expertise in a certain area of the literature, discover the silences and gaps in the present literature, and those who choose a theoretical framework. Candidates will develop further skills in critiquing and analyzing research and will design a literature review in which they bring together major voices, concepts, and contributions in their chosen literacy area. Includes 8 hours of fieldwork. Prereq: EDCE 7801C. 2 hr./wk.; 2 cr.

EDCE 7803C: Literacy Research Seminar III
The third of a four semester course designed to support candidates in conceptualizing a research project around literacy learning and teaching. In this third semester, the focus is on the teacher as researcher and writer who discovers different ways of looking at literacy learning. They will develop expertise in a certain area of the literature, discover the silences and gaps in the present literature, and those who choose a theoretical framework. Candidates will develop further skills in critiquing and analyzing research and will design a methodology chapter where they bring all of these knowledges and skills together. Candidates will begin to implement data collection and learn some techniques for data analysis. Includes 8 hours of fieldwork. Prereq: EDCE 7801C and EDCE 7802C. 2 hr./wk.; 2 cr.

EDCE 7804C: Literacy Research Seminar IV
This course is the final of four research seminars. Work will focus on the completion, publication, and public presentation of research findings. Students will view their work in the context of the professional literacy organizations and journals and prepare to present their question, research design for collecting data, conclusions, and new emerging questions in a public forum for all students in the Graduate Literacy Acquisition and Development Program. Prereq: EDCE 7801C, EDCE 7802C, and EDCE 7803C. 1 hr./wk.; 1 cr.

EDCE 1300E: Negotiating Curriculum Standards, Children’s Inquiries and Appropriate Multicultural Materials for Children from Birth to Grade 6
This course provides foundations for understanding the complexities of teachers’ relationships with curriculum for Birth to Grade 6. Candidates will expand their knowledge of the multiple dimensions of curriculum including assessment, literacy content, educational structures, notions of the hidden curriculum, and children’s perspectives. Candidates will examine the New York State English Language Arts and Content Area Standards to inform their understandings of what is possible and necessary in developing literacy curriculum and activities. Candidates will investigate multiple resources to enrich their curricula revisions, address these dimensions, and incorporate into their teaching the diversity of their class and the world. Candidates will explore aspects of social justice, critical literacies, and multiculturalism while producing standard-driven activities. Candidates will increase their knowledge of intrcultural language, technology, music, websites, and museums. This class includes 20 hours of fieldwork required to implement curriculum planning and activities. Includes 20 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 1301E: Negotiating Curriculum Standards, Children’s Inquiries, and Appropriate Multicultural Materials for 5th to 12th Grade
This course provides foundations for understanding the complexities of teachers’ relationships with curriculum for 5th to 12th Grade. Candidates will expand their knowledge of the multiple dimensions of curriculum including assessment, literacy content, educational structures, notions of the hidden curriculum, and children’s perspectives. Candidates will examine the New York State English Language Arts and Content Area Standards to inform their understandings of what is possible and necessary in developing literacy curriculum and activities. Candidates will investigate multiple resources to enrich their curricula revisions, address these dimensions, and incorporate into their teaching the diversity of their class and the world. Candidates will explore aspects of social justice, critical literacies, and multiculturalism while producing standard-driven activities. Candidates will increase their knowledge of intrcultural language, technology, music, websites, and museums. This class includes 20 hours of fieldwork required to implement curriculum planning and activities. Includes 20 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 1400E: Writing for Teachers
This course is designed to support teachers in focusing on their own writing and its relationship to their development as learners, teachers, researchers, and human beings. Candidates will construct positive identities as writers, discuss draft literature available for teaching, and develop their craft as writers within several basic genres (poetry, prose, descriptive and persuasive writing). During this course they will explore the writing process and learn about key dimensions of writing including textuality, intertextuality, figurative language and writing as rewriting culture. Candidates will build on their strengths, address their challenges, and identify implications for their role as writing instructors and the role of writing in their classes. 2 hr./wk.; 2 cr.

EDCE 1600E: Small Group Literacy Inquiry Practicum - Birth to 6th Grade
This course supports candidates in learning the premises of inquiry-based learning and transforming practices within the field of literacy for Birth to 6th grade. While working with a small group of children, candidates will learn how to investigate curriculum, literacy development, planning, resources, and issues of social justice. Candidates are expected to think about peer relationships, work on collaborative teaching and learning processes, and foster children’s abilities to help and support each other’s literacy learning. Candidates are responsible for organizing effective learning contexts, differentiating instruction, exploring content area literacies, understanding the children’s individual development in the context of social interactions, and diversifying the range of genres and materials available for each child. This class focuses on building candidates’ strengths in utilizing multiple sign systems, exploring a range of literacies practices, connecting the word and the world, and building family/community relationships. Candidates are required to choose a variety of assessment tools learned in other courses such as miscue analysis, writing sample analysis, observation, and note taking to record children’s literacy abilities, inform an instructional plan, analyze, and support children’s literacy practices. Includes 18 hours practicum. Pre/coreq: EDCE 1500C. 3 hr./wk.; 3 cr.

EDCE 1610E: Small Group Literacy Inquiry Practicum - 5th to 12th Grade
This course is designed to support candidates in learning the premises of inquiry-based learning and transformative practices within the field of literacy for 5th to 12th Grade. While working with a small group of children, candidates will learn how to investigate curriculum, literacy development, planning, resources, and issues of social justice. Candidates are expected to think about peer relationships, work on collaborative teaching and learning processes, and foster children’s abilities to help and support each other’s literacy learning. Candidates are responsible for organizing effective learning contexts, differentiating instruction, exploring content area literacies, understanding the children’s individual development in the context of social interactions, and diversifying the range of genres and materials available for their child. This class focuses on building candidates’ strengths in utilizing multiple sign systems, exploring a range of literacies practices, connecting the word and the world, and building family/community relationships. Candidates are required to use a variety of assessment tools learned in other courses such as miscue analysis, writing sample analysis, observation, and note taking to record children’s literacy abilities, inform an instructional plan, analyze, and support children’s literacy practices. Includes 18 hours practicum. Pre/coreq: EDCE 1501C. 3 hr./wk.; 3 cr.
EDCE 1700E: Critical Use of Technology for Literacy Instructors of Children Birth to 6th Grade
In this course, candidates develop competencies and skills in the critical and appropriate use of information technologies for the teaching of literacy at the Pre-K to 6th grade level. Candidates examine new, relevant, and appropriate information technology resources on literacy, apply research findings to the appropriate application of information technologies to literacy instruction, learn how new information technologies impact language and culture, expand competencies in using information technologies to develop literacy skills (reading, writing, listening, and speaking), and examine strategies to use information technologies to address literacy curricula for New York State English Language Arts and Content Area Standards. In addition, candidates engage in fieldwork where they utilize strategies for using new information technologies in classroom settings. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 1701E: Critical Use of Technology for Literacy Instructors of Students 5th to 12th Grade
In this course, candidates develop competencies and skills in the critical and appropriate use of information technologies for the teaching of literacy at the 5th to 12th grade level. Candidates examine new, relevant, and appropriate information technology resources on literacy, apply research findings to the appropriate application of information technologies to literacy instruction, learn how new information technologies impact language and culture, expand competencies in using information technologies to develop literacy skills (reading, writing, listening, and speaking), and examine strategies to use information technologies to address literacy curricula for New York State English Language Arts and Content Area Standards. In addition, candidates engage in fieldwork where they utilize strategies for using new information technologies in classroom settings. Includes 8 hours of fieldwork. 2 hr./wk.; 2 cr.

EDCE 7600F: Conflict Resolution Through Theatre
This course explores how drama can provide a format for young people to discuss conflict resolution, peer pressure, bullying and other issues that affect them. The course will enable candidates to discover how to create a safe environment and empower children to develop problem-solving skills and assume personal responsibility as well as understand perspective on a situation. This course includes creating lesson plans (learning experiences) and generating strategies to use in the classroom to navigate through these topics.

EDCE 7200F: Inclusive Practices for the General Education Classroom (Grades 1-6)
This course prepares candidates to teach in inclusive classroom settings grades 1-6. Topics of study include: special education law, disability categories, differentiation, strategies for instruction and assessment (curriculum design), co-teaching models, and classroom management. Drawing upon an understanding of disabilities as natural human variation, candidates develop a case study of a struggling learner in the classroom context. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 3000F: Curriculum Development in Childhood Education
An examination of principles that underlie curriculum development; planning appropriate goals, sequencing content, and implementing teaching/learning strategies. An important goal of the course is to help students develop skills in developing and offering differentiated instruction and integrating technology into learning experiences. Includes 10-15 hours of fieldwork at the 1-3 or 4-6 grade levels. Prerequisite: EDUC 2900F. 3 hr./wk.; 3 cr.

EDCE 3100F: Curriculum Development in Educational Theatre
This course will help students develop a framework for analyzing and assessing learners, curriculum design, and teaching strategies based on readings and observations of children in a classroom setting. Open only to matriculated students. 10-15 hours of field experience required in grades pre-K-12.

EDCE 4000F: Arts Integration: Theatre and Related Arts in the Curriculum (Grades 7-12)
This course explores theories and practices of integrating drama into the general curriculum, grades 6-12. Participants will learn how to teach content through the use of various dramatic activities, techniques and strategies including teacher-in-role, process drama and the use of still images/tableaux, music. The course will also discuss how theatre practitioners can use non-arts content as source material in their theatre curriculum while strengthening the learning in core subject areas. 15 hours of fieldwork required. 3 hr./wk.; 3 cr.

EDCE 7200F: Contemporary Problems in Bilingual Education
Workshop to assist teachers in bilingual education in solving, through action research, problems they encounter in their teaching and in the development and use of materials. Prerequisite: EDUC 7500G or present full-time service as a teacher. This course must be taken before EDUC 2200L. 3 hr./wk.; 3 cr.

EDCE 7300F: Contemporary Problems and Issues in Early Childhood Education
The identification and study of classroom and school problems educators encounter in their teaching, including effective instruction for children with a range of special needs. Serves as an introduction to action research and as preparation for the research sequence of courses the student will complete at the final stage of the program. Required for professional certification in Early Childhood. Pre-requisite: a minimum of 18 credits or special permission of advisor. 3 hr./wk.; 3 cr.

EDCE 7400F: Contemporary Problems and Issues in Childhood Education
The identification and study of classroom and school problems educators encounter in their teaching, including effective instruction for children with a range of special needs. Serves as an introduction to action research and as preparation for the research sequence of courses the student will complete at the final stage of the program. Required for professional certification in Childhood Education. Pre-requisite: a minimum of 18 credits or special permission of advisor. 3 hr./wk.; 3 cr.

EDCE 7500F: Special Topics in Educational Theatre
This course investigates how students can negotiate the complex role of being both a teacher and an artist in and out of the classroom setting. Methods and materials for exploring the process of being a teaching artist include discussions on the role of the teaching artist in different classroom settings (i.e., a one-shot, residency, afterschool programs, other settings). There will be an exploration of the application of drama structures and activities as tools for enlivening any curriculum, by building motivation, classroom community and collaborative exchange. Participants will learn how to integrate and adapt strategies and activities for different age ranges, and investigate how drama can be scaffolded effectively in lesson planning, thus aiding in classroom management. 3 hr./wk.; 3 cr.

EDCE 1700G: Home-School Partnerships for Literacy Development
This course is designed to support candidates in fostering strong relationships between home and school communities, and helping children negotiate the different contexts of their learning. Candidates learn how to operate from non-deficit models of evaluation in investigating the child's cultural and family background. Candidates learn how to build constructive relationships between all the partners that help educate the child and how to build on local funds of knowledge in developing curriculum. Candidates explore the shifting intersections between community-based and school-based literacies in supporting the child's learning and literacy growth. Includes 8 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 5701G: Practicum Teaching Bilingual Special Education
Assessing and developing skills for teaching language minority students with disabilities. Field supervision, integrative seminar, individual conferences. Approval required one semester in advance; open only to matriculants. Pre-requisite: completion of 15 credits. 3 hr./wk.; 3 cr.

EDCE 5901G: Curriculum and Instructional Approaches in Bilingual Special Education
Examination and development of curriculum and material for teaching language minority students with disabilities in English and non-English. Special emphasis will be given to NYS learning standards for science and social studies. Includes 10 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 7201G: Student/Supervised Teaching in Educational Theatre P-6
Students will complete their student teaching full-time for seven weeks in grades PreK-6 and attend a weekly seminar. Permission of the Program Head required. Co-requisite: EDCE 7204G. 2 cr.

EDCE 7202G: Student/Supervised Teaching in Educational Theatre (7-12)
Students will complete their student teaching full time for seven weeks in grades 7-12 and attend a weekly seminar. Permission of the Program Head is required. Co-requisite: EDCE 7205G. 2 cr.

EDCE 7203G: Capstone Field Experience in Educational Theatre
Students will work closely to create a final teaching experience that coincides with their professional goals. Permission of the Program Head is required. Students must attend seminar. Co-requisite: EDCE 7204G. 1 cr.

EDCE 7204G: Seminar in Educational Theatre P-6
Seminar provides student teachers an opportunity to meet, reflect and generate ideas for their current P-6 student teaching placements. Weekly discussions focus on preparing student teachers for the job search as well as for a career in education. Corequisite: EDCE 7201G. 1 hr./wk.; 1 cr.

EDCE 7205G: Seminar in Educational Theatre (7-12)
Seminar provides student teachers an opportunity to meet, reflect, and generate ideas for their current 7-12 student teaching placements. Weekly dis-
cussions focus on preparing student teachers for the job search as well as for a career in education. Corequisite: EDCE 7202G. 1 hr./wk.; 1 cr.

EDCE 7301G: Student Teaching and Seminar in Early Childhood Education I
Full time supervised student teaching for 20 – 50 days in one developmental level of early childhood (as part of 70 days total in student/supervised teaching). Accompanying weekly seminar integrates the teaching experience with course work. Required for those in the initiative certification program. Advance approval necessary. To be completed at the end of the program sequence. Corequisite(s): EDUC 1900G. 3 hr./wk.; 3 cr.

EDCE 7302G: Student Teaching and Seminar in Early Childhood Education II
Full time supervised student teaching for 20 – 50 days in a second developmental level of early childhood (as part of 70 days total in student/supervised teaching). Accompanying weekly seminar integrates the teaching experience with course work. Required for those in the initial certification program. Advance approval necessary. To be completed at the end of the program sequence. Corequisite(s): EDUC 1900G. 3 hr./wk.; 3 cr.

EDCE 7403G: Supervised Teaching and Seminar in Early Childhood Education
Full time supervised student teaching for a semester in their own classroom for those who teach full-time. Accompanying weekly seminar integrates the teaching experience with course work. Option for those in the initial certification program. Advance approval necessary. To be completed at the end of the program sequence. 3 hr./wk.; 3 cr.

EDCE 7304G: Student Teaching in Early Childhood Education and Seminar
Supervised teaching for 100 hours in pre-K, or grades 1-2 and a weekly seminar. Includes special seminars on school violence prevention and intervention, safety education and fire and arson prevention. Required of students in the Teaching Fellows program that provides supervision of student teaching. Advance approval required. 0 cr.

EDCE 7305G: Supervised Teaching in Early Childhood Education and Seminar
Supervised teaching for one semester in the student’s own classroom in pre-K, K, or grades 1-2 (the level being different from that in EDUC 0304G) and a weekly seminar. Required of students in the Teaching Fellows program that provides supervision of teaching. Advance approval required. 0 cr.

EDCE 7401G: Student Teaching in Childhood Education I and Seminar
Supervised teaching full time for seven weeks in grades 1-3 and weekly seminar. Required of all students in the initial certification program in childhood education who are not currently holding a full-time teaching position. Advance approval required. Prereq: EDCE 1900G. 3 hr./wk.; 3 cr.

EDCE 7402G: Student Teaching in Childhood Education II and Seminar
Supervised teaching full time for seven weeks in grades 4-6 and weekly seminar. Required of all students in the graduate initial certification program in childhood education who are not currently holding a full-time teaching position. Advance approval required. Prereq: 21 cr. of initial certification courses and CST examination (Advanced Certificate students: See advisor or program head for necessary prerequisites); Coreq: EDUC 1900G. 3 cr.

EDCE 7403G: Supervised Teaching in Childhood Education I and Seminar
Supervised teaching for one semester in the students’ own classroom in grades 1-3 or 4-6 and weekly seminar. Required of all students in the initial certification program who are presently teaching full time. Advance approval required. Prereq: EDCE 1900G. 3 cr.

EDCE 7404G: Supervised Teaching in Childhood Education II and Seminar
Supervised student teaching for 120 hours at the grade level (1-3 or 4-6) that the student did not complete in Supervised Teaching I and weekly seminar. Advance approval required. Prereq: 21 cr. of initial certification courses and CST examination. 3 cr.

EDCE 7405G: Student Teaching in Childhood Education and Seminar
Supervised student teaching for 100 hours at grade level (1-3 or 4-6) and weekly seminar. Includes special seminars on school violence prevention and intervention, safety education, and fire and arson prevention. Required of students in the Teaching Fellows program and similar programs that provide supervision of student teaching. Advance approval required. 0 cr.

EDCE 7406G: Supervised Student Teaching in Childhood Education Seminar
Supervised student teaching for one semester in the student’s own classroom in grades 1 to 3 or 4 to 6 (the level being different from that in EDUC 0405G) and weekly seminar. Required of students in the Teaching Fellows program and similar programs that provide supervision of student teaching. Advance approval required. 0 cr.

EDCE 7501G: Seminar in Bilingual Education
This weekly seminar addresses applications of the principles of teaching to all aspects of the curriculum; understandings and skills to plan a coherent and integrated curriculum; assessment systems that inform teaching and support student learning; developing classroom structures, routines, teaching strategies, and skills that build community and maintain discipline within a range of learners. Special emphasis is given to match instructional approaches with the needs and interests of diverse learners as well as how to build a respectful and productive classroom environment and effective home-school relations. Prereq: 100 hours of fieldwork. Coreqs: EDCE 7502G, EDUC 1900G. 2 hr./wk.; 2 cr.

EDCE 7502G: Student Teaching in Bilingual Education
The student teaching experience is designed to provide prospective childhood teachers with opportunities to teach and critically analyze teaching practices in monolingual and bilingual classrooms. Students will: develop and improve teaching practices and organizational skills; practice the use two languages to meet the academic, cognitive and emotional needs of all students; practice formal and informal assessment techniques; examine special features of classroom management in the bilingual classroom; develop awareness of the many ways in which the classroom, home and community environment are supportive of the learner. 300 hrs. Corequisite(s): EDCE 7501G, EDUC 1900G. 4 cr.

EDCE 7503G: Student Teaching in TESOL (Grades Pre-K – 12)
Candidates will spend 15 weeks of supervised student teaching in grades Pre-K through 12, apportioned between elementary (P-6) and secondary (P-12) classroom settings. The supervised student teaching experience is designed to provide prospective English as a Second Language (ESL) teachers with opportunities to teach and critically analyze teaching practices in classroom for English language learners. Candidates will: develop and improve teaching strategies and organizational skills to meet the needs of all students; practice formal and informal assessment techniques; examine special features of classroom management; and develop awareness of learning environments, including home and community. Required of all students in the graduate initial certification program in TESOL. Prereq: EDCE 2600C, EDCE 5201C, EDCE 5400C, EDCE 5700C, EDCE 5800C, EDCE 6000K, EDCE 6800C, EDCE 6900C, and EDCE 7200C; 300 Hours of in-school experience and weekly seminar; Coreq: EDCE 7504G, EDUC 1900G. 4 cr.

EDCE 7504G: Seminar in TESOL
This weekly seminar addresses applications of the principles of teaching to all aspects of the curriculum: understandings and skills to plan a coherent and integrated curriculum; assessment systems that inform teaching and support student learning; developing classroom structures, routines, teaching strategies, and skills that build community and maintain discipline within a range of learners. Special emphasis is given to match instructional approaches with the needs and interests of diverse learners as well as how to build a respectful and productive classroom environment and effective home-school relations. Prereq: EDCE 2600C, EDCE 5201C, EDCE 5400C, EDCE 5700C, EDCE 5800C, EDCE 6000K, EDCE 6800C, EDCE 6900C, and EDCE 7200C; 300 Hours of in-school experience and weekly seminar; Coreq: EDCE 7503G, EDUC 1900G. 2 cr.

EDCE 7703G: Internship in Bilingual Special Education
Students will be assigned to a school and will spend half a semester teaching in a regular class and half a semester teaching in a special class for exceptional bilingual children. 4 hr./wk.; 4 cr.

EDCE 9602G: Guidance Services

EDCE 9604G: Literacy Programs

EDCE 2202I: Content Research Seminar in Early Childhood Education
Culminating experience of the graduate education program. Students identify the topic for their seminar which to inquire, review the research literature related to that problem (including on-line sources), and design a study to carry out in the following semester. Required of all graduate students in Early Childhood Education. By permission only. Prereq: EDCE 2100K or equivalent. 2 hr./wk.; 2 cr.

EDCE 2203I: Content Research Seminar in Bilingual Education
A critical review of the research literature in the candidate’s major field, as well as research methodology and instrumentation appropriate to the field. This first semester covers the basic concepts and procedures needed to
evaluate research critically. Each student will identify a problem in his or her major area, review the literature related to that problem, and design a project to study the problem. This project will be carried out during the second semester. Matriculants only. This course is followed by EDUC 2900I. This course should be taken no later than the semester prior to the one in which the student expects to complete the requirements for their degree. Students who expect to write a thesis should take this course no later than two semesters prior to the one in which they expect to complete the requirements for their degree. Prereq: see individual programs. 2 hr./wk.; 2 cr.

EDCE 2204I: Content Research Seminar in Childhood Education
Culminating experience in the graduate program in childhood education. Students identify a problem or issue about which to inquire, review the research literature related to that problem, and design a study to carry out the following semester. By permission only. Prereq: Matriculation, 15 cr. and EDUC 2900F. 2 hr./wk.; 2 cr.

EDCE 2205I: Research Seminar I in Teaching Linguistically and Culturally Diverse Students
A critical review of the research literature in the candidate's major field, as well as research methodology and instrumentation appropriate to the field. This first semester covers the basic concepts and procedures needed to evaluate research critically. Each student will identify a problem in his or her major area, review the literature related to that problem, and design a project to study the problem. This project will be carried out during the second semester. Matriculants only. This course is followed by EDUC 2900I. This course should be taken no later than the semester prior to the one in which the student expects to complete the requirements for the degree. Students who expect to write a thesis should take this course no later than two semesters prior to the one in which they expect to complete the requirements for their degree. Prereq: see individual programs. Includes 10 hours of fieldwork. 2 hr./wk.; 2 cr.

EDCE 2206I: Content Research Seminar in Educational Theatre
Culminating experience in the graduate program in Educational Theatre. Students identify a problem or issue about which to inquire, review the research literature related to that problem, and design a study to carry out the following semester. By permission only. Prereq: Matriculation, 15 cr. and EDUC 2900F. 2 hr./wk.; 2 cr.

EDCE 2900K: Seminar in Educational Research II
Second semester of the research sequence. Students carry out their study designed in the Content Research Seminar and learn how to analyze, write about, and present the data collected. By permission only. 2 hr./wk.; 2 cr.

SPED 6100: Working with Parents of Students with Disabilities
Problems, principles, and procedures in working with parents of students with disabilities. Impact of disabling factors on parents, and study of different problem solutions including study of school and community resources. 3 hr./wk.; 3 cr.

EDCE 7000K: Language and Learning
The course examines learning theories and their application to language learning with an emphasis on the student as both teacher and learner. Special emphasis is given to talking to learn and writing to learn. 3 hr./wk.; 3 cr.

EDCE 1800K: Family, Child and School
A study of the contexts for learning that affect teachers, children, and their families. Topics explored include: multicultural communities and differing family structures, conferencing with parents, children with special needs, indications of child abuse, educators’ legal and ethical responsibilities. Required for initial certification. Includes 10-15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 2100K: Development Issues in Early Childhood/Childhood Education
In-depth study of the developmental progression and the active nature of children’s learning (birth through the childhood years). Major developmental and learning theories are critically examined and illuminated through candidates’ experiences with children of diverse needs from varying backgrounds. Implications for program planning, classroom organization, and differentiating curriculum to meet special needs are continually drawn. Required. 3 hr./wk.; 3 cr.

EDCE 4500K: Inclusive Practices for the Arts
The potential of theatre arts as a powerful vehicle for positive disability representation is explored. Topics of study include: special education law, disability categories, differentiation, collaborative teaching, and classroom management. Candidates draw upon the narrative work of disabled artists to (re)conceptualize disability as natural human variation and an essential feature of diversity in a multicultural society. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 6000K: Introduction to the Education of Emergent Bilingual Students with Disabilities
Course content focuses upon the needs of learners with disabilities who are in the process of acquiring skills in English, culturally responsive practices, and collaboration with culturally and linguistically diverse families. Topics of study include: special education law, disability categories, differentiation, strategies for instruction and assessment, co-teaching models, and classroom management. This course presents disability as natural human variation and an essential feature of diversity in a multicultural society. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

EDCE 6100K: Assessing the Educational Needs of Language Minority Students with Disabilities
This course examines the impact of second language, cultural variables, and bilingualism on academic test performance. Participants will learn to assess educational environments, previous educational experiences, administer norm-referenced and criterion-referenced tests in English and in the non-English language. Both formal and informal assessment techniques will be studied. Prereq: Includes 20 hours practicum; EDUC 6000K. 3 hr./wk.; 3 cr.

EDCE 6200K: Language Minority Families and the Special Education System
This course examines current and historical perspectives on parent involvement in the special education of children and youth with disabilities. Emphasis is on understanding the views of exceptionalities and family involvement held by language minority families. Focuses on strategies, activities, and materials that will facilitate school and family collaboration. Prereq: EDUC 6000K. 3 hr./wk.; 3 cr.

EDUC 7100A: Urban Schools in a Diverse Society
Selected significant social, political, and economic forces which influence the school as an institution and which in turn are influenced by the school, especially in urban settings that educate students from diverse ethnic and cultural backgrounds. Includes history, philosophy, sociology and politics of education. Includes 10 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

EDUC 7200A: Psychology of Learning and Teaching
Theories and principles of learning and instruction pertinent to achievement, development, self-regulation, and behavior in children from culturally and ethnically-diverse backgrounds. Includes classroom applications, testing and evaluation. Includes 10-15 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

EDUC 7300A: Child Development
Theories and principles of development pertinent to culturally and ethnically-diverse and inclusive classrooms with an emphasis on classroom applications and fieldwork. Includes 10-15 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

EDUC 7400A: The School in American Society: Bilingual Education in the Urban School
Analysis of selected social, political, and economic forces that influence the school as an institution, and in turn are influenced by the school, especially in urban settings. Special attention to immigrant, bilingual, and language minority groups. Not open to students who have taken EDUC 22100, EDUC 22200, or equivalent. 3 hr./wk.; 3 cr.

EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues
Definitions, indicators, and the impact of abuse and neglect on the child; reporting abuse. Violence prevention. Additional workshops include topics such as certification, resume building, and professional resources. Corequisites: Student Teaching. 2 hr./wk.; 0 cr.

EDUC 9602G: Administration and Supervision of Early Childhood Education
The supervisor’s responsibilities in such areas as program making, staff development, pupil/personnel, and program/department management. Cases and problems examined in laboratory settings, taught by joint administration and specialized area faculty. Special permission required. 3 hr./wk.; 3 cr.

EDUC 9800G: Educational Leadership in Day Care
Role of the director in setting priorities for the center and its early childhood program. Supervision and development of staff. Relations with governmental agencies, sponsoring agency, board, and community. Open to only matriculants in the Day Care Leadership Program or by special permission. 3 hr./wk.; 3 cr.

EDUC 3100N: Independent Study and Research in Education
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsor-
ship by appropriate faculty member. Variable 1-4 cr./sem. and may be repeated for a maximum of six cumulative credits with faculty approval.

**Latin American and Latino Studies**

**LALS 1100C: Puerto Rican Community: Field Research Work**
Study of migration of the Puerto Rican to New York City, sociological impact, and resultant problems in education, housing, health services, family and community development. Practical experience and research through placement in agencies serving Puerto Ricans. 3 hr./wk; 3 cr.

**LALS 1200C: Vernacular Language of Puerto Rico**
Provides basic knowledge of Spanish as spoken in Puerto Rico. Includes linguistic concepts needed to help students develop communicative skills in reading, writing, and speaking the vernacular language to allow research and facilitate communication with the Puerto Rican. Prereq: fluency in conversational Spanish. 3 hr./wk; 3 cr.

**LALS 3200F: Independent Study and Research in Latin American and Latino Studies**
Open to qualified graduate students in the School of Education interested in the study on special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

**Faculty**

Megan Blumenreich, Associate Professor
B.A., Colby College; M.A., Teachers College, Columbia Univ.; Ed.M., Ed.D.

Nancy Cardwell, Assistant Professor
B.A., St. John’s University; M.S., Bank Street College of Education; Ed.M., Harvard University, Graduate School of Education; Ph.D., The Graduate Center, City University of New York

Joseph Davis, Associate Professor
B.S. Wake Forest Univ.; M.S.P.H., Univ. of North Carolina; M.A., Columbia Univ.; M.Phil., Ph.D.

Beverly Falk, Professor
B.A., Sarah Lawrence College; M.S.Ed, The City College; Ed.D., Teachers College, Columbia Univ.

Jesús Fraga, Lecturer
B.S., The City College, CUNY; M.S., Bank Street College of Education; M.A., Adelphi Univ.

Catherine Franklin, Associate Professor
B.A., Univ. of Rhode Island; M.A., Leslie College Graduate School; Ed. D., Teachers College, Columbia Univ.

Laura Gellert, Associate Professor
A.B., Bryn Mawr College; M.S., New York Univ.; Ph.D., CUNY

Amita Gupta, Professor and Chair

Gretchen Johnson, Associate Professor
B.A., Queens College; M.A., Yeshiva Univ.; Ph.D., New York Univ.

Jennifer Katona, Lecturer
B.A., Fairfield University; M.A., New York Univ.; Ph.D, CUNY

Sobha Kavanakudiyil, Lecturer
B.A., Fordham University; M.A., New York University

Tatyana Kleyn, Associate Professor
B.S., Ohio State Univ.; M.E.; Ed.D., Teachers College, Columbia Univ.

Dina López, Assistant Professor
B.A., Brown University; M.S. Fordham University; Ed.D., Teachers College, Columbia Univ.

Carmina Makar Martin, Assistant Professor
B.A. ITESO University; M.A., Ed.D., Teachers College, Columbia Univ.

Nadjwa Norton, Associate Professor
B.A., Yale Univ.; M.Ed., Teachers College, Columbia Univ.; Ed.D.

Nancy Stern, Associate Professor
B.A., The College of William and Mary; M.Phil. (Linguistics), Ph.D, CUNY

Jan Valle, Associate Professor
B.A., Furman Univ.; M.A., Teachers College, Columbia Univ.; Ed.D.

Professors Emeriti
Ruth R. Adams
Hubert Dyasi
Shirley Feldmann
Catherine Twomey Fosnot
Ruth Grossman
Elisabeth S. Hirsch
James L. Neujahr
Oliver Patterson
Madelon Delany Stent
Department of Leadership and Special Education

Professor Hazel Carter, Chair • Department Office: NA 6/207B • Tel: 212-650-7262

General Information

The City College offers the following master’s degrees and advanced certificates in Education:

Master of Science in Education (M.S.Ed.)
Students with Disabilities in Childhood Education-Generalist (Grades 1-6)
Students with Disabilities in Adolescent Education-Generalist (Grades 7-12)
Administration and Supervision

Post Master’s Advanced Certificate Program
Administration and Supervision
Advanced Certificate Programs for Certified New York State Teachers
Students with Disabilities-Generalist (Grades 1-6)
Students with Disabilities-Generalist (Grades 7-12)

Advisement
The Office of Admissions and Student Services (212-650-5316) or the office of the chair (212-650-7262) will be pleased to assist you in contacting the faculty member in charge of any of the programs above.

Programs and Objectives

Special Education

The School of Education offers two graduate programs in special education: Students with Disabilities in Childhood Education (Grades 1-6) and Students with Disabilities in Adolescent Education (Grades 7-12). The programs require 31-43 credit hours (depending on previous coursework) and lead to a master of science in education. Completion of either of the programs satisfies the educational requirements for initial certification in New York State and students may apply for such through the School. In addition, the master’s degree fulfills the education requirements for the professional certification in either special education or childhood education if the candidate already holds initial certification. The Special Education Program also offers two Advanced Certificate programs for New York State teachers who already hold certification: Students with Disabilities-Generalist (Grades 1-6) and Students with Disabilities-Generalist (Grades 7-12). The inclusion model of delivering special education services in an urban environment is emphasized, but candidates will be prepared to work in self-contained environments as well.

Students with Disabilities in Childhood Education-Generalist (Grades 1-6)

3. Prerequisites for all candidates: bachelor’s degree with a major or concentration in one of the liberal arts or sciences with study in a foreign language (two semesters of ASL accepted). Candidates with deficiencies in any of these areas may be conditionally accepted.

4. Prerequisites for candidates seeking Provisional New York State Certification (credit may be given for these courses or their equivalents if taken elsewhere on the graduate or undergraduate level, but they are not counted toward the master’s degree):
   - EDUC 7100A: Urban Schools in a Diverse Society
   - EDUC 7200A: Psychology of Learning and Teaching
   - EDUC 7300A: Child Development
   - SPED 5000K: Introduction to Inclusive Education

This program fulfills the education requirements for initial or professional New York State certification in Students with Disabilities. Note: those taking courses requiring fieldwork or practica may do it in their own workplaces if they are employed as special education teachers or have major responsibility in inclusion classrooms. All others will be placed in fieldwork situations taking place within the normal school day.

Required Courses:
   - SPED 3300K: Building Community in Inclusive Contexts
   - SPED 3600K: Reading and Writing Instruction for Students with Disabilities in Childhood Education I
   - SPED 3700K: Reading and Writing Instruction for Students with Disabilities in Childhood Education II
   - SPED 3800K: Differentiated Instruction and Assessment for Students with Disabilities in Childhood Education I
   - SPED 3900K: Differentiated Instruction and Assessment in Collaborative Contexts II in Childhood Education
   - SPED 5300K: Positive Approaches to Challenging Behaviors
   - EDCE 5400C: Methods of Teaching English to Speakers of Other Languages
   - SPED 6100I: Working with the Families of Children with Disabilities
   - SPED 2600I: Content Research Seminar in Special Education
   - SPED 2900I: Seminar in Educational Research

One of the following two:
   - SPED 5700G: Practicum in Teaching Special Education (for those who hold a teaching certificate)
   - SPED 7710G: Internship in Special Education (for those who do not hold a teaching certificate)

Total credits

31

Students with Disabilities in Adolescent Education-Generalist (Grades 7-12)

5. Prerequisites for all candidates: bachelor’s degree with a major or concentration in one of the liberal arts or sciences with study in a foreign language (two semesters of ASL accepted). Candidates with deficiencies in any of these areas may be conditionally accepted.

6. Prerequisites for candidates seeking Provisional New York State Certification (credit may be given for these courses or their equivalents if taken elsewhere on the graduate or undergraduate level, but they are not counted toward the master’s degree):
   - EDUC 7100A: Urban Schools in a Diverse Society
   - EDUC 7200A: Psychology of Learning and Teaching
   - EDUC 7500A: Adolescent Learning and Development
   - SPED 5000K: Introduction to Inclusive Education

This program fulfills the education requirements for initial or professional New York State certification in Students with Disabilities. Note: those taking courses requiring fieldwork or practica may do it in their own workplaces if they are employed as special education teachers or have major responsibility in inclusion classrooms. All others will be placed in fieldwork situations taking place within the normal school day.

Required Courses:
   - SPED 3300K: Building Community in Inclusive Contexts
   - SPED 3600K: Reading and Writing Instruction for Students with Disabilities in Adolescent Education I
   - SPED 3700K: Reading and Writing Instruction for Students with Disabilities in Adolescent Education II
   - SPED 3800K: Differentiated Instruction and Assessment for Students with Disabilities in Adolescent Education II
   - SPED 3900K: Differentiated Instruction and Assessment in Collaborative Contexts II in Adolescent Education
   - SPED 5300K: Positive Approaches to Challenging Behaviors
   - EDCE 6900C: Methods of Teaching English to Speakers of Other Languages II (Grade 7 – Adult)
   - SPED 6100I: Working with Families of Children with Disabilities
   - SPED 2600I: Content Research Seminar in Special Education
   - SPED 2900I: Seminar in Educational Research

One of the following two:
   - SPED 5700G: Practicum in Teaching Special Education (for those who hold a teaching certificate)
   - SPED 7710G: Internship in Special Education (for those who do not hold a teaching certificate)

Total credits

31

Advanced Certificate Program: Students with Disabilities-Generalist (Grades 1-6)

The advanced certificate program serves certified New York state teachers at the childhood level who wish to develop more effective inclusion settings for all of their learners. Specifically, this is a 15-18 credit program (depending on prior completion of an introduction to Special Education
course) for childhood education teachers who wish to have more background with respect to students with disabilities and be eligible for certification as a teacher of students with disabilities, generalist (grades 1-6).

The advanced certificate is for teachers who already possess initial, provisional, permanent, or professional certification as a classroom teacher at the elementary school level. The program leads to certification to become the teacher of record in a special education setting, the special educator within an integrated co-teaching (ICT) classroom, or the special education consultant and/or case manager in a collaborative school-based context. This program does not lead to a degree.

Required Courses:
- SPED 5000K: Introduction to Inclusive Education 3
- SPED 5300K: Positive Approaches to Challenging Behaviors 3
- SPED 6100K: Working with Families of Children with Disabilities 3
- SPED 5700G: Practicum in Teaching Special Education 3

Only Students in the Advanced Certificate Program can take the following courses without having taken the respective prerequisite courses SPED 3600K and SPED 3800K:
- SPED 3700K: Reading and Writing Instruction for Students with Disabilities in Childhood Education II 3
- SPED 3900K: Differentiated Instruction and Assessment for Students with Disabilities in Childhood Education II 3

Total Credits 18

Advanced Certificate Program: Students with Disabilities-Generalist (Grades 7-12)
The advanced certificate program serves certified New York state teachers at the secondary level who wish to develop more effective inclusion settings for all of their learners. Specifically, this is a 12-15 program (depending on prior completion of an Introduction to Special Education course) for high school teachers who wish to have more background with respect to students with disabilities and be eligible for certification as a teacher of students with disabilities, generalist (grades 7-12).

The advanced certificate is for teachers who already possess initial, provisional, permanent, or professional certification as a classroom teacher at the high school level. The program leads to certification to become the teacher of record in a special education setting, the special educator within an integrated co-teaching (ICT) classroom, or the special education consultant and/or case manager in a collaborative school-based context. This program does not lead to a degree.

Required Courses:
- SPED 5000K: Introduction to Inclusive Education 3
- SPED 5300K: Positive Approaches to Challenging Behaviors 3
- SPED 5700G: Practicum in Teaching Special Education 3

Only Students in the Advanced Certificate Program can take the following courses without having taken the respective prerequisite courses SPED 3600K and SPED 3800K:
- SPED 3701K: Reading and Writing Instruction for Students with Disabilities in Adolescent Education II 3
- SPED 3901K: Differentiated Instruction and Assessment for Students with Disabilities in Adolescent Education II 3

Total credits 15

Educational Leadership

School District Leader
The School District Leader Program (SDL) is an advanced certificate program targeting district or central office leader positions. Candidates are prepared for New York State certification as a School District Leader (SDL). All candidates must pass the New York State examination for School District Leader to be certified. The Program prepares candidates for a number of roles including but not limited to:
- Superintendent
- Deputy Superintendent
- Assistant Superintendent
- Executive Assistant to the Superintendent
- Director of Instruction
- Director of Personnel
- District Educational Planning
- District Finance and Business Management

Matriculation Requirements
Candidates seeking matriculation must (1) possess a bachelor’s degree from an accredited institution; (2) possess a master’s degree with a minimum 3.0 grade point average; (3) hold state certification as a teacher, guidance counselor, school psychologist, school social worker, or other appropriate certification; (4) have three years teaching or relevant educational work experience, including demonstrated success in fulfilling leadership roles in school or district; (5) submit three letters of recommendation and official transcripts; and (6) satisfactorily complete an interview and an on-site essay. In addition, candidates will be evaluated on the basis of superior references and evidence of strong potential for professional work in administration.

School District Leader Degree Requirements

Core A: Human, Foundational, & Structural Elements of Education
- EDLS 7101G: Dynamics of Educational Organizations 3
- EDLS 7201G: Moral Dimensions of Leadership 3
- EDLS 7401G: Instructional Leadership 3
- EDLS 6701G: School Management 3
- EDLS 8801G: School Community Building 3
- EDLS 8601G: Education Law 3

Core C: District Level Application
- EDLS 8103G: Management Operations at the District Level 3
- EDLS 8604: Social Responsibility, Politics, and Education 3
- EDLS 5607G: Leadership at the District Level 3
- EDLS 7904G: Internship and Seminar 3

Total credits 30

School Building Leader
This program leads to a master’s degree and is designed to prepare candidates for New York State initial certification as School Building Leader (SBL) and for such positions as elementary school principal, intermediate school principal, secondary school principal, department chair, supervisor (curriculum specialty), team leader, mini-school director, project coordinator, and assistant principal (all levels). All candidates must pass the New York State examination for School Building Leader to be certified.

Matriculation Requirements
Candidates seeking matriculation must (1) possess a bachelor’s degree from an accredited institution; (2) possess a master’s degree with a minimum 3.0 grade point average; (3) hold state certification as a teacher, guidance counselor, school psychologist, school social worker, or other appropriate certification; (4) have three years teaching or relevant educational work experience, including demonstrated success in fulfilling leadership roles in school or district; (5) submit three letters of recommendation and official transcripts; and (6) satisfactorily complete an interview and an on-site essay. In addition, candidates will be evaluated on the basis of superior references and evidence of strong potential for professional work in administration.

School Building Leader Degree Requirements

Core A: Human, Foundational, & Structural Elements of Education
- EDLS 7101G: Dynamics of Educational Organizations 3
- EDLS 7201G: Moral Dimensions of Leadership 3
- EDLS 7401G: Instructional Leadership 3
- EDLS 6701G: School Management 3
- EDLS 8801G: School Community Building 3
- EDLS 8601G: Education Law 3

Core C: Building Level Application
- EDLS 7001G: Foundations of Educational Policy-Making 3
- EDLS 8501I: Field Problem Seminar in Educational Leadership 2
- EDLS 7301G: Curriculum Development 3
- EDLS 7904G: Internship and Seminar: Building Level 3

Total credits 31

Entry Level Leader Certification Program (ELLCC)
The Entry Level Leader Certification Program (ELLCC) is a fast-track twenty-one (21) credit hour program that prepares candidates for certification as entry-level School Building Leader positions. All candidates must pass the New York State examination to be certified. Addressing the need for “front-line” leaders (i.e., assistant principals, content coaches, department heads) who deal daily with “on the ground” issues of educational policy, practice, curriculum and instruction, and management and operations. The ELLCC Program is a certification-only program that involves Core
A courses plus three semester internship. Beginning in the first semester of the program, the courses will have a field experience component. All courses in the programs integrate the use of technology as a tool, are problem-based, and utilize case studies and data-based decision-making instructional strategies.

**Matriculation Requirements**
Candidates must be nominated by their principal or other school leader. In addition, candidates must (1) possess a bachelor’s degree from an accredited institution; (2) possess a master’s degree with a minimum 3.0 G.P.A.; (3) hold state certification as a teacher, guidance counselor, school psychologist, school social worker, or other appropriate certification; (4) have three years teaching or relevant educational work experience, including demonstrated success in fulfilling leadership roles in school or district; (5) submit three letters of recommendation and official transcripts; and (6) satisfactorily complete an interview and on-site essay. In addition, candidates will be evaluated on the basis of references, interviews, and potential for professional work in administration.

**Entry Level Leader Certification (ELLC) Requirements**

**Core A: Human, Foundational, & Structural Elements of Education**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDLS 7101G</td>
<td>Dynamics of Educational Organizations</td>
<td>3</td>
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<tr>
<td>EDLS 7201G</td>
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<td>EDLS 7401G</td>
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<td>3</td>
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<tr>
<td>EDLS 7904G</td>
<td>Internship and Seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits**

21

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**Leadership and Special Education Course Descriptions**

**Educational Foundations**

**EDUC 7100A: Urban Schools in a Diverse Society**
Selected significant social, political, and economic forces which influence the school as an institution and which in turn are influenced by the school, especially in urban settings that educate students from diverse ethnic and cultural backgrounds. Includes history, philosophy, sociology and politics of education. Includes 10 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

**EDUC 7200A: Psychology of Learning and Teaching**
Theories and principles of learning and instruction pertinent to achievement, development, self-regulation, and behavior in children from culturally and ethnically-diverse backgrounds. Includes classroom applications, testing and evaluation. Includes 10-15 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

**EDUC 7300A: Child Development**
Theories and principles of development pertinent to culturally and ethnically diverse and inclusive classrooms with an emphasis on classroom applications and fieldwork. Includes 10-15 hours of fieldwork at either the 1-3 or 4-6 grade levels. 3 hr./wk.; 3 cr.

**EDUC 7500A: Adolescent Learning and Development**
The evolution of how theories and research on learning and development manifest themselves in urban settings for teachers of adolescents. Teacher-centered and student-centered, human and technology-based approaches, emphasizing those promoting independent, self-regulated adolescent learners. Theories, their cultural implications and their classroom applications: learning, intelligence, motivation, affect, parenting styles, classroom communications, and classroom management strategies. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

**EDUC 7502A: Adolescent Learning in the Urban Context (Teaching Fellows)**
This course is intended to help Teaching Fellows learn and apply modern theories of and research on developmental, educational, and cognitive psychology to their classroom instruction. Special emphasis is on theories that are relevant to adolescents, i.e., students in middle, intermediate, and high schools in the urban setting. It is also intended to help candidates a) become reflective practitioners who teach for and with metacognition; b) utilize the diversity in the classroom; c) create a caring community; and d) develop leadership skills. 3 hr./wk.; 3 cr.

**EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues**
Definitions, indicators, and the impact of abuse and neglect on the child; reporting abuse. Violence prevention. Additional workshops include topics such as certification, resume building, and professional resources. Corequisite(s): Student Teaching. 2 hr./wk.; 0 cr.

**EDUC 7000: Introduction to Educational Research**
The first semester of the research sequence covers the basic concepts needed to evaluate research critically and plan it effectively. Each student will identify a problem in his or her major area, review the literature related to that problem, and design a project to study the problem. The study will be carried out during the second semester. This course should be taken no later than the semester prior to the one in which the student expects to complete the requirements for the degree. 2 hr./wk.; 2 cr.

**EDUC 7100: Individual Study in Educational Research**
Second semester of research sequence. Consideration of research design, sampling, instrumentation, data collection, statistical or qualitative data presentation. Students will execute the study developed during the first semester and prepare a written report, in research form, of the complete study. Prereq: EDUC 7000I. 2 hr./wk.; 2 cr.

**EDUC 3100N: Independent Study and Research in Education**
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by appropriate faculty member. Variable 1-4 cr./sem. May be repeated for a maximum of six cumulative credits with faculty approval.

**Leadership**

**EDLS 5607G: Leadership at the District Level: Roles and Responsibilities**
Roles and responsibilities of the superintendent, deputy superintendent, and central headquarters personnel for curriculum and instruction, business, pupil support programs, school safety, and school-community and parent involvement to increase student achievement and attain the goals specified in the current legislation. Knowledge and skills necessary to build the capacities of central staff and school leaders through support, mentoring, coaching, and succession planning are developed. Strategies for effective communication and interaction with school board members, community leaders, and school leaders are developed. Restructuring and school reform and effective implementation of policies and state and federal statutes are to be studied and analyzed. 3 hr./wk.; 3 cr.

**EDLS 6700G: The Management of Schools - Operational Problems and Practices**
Aspects of management such as scheduling, assignment, financial management, and reporting. Basic operational needs, procedures and administration for prospective building level principals. 3 hr./wk.; 3 cr.

**EDLS 6701G: School Management**
An examination of the leader’s role in managing the organization’s operations required to deliver an effective school program. Emphasis is placed on data gathering and analysis in the management of human, fiscal, facility, and technology resources. Candidates will learn strategies that will prepare them to plan and utilize resources comprehensively from federal, state, and city sources to enhance, supplement, and achieve goals and objectives. 3 hr./wk.; 3 cr.

**EDLS 7000G: Educational Policy and School Administration**
Policy formulations and basic issues examined with a view to identifying underlying assumptions. Attempts to analyze and assess consequences of alternative courses of action, including consequences in terms of major issues, with emphasis on the controversies of our time. 3 hr./wk.; 3 cr.

**EDLS 7001G: Foundations of Educational Policy-Making**
Introduction to the process by which policy is formulated, analyzed, implemented, and evaluated. The roles of the educational leader, educational interest groups, school boards, professional educators, parents and other citizens in the formulation and execution of educational policy are explored. Contemporary policy issues are examined and critiqued. Critical examination of ethical issues confronting education leaders and policymakers in a liberal-democratic society. 3 hr./wk.; 3 cr.

**EDLS 7100G: Leadership in Education**
Introduction to organizational development, tested concepts and theoretical formulations concerning organizational behavior, participative management, and systematic school improvement. Application of organizational development concepts to leadership behavior, with particular focus on group dynamics and human relations. 3 hr./wk.; 3 cr.
EDLS 7101G: Dynamics of Educational Organizations
Candidates explore the foundations and philosophies of education, systems theory, the principles of organizational development, and the change process for systems, organizations, schools, and individuals. Candidates learn to develop and sustain an educational vision for all students informed by multiple data sources, to lead comprehensive long-range strategic planning projects and to utilize effective communication, consensus-building, and negotiation skills. 3 hr./wk.; 3 cr.

EDLS 7200G: Leadership in Education II
Organizational behavior. Situational analysis of administrative problems through the application of behavioral science theories in role communication, decision-making, leadership, and organizational change, using a series of elementary, secondary, and central office case studies. Prereq: SPED 7100G. 3 hr./wk.; 3 cr.

EDLS 7201G: Moral Dimensions of Leadership
Candidates explore leadership theories, develop a leadership philosophy, a professional code of ethics, and a personal growth plan. An examination of issues related to personal and professional accountability is conducted. Preparation is provided in the leadership skills (i.e., motivation, conflict management, decision-making, etc.) needed to influence individual and group behavior and to shape school culture and values in the context of highly diverse schools and student and staff needs. 3 hr./wk.; 3 cr.

EDLS 7300G: Curriculum Development and Supervision I
Current and developing curriculum patterns, technological innovations, and strategies for effecting curriculum change. Role of the principal supervisor considered within the context of formulations for innovations in organizations. 3 hr./wk.; 3 cr.

EDLS 7301G: Curriculum Development
The principles of curriculum development, implementation, evaluation, and instructional programming are examined. Emphasis is placed on understanding learners, the learning environment and developing instructional support services for diverse and special school populations. Best practices in curriculum and instruction and standards based teaching and learning are addressed. Strategies for developing and implementing curriculum improvement plans for improved student achievement are stressed. Candidates are expected to develop an eclectic approach to the curriculum improvement process. 3 hr./wk.; 3 cr.

EDLS 7400G: Curriculum Development and Supervision II
Theory of supervisory functions. Wide range of techniques that provide for in-service education and staff development, emphasizing clinical supervision and interactional analyses. Guidelines and procedures for the effective evaluation of both learning and teaching. Prereq: SPED 7300G. 3 hr./wk.; 3 cr.

EDLS 7401G: Instructional Leadership
Purpose, theory, and nature of instructional leadership are examined. This course focuses on the supervisor’s human relations skills as a group leader, classroom visitations and conferences, supervisory techniques, teacher assessment, student learning and development, and curriculum review. Candidates explore the role of entry level leaders in the improvement and evolution of teaching and learning, assessing supervision and teaching, and exploring strategies that promote the transformation of districts and schools into effective learning communities. 3 hr./wk.; 3 cr.

EDLS 7800G: Advanced Seminar in Educational Organizational Development
In-depth analysis of O.D. models and processes for improving schools, ranging from individual to system-wide interventions. Providing and refining organizational development skills for those seeking organizational leadership roles within schools, human service, and other related institutions. Prereq.: SPED 7100G. SPED 7100G. 3 hr./wk.; 3 cr.

EDLS 7903G: Internship in School Administration and Supervision
Carefully planned and supervised on-the-job training under general control of the faculty in Administration. Where possible, the work will be in a multi-system, but, as appropriate, may be carried on in another community agency. Regular reports and conferences required. 3 hr./wk.; 3 cr.

EDLS 7904G: Internship and Seminar
The internship is a supervised learning experience in a school setting that provides an opportunity to apply the theories and concepts learned and skills acquired during the candidates’ graduate program. Candidates for the internship identify areas they need to strengthen and develop a plan to enhance their skills in the identified areas. During the internship, candidates work under the guidance of a college facilitator and the supervision of a school-site administrator. Problem-solving seminars that focus on internship activities are conducted on a regular basis. 3 hr./wk.; 3 cr.

EDLS 8000G: Survey of Problems in Educational Administration and Supervision
A foundations course designed to set forth systematically the problems of educational administration and supervision. May be credited toward a master’s degree only with permission of student’s major field advisor. Open to non-degree students. 3 hr./wk.; 3 cr.

EDLS 8101G: School Finances and the Economics of Public Education
An overview of school finance and educational economics. Topics include: property taxation, assessed valuation, school finance court decisions, federal aid to education, and school finance alternatives. Although New York State aid formulas are emphasized, data from California, New Jersey, Hawaii, and Washington, D.C. are also utilized. 3 hr./wk.; 3 cr.

EDLS 8102G: School Business Management and Budgeting
Budgetary processes and tools, critique of PPBS zero-based budgeting, and other control techniques. Use of cost-effectiveness measures. Federal, state, and local support patterns. Categorical aid, special funding, and their budget implications. Open to non-degree students, with permission. 3 hr./wk.; 3 cr.

EDLS 8103G: Management and Organizational Leadership at the District Level
This course provides models, strategies, and applications in use of information sources, data collection and analysis in designing and executing strategic plans for district-wide systems. Management and operational functions of a school district leader including human resources administration, budgeting, and financial operations at the school and district levels, obtaining and using resources comprehensively from a variety of public and private sources, training schools in prioritizing the use of resources, and planning for and utilizing school plants and facilities to support the instructional program. Exploration of safety and security issues and concerns; model plans are developed. Operational plans to implement the district’s mission and vision and maximize student achievement. 3 hr./wk.; 3 cr.

EDLS 8200G: Education Planning and Systems Problem-Solving
The role of educational administrators and supervisors in short and long-range program planning, resource allocation, and physical planning. The relationship between educational planning and human resources, utilizing organizational development strategies, application of general systems theory, systems analysis, and the techniques of PERT, MBO, PPBS and CPM, etc. to educational and human service institutions. Open to non-matriculants. 3 hr./wk.; 3 cr.

EDLS 8301G: School Personnel I
Personnel administration and staff development. Practices and processes in educational leadership. Developing programs; organizing staff and facilities; defining roles of professional and non-professional personnel; personnel administration and guidance; application of techniques for evaluating the effectiveness of the organization. Open to non-degree students. 3 hr./wk.; 3 cr.

EDLS 8302G: School Personnel II
Contract bargaining, contract administration, and grievance arbitration. The meaning and impact of collective negotiations on public education. Topics include: the background of collective bargaining in public education; the legal and political framework; organizational approaches to, and organizational issues in negotiations; administering the agreement; and grievance machinery. Strategy, tactics, and special issues in relation to educational administration will be studied. Open to non-degree students. 3 hr./wk.; 3 cr.

EDLS 8600G: School Law and the Administrator
Legal responsibilities of administrators. Requirements of local boards, including contracts, state and federal laws affecting local operation of schools. May be credited toward a master’s degree only with permission of the student’s major field advisor. Open to non-degree students, with permission. 3 hr./wk.; 3 cr.

EDLS 8601G: School Law
Candidates will examine the constitutional and statutory provisions and principles of representative governance that are the foundations of the American public school system. A comprehensive overview of the origin and legal status of the local school unit, legal responsibilities of administrators, requirements of school boards, rights of students and teachers, evolution of legal provisions for school support; and the importance of diversity and equity in a democratic political system provides the basis for candidate discussion, analysis and application. Contemporary legal and ethical issues confronting education leaders and policymakers in a liberal-democratic society are critically examined, as are the dynamics of policy development and advocacy under our democratic political system. Issues are examined for common legal pitfalls affecting all school personnel contracts and labor relations. 3 hr./wk.; 3 cr.
EDLS 8800G: School-Public Relations
A study of concepts, organizational and administrative processes. Functions of school personnel, media designed to promote school-community understanding and cooperation. May be credited toward master’s degree only with permission of student’s major field advisor. 3 hr./wk.; 3 cr.

EDLS 8801G: School-Community Building
Utilizing the values, emerging issues and trends, conditions, and dynamics impacting the school community and educational programs. This course provides best practices in communication, marketing strategies, media use, and partnerships with higher education, social agencies, businesses, and other stakeholders to build support and garner community resources for improving student achievement. 3 hr./wk.; 3 cr.

EDLS 9600G: Administration and Supervision of Specialized Programs/Departments
The chair’s or special area supervisor’s responsibilities in such areas as program making, staff development, pupil/personnel, and program/department management. Cases and problems examined in laboratory settings, taught by joint administration and specialized area faculty. Special permission of particular program advisor required. 3 hr./wk.; 3 cr.

EDLS 9601G: Adult Education
Problems involving administrative routine, discipline, classification of pupils, experimental programs, standards of promotion, and human relationships in administration. May be credited toward a master’s degree only with permission of student’s major field advisor. 3 hr./wk.; 3 cr.

EDLS 9602G: Administration and Supervision of Early Childhood Education
The supervisor’s responsibilities in such areas as program making, staff development, pupil/personnel, and program/department management. Cases and problems examined in laboratory settings, taught by joint administration and specialized area faculty. Special permission required. 3 hr./wk.; 3 cr.

EDLS 9605G: Administration of Special Education
Problems involving administrative routine, discipline, classification of pupils, experimental programs, standards of promotion, and human relationships in administration. May be credited toward a master’s degree only with permission of student’s major field advisor. 3 hr./wk.; 3 cr.

EDLS 9800G: Educational Leadership in Day Care
Role of the director in setting priorities for the center and its early childhood program. Supervision and development of staff. Relations with governmental agencies, sponsoring agency, board and community. Open only to matriculants in the Day Care Leadership Program or by special permission. 3 hr./wk.; 3 cr.

EDLS 2500I: Content Research Seminar in Educational Administration
A critical review of the research literature in the candidate’s major field, as well as research methodology and instrumentation appropriate to the field. This first semester covers the basic concepts and procedures needed to evaluate research critically. Each student will identify a problem in his or her major area, review the literature related to that problem, and design a project to study the problem. This project will be carried out during the second semester. Matriculants only. This course is followed by EDUC 8100I. This course should be taken no later than the semester prior to the one in which the student expects to complete the requirements for the degree. Students who expect to write a thesis should take this course no later than two semesters prior to the one in which they expect to complete the requirements for their degree. Prereq: see individual programs. 2 hr./wk.; 2 cr.

EDLS 2501I: Research and Assessment Seminar in Educational Leadership
Examination of the basic concepts and procedures necessary for identifying and using strategies, analyzing performance data, and understanding and using research within classroom and school contexts for the improvement of instruction. Each candidate will identify a school-based research problem and design a project to study the problem. 2 hr./wk.; 2 cr.

EDLS 8000I: Critique of Research in Educational Administration and Supervision
A review of the literature, and an analysis of the implications of this research for administrative performance. Special permission required. 2 hr./wk.; 2 cr.

EDLS 8100I: Individual Research in Educational Administration and Supervision
Advanced study of special problems in education sponsorship by staff member. Special permission required. Hours to be arranged. 2 hr./wk.; 2 cr.

EDLS 8200I: Computer Applications and Use for School Administrators
Discussion of a variety of current topics related to computer applications and use in school administration and with particular emphasis on recent advancement and research in hardware/software development, and adaptation at the elementary and secondary school levels. Ample opportunity to participate in hands-on computer laboratory. 3 hr./wk.; 3 cr.

EDLS 8500I: Field Problem Seminar in Educational Administration and Supervision
Analysis of problems arising in the experience of the group. Relation to perennial problems in this field. Directed self-study of pertinent bibliographic sources. Arrangements may be made for observations and conferences. Designing for those currently engaged in administration or supervision. Open only to matriculants in Administration. (This course is part of a specialized component in organizational development.) Hr. to be arranged; 1-6 cr.

EDLS 8501I: Field Problem Seminar in Educational Leadership
Candidates carry out the school-based research projects designed in EDUC 2500I and participate in seminars to review, critique, and apply current research in Educational Leadership. Critical examinations are conducted of the candidates’ school-based research projects. 2 hr./wk.; 2 cr.

EDLS 8601I: Advanced Problem Seminar in Urban Education and Administration
In-depth analysis of issues that have special significance for urban school administrators; the current status of decentralization, integration, minimum competency, school finance, and constituent participation. The local, state, and federal roles in policy formulation. Analysis of research findings; alternate models. Open to non-matriculants. 3 hr./wk.; 3 cr.

EDLS 8602I: Strategies for Organizational Development in Educational Administration
Simulated laboratory applications of organizational development and open systems theory to the field of educational administration, including time management, team building, force field analysis, and survey feedback. Course draws upon the works of Schmuck, Levinson, Argyris, et al. Open to non-matriculants. 3 hr./wk.; 3 cr.

EDLS 8603I: Strategies for Instructional Change in Educational Administration
The role of the administrator in creating and supporting a climate for the adoption of educational change and instructional innovation. Application of various techniques to design and evaluate the effectiveness of various change strategies. 3 hr./wk.; 3 cr.

EDLS 8604I: Social Responsibility, Politics, and Education
Rooted in educational foundations, educational philosophy, and current social and economic dynamics, this course provides an in-depth analysis of issues of special significance for urban central office educational leaders impacting the quality, equity, and excellence of education for all students and includes best practices for communicating, understanding, valuing, and working effectively with district leaders, state leaders, community leaders, and other community members from diverse backgrounds. Candidates develop an understanding of the implications of political strategies and involvement in education. 3 hr./wk.; 3 cr.

Special Education

SPED 5700G: Practicum in Teaching Special Education
An advanced course to assess and develop teaching skills in various special education settings under supervision in the field and in an integrative seminar. Individual conferences to review teaching strategies, materials, and techniques. Department permission required. 3 hr./wk.; 3 cr.

SPED 7701G: Internship in Special Education
Students will be assigned to a school and spend half a semester in a special education or inclusion classroom, grades 1-3, and half a semester in a special education or inclusion classroom, grades 4-6. Minimum of 15 hours per week, 3 credits equivalent to 12 semester hours for 240 hours (40 days) minimum. There is a scheduled weekly seminar. 3 cr.

SPED 2600I: Content Research Seminar in Special Education
A critical review of the research literature in the candidate’s major interest, as well as appropriate research methodology and instrumentation. The first semester covers the basic concepts related to research. Each student will identify a research problem related to that problem, and design a project to study it. The study will be carried out during the second semester. This course should be taken no later than the semester prior to the one in which the student expects to complete the requirements for the degree. 2 hr./wk.; 2 cr.

SPED 2900I: Seminar in Educational Research
Second semester of the research sequence. Students carry out their study designed in the Content Research Seminar and learn how to analyze, write about, and present the data collected. By permission only. 2 hr./wk.; 2 cr.
SPED 6100: Working with the Families of Children with Disabilities
Understanding and valuing the perspective and knowledge of parents and families who raise children with disabilities forms the focus of this class. We will reflect upon our own assumptions and misconceptions about parents and families and consider positive reconfigurations of family/school relationships. We explore how “the medical model of disability”—inherent within the institution of special education—disrupts effective communication between families and professionals. We will also explore the relational aspects of disability on extended family members. Attention will be paid to culturally responsive factors that promote effective communication and authentic collaboration with families as well as effective parent/family advocacy strategies. 3 hr./wk.; 3 cr.

SPED 3300K: Building Community in Inclusive Contexts
Children come to school as unique learners who negotiate the world within complex and ever-shifting intersectionalities of race, class, gender, and ability. This course prepares teacher candidates to conceptualize human diversity as a resource (rather than a liability) and to facilitate caring classroom communities within which all learners are viewed as valuable. Participants will acquire in-depth understanding of techniques that nurture the development of an interdependent learning community based upon trust, mutual respect, and acceptance. Issues specific to classroom dynamics and access are considered in the instance of physical setting, curriculum, and teaching strategies as each relates to building community in the classroom. In addition, community building in the larger school context (including strategies for initiating and sustaining school change) will be addressed as well as transition issues that bridge the child/the outside community/environment (communication, coordination). Attention will be given to language arts, mathematics, science, social studies, and technology as appropriate and consistent with the N.Y. State Learning Standards. 3 hr./wk.; 3 cr.

SPED 3600K: Reading and Writing Instruction for Students with Disabilities in Childhood Education I
This course is the first in a two-part sequence designed to assist participants to make informed choices about how to structure classroom routines and rituals that maximize opportunities for teaching reading and writing in an integrated fashion. Various frameworks for lesson planning to complement the IEP will be introduced as well as exceptionality specific assessment instruments. Course content will address the essential components of reading, including: phonemic awareness, phonics, fluency and expressiveness, vocabulary, and comprehension. In conjunction with reading skills, methodologies of writing through a process approach will also be introduced (i.e., pre-writing, organization, writing a primary draft, multiple revisions, and final editing). Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

SPED 3600K: Reading and Writing Instruction for Students with Disabilities in Childhood Education II
This course (part II) is designed to extend the literacy components introduced in part I. Extended experiences will focus on maintaining a classroom structure that supports a reading-rich context in conjunction with writing-worthy opportunities for use in a variety of educational contexts. The course will feature strategies to teach habits of good readers, such as: activating schema, visualizing, questioning, determining importance, making inferences, monitoring for meaning, and synthesizing. In conjunction with explicit reading skills, methodologies of writing will also be taught, focusing on the process of writing through: pre-writing, organization, writing a primary draft, multiple revisions, and final editing. The art of individual conferencing with students will be featured at length. Prereq: EDUC 3600K (except for those in the Advanced Certificate Program Students with Disabilities 7-12). Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

SPED 3601K: Reading and Writing Instruction for Students with Disabilities in Adolescent Education I
This course is the first in a two-part sequence designed to assist participants to make informed choices about how to structure classroom routines and rituals that maximize opportunities for teaching reading and writing in an integrated fashion. Various frameworks for lesson planning to complement the IEP will be introduced as well as exceptionality specific assessment instruments. Course content will address the essential components of reading, including: phonemic awareness, phonics, fluency and expressiveness, vocabulary, and comprehension. In conjunction with reading skills, methodologies of writing through a process approach will also be introduced (i.e., pre-writing, organization, writing a primary draft, multiple revisions, and final editing). Matriculation in students with disabilities program required. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

SPED 3700K: Reading and Writing Instruction for Students with Disabilities in Childhood Education II
This course (part II) is designed to extend the literacy components introduced in part I. Extended experiences will focus on maintaining a classroom structure that supports a reading-rich context in conjunction with writing-worthy opportunities for use in a variety of educational contexts. The course will feature strategies to teach habits of good readers, such as: activating schema, visualizing, questioning, determining importance, making inferences, monitoring for meaning, and synthesizing. In conjunction with explicit reading skills, methodologies of writing will also be taught, focusing on the process of writing through: pre-writing, organization, writing a primary draft, multiple revisions, and final editing. The art of individual conferencing with students will be featured at length. Prereq: EDUC 3600K (except for those in the Advanced Certificate Program Students with Disabilities 7-12). Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

SPED 3800K: Differentiated Instruction and Assessment for Students with Disabilities in Childhood Education I
This course is the first in a two-part sequence designed to foster creative approaches to planning, implementation of instruction, ongoing curriculum-based/authentic instruction for all children in a variety of educational settings. Participants will focus on understanding differences as a basis for planning; use diagnostic assessment in an ongoing manner to make instruction more responsive to learner need; utilize multiple forms of intelligence; assist students by frequently guiding them in making interest-based choices; use varied instructional arrangements; employ student readiness, interest, and learning profile in planning; develop multi-option assignments; develop flexible use of timing; facilitate students becoming more self-reliant learners; and implement multiple forms of assessment. Content specialists will inform the course activities in the areas of language arts, mathematics, science, social studies, and technology (teaching modules) as per the Part 100 Regula-
tions of the Commissioner of Education and the New York State Standards. Participants will utilize content modules and apply their acquired knowledge of assessment, differentiated instructional design and planning to the content areas studied. Regulatory requirements (Part 100 and Part 200 Rules and Reg-
ulations of the NYS Commissioner of Education) that focus on curriculum content, due process, assessment, programs and services are correlated to each of the topics covered during this course. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

SPED 3801K: Differentiated Instruction and Assessment for Students with Disabilities in Adolescent Education I
This course is the first in a two-part sequence designed to foster creative approaches to planning, implementation of instruction, ongoing curriculum-based/authentic instruction for all children in a variety of educational settings. Participants will focus on understanding differences as a basis for planning; use diagnostic assessment in an ongoing manner to make instruction more responsive to learner need; utilize multiple forms of intelligence; assist students by frequently guiding them in making interest-based choices; use varied instructional arrangements; employ student readiness, interest, and learning profile in planning; develop multi-option assignments; develop flexible use of timing; facilitate students becoming more self-reliant learners; and implement multiple forms of assessment. Content specialists will inform the course activities in the areas of language arts, mathematics, science, social studies, and technology (teaching modules) as per the Part 100 Regula-
tions of the Commissioner of Education and the New York State Standards. Participants will utilize content modules and apply their acquired knowledge of assessment, differentiated instructional design and planning to the content areas studied. Regulatory requirements (Part 100 and Part 200 Rules and Reg-
ulations of the NYS Commissioner of Education) that focus on curriculum content, due process, assessment, programs and services are correlated to each of the topics covered during this course. Matriculation in students with disabilities program required. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

SPED 3900K: Differentiated Instruction and Assessment for Students with Disabilities in Childhood Education II
This course is the second part of a two-part sequence that extends the content addressed in Part I. Participants will focus on developing pedagogical flexibility within three broad, interconnected strands: The information to be taught (content specific to: language arts, mathematics, science, social studies, technology), how students engage with that information (process), and ways in which students demonstrate their knowledge as a result of interacting with information (product). Content areas are used to engage participants as per the Part 100 Regulation of the Commissioner of Education and the New York State Standards. Extending part I of the course, participants will elaborate on content-based modules and apply acquired knowledge of assessment, differentiated instruction, design and planning to the content areas studied. In addition, regulatory requirements (Part 100 and Part 200 Rules and Regulations of the NYS Commissioner of Education) that focus on curriculum content, due process, assessment, programs and services are correlated to the topics covered during this course. Prereq: EDUC 3800K (except for those in the Advanced Certificate Program Students with Disabilities 1-6). Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.
SPED 3901K: Differentiated Instruction and Assessment for Students with Disabilities in Adolescent Education II

This course is the second part of a two-part sequence that extends the content addressed in Part I. Participants will focus on developing pedagogical flexibility within three broad, interrelated strands: The information to be taught (content specific to: language arts, mathematics, science, social studies, technology), how students engage with that information (process), and ways in which students demonstrate their knowledge as a result of interacting with information (product). Content areas are used to engage participants as per the Part 100 Regulation of the Commissioner of Education and the New York State Standards. Extending part I of the course, participants will elaborate on content-based modules and apply acquired knowledge of assessment, differentiated instructional design and planning to the content areas studied. In addition, regulatory requirements (Part 100 and Part 200 Rules and Regulations of the NYS Commissioner of Education) that focus on curriculum content, due process, assessment, programs and services are correlated to the topics covered during this course. Prereq: EDUC 3801K(except for those in the Advanced Certificate Program Students with Disabilities 7-12). Matriculation in students with disabilities program required. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

SPED 5000K: Introduction to Inclusive Education

An introduction to the multiple meanings of inclusive education as employed in both national and international contexts. Specific attention is paid to school structure, legislative mandates in support of inclusive education, collaborative problem-solving relationships among educators (general and special); students, and families in designing and modeling inclusive pedagogies and practices for broad, interdependent learners. We will examine historical contexts, shifting societal beliefs, and subsequent educational theories that have led to an increased emphasis on inclusion and the merits of collaborative education to serve students with disabilities in more integrated contexts. The course includes: an overview of inclusive education, student characteristics; diverse approaches to pedagogical practice; models of collaboration, including collaborative team teaching (CTT); classroom management; and assessment and utilization of assistive instructional technologies. Matriculation in School of Education program required. 3 hr./wk.; 3 cr.

SPED 5300K: Positive Approaches to Challenging Behaviors

This course is designed to assist participants to make informed choices about how to analyze a "behavior issue" in the classroom and school context. Participants will learn how to develop multiple positive approaches for extinguishing difficult behaviors. Traditional as well as alternative behavioral interventions will be considered including an overview of the traditional (i.e., controlling) behavioral approaches and practices typically used with students with intellectual or emotional disabilities. Readings and activities will encourage examination of the conceptual foundations and underlying principles of such approaches for use in an inclusive society. The central feature of this course, however, will be on interactive intervention alternatives that alleviate frustrations for students with disabilities, focus on their needs and wishes, and support them in taking control of their lives. The final project will require participants to apply an approach to the management of difficult behaviors they find most suitable in their classrooms. Includes 15-20 hours of fieldwork. 3 hr./wk.; 3 cr.

Faculty

Hazel Carter, Associate Professor and Chair
B.A., Univ. of the West Indies (Trinidad); Graduate Diploma; M.S., New School Univ.; Ph.D., New York Univ.

Maria Castiglioni, Lecturer
B.A., Hunter College, M.A.; Ph.D., CUNY

Yvel Crevecoeur, Associate Professor
B.A., Central Connecticut State Univ.; M.S., Univ. of Bridgeport; C.A.S., C.A.S., Fairfield Univ.; Ph.D., Univ. of Connecticut

Carol Huang, Assistant Professor
B.A., Tamkang Univ. (Taiwan); M.A., Michigan State Univ.; M.Ed., New York Univ.; Ph.D., Univ. of Illinois, Urbana-Champaign

Robert Lubetsky, Associate Professor
A.B., Syracuse University; M.A., University of Manchester; Professional Diploma, Fordham University; Ed.D., New York University.

Susan Semel, Professor

Laura Rader, Assistant Professor
B.A., Univ. of Connecticut; M.Ed., Univ. of Hartford; Ed.D., Teachers College, Columbia Univ.

Marvin Stober, Lecturer
B.A., Univ. of Minnesota; M.S., Yeshiva Univ.; M.S.Ed., The City College of New York; Ed.S., Yeshiva Univ.

Terri Watson, Assistant Professor
B.A., St. John’s College, St. John’s Univ.; M.A., Teachers College, Columbia Univ.; Ph.D., Florida Atlantic Univ.

Christopher Yawn, Associate Professor
B.A., Hampton Univ.; M.S., Mercy College; Ph.D., The Ohio State Univ.

Professors Emeriti

Doyle Bortner
Debora C. Brink
Paul J. Burke
Thomas F. Carey
Joyce Coppin
Richard G. Durnin
Edwin Farrell
Harwood Fisher
Hope Hartman
Sylvia Roberts
Arnold Rothstein
Marilyn Rousseau
Norman Shapiro
James J. Shields
Marvin Siegelman
Martin Silverman
Robert Simmelkaer
Sigmund Tobias

B.A., Hamline Univ.; M.A., Cowles College; Ed.D., University of Minnesota


B.A., Hampton Univ.; M.S., Mercy College; Ph.D., The Ohio State Univ.
Department of Secondary Education

Associate Professor Hazel Carter, Acting Chair • Department Office: NA  6/207B • Tel: 212-650-7262

General Information

The Department of Secondary Education offers graduate programs leading to New York State initial and professional certification in adolescent education (7-12) in English, mathematics, science, social studies, and Spanish education; in P-12 art education; and in middle school (5-9) mathematics and science education.

Adolescent-level (7-12) initial certification programs are available at the graduate level for students with a baccalaureate related to their teaching subject area.

The middle school initial certification programs (5-9) in mathematics and science do not require a baccalaureate degree in the teaching subject area. Content requirements for these programs can be found in the program descriptions that follow.

Professional certification programs leading to a master’s degree are available to students who possess initial certification.

Students already holding a master’s degree in their subject area may enroll in an advanced certificate program in English, mathematics, science, and social studies education.

The City College offers the following master’s degrees and advanced certificates in Secondary Education:

Master of Arts (M.A.)
Art Education (K-Grade 12)
English Education (Grades 7-12)
Mathematics Education (Grades 7-12)
Science Education (Grades 7-12): Biology, Chemistry, Earth and Atmospheric Science, and Physics
Social Studies Education (Grades 7-12)

Master of Science in Education (M.S.Ed.)
Mathematics Education (Grades 5-9)
Science Education (Grades 5-9): Biology, Chemistry, Earth and Atmospheric Science, and Physics
Spanish Education (Grades 7-12)

Advanced Certificate Programs for Content-Relevant Master’s Degree Holders
English Education (Grades 7-12)
Mathematics Education (Grades 7-12)
Science Education (Grades 7-12): Biology, Chemistry, Earth and Atmospheric Science, and Physics
Social Studies Education (Grades 7-12)

Advisement
The Office of Admissions and Student Services (212-650-5316) or the Office of the Chair (212-650-7262) will be pleased to assist you in contacting the faculty member in charge of any of the programs above.

Programs and Objectives

Art Education (P-12)
The Art Education Program serves graduate students who would like to teach in schools, museums, and community centers, as well as those who are currently practicing educators seeking professional development.

Initial Certification in P-12 Art Education

Required Courses:
EDSE 4100E: Curriculum and Assessment in Art Education 4
EDSE 4200E: Identity, Community, and Culture in Art Education 3
EDSE 4300F: Materials and Methods in Art Education 4
EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1
EDSE 7800G: Teaching Practicum in the Arts 2
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0

One of the following four courses:
EDUC 2100K: Developmental Issues in Childhood and Early Childhood Education 3
EDUC 7200A: Psychology of Teaching and Learning 3
EDUC 7300A: Child Development 3
EDUC 7500A: Adolescent Learning and Development 3

One of the following four courses:
EDSE 1900C: Language and Literacy Development in Young Children 3
EDSE 7500C: Emergent to Fluent Literacy 3
EDSE 1200E: Reading and Writing across the Curriculum 3
EDSE 1201E: Middle School Literacy 4

One of the following two courses:
EDSE 4500K: Inclusive Practices for the Arts 3
SPED 5000K: Introduction to Inclusive Education 3

Art and Art Education
ARTE 3100A: Critical Perspectives in Art Education 3
ARTE 3100C: Community-Based Art Education 3
One course in art history selected under advisement 3
One studio art course selected under advisement 3

Research Course:
EDSE 7200I: Master’s Project 3
Total credits 40-41

Professional Certification in P-12 Art Education

Pre-requisites:
SPED 5000K: Introduction to Inclusive Education 3
or
EDSE 4500K: Inclusive Practices for the Arts 3
and
EDSE 1200E: Reading and Writing across the Curriculum 3
or
EDSE 1201E: Middle School Literacy 4
or
EDSE 1900C: Language and Literacy Development in Young Children 3
or
EDSE 7500C: Emergent to Fluent Literacy 3

Required Courses
EDSE 4100E: Curriculum and Assessment in Art Education 4
EDSE 4200E: Identity, Community, and Culture in Art Education 4
EDSE 4300F: Materials and Methods in Art Education 4
ARTE 3100A: Critical Perspectives in Art Education 3
ARTE 3100C: Community-Based Art Education 3

Content Electives (selected in consultation with an advisor): 9-12

Research Course:
EDSE 7200I: Master’s Project 3
Total credits 32-35

Non-Certification Program in Art Education

This program is for graduate students who do not wish to seek teaching certification.

EDSE 4100E: Curriculum and Assessment in Art Education 4
EDSE 4200E: Identity, Community, and Culture in Art Education 3
EDSE 4300F: Materials and Methods in Art Education 4
ARTE 3100A: Critical Perspectives in Art Education 3
ART 87500: Museum Education 3
EDSE 1200E: Reading and Writing across the Curriculum 3
EDSE 4500K: Inclusive Practices for the Arts 3
OR
SPED 5000K: Introduction to Inclusive Education 3
EDUC 7500A: Adolescent Learning & Development 3
OR
EDUC 7200A: Psychology of Teaching and Learning 3
OR
EDUC 7300A: Child Development 3
OR
EDUC 2100C: Developmental Issues in Childhood and Early Childhood Education 3
One course in studio art or art history selected under advisement 3
One course in studio art or art history selected under advisement 3
One internship in Art or Museum Education 3
EDSE 1099G: Child Abuse and Health Education 0
Total credits 38

Middle School Mathematics Education
Initial Certification in Middle School Mathematics
This program is for graduate students who have completed 15 credit hours of mathematics, including a course in calculus, and are interested in teaching mathematics in grades 5-9.

Required Courses:
Education
EDSE 7200I: Master's Project 3
OR
EDSE 7201I: Action Research in Mathematics Education 3
Mathematics
EDUC 7100I: Independent Student and Research in 2
and
EDUC 7000I: Introduction to Educational Research 2
Research Course(s): 3
MATHE 5000C: Data Analysis, Probability, and Statistics 3
MATHE 1000E: History of Mathematics 3
MATHE 4700C: Modeling with Algebraic and Trigonometric Functions 3
MATHE 4800C: Foundations of Geometry 3
MATHE 4900C: Fundamental Ideas of Calculus 3

Professional Certification in Middle School Mathematics
This program is for graduate students holding initial certification and who have completed 15 credit hours of mathematics, including Calculus I.

Required Courses:
Education
EDSE 6401E: Curriculum, Instruction and Assessment in Mathematics Education 3
EDSE 2700E: Middle and Secondary School Mathematics: Teaching Developmentally 3
Mathematics Education
MATHE 4600C: Introduction to Mathematical Thinking 3
MATHE 4700C: Modeling with Algebraic and Trigonometric Functions 3
MATHE 4800C: Foundations of Geometry 3
MATHE 4900C: Fundamental Ideas of Calculus 3

Middle School Science Education
Initial Certification in Middle School Science
This program is for graduate students who have at least 8 credit hours in science and are interested in teaching science in grades 5-9.

Required Courses:
Education
EDSE 1201E: Middle School Literacy 4
EDSE 6100E: Teaching Mathematics in Middle and Secondary Schools 4
EDSE 6400E: Curriculum, Instruction and Assessment in Middle and Secondary School Mathematics 4
EDSE 7600G: Student Teaching in Middle and Secondary Education 2
EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
Mathematics Education
MATHE 4600C: Introduction to Mathematical Thinking 3
MATHE 4700C: Modeling with Algebraic and Trigonometric Functions 3
MATHE 4800C: Foundations of Geometry 3
MATHE 4900C: Fundamental Ideas of Calculus 3
One of the following Mathematics Education courses (selected in consultation with an advisor): 3
EDSE 6600E: Using Computers to Teach Mathematics 3
EDSE 6300E: Enriching the Teaching of Mathematics 3
EDSE 6200E: Teaching Problem-Solving Strategies in Mathematics 3
EDSE 6300E: Enriching the Teaching of Mathematics 3
EDSE 6600E: Strategies for Using Computers in the Mathematics Class 3
EDSE 6800E: Teaching Mathematics Using Graphing Utilities 3
One of the following mathematics courses: 3
MATHE 1000E: History of Mathematics 3
MATHE 5000K: Data Analysis, Probability and Statistics (or another approved elective) 3
Research Course(s): 3-4
EDUC 7000I: Introduction to Educational Research 2
EDUC 7100I: Independent Student and Research in Mathematics 2
or
EDSE 7200I: Master's Project 3
or
EDSE 7201I: Action Research in Mathematics Education 3
Total Credits 41-42

Three of the following courses (selected in consultation with an advisor): 3
EDSC 4100E: Adolescent Learning of Science Education 3
EDSE 3105E: Adolescent Learning of Science Education 3
EDSE 3700E: Science Education 3
EDSE 3101E: Teaching Science in Middle Schools 3
EDSE 3102E: Teaching Science in Middle Schools 3
EDSE 7600G: Student Teaching in Middle and Secondary Education 2
EDSE 7603G: Seminar on Teaching in Secondary Schools 1
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
Science Education
SCIE 1403E: Physical Science for Middle School Teachers 4
SCIE 1404E: Physical Science for Middle School Teachers 4
SCIE 4101E: Life Science for Middle School Teachers 4
SCIE 4102E: Life Science for Middle School Teachers 4
SCIE 4103E: Nature of Scientific Knowledge 3
Science electives (selected in consultation with an advisor; depend on your area of specialization) 9
Research Course(s): 3
EDSE 7202I: Master's Project in Science Education 3
Total credits 52
Professional Certification in Middle School Science

This program is for graduate students who have at least 8 credit hours in science, hold initial certification in any area, and are interested in teaching science in grades 5-9.

Required Courses:

Education
EDSE 3101E: Teaching Science in Middle School 4
EDSE 3900L: Curriculum and Instruction in Science 4
SPED 5000K: Introduction to Inclusive Education (can be waived if equivalent course has been taken)

Science Education
SCIE 1403E: Physical Science for Middle School Teachers I 4
SCIE 1404E: Physical Science for Middle School Teachers II 4
SCIE 4101E: Life Science for Middle School Teachers I 4
SCIE 4102E: Life Science for Middle School Teachers II 4
SCIE 4103E: Nature of Scientific Knowledge 3
Science electives (selected in consultation with an advisor; depend on your area of specialization)

Research Course:
EDSE 7202I: Masters Project in Science Education 3
Total credits 42

Transitional B –Certificate in Middle School Science

This program is for New York City Teaching Fellows.

Required Courses:

Education
EDSE 1203E: Middle School Literacy (Math and Science Middle School Teaching Fellows) 3
EDSE 3102E: Teaching Science in Middle Schools 3
EDSE 3105E: Adolescent Learning of Science Education 3
EDSE 3901I: Curriculum and Instruction in Science Education 3
SPED 5003K: Introduction to Inclusive Education 3
EDSE 7602G: Supervised Teaching at the Middle and Secondary Levels 3
EDSE 7603G: Seminar on Student Teachings in Secondary Schools 1
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0

Science Education
SCIE 1403E: Physical Science for Middle School Teachers I 4
SCIE 4101E: Life Science for Middle School Teachers I 4
SCIE 4103E: Nature of Scientific Knowledge 3
One of the following courses:
SCI 1404E: Physical Science for Middle School Teachers II or SCI 4102E: Life Science for Middle School Teachers II Science electives (selected in consultation with an advisor; depend on your area of specialization)

Research Course:
EDSE 7202I: Masters Project in Science Education 3
Total credits 40

Secondary English Education

The English Education Program serves both graduate students who want to become high school English teachers and those graduate students who are currently practicing educators interested in improving their teaching in grades 5-9.

Required Courses:

Education
EDUC 7300E: Curriculum Development in Secondary School: Language Acquisition and Literacy 4
SPED 5000K: Introduction to Inclusive Education 3

English Education
EDSE 1202E: Teaching Reading in Secondary Schools 3
EDSE 1500E: Teaching Writing in Secondary Schools 3
ENGLE 4400E: Structure and Growth of the English Language 3
Content pedagogy electives with advisor’s approval 9
Total credits 40

Professional Certification in 7-12 English Education

Required Courses:

Education
EDSE 7300E: Curriculum Development in Secondary School: English 4
SPED 5000K: Introduction to Inclusive Education 3

English Education
EDSE 1202E: Teaching Reading in Secondary Schools 3
EDSE 1500E: Teaching Writing in Secondary Schools 3
ENGLE 4400E: Structure and Growth of the English Language 3
Content pedagogy electives with advisor’s approval 6
English electives 6
Research Course:
EDSE 7202I: Master’s Project 3
Total credits 31

Advanced Certificate in 7-12 English Education

Required Courses:

EDUC 7500A: Adolescent Learning and Development 3
SPED 5000K: Introduction to Inclusive Education 3
EDSE 7300E: Curriculum Development in Secondary School: English 4
EDSE 1100E: Methods of Teaching English in Secondary Schools 4
EDSE 1202E: Teaching Reading in Secondary Schools 3
EDSE 1500E: Teaching Writing in Secondary Schools 3
EDSE 7600G: Student Teaching in Middle and Secondary Education 2
EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
Total credits 25

Secondary Mathematics Education

The Mathematics Education Program serves both graduate students who want to become middle or high school teachers and those graduate students who are currently practicing educators interested in improving their pedagogical and content knowledge related to mathematics.

Initial Certification Program in 7-12 Mathematics Education

Required Courses:

Education
EDUC 7500A: Adolescent Learning and Development 3
SPED 5000K: Introduction to Inclusive Education 3
EDSE 1200E: Teaching Reading and Writing across the Curriculum 3
EDSE 6100E: Teaching Mathematics in Secondary Schools 4
EDSE 6400E: Curriculum, Instruction and Assessment in Middle and Secondary School Mathematics 4
EDSE 7600G: Student Teaching in Middle and Secondary Education 2
EDSE 7603G: Seminar on Teaching in Secondary Schools 1
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
Two of the following courses:
EDSE 2700E: Middle and Secondary School Mathematics 3
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
Research Course:
EDSE 7200I: Master’s Project 3
Total credits 31
Teaching Developmentally
EDSE 6200E: Teaching Problem-Solving Strategies in Mathematics 3

EDSE 6300E: Enriching the Teaching of Secondary School Mathematics 3
EDSE 6600E: Strategies for Using Computers in the Mathematics Class 3
EDSE 6800E: Teaching Mathematics Using Graphing Utilities 3
EDSE 6900E: The Teaching of Calculus 3
MATHE 1000E: History of Mathematics 3

Two of the following courses, each chosen from a different area:

Algebra
MATHE 2900E: Theory of Equations 3
MATHE 7700E: Modern Algebra 3

Geometry
MATHE 7400E: Foundations of Geometry 3
MATHE 7800E: Transformational Geometry 3
MATHE 1100E: Advanced Euclidean Geometry 3

Discrete Mathematics
MATHE 7700E: Introduction to Discrete Mathematics 3
MATHE 2100E: Probability 3
MATHE 2200E: Mathematical Statistics 3

Analysis
MATHE 7500E: Classic Applications of Calculus I 3
MATHE 7600E: Classic Applications of Calculus II 3
MATHE 2800E: Numerical Analysis 3
MATHE 7500E: Classic Applications of Advanced Calculus 3

Miscellaneous
MATHE 2700E: The Theory of Numbers 3
MATHE 3700E: Topology 3
MATHE 6000C: High School Mathematics from an Advanced Perspective 3
MATHE 6500C: Mathematical Applications in Science & Industry 3
MATHE 2700E: The Theory of Numbers 3
MATHE 3700E: Topology 3
MATHE 6000C: High School Mathematics from an Advanced Perspective 3
MATHE 6500C: Mathematical Applications in Science & Industry 3
MATHE 3200F: Independent Study and Research in Industry 1-3

Mathematics
Research Courses(s)
EDUC 7000I: Introduction to Educational Research and
EDUC 7100I: Independent Study and Research in Mathematics or
EDSE 7200I: Master’s Project or
EDSE 7201I: Action Research in Mathematics Education

Total credits 37-38

Professional Certification in 7-12 Mathematics Education

Required Courses:
Education
EDSE 6401E: Curriculum, Instruction and Assessment in Mathematics Education 3
SPED 5000K: Introduction to Inclusive Education 3

Five of the following courses (selected in consultation with an advisor; with a minimum of 2 from the MATHE category):
EDSE 2700E: Middle and Secondary School Mathematics: Teaching Developmentally 3
EDSE 6200E: Teaching Problem-Solving Strategies in Mathematics 3
EDSE 6300E: Enriching the Teaching of Secondary School Mathematics 3
EDSE 6600E: Strategies for Using Computers in the Mathematics Class 3
EDSE 6900E: The Teaching of Calculus in Algebra
MATHE 2600E: Linear Algebra 3
MATHE 2900E: Theory of Equations 3
MATHE 7700E: Modern Algebra 3

Geometry
MATHE 7400E: Foundations of Geometry 3
MATHE 7800E: Transformational Geometry 3
MATHE 1100E: Advanced Euclidean Geometry 3

Discrete Mathematics
MATHE 7700E: Introduction to Discrete Mathematics 3
MATHE 2100E: Probability 3
MATHE 2200E: Mathematical Statistics 3

Analysis
MATHE 7500E: Classic Applications of Calculus I 3
MATHE 7600E: Classic Applications of Calculus II 3
MATHE 2800E: Numerical Analysis 3
MATHE 7500E: Classic Applications of Advanced Calculus 3

Miscellaneous
MATHE 2700E: The Theory of Numbers 3
MATHE 3700E: Topology 3
MATHE 6000C: High School Mathematics from an Advanced Perspective 3
MATHE 6500C: Mathematical Applications in Science & Industry 3
MATHE 3200F: Independent Study and Research in Mathematics 1-3

Research Course(s):
EDUC 7000I: Introduction to Educational Research and
EDUC 7100I: Independent Study and Research in Mathematics or
EDSE 7200I: Master’s Project or
EDSE 7201I: Action Research in Mathematics Education

Total credits 30-31

Advanced Certificate in 7-12 Mathematics Education

Required Courses:
EDUC 7500A: Adolescent Learning and Development 3
SPED 5000K: Introduction to Inclusive Education 3
EDSE 1200E: Reading and Writing across the Curriculum 3
EDSE 6100E: Teaching Mathematics in Middle and Secondary Schools 4
EDSE 6400E: Curriculum, Instruction and Assessment in Middle and Secondary School Mathematics 4
EDSE 7600G: Student Teaching in Middle and Secondary Education 2
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
EDUC 7603G: Seminar on Teaching in Secondary Schools 1

Total credits 22

Initial Certification in 7-12 Mathematics Education for MFAs
This program is for graduate students accepted into the Math for America Teaching Fellowship.

Required Courses:
EDUC 7500A: Adolescent Learning in the Urban Context 3
SPED 5000K: Introduction to Inclusive Education 3
EDSE 1200E: Reading and Writing across the Curriculum 3
EDSE 6100E: Teaching Mathematics in Middle and Secondary Schools 4
EDSE 6401E: Curriculum, Assessment, and Instruction in Mathematics Education 3
EDSE 7600G: Student Teaching in Middle and Secondary Education 2
EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
EDSE 7202I: Action Research in Mathematics Education 3
EDSE Math Education Electives 3
MATHE Electives Total credits 36

Secondary Science Education

The Science Education Program serves both graduate students who want to become middle or high school teachers and those graduate students who are currently practicing educators interested in improving their pedagogical and content knowledge related to science.
Initial Certification in 7-12 Science Education

Required Courses:

Education
- EDSE 1200E: Reading and Writing across the Curriculum 3
- EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
- EDSE 3100E: Teaching Science in Secondary Schools 4
- EDSE 3105E: Adolescent Learning of Science Education 1
- EDSE 3900I: Curriculum and Instruction in Science Education 4
- SPED 5000K: Introduction to Inclusive Education 3
- EDSE 7600G: Student Teaching in Middle and Secondary Education 3
- EDSE 7603G: Seminar on Teaching in Secondary Schools 3
- EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1
- EDSE 3105E: Adolescent Learning of Science Education 2

Professional Certification in 7-12 Science Education

Required Courses:

Education
- EDSE 1200E: Reading and Writing across the Curriculum 3
- EDSE 3100E: Teaching Science in Secondary Schools 4
- SPED 5000K: Introduction to Inclusive Education (can be waived if equivalent course has been taken) 3
- Nine graduate credits in science education plus six graduate credits in science 15
- Six additional graduate credits in science or education (selected in consultation with an advisor) 6

Research Course:
- EDSE 7200I: Masters Project in Science Education 3

Total credits 34

Advanced Certificate in 7-12 Science Education

Required Courses:
- EDSE 1200E: Reading and Writing Across the Curriculum 3
- EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
- EDSE 3100E: Teaching Science in Secondary Schools 4
- EDSE 3105E: Adolescent Learning of Science Education 1
- EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1
- EDSE 3900I: Curriculum and Instruction in Science Education 4
- SPED 5000K: Introduction to Inclusive Education 3
- EDSE 7600G: Student Teaching in Middle and Secondary Education 2

Total credits 20

Transitional B Certificate in 7-12 Science Education

This program is for New York City teaching Fellows.

Required Courses:
- EDSE 1200E: Reading and Writing Across the Curriculum 3
- EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues 0
- EDSE 3100E: Teaching Science in Secondary Schools 4
- EDSE 3105E: Adolescent Learning of Science Education 1
- EDSE 3900I: Curriculum and Instruction in Science Education (TF) 3
- SPED 5000K: Introduction to Inclusive Education 3
- Six graduate credits in required science courses (depending on your area of specialization) 12
- Six additional graduate credits in science must be selected in consultation with a science education advisor 0
- EDSE 7602G: Supervised Teaching at the Middle and Secondary Levels 0
- EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1

Total credits 32

Secondary Social Studies Education

The Social Studies Education Program serves both students who want to become middle or high school social studies teachers and those students who are currently practicing educators interested in sharpening their pedagogical and content knowledge related to social studies.

Initial Certification in 7-12 Social Studies Education

Required Courses:
- EDSE 1200E: Reading and Writing Across the Curriculum 3
- SPED 5000K: Introduction to Inclusive Education 3
- EDSE 7600G: Student Teaching in Middle and Secondary Education 2
- EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1
- Graduate courses offered in history, economics, political science, anthropology, sociology or content-pedagogy linked courses in social studies, with advisor’s approval 12

Research Course:
- EDSE 7200I: Master’s project 3
- OR
- EDUC 7000I: Introduction to Educational Research 2
- EDUC 7100I: Independent Study and Research 2
- Education content-pedagogy linked courses may be substituted for required liberal arts and social science courses with the advisor’s approval.

Total credits 37-38

Professional Certification in 7-12 Social Studies Education

Required Courses:
- EDSE 1200E: Reading and Writing Across the Curriculum 3
- SPED 5000K: Introduction to Inclusive Education* OR (For candidates who have already taken an equivalent of SPED 5000K) 3
- SPED 3300K: Positive Approaches to Challenging Behaviors OR SPED 3701K: Reading and Writing Instruction for Students with Disabilities in Adolescent Education II 12
- Graduate courses in history, economics, political science, geography, anthropology, sociology and content-pedagogy linked courses with advisor’s approval 12

Education Electives
- EDUC 7200I: Master’s project 6
- OR
- EDUC 7000I: Introduction to Educational Research 2
- EDUC 7100I: Independent Study and Research 2

Total credits 31-32

*For students who do not have a special education course on their transcript.

Elective Options
From the Department of History:
- HIST B0000: Historical Methods and Historiography
- HIST B0412: The American Legal Tradition, and Courses in the following areas:
  - Ancient and Medieval History
  - Modern European History
  - Latin American History
  - Asian History
  - African History

*See course bulletin for specific course codes
From the Department of Sociology:
SOC B5100: Urban Sociology
SOC B5200: The People of the City of New York
SOC B8100: Sociology of Politics and Collective Behavior

From the International Relations Program:
IR B6200: International Organizations
IR B6300: International Law
IR B6927: International Political Economy

From the Department of Secondary Education:
HISTE 3400E: The United States in World Affairs
PSCE 5200C: The Governments of the New York Area
PSCE 6200C: Civic Participation of Youth

Recommended Education Electives:
From the Department of Secondary Education:
EDSE 2200E: Study and Teaching of History
EDSE 4200E: Identity, Community, and Culture in Art Education
ENGL 4200C: Reading Non-Fiction Texts
BIOE 6100E: Human Ecology
SCIE 4103E: Science Across Contexts

From the Department of Teaching, Learning, and Culture:
EDCE 4000F: Arts Integration: Theatre and Related Arts in the Curriculum
EDCE 6400C: Teaching Content Using English and an Additional Language (counts towards bilingual extension)
EDCE 6500C: Teaching English Language Arts to Bilingual English Language Learners, Grades 7 – 12 (counts towards TESOL certification)
EDCE 6900C: Methods of Teaching English to Speakers of Other Languages, Grades 7 - 12 (counts towards TESOL certification)
EDCE 5300C: Theories, Policies, and Programs for Emergent Bilinguals (counts towards bilingual extension)
EDCE 5700C: Education that is Multicultural (counts towards bilingual extension)
EDCE 6500C: Teaching English Language Arts to Bilingual English Language Learners, Grades 7 – 12 (counts towards TESOL certification)

From the Department of Leadership and Special Education:
SPED 5300K: Positive Approaches to Challenging Behaviors
SPED 3701K: Reading and Writing Instruction for Students with Disabilities in Adolescent Education II
SPED 6100I: Working with Parents of Children with Disabilities
EDLS 7201G: Moral Dimensions of Leadership
EDLS 8801G: A30:A43Building School Community

Advanced Certificate in 7-12 Social Studies Education
Required Courses:
EDUC 7500A: Adolescent Learning and Development 3
EDSE 7600A: Issues for Secondary School Teachers: Second 2
Language Acquisition and Literacy
EDSE 7603G: Seminar on Student Teaching in Secondary Schools 1
EDSE 1200E: Reading and Writing Across the Curriculum 3
EDSE 2100E: Teaching Social Studies in Secondary Schools 3
SPED 5000K: Introduction to Inclusive Education 2
EDSE 7600G: Student Teaching in Middle and Secondary Education 2
Total credits 22

Secondary Spanish Education
The Spanish Education Program serves graduate students with a baccalaureate degree in Spanish or another field and graduate students holding initial certification in any area.

Initial Certification in 7-12 Spanish Education for Candidates with a B.A. in Spanish
Required courses:
Education
EDUC 7500A: Adolescent Learning and Development 3
SPED 5000K: Introduction to Inclusive Education 3
EDSE 1104E: Methods of Teaching Spanish in Secondary Schools 4
EDSE 1204E: The Teaching of Reading and Writing across the Curriculum in Spanish in Secondary Schools 3
EDSE 1304E: The Teaching of Spanish to Heritage Language Learners in Secondary Schools 3
EDSE 6804E: Spanish Grammar and its Pedagogy 3
EDSE 7304E: Curriculum Development in Secondary School Spanish 4
EDSE 7600G: Student Teaching in Middle and Secondary Education 2

Total credits 35

Initial Certification in 7-12 Spanish Education for Candidates with Initial Certification in an Area Other than Spanish
Pre-requisites include 15 credits in advanced (300 level or above) undergraduate Spanish courses, including a grammar course and a composition course, and EDUC 20500 or equivalent.

Required courses:
Education
SPED 5000K: Introduction to Inclusive Education 3
EDSE 1104E: Methods of Teaching Spanish in Secondary Schools 4
EDSE 1204E: The Teaching of Reading and Writing across the Curriculum in Spanish in Secondary Schools 3
EDSE 1304E: The Teaching of Spanish to Heritage Language Learners in Secondary Schools 3
EDSE 6804E: Spanish Grammar and its Pedagogy 3
EDSE 7304E: Curriculum Development in Secondary School Spanish 4

Total credits 38

Initial Certification in 7-12 Spanish Education for Candidates with a B.A. in a Field other than Spanish
Pre-requisites include 15 credits in advanced (300 level or above) undergraduate Spanish courses, including a grammar course and a composition course.

Required courses:
Education
EDUC 7500A: Adolescent Learning and Development 3
SPED 5000K: Introduction to Inclusive Education 3
EDSE 1104E: Methods of Teaching Spanish in Secondary Schools 4
EDSE 1204E: The Teaching of Reading and Writing across the Curriculum in Spanish in Secondary Schools 3
EDSE 1304E: The Teaching of Spanish to Heritage Language Learners in Secondary Schools 3
EDSE 6804E: Spanish Grammar and its Pedagogy 3
EDSE 7304E: Curriculum Development in Secondary School Spanish 4
EDSE 7600G: Student Teaching in Middle and Secondary Education 2

Total credits 44

Professional Certification in 7-12 Spanish Education
Required courses:
SPED 5000K: Introduction to Inclusive Education 3
EDSE 1204E: The Teaching of Reading and Writing across the Curriculum in Spanish in Secondary Schools 3
EDSE 1304E: The Teaching of Spanish to Heritage Language Learners in Secondary Schools 3
EDSE 6804E: Spanish Grammar and its Pedagogy 3
EDSE 7304E: Curriculum Development in Secondary School Spanish 4

One of the following two courses:
EDCE 2600C: Linguistics for Teachers 3
EDSE 5800C: Theories of Second Language Acquisition 3
One of the following six courses:  
EDCE 2000C: First and Second Language Literacy Acquisition 3  
EDCE 5300C: Theories, Policies, and Programs for Emergent Bilingual Students 3  
EDCE 5700C: Education that is Multicultural 3  
EDCE 6400C: Teaching Content (Math, Science, Social Studies) 3  
Using Both English and a Native Language SPED 5300C: Positive Approaches for Challenging Behaviors 3  
Spanish Two Spanish linguistics graduate courses 6  
One Spanish literature graduate course 3  
Research Course:  
EDSE 7200L: Master’s Project 3  
Total credits 34

Secondary Education Course Descriptions

EDSE 7502A: Adolescent Learning in the Urban Context (Teaching Fellows)  
This course is intended to help Teaching Fellows learn and apply modern theories of and research on developmental, educational, and cognitive psychology to their classroom instruction. Special emphasis is on theories that are relevant to adolescents, i.e., students in middle, intermediate, and high schools in the urban setting. It is also intended to help candidates a) become reflective practitioners who teach for and with metacognition; b) utilize the diversity in the classroom; c) create a caring community, and d) develop leadership skills. 3 hr./wk; 3 cr.

EDSE 7503A: Introduction to Teaching Humanities in Urban Secondary Schools  
This course is co-designed by both the instructor and the participants. We will use problem-based learning to identify, research, and solve the issues which arise in your classrooms. The topics we will address include: assessing student learning and needs; classroom management; fostering a learning community; differentiating instruction; incorporating metacognition and the Principles of Learning; and setting long and short term goals. 3 hr./wk; 3 cr.

This graduate level course is a core requirement of all secondary education candidates, providing you opportunities to consider essential issues in literacy development and second language acquisition, and to deliberate about tensions within each area. The course is designed to provide a general introduction to these areas, focusing on issues of particular concern to middle and secondary school teachers, from which you will begin to consider how to differentiate your instruction for a diverse population of students. In turn, the course design is intended to help you create the kinds of classrooms our students deserve, using methods to deliver instruction that are aligned to the needs of these learners. Includes 10 hours of fieldwork. 2 hr./wk; 2 cr.

EDSE 6400D: Educational Applications of Group Dynamics  
Concepts and methods of group dynamics and social group work, and their application to school situations; use of group processes in meeting children’s needs for activity, socialization, and emotional security; diagnostic and therapeutic implications. 3 hr./wk; 3 cr.

EDSE 1100E: Methods of Teaching English in Secondary Schools  
This course explores the pedagogical theories, teaching practices, and curricular trends confronting English teachers in order to provide an understanding of the complex interactions between reading, writing, listening, and speaking. The acquisition of methodological knowledge and the development of self-awareness are primary goals. How teaching methods affect what really happens in the classroom. Includes 30 hours of fieldwork. 3 hr./wk; 4 cr. Fall only.

EDSE 1101E: English Methods (Teaching Fellows)  
The purpose of this course is to introduce you to a variety of approaches, routines, materials, and issues that concern English teachers in secondary school settings, and to help you develop a set of lessons, assessments, and materials to use during your first few weeks of teaching. The course will provide time for you to practice and experiment with methods introduced in class readings and discussions. This course will also provide a controlled and supportive environment for trying out strategies and techniques that may be somewhat different from your previous experiences in English classrooms. At the same time, you will be asked to share what you observe in your morning in-school sessions of the everyday realities of teaching and learning in authentic classroom settings. These observations will further inform your emerging conception of effective approaches and practices in the field of English education. 3 hr./wk; 3 cr.

EDSE 1104E: Methods of Teaching Spanish in Secondary Schools  
This course is intended to provide prospective teachers of Spanish and/or other second languages with the background and strategies needed to teach Spanish at the secondary level. It is designed specifically for candidates without initial certification. Major topics include: second language acquisition and language development in adolescents; comprehension-based teaching strategies; standards-based planning and instruction; content-based instruction; and teaching and assessing listening, speaking, reading, and writing skills as well as cultural competency. Includes 30 hours of fieldwork. 3 hr./wk; 4 cr.

EDSE 1200E: Reading and Writing Across the Curriculum  
Explore how reading and writing can be modes of learning across the curriculum. Current research and theory will be discussed and methods of using reading and writing to learn will be developed. Not open to students who have completed EDSE 41200. Includes 10 hours of fieldwork. 3 hr./wk; 3 cr.

EDSE 1201E: Middle School Literacy  
This course will support candidates to learn how to: identify strengths of literacy learners in content classrooms; individualize instruction based on these assessments; and assess textual difficulty and guide students to develop reading and writing strategies and study skills. Includes 20 hours of fieldwork. 4 hr./wk; 4 cr.

EDSE 1202E: Teaching Reading in the Secondary School English Classroom  
This course is designed to prepare graduate secondary English Language Arts candidates with theoretical and practical guidance for teaching reading and literature. There will be an overview of reading processes (including those of English language learners), the fundamentals of reading instruction, factors that influence the ability to read text effectively, strategies and materials for identifying and reducing reading problems, school resources, and different programs for proficient and struggling readers, including Ramp Up and SR. During the semester ELA candidates will describe, compare, and contrast theories, models, approaches, and methods of teaching reading. The emphasis of our inquiry will be on the teaching of critical reading skills in various genres of literature, including contemporary adolescent literature. Candidates will discuss and investigate the different types of readings, assessments, reading skills, reading instruction, learning strategies, and possible motivations for reading. Throughout the course candidates will read, share, discuss, adopt multiple perspectives, and critique a wide range of literature taught in the secondary English classroom, as well as investigate the needs of diverse student populations, including ELLs and students with special needs. Includes 10 hours of fieldwork. 3 hr./wk; 3 cr. Spring only.

EDSE 1204E: The Teaching of Reading and Writing across the Curriculum in Spanish in Secondary Schools  
The course is designed to explore methods for the teaching of reading and writing in Spanish to non-native speakers of the language and how these skills relate to listening and speaking across the curriculum. Prospective or current teachers will be provided knowledge of theory and best practices related to literacy in Spanish. They will also develop instructional materials and their own “voices” as writers. Includes 20 hours of fieldwork. 3 hr./wk; 3 cr.

EDSE 1300E: Assessment and Testing for the Language Arts  
This course is designed to introduce you to the fundamental principles of English Language Arts assessment and testing. It is both theoretical and practical in nature. The course will cover types of assessments, planning instruction and assessment, diversity and gender, formal and informal assessment, construction, administration, and grading. 3 hr./wk; 3 cr.

EDSE 1304E: The Teaching of Spanish to Heritage Language Learners in Secondary Schools  
Current theories and methods of teaching Spanish to heritage language learners. Emphasis is placed on the teaching of multi-modal literacies and oral communication patterns, and sociolinguistic competency. Includes 20 hours of fieldwork. 2.5 hr./wk; 3 cr.

EDSE 1500E: Teaching Writing in Secondary Schools  
Students taking this course will write as a way to engage in the best practices of writing instruction while reflecting on this practice by examining the theoretical lens that informs its use. Includes 10 hours of fieldwork. 3 hr./wk; 3 cr. Fall only.
EDSE 2100E: Teaching Social Studies in Secondary Schools
Lesson planning, classroom management, co-operative learning, questioning, assessment, reading, writing, and note taking in social studies are emphasized. Students study the secondary school curriculum, uses of technology, differentiated instruction for students with special needs, and the needs of English language learners. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 2200E: Study and Teaching of History
Designed for teachers of advanced placement courses in secondary schools. Examination of relevant source materials and examples of historical scholarship. 3 hr./wk.; 3 cr.

EDSE 2201E: Teaching of American History
The purpose of this course is to prepare pre-service teachers to increase their knowledge of American History, to demonstrate best practices in the teaching of American history at the secondary level, to improve teacher’s use of primary sources and to integrate the arts in the teaching of American History. This course explores American history beginning with the settlement of the Puritans and ending with contemporary American society. The underlying framework for the course is to foster teaching American history in ways that will both engage and excite students as well as expand social studies teachers’ knowledge of American history. Effective instructional strategies for teaching American history will be examined and developed. Students will examine New York State standards for American History as well as the standards for our specialty interest association, the National Council for Social Studies. 3 hr./wk.; 3 cr.

Examination of selected social studies projects and application of their methods and materials to students’ present teaching situations. Open only to matriculants or by special permission. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 2700E: Middle and Secondary School Mathematics: Teaching Developmentally
This course is designed to help teachers better understand the types of mathematical misconceptions students may have developed by the time they reach middle and high school. It will identify a variety of research-based strategies for developing a better understanding of the mathematical procedures and concepts related to those misconceptions. In addition, students will learn to differentiate instruction to help all learners meet and exceed appropriate New York State Learning Standards. 3 hr./wk.; 3 cr.

EDSE 3100E: Teaching Science in Secondary Schools
Lesson planning, classroom management, cooperative learning, questioning, remediation, enrichment, motivation, homework, testing and assessment, reading, writing, and note taking in science. Problem solving, the secondary school curriculum, technology, methodology for students with special needs, learning English as a second language, literacy in the science classroom. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 3101E: Teaching Science in Middle Schools
Lesson planning, classroom management, cooperative learning, questioning, remediation, enrichment, motivation, homework, testing and assessment, reading, writing in science. Problem solving, the middle school curriculum, technology, methodology for students with special needs, learning English as a second language, literacy in the science classroom. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 3102E: Teaching Science in Middle Schools (Teaching Fellows)
Participants in this course will explore perspectives, philosophies, theories, methods, and materials for teaching middle school science (grades 6-8). The course addresses four standards of professional practice that a teacher, to be successful, must not only master separately, but also learn to weave together seamlessly. Co-req: EDSE 3105E. 3 hr./wk.; 3 cr.

EDSE 3105E: Adolescent Learning of Science
This course provides an opportunity for students enrolled in EDSE 3100E to link to and extend their fieldwork experiences as participant/observers and to connect these experiences to current research into the theories and practices of student learning. Students will conduct a lesson in their field placements as part of their fieldwork for EDSE 3100E and this class. This lesson will be videotaped and critiqued during the seminar, providing an opportunity for the students to address adolescent learning theory in the context of actual classroom practice. Weekly topics include: cognitive science, student understanding, models of teaching, social construction of knowledge, investigating student ideas, and multiple representations of ideas. 1 hr./wk.; 1 cr.

EDSE 4100E: Curriculum and Assessment in Art Education
This course introduces the historical, cultural, and social foundations of art education. Discussions about the nature of learning in the arts prepare students to develop their own art curricula and embedded assessment strategies. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 4101E: Fieldwork: Teaching Art K - 12
Forty-five hours of fieldwork related to the study of teaching art in the classroom with particular emphasis on standard-based curriculum design. Pass/Fail only. Coreq.: EDSE 4100E. 1 hr./wk.; 1 cr.

EDSE 4200E: Identity, Community and Culture in Art Education
This arts-integrated course explores the role of identity, culture, and community in multiple arts settings with an emphasis on identity development, community building, and culturally relevant pedagogy. 3 hr./wk. plus 10 hr. fieldwork; 3 cr.

EDSE 6100E: Teaching Mathematics in Middle and Secondary Schools
Lesson planning, classroom management, cooperative learning, questioning, remediation, enrichment, motivation, homework, testing and assessment, reading, writing, and note taking in mathematics. Problem solving, the middle and secondary school curriculum, technology, methodology for students with special needs, learning English as a second language, literacy in the mathematics classroom. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 6101E: Teaching Mathematics in New York City
This course focuses on the Beginning level of practice and knowledge as defined by The New Teacher Center at UCSC’s Continuum of Teacher Development. Topics include planning and instruction for diverse classrooms, using NYCDOE curricula, aligning instruction and assessment with learning standards, promoting school community relationships in urban settings, classroom management, and understanding the culture of urban schools. Students will learn how to teach mathematics and prepare their students to meet New York State Learning Standards for Mathematics. Students will participate in a field experience as part of the course. 3 hr./wk.; 3 cr.

EDSE 6102E: Teaching & Learning Secondary School Mathematics
This capstone methods course will help teachers use their flexible and comprehensive knowledge of mathematics, their understanding of adolescent learning and development, and their ability to plan and implement instructional units to maximize the learning of all students. Candidates will focus on research-based instructional strategies that supported mathematics achievement of students in diverse urban secondary school classrooms. They will learn to create instructional environments where all students will develop confidence in their ability to do mathematics and are challenged to think critically about the discipline. In addition candidates will identify a problem of interest and draft a literature review that will serve as a basis for their action research project. This project will be completed during the following semester. Prereq: EDSE 6401E. on approval of instructor. 3 hr./wk.; 3 cr.

EDSE 6103E: Teaching & Learning Middle School Mathematics
This capstone methods course will help teachers use their flexible and comprehensive knowledge of mathematics, their understanding of adolescent learning and development, and their ability to plan and implement instructional units to maximize the learning of all students. Candidates will focus on research-based instructional strategies that supported mathematics achievement of students in diverse urban middle school classrooms. They will learn to create instructional environments where all students will develop confidence in their ability to do mathematics and are challenged to think critically about the discipline. In addition candidates will review the literature related to teaching mathematics at the middle school level. They will identify a problem of interest and draft a literature review that will serve as a basis for their action research project. This project will be completed during the following semester. Prereq: EDSE 6401E. 3 hr./wk.; 3 cr.

EDSE 6200E: Teaching Problem-Solving Strategies in Mathematics
This course is designed to expose and train mathematics teachers to a wide range of problem-solving strategies applicable to all parts of the secondary school curriculum. The goal of the course is to enable teachers to integrate this knowledge into the existing mathematics classroom. 3 hr./wk.; 3 cr.

EDSE 6300E: Enriching the Teaching of Secondary School Mathematics
How the teaching of secondary school mathematics can be enriched by presenting non-traditional topics. Methods of implementation as well as source material to be provided. 3 hr./wk.; 3 cr.

EDSE 6400E: Curriculum, Instruction, and Assessment in Middle and Secondary School Mathematics
Theory of curriculum development; alternatives in teaching laboratory programmed instruction; multimedia materials and procedures; learning theories designed to help the teacher develop criteria and knowledge for implementing curriculum in schools. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.
EDSE 6401E: Curriculum, Instruction, and Assessment in Mathematics Education
In this course candidates will design, implement, and reflect on instructional units that are aligned with long-term and short-term goals. They will use multiple sources of information to assess student learning, including data provided by NYC DOE assessment databases; involve and guide students in assessing their own learning; and use the results of assessment to inform instruction. Candidates will learn how to develop a classroom culture where mathematical learning and assessment are woven into the fabric of the classroom in a manner that supports the learning of all students. The course will require candidates to complete classroom-based activities. Prereq.: EDSE 0504A. 3 hr./wk.; 3 cr.

EDSE 6600E: Strategies for Using Computers in the Mathematics Classroom
Curriculum strategies and materials for introducing computer programming in the secondary school curriculum. Activities involve various levels of skills and techniques to solve mathematics problems using the computer. 3 hr./wk.; 3 cr.

EDSE 6800E: Teaching Mathematics Using Graphing Utilities
This course is designed to familiarize students with the latest in graphing calculator technology and software, which can be used to improve the understanding of mathematical concepts. Applications of this technology for all secondary school levels will be explored. The goal of the course is to enable students to better understand mathematical concepts with the aid of the newest technology. 3 hr./wk.; 3 cr.

EDSE 6804E: Spanish Grammar and its Pedagogy
Designed to provide an intensive review of key aspects of Spanish grammar. Emphasis is placed on the role grammar plays in oral and written communication. The course also provides strategies for the teaching and assessment of grammatical knowledge in the target language. 3 hr./wk.; 3 cr.

EDSE 6900E: The Teaching of Calculus
The aim of this course is to provide in-service and prospective mathematics teachers with deeper insight into elementary differential and integral calculus concepts. Since the use of graphing calculators is a vital part of the Advanced Placement program, how to use them to teach calculus is emphasized. 3 hr./wk.; 3 cr.

EDSE 7300E: Curriculum Development in Secondary School English
The variables, both societal and institutional, influencing the practice of high school English curriculum design. Topics include the psychology of writing, adolescent psychology and youth culture, popular culture, state mandates, the literary cannon and the debates it raises. Students' final project is a self-designed high school English curriculum informed by the semester's inquiry. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr. Spring only.

EDSE 7301E: Curriculum Development in Secondary School English (Teaching Fellows)
This course surveys the critical trends in English curriculum and instruction and the role of planning in the practice of teaching secondary school English in order to provide students with a supportive and exploratory environment to further our understanding of the complex interactions between reading, writing, listening, speaking, and viewing taking place in high school English classrooms. The acquisition of knowledge in the field of English curriculum, the development of planning skills, and the development of reflective practice in these areas are our goals. Designed specifically for English Teaching Fellows who have completed one year of teaching, the course draws on the candidates' classroom experiences to help them design a curriculum project for their second year of teaching. 3 hr./wk.; 3 cr.

EDSE 7304E: Curriculum Development in Secondary Spanish
This course explores the variables, both societal and institutional, influencing the practice of high school foreign language curriculum design. An overview of how language instruction has evolved will be studied. Topics include the alignment of standards and instructional goals, ACTFL's Standards for Foreign Language Learning, contextualized instruction, and how to design and implement a curriculum based on linguistic functions. Students' final project is a self-designed high school Spanish curriculum informed by the semester's inquiry. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 4300F: Materials and Methods in Art Education
This studio-focused class introduces students to strategies for teaching creativity in multiple settings. Students merge explorations of contemporary art practices with educational theory to develop lessons in the arts. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 4301F: Fieldwork: Workshops in Art Education
Forty-five hours of fieldwork related to the study of teaching art in the classroom with particular emphasis on standard-bases curriculum design. Pass/Fail only. Coreq.: EDSE 4300F. 1 hr./wk.; 1 cr.

EDSE 7600G: Student Teaching in Middle and Secondary Education
Students will be assigned, under supervision, to a middle and/or secondary school as student teachers for a minimum of 300 hours. These hours subject to regulations currently in force in the school system. Open only to matriculants. Advance approval by program director required. Co-req.: EDSE 7603G and EDUC 1900G. 2 cr.

EDSE 7602G: Supervised Teaching at the Middle and Secondary Level
Teacher candidates will teach in a supervised setting in middle and secondary schools. Candidates will be mentored by School of Education faculty and New York City teacher mentors. This course is designed to provide teacher candidates who are teaching as part of the New York City Teaching Fellows Program a supervised teaching designation on their transcript. 0 cr.

EDSE 7603G: Seminar on Student Teaching in Secondary Schools
This course provides an opportunity for graduate Secondary Education candidates to reflect about their student teaching experiences and a forum to discuss relevant issues in education. Weekly topics include: Literacy; Planning for Instruction, Differentiated Instruction and UDL; Classroom Management; Grading and Assessment (including assessment of teaching); and Home-School-Community Connections. Candidates will compile a portfolio that documents their growth as a teacher. Coreq.: EDSE 7600G, EDUC 1900G. 1 hr./wk.; 1 cr.

EDSE 7800G: Teaching Practicum in the Arts
Students teaching at the pre-K to 6 and 7 to 12 levels with a minimum of 30 days, 150 hours, in each setting. Accompanying seminar focuses on the practicum experience, reflecting on it in relation to the teacher preparation program. Includes a minimum of 300 hours of student teaching. 1 hr./wk.; 3 cr.

EDSE 3900I: Curriculum and Instruction in Science Education
A course designed to discuss present curriculum trends in science education from a local, state-wide, and national level with emphasis on the National Standards in Science and the process of selecting and evaluating curricular materials in science. Includes 30 hours of fieldwork. 3 hr./wk.; 4 cr.

EDSE 3901I: Curriculum and Instruction in Science Education (Teaching Fellows)
A course designed to discuss present curriculum trends in science education from a local, state-wide, and national level with emphasis on the National Standards in Science and the process of selecting and evaluating curricular materials in science. 3 hr./wk.; 3 cr.

EDSE 7001I: Introduction to Educational Research in Secondary Schools
The purpose of this course is to give you an overview of educational research models, and for you to begin designing a research project that you will conduct in the spring. We will look at models of quantitative and qualitative research, education literature and review and describe the various methodology, and discuss ethical issues involved in conducting educational research. By the end of the course, you will have completed: 1) A problem statement or research question, with context; 2) a literature review; 3) a methodology; and 4) a plan for completing the project next semester. 2 hr./wk.; 2 cr.

EDUC 7100I: Individual Study in Educational Research
Second semester of research sequence. Consideration of research design, sampling, instrumentation, data collection, statistical or qualitative data presentation. Students will execute the study developed during the first semester and prepare a written report, in research form, of the complete study. Prereq: EDUC 7000I. 2 hr./wk.; 2 cr.

EDSE 7101I: Independent Study in Secondary School Research
In this course, a continuation of EDSE 7001I, you will carry out and write up the classroom inquiry project you designed last semester. You will continue working in the inquiry groups organized last semester; monthly conferences with the course instructor are also required. The class will meet only three times during the semester, and will end with a mini-conference, at which you will present the findings of your project. Prereq: EDSE 7001I. 2 hr./wk.; 2 cr.

EDSE 7200I: Master's Project
The objective of this course is to have students do a critical analysis of their evolving understanding of learning and teaching, and how these views influence what occurs in their own classroom. This critical analysis will be the basis for their own extended written piece, which will serve as the culminating experience of the program. 3 hr./wk.; 3 cr.
EDSE 7201I: Action Research in Mathematics Education
This course will provide guidance and support for students as they complete an action research project in their classrooms. Candidates must have an approved project and have completed a literature review prior to starting this course. Prereq: EDSE 6102E or EDSE 6103E. 3 hr./wk.; 3 cr.

EDSE 7202I: Master’s Project in Science Education
The objective of this course is to have science education students do a critical analysis of their evolving understanding of learning and teaching of science and how these views influence what occurs in their own classrooms. This critical analysis will be the basis for their own extended written piece, which will serve as the culminating experience of the program. Permission of science education advisor required. 3 hr./wk.; 3 cr.

EDUC 1900G: Workshops on Child Abuse Identification, Violence Prevention and other Professional Issues
Definitions, indicators, and the impact of abuse and neglect on the child; reporting abuse. Violence prevention. Additional workshops include topics such as certification, resume building, and professional resources. Corequisite(s): Student Teaching. 2 hr./wk.; 0 cr.

EDUC 3100N: Independent Study and Research in Education
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

EDUC 7000I: Introduction to Educational Research
The first semester of the research sequence covers the basic concepts needed to evaluate research critically and plan it effectively. Each student will identify a problem in his or her major area, review the literature related to that problem, and design a project to study the problem. The study will be carried out during the second semester. This course should be taken no later than the semester prior to the one in which the student expects to complete the requirements for the degree. 2 hr./wk.; 2 cr.

EDUC 7500A: Adolescent Learning and Development
The evolution of how theories and research on learning and development manifest themselves in urban settings for teachers of adolescents. Teacher-centered and student-centered, human and technology-based approaches, emphasizing those promoting independent, self-regulated adolescent learners. Theories, their cultural implications and their classroom applications: learning, intelligence, motivation, affect, parenting styles, classroom communications, and classroom management strategies. Includes 15 hours of fieldwork. 3 hr./wk.; 3 cr.

Anthropology
ANTHE 2000E: Developmental Patterns in Different Cultures
Childrearing, training patterns. Cross-cultural comparisons. Effect of early training and later training on classroom behavior. 3 hr./wk.; 3 cr.

Art
ARTE 3100A: Critical Perspectives in Art Education
This course provides an introduction into historical and current debates in the field of visual art education. Students will analyze topics such as certification, resume building, and professional resources. Corequisite(s): Student Teaching. 2 hr./wk.; 0 cr.

ARTE 3100C: Community-Based Art Education
This course introduces the theories and practices of teaching visual art in community settings such as museums, community centers, after school programs, and informal spaces. Students analyze current community arts projects, develop teaching strategies, and design their own community arts program based on research in the field. 3 hr./wk.; 3 cr.

ARTE 5300C: New York as an Art Center
Study of the development of the arts, their integration into the pattern of metropolitan culture. 3 hr./wk.; 3 cr.

ARTE 7000C: History of Design
Historical and cultural influences and technical developments in the design of objects for use. Art and Art Education majors require advisor’s permission. 3 hr./wk.; 3 cr.

ARTE 1000E: Contemporary Art Criticism
Problems of description, analysis, interpretation, and evaluation of the art object as an aesthetic and cultural phenomenon. Perceptual patterns of aesthetic response and their relationships to education. 2 hr./wk., plus gallery visits; 2 cr.

ARTE 6100E: Techniques of Oil Painting: Advanced
Prereq: ARTE 5100E. 30 hr., plus conf. 3 hr./wk.; 3 cr.

ARTE 6200E: Water Color, Advanced
Prereq: ARTE 5200E. 3 hr./wk.; 3 cr.

ARTE 1000F: Ceramics
Clay modeling and ceramics; pottery forms produced by pinch, slab, and coil methods; glazing use of the kiln. 3 hr./wk.; 3 cr.

ARTE 1300F: Design in Wood and Metal
Craft methods and processes; experiences with hand tools and power equipment. 3 hr./wk.; 3 cr.

ARTE 4100F: Advanced Design
Design workshops in decorative and applied arts; techniques and practices of the craftsman designer. Open to majors in Industrial and Fine Arts. 3 hr./wk.; 3 cr.

ARTE 5100F: Painting Mediums I
Study and preparation of colors, medium, and grounds for painting in oils and emulsions. Prereq: 6 credits in painting; Coreq: ARTE 6100F. 3 hr./wk.; 3 cr.

ARTE 5200F: Painting Mediums II
Study and preparation of colors for water and emulsion medium: egg tempera, gouache, distemper, casein, fresco, and transparent color. Preparation of paper and grounds. Prereq: 6 credits in painting; Coreq: ARTE 6200F. 3 hr./wk.; 3 cr.

ARTE 6100F: Painting Techniques I
Methods of painting in transparent body color and related water mediums. Corequisite(s): ARTE 5200F. 3 hr./wk.; 3 cr.

ARTE 1000G: Ceramics: Advanced
Design workshop, including use of potter’s wheel, casting, and glazing. 3 hr./wk.; 3 cr.

ARTE 1100G: Design in Metal: Advanced Workshop
Techniques and practices in creative design in a variety of metals. 3 hr./wk.; 3 cr.

ARTE 1200G: Design in Wood: Advanced
Design workshop in furniture. 3 hr./wk.; 3 cr.

ARTE 1400G: Compositional Aspects of Photography
Fundamental phases of photography, advancing to the art of enlarging, cropping, dodging, burning, and composing; all the means by which a story-telling photograph is created. 3 hr./wk.; 3 cr.

ARTE 1500G: Costume Design
Principles and practices of costume design, including a survey of periods and styles. Prereq: special permission. 3 hr./wk.; 3 cr.

ARTE A6501: Early Modern Art in Europe and the U.S.
The evolution of early modern art styles in France, Germany, Italy, Russia, and the U.S. including fauvism, cubism, futurism, constructivism, expressionism, dada, and surrealism. 3 hr./wk.; 3 cr.

ARTE A6602S: Meso-American Art
A survey of sculpture, architecture, the town plan, and crafts in selected pre-European cultures of the Caribbean Basin, the Andes, and Meso-America. 3 hr./wk.; 3 cr.

ARTE B0100: Projects in Drawing I
Investigation of various drawing media and techniques for the purpose of enlarging the student’s conceptual scope and professional skills. 3 hr./wk.; 3 cr.

ARTE B0200: Projects in Drawing II
Investigation of various drawing media and techniques for the purpose of enlarging the student’s conceptual scope and professional skills. 3 hr./wk.; 3 cr.

ARTE B1101: Projects in Painting I
Intensive work under faculty supervision. 3 hr./wk.; 3 cr.

ARTE B1102: Projects in Painting II
Intensive work under faculty supervision. 3 hr./wk.; 3 cr.

ARTE B1801: Projects in Ceramic Design I
Intensive work under faculty supervision. 3 hr./wk.; 3 cr.

ARTE B1802: Projects in Ceramic Design II
Intensive work under faculty supervision. 3 hr./wk.; 3 cr.

ARTE B2301: Projects in Printmaking I
Intensive work under faculty supervision. 3 hr./wk.; 3 cr.

ARTE B2302: Projects in Printmaking II
Intensive work under faculty supervision. 3 hr./wk.; 3 cr.

Program for Physician Assistants | 123
Biology

BIOE 1500E: Field Biology
Study of local plants and animals, their environmental relationships, and the use of the resources of the out-of-doors in teaching science in New York City. 4 hr./wk.; 4 cr.

BIOE 1600E: Environmental Field Studies
Study of the biotecnosphere of the Greater New York area; included are field visits, sampling, laboratory analysis, and research. Open to those teaching environmental sciences at the elementary or secondary level. 3 hr./wk.; 3 cr.

BIOE 1900E: Environmental Conservation
Introduction of modern ecological knowledge to local, national, and international problems of conservation of natural resources. Field visits are included. 3 hr./wk.; 3 cr.

BIOE 2000E: Genetics
A study of the mechanisms of heredity, both Mendelian and modern, with application to plant and animal variation. 3 hr./wk.; 3 cr.

BIOE 3000E: Human Biology
An analysis of both the structure and function of the human organism. Topics include respiration, nutrition, digestion, circulation, excretion, metabolism, and reproduction. 3 hr./wk.; 3 cr.

BIOE 6000E: Basic Ecology
Designed to analyze the biotic and abiotic relationship of plants and animals. Population and community ecology discussed. Model ecosystems analyzed. Field visits are included. 3 hr./wk.; 3 cr.

BIOE 6100E: Human Ecology
Designed to broaden the student’s understanding of man’s role in nature in relation to his ecosystem. Topics include population, energy cycles, pesticides, solid waste, and pollution. 3 hr./wk.; 3 cr.

BIOE 7100E: Modern Concepts in Biology I
A seminar designed for majors in science education to explore developments and their applications. Topics include physiology, endocrinology, and pathology. 3 hr./wk.; 3 cr.

BIOE 7200E: Modern Concepts in Biology II
A seminar designed for majors in science education to explore recent developments in biology and their applications. Topics include genetic engineering, evolution, and marine study. May be taken independently of BIOE 7100E. 3 hr./wk.; 3 cr.

BIOE 7500E: The Biological Foundations of Social Behavior
To broaden the student’s understanding of the nature of social behavior by a comparative study of such behavior in animals and humans. An analysis of both neural and endocrine systems of vertebrates will be undertaken. 3 hr./wk.; 3 cr.

BIOE 7600E: Experimental Studies of Social Behavior in Animals
Analysis of experimental studies of the role of physiological and experimental factors in the development of social behavioral responses in animals. May be taken independently of BIOE 7500E. 3 hr./wk.; 3 cr.

BIOE 3200F: Independent Study and Research in Biology
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

Chemistry

CHEME 7100E: Modern Concepts in Chemistry I
Chemistry approached from the basis of more recently developed theoretical concepts, with selected applications. Topics include biochemistry, physical chemistry. 3 hr./wk.; 3 cr.

CHEME 7200E: Modern Concepts in Chemistry II
A seminar designed for majors in science education to explore recent developments in chemistry and their application. Topics include chemical nutrition, industrial chemistry. Prereq: One year of college chemistry. 3 hr./wk.; 3 cr.

CHEME 7600E: Principles of Physical Chemistry
Introduction of the basic principles and concepts of kinetic molecular theory, thermodynamics, solutions, solids and phase equilibria. 3 hr./wk.; 3 cr.

CHEME 7700E: Introduction to Modern Organic Chemistry
Introduction to the chemistry of compounds based upon the modern concepts of physical organic theory. Includes a presentation of major organic reactions and their application to synthesis. 3 hr./wk.; 3 cr.

CHEME 7800E: Elements of Biochemistry
Applications of chemical principles to the study of the living cell. Study of chemical compounds of biological importance and their metabolic interrelationships. Prereq: CHEME 0200E or one semester of organic chemistry. 3 hr./wk.; 3 cr.

CHEME 3200F: Independent Study and Research in Chemistry
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

Earth and Atmospheric Science

EASE 1500E: Meteorology
Principles of meteorology applied to weather analysis, and structure composition. Properties of the atmosphere with simple forecasting theory. Lab included. 3 hr./wk.; 3 cr.

EASE 1600E: Physical Climatology
Physical principles of climates of the past and present, the earth-sun relationships, heat transfer, and classification of climates. Statistical laboratory analysis of climate data. 4 hr./wk.; 4 cr.

EASE 1800E: Weather Prediction
Weather forecasting theory and practice; classical, objective, and long range methods. Weather control, numerical prediction, automatic weather station recording, radar, rocket and satellite meteorology. Prereq: EASE 1500E. 3 hr./wk.; 3 cr.

EASE 5200E: Introduction to Meteorology
Principles and phenomena of weather and climate. Discussion of snow storms, hurricanes, rainbows, Ice Ages. Weather analysis and forecasting. 3 lect., 3 lab. hr./wk.; 4 cr.

EASE 6200E: The Ocean Environment
Explores oceans and ocean basins, submarine topography; properties of sea water; oceanographic instruments and research vessels. Water masses and currents; tides, waves, and wave action; marine sediments. Lab/field trips included. 4 hr./wk.; 4 cr.

EASE 7000E: Physical Geology
Comprehensive treatment of physical and chemical processes responsible for the development and behavior of the earth. Study of minerals, rocks, and maps supplemented by labs and field trips in the Greater New York area. 3 hr./wk., plus field trips; 3 cr.

EASE 3200F: Independent Study and Research in Earth and Atmospheric Science
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

Economics

ECOE 6500C: Comparative Economic Systems
Principals of economic organizations, i.e., liberal capitalism, the mixed systems, and authoritarian socialist systems. Critical examination of socioeconomic conceptions, theories and ideologies, blueprints, plans, and typical problems. 3 hr./wk.; 3 cr.

ECOE 7200C: Modern Concepts in Economics
Designed for those teaching or preparing to teach high school economics. Only those analytical tools and refinements useful in high school teaching will be included. 3 hr./wk.; 3 cr.

ECOE 7300C: The Operation of the American Economy
Analysis of operation of the American economy and its efficiency, in the light of basic economic objectives. Designed for those with a limited background in economics or those who wish a review of essentials before taking further work in the field. 3 hr./wk.; 3 cr.

ECOE 7200D: Modern Concepts in Economics
Designed for those teaching or preparing to teach high school economics. Only those analytical tools and refinements useful in high school teaching will be included. 3 hr./wk.; 3 cr.

ECOE 3200F: Independent Study and Research in Economics
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.
**English**

**ENGLE 1700C: The Technique of Poetry**
A close reading of poetic texts with emphasis on the effect of poetic technique on the reader and interpretation. 3 hr./wk.; 3 cr.

**ENGLE 1800C: Criticism and Appreciation of Poetry**
Introduction of new critical devices which can be used in teaching poetry in the secondary schools. 3 hr./wk.; 3 cr.

**ENGLE 4200C: Reading Nonfiction Texts**
The purpose of this elective course is to study informational, nonfiction texts and the literacy practices that foster comprehension and critique of them. Students read multiple nonfiction texts on a variety of topics and respond to them through different writing and speaking projects. Students also craft instructional plans for how to support youth to read and respond to informational, nonfiction texts in secondary classrooms. 3 hr./wk.; 3 cr.

**ENGLE 4500C: The Child and Adolescent in American Fiction**
The child as a major American literary theme. 3 hr./wk.; 3 cr. Spring only.

**ENGLE 4600C: The Adolescent in Literature**
The adolescent as a central figure in contemporary novels, biographies and plays, with emphasis on the literary treatment of adolescent problems. 3 hr./wk.; 3 cr. Spring only.

**ENGLE 6300C: The Modern Short Story**
Significant short stories of the twentieth century. 3 hr./wk.; 3 cr. Fall only.

**ENGLE 6500C: The Short Novel**
Analysis and explication of the novella in Western literature. 3 hr./wk.; 3 cr. Fall only.

**ENGLE 1100E: Creative Writing**
One or more genres of creative writing, explored to develop the student’s ability, learn about the process of teaching writing from the student’s perspective, and develop further critical insight into literature. 3 hr./wk.; 3 cr.

**ENGLE 1200E: Fundamentals of English**
Intensive review of grammar, together with practice in writing. 3 hr./wk.; 3 cr.

**ENGLE 4400E: Structure and Growth of the English Language**
Introductory course in philology; comparative study of English words and their use. 3 hr./wk.; 3 cr. Fall only.

**History**

**HISTE 1700C: The Renaissance**
Social and cultural development from the 14th to the early 16th centuries. 3 hr./wk.; 3 cr.

**HISTE 1800C: European Social and Cultural History, 1789 to 1919**
A survey of political, social, and ideological currents during the age of emerging and maturing capitalism from the Industrial Revolution to World War I. 3 hr./wk.; 3 cr.

**HISTE 1900C: Recent European Social and Cultural History**
A survey of social and cultural life in its political and economic contexts in the 20th century. 3 hr./wk.; 3 cr.

**HISTE 3400C: American Social and Cultural History to 1865**
Institutional and structural developments in social and cultural life, including the family, religion, ethnic patterns, recreation, working conditions, and ideologies from the earliest settlements to the emerging capitalism of the 19th century. 3 hr./wk.; 3 cr.

**HISTE 3500C: American Social and Cultural History Since 1865**
Concentrates on urbanization, industrialization, the new immigration, and the emergence of the modern corporate state. 3 hr./wk.; 3 cr.

**HISTE 3900C: Modern Latin America**
History, politics, and culture of Hispanic America; colonial and Indian background fused through independence movements into the history of modern Latin America. 3 hr./wk.; 3 cr.

**HISTE 6900C: African-American History to 1865**
The history of African-Americans in the United States, including West African backgrounds, a comparative study of hemispheric slavery, early Black institutional life, and efforts to resist slavery. 3 hr./wk.; 3 cr.

**HISTE 7000C: African-American History since 1865**
Beginning with Reconstruction, African-American political, economic, cultural, and ideological evolution will be traced to the present. 3 hr./wk.; 3 cr.

**HISTE 3400E: The United States in World Affairs**
The evolution of United States foreign policy and relations from colonial dealings with native Americans to military, economic and political involvement on a global scale. 3 hr./wk.; 3 cr.

**HISTE 3500E: Problems in American History, 1900 to Present**
Traces the development of the American people since 1890. Analysis of factors, domestic and foreign, that led to the emergence of the United States as a world power. 3 hr./wk.; 3 cr.

**HISTE 3600E: Ethnic Patterns and the Old Immigration in American History**
Immigration and ethnic interchange from the relations between Africans, the English, and native Americans in the 17th century through the Irish migration of the 19th century. Emphasis will be on cultural adaptations to and retentions in America. 3 hr./wk.; 3 cr.

**HISTE 3700E: Ethnic Patterns and the New Immigration in American History**
Ethnic cultures and migratory movements, including the northward migration of Blacks, since the 1870s. Topics will include the similarities and differences among ethnic experiences in America, cultural adaptions to and retentions in a rapidly industrializing society. 3 hr./wk.; 3 cr.

**HISTE 6000E: History of China and Japan**
Survey of development of Chinese and Japanese civilizations from ancient times to the 17th century. Emphasis on political and social institutions and culture. 3 hr./wk.; 3 cr.

**HISTE 6100E: The Modern Far East**
Development of China and Japan from the 17th century to present; contact and conflict of occidental and oriental civilization; influence of Europe and America. 3 hr./wk.; 3 cr.

**HISTE 7500E: President and Congress**
The nature of executive and legislative power in American national government, with particular focus upon the constitutional bases, politics, and contemporary operation of the elective branches. 3 hr./wk.; 3 cr.

**HISTE 3200F: Independent Study and Research in History**
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

**Mathematics**

**MATHE 4600C: Introduction to Mathematical Thinking**
This course discusses mathematical thinking and methods for theorem proving. It includes truth tables, basic set theory, equivalence relations and functions, mathematical induction and other techniques for discussing and proving mathematical statements. Material to be proven will be drawn primarily from basic number theory and elementary combinatorics. This course may be required of students with insufficient background in abstract mathematics. 3 hr./wk.; 3 cr.

**MATHE 4700C: Modeling with Algebraic and Trigonometric Functions**
In this course, students will use algebra, geometry, and trigonometry to mathematize real life problems. Students will formulate questions, identify assumptions, collect data, and build and revise mathematical models. Students will use multiple representations and methods including formulas, diagrams, graphs, and procedures, and technology in modeling. Particular attention will be paid to linear, polynomial, exponential, logarithmic and trigonometric functions. Students will be asked to interpret models in contexts and will be expected to communicate effectively about connections they see, representations they create, and generalizations they make. Technological tools such as graphing calculators will be used to facilitate the learning. Adolescent certification candidates may not take this course for graduate credit without permission of the mathematics advisor. Pre-req: MATHE 4600C or permission. 3 hr./wk.; 3 cr.
MATHE 4800C: Foundations of Geometry
Continuation of MATHE 4700C. Further study of the theory of numbers, equations, inequalities, proof in a mathematical system, metric and non-metric geometry, topics in topology, probability and statistics. Senior high school mathematics teachers may not take this course for graduate credit without permission of the mathematics advisor. 3 hr./wk.; 3 cr.

MATHE 4900C: Fundamental Ideas of Calculus
Through the use inquire and discovery students will apply prior knowledge to explore the ideas and principles of calculus. Topics covered will include sequences and series; functions with a focus on the ideas of limits and continuity; differentiation with a focus on rates of change, optimization, graph sketching and exponential change; integration with a focus on area and volume. Students will also use mathematical tools such as graphing calculators to explore concepts and applications of calculus. Technological tools such as graphing calculators will be used to facilitate the learning. Pre-req.: MATHE 4700C and MATHE 4800C. 3 hr./wk.; 3 cr.

MATHE 5000C: Data Analysis, Probability and Statistics
The course aims to develop a deep and flexible understanding of basic data analysis (probability and statistics) concepts and applications. Topics include descriptive statistics such graphs (histograms, box plots), two-way tables, and summary statistics (mean, median, mode, standard deviation, range) to describe data, sampling and study design, probability distributions, conditional probability, combinations, permutations, expected value and introduction to inference. Students will use technology such as spreadsheets to explore and analyze data sets. 3 hr./wk.; 3 cr.

MATHE 6000C: High School Mathematics from an Advanced Perspective
In this course, students will examine the topics in the high school curriculum through the lens of advanced college level mathematics courses (including Calculus, linear algebra, modern geometry, real analysis, abstract algebra and number theory). Connections between the mathematics taught in high school and college will be stressed, and students will also develop increased understanding of the connections between algebraic, geometric, and logical thinking. Students will be asked to interpret mathematical ideas in contexts and will be expected to communicate effectively about connections they see, representations they create and generalizations they make. Prerequisite: One proof intensive course and Calculus II, Linear Algebra. 3 hr./wk; 3 cr.

MATHE 6500C: Mathematical Applications in Science and Industry
Mathematics in contemporary science and industry, as illustrated in representative examples ranging through the mathematical subjects taught in secondary schools, but including other mathematics as well. Introduction to mathematics underlying instrumentation in science and technology. 3 hr./wk.; 3 cr.

MATHE 1000E: The History of Mathematics
Historical evaluation of mathematical concepts. Selected topics related to elementary geometry and algebra, analytic geometry and calculus, and the modern postulational viewpoint. 3 hr./wk.; 3 cr.

MATHE 1100E: Advanced Euclidean Geometry
Extensions and generalization of elementary geometry; higher geometry of triangles, circles, quadrilaterals; constructions, classical problems. 3 hr./wk.; 3 cr.

MATHE 1200E: Fundamental Concepts of Modern Mathematics
Limit, length, area, volume (non-limit/limit developments). Euler's Theorem and consequences, angle-sum formulae (De-Gua) and generalization, isosceles triangles, circles, quadrilaterals; constructions, classical problems. Prereq: one year of calculus. 3 hr./wk.; 3 cr.

MATHE 1900E: Mathematical Computer Software
Survey of mathematical computer software. Using Geometer's Sketchpad to learn advanced geometry theorems. Sample programming problems drawn from scientific and mathematical applications. 3 hr./wk.; 3 cr.

MATHE 2100E: Probability
Finite sample spaces; probability as set function; permutations, combinations, conditional probability and Bayes' Theorem; independent events; random variables and distribution functions; expected values; Chebyshev's inequality. 3 hr./wk.; 3 cr.

MATHE 2200E: Mathematical Statistics
Frequency histograms, measures of location and dispersion, correlation and least squares, testing hypotheses, confidence intervals and estimation. Pre-req: a course in probability. 3 hr./wk.; 3 cr.

MATHE 2600E: Linear Algebra
Vector spaces, matrices, systems of linear equations, determinants, linear transformations. 3 hr./wk.; 3 cr.

MATHE 2700E: The Theory of Numbers
A study of problems concerning numbers as well as properties of numbers. Included are: divisibility, continued fractions, diophantine equations, primes, congruences. Fermat's and Euler's Theorems, quadratic residues and reciprocity, number theoretic functions. 3 hr./wk.; 3 cr.

MATHE 2800E: Numerical Analysis
Solution of algebraic equations by iteration interpolation; numerical integration; solution of ordinary differential equations. Prereq: one year of calculus. 3 hr./wk.; 3 cr.

MATHE 2900E: Topics in Higher Algebra
Topics include: polynomials and their properties, solution of third and fourth degree equations by formula and approximation, impossibility of solving equations of fifth degree or higher, real and complex roots of nth degree equations; other fundamental concepts of elementary algebra from an advanced standpoint. 3 hr./wk.; 3 cr.

MATHE 3700E: Topology
Examples and classifications of surfaces; metric and topological spaces. 3 hr./wk.; 3 cr.

MATHE 6000C: High School Mathematics from an Advanced Perspective
In this course, students will examine the topics in the high school curriculum through the lens of advanced college level mathematics courses (including Calculus, linear algebra, modern geometry, real analysis, abstract algebra and number theory). Connections between the mathematics taught in high school and college will be stressed, and students will also develop increased understanding of the connections between algebraic, geometric, and logical thinking. Students will be asked to interpret mathematical ideas in contexts and will be expected to communicate effectively about connections they see, representations they create and generalizations they make. Prerequisite: One proof intensive course and Calculus II, Linear Algebra. 3 hr./wk; 3 cr.

MATHE 7400E: Foundations of Geometry
The basic concepts of Euclidean Geometry and the underpinnings of non-Euclidean Geometry. 3 hr./wk.; 3 cr.

MATHE 7500E: Classic Applications of Calculus I
Development of prediction techniques using various physical models developed by Newton, Leibniz, and their successors. Models using one variable differential and integral calculus will be described and used to make predictions. Applications will be taken from fields of population growth, electrical circuits, interest rates, planetary motions, and others. 3 hr./wk.; 3 cr.

MATHE 7600E: Classic Applications of Calculus II
Further applications will be taken from fields of population growth, electrical circuits, interest rates, planetary motions, and others. 3 hr./wk.; 3 cr.

MATHE 7700E: Modern Algebra
Sets, mappings, equivalence relations, operations, rings, integral domains, isomorphisms. Mathematical induction fields and groups. 3 hr./wk.; 3 cr.

MATHE 7800E: Transformational Geometry
The study of geometric transformation groups in the complex plane including similarities, isometries, translations, rotations, dilations. Applications of cosets and normal subgroups, invariants. 3 hr./wk.; 3 cr.

MATHE 3200F-3203F: Independent Study and Research in Mathematics
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem.; may be repeated for a maximum of six credits.

Physics
PHYS 1401E: Development of Knowledge in Physics I
Selected topics in physics with emphasis on gaining a depth of understanding of the subject matter and an awareness of the development of skills essential to the scientific process. Background for teaching science in secondary schools or introductory college level. Integrated laboratory/discussion format. 3 hr./wk.; 3 cr.

PHYS 1402E: Development of Knowledge in Physics II
Selected topics in physics with emphasis on gaining a depth of understanding of the subject matter and an awareness of the development of skills essential to the scientific process. Background for teaching science in secondary schools or introductory college level. Integrated laboratory/discussion format. Prereq: PHYS 1401E. 3 hr./wk.; 3 cr.

PHYS 7100E: Modern Concepts in Physics I
A seminar designed for majors in science education to explore recent developments in physics and their application. Topics include plasma physics, sound and light. Prereq: one year of college physics. 3 hr./wk.; 3 cr.
PHYSE 7200E: Modern Concepts in Physics II
A seminar designed for majors in science education to explore recent developments in physics and their application. Topics include black hole phenomena, space physics, mechanics. Prereq: one year of college physics. 3 hr./wk.; 3 cr.

PHYSE 7300E: Introduction to Astronomy
Designed to introduce science educators to the universe, solar system, and galaxy. Topics include quasars, pulsars, black holes. 3 hr./wk.; 3 cr.

PHYSE 3200F: Independent Study and Research in Physics
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

Political Science

PSCE 1600C: Political Parties
Political parties in relation to the electoral process, pressure politics, and democratic theory. Emphasis will be given to both the theory and dynamics of party politics. 3 hr./wk.; 3 cr.

PSCE 5200C: The Governments of the New York Area
Government and administration of the central city and suburban communities. Emergence of regional forms of metropolitan government (e.g., the Port Authority) and of metropolitan planning as a means of metropolitan integration. Relation of local to state authority. 3 hr./wk.; 3 cr.

PSCE 6200C: Civic Participation of Youth
This course focuses on how youth develop civic identities and engage in civic life. Class readings and assignments will help students consider the history of civic education, current models of youth civic participation, and the value of various civic competencies. 3 hr./wk. 3 cr.

PSCE 7800C: American Political Thought
Development of political ideas in the United States, with particular relation to the forces and events that have influenced liberal and conservative theory. 3 hr./wk.; 3 cr.

PSCE 7500E: President and Congress
The nature of executive and legislative power in American national government, with particular focus upon constitutional bases, politics, and contemporary operation of the elective branches. 3 hr./wk.; 3 cr.

PSCE 3200F: Independent Study and Research in Political Science
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. Variable 1-3 cr./sem. and may be repeated for a maximum of six credits.

Science

SCIE 1300E: Introduction to Chemistry
Designed to bring together principles and applications of basic chemistry. Topics include inorganic, organic, and physical chemistry. 3 hr./wk.; 3 cr.

SCIE 1400E: Introduction to Physics
Designed to bring together principles and applications of basic physics. Topics include mechanics, electricity, sound, light, and nuclear physics. 3 hr./wk.; 3 cr.

SCIE 1403E: Physical Sciences for Middle School Teachers I
Selected topics in physical science with emphasis on gaining a depth of understanding of the subject matter and an awareness of the development of skills essential to the scientific process. Background for teaching science in middle schools. Integrated laboratory/discussion format. 4 hr./wk.; 4 cr.

SCIE 1404E: Physical Sciences for Middle School Teachers II
Selected topics in physical science with emphasis on gaining a depth of understanding of the subject matter and an awareness of the development of skills essential to the scientific process. Background for teaching science in middle schools. Integrated laboratory/discussion format. May be taken independently of SCIE 1403E. 4 hr./wk.; 4 cr.

SCIE 1500E: Introduction to Earth and Planetary Sciences
Designed to bring together the principles and application of geology and meteorology. Topics include atmosphere, oceans, Earth’s crust, and weather prediction. 3 hr./wk.; 3 cr.

SCIE 1700E: Environmental Energetics
A study of physical principles of energy; present and future national and international energy resources and the development of an energy policy. Topics include fission, fusion, geothermal, solar, wind, tide, and fossil fuels. 3 hr./wk.; 3 cr.

SCIE 2100E: Introduction to Botany
A study of the structure and function, diversity and ecology of green and non-green plants. 3 hr./wk.; 3 cr.

SCIE 2200E: Introduction to Zoology
A study of the structure and function, diversity and ecology of invertebrate and vertebrate animals. 3 hr./wk.; 3 cr.

SCIE 2300E: Introduction to Microbiology
A study of the structure and function, diversity and ecology of bacteria, viruses, and micro-organisms. 3 hr./wk.; 3 cr.

SCIE 3100E: Aerospace Science
Introduction to aerospace science, including aerodynamics, instruments and systems, meteorology, basic navigation, radio navigation and communication, and rocket/misile fundamentals. 3 hr./wk.; 3 cr.

SCIE 4101E: Life Science for Middle School Teachers I
This course will cover general and specific aspects of cell biology, molecular biology, and genetics. It will also cover the approaches for studying cells and genes and how genetic and cellular processes relate to physiological processes in organisms. Students will study the chemical components of the cell, such as proteins, nucleic acids, lipids, etc. The course will facilitate life science teachers’ understanding of the principles and techniques of both biochemistry and genetics. 4 hr./wk.; 4 cr.

SCIE 4102E: Life Science for Middle School Teachers II
The purpose of this course is to provide graduate students (who have had little undergraduate preparation in biology) with a solid conceptual grounding in ecology and evolutionary biology (EEB) in one semester. The content coverage of the course provides both empirical study and theoretical exploration of topics that are considered central to the life sciences (according to the National Science Education Standards). These topics include organismal biology, ecology, and evolution. 4 hr./wk.; 4 cr.

SCIE 4103E: Nature of Science
This course will cover four topics relating to the nature of science: (1) the philosophy of science; (2) the social and economic context of science; (3) the history of science; and (4) scientific epistemology in teaching and learning. 3 hr./wk.; 3 cr.

SCIE 4104E: Environmental Systems Science
This course focuses on Earth as a system and explores the interdependent relationships among the atmosphere, hydrosphere, biosphere and lithosphere. Through inquiry-based laboratories and field investigations, students learn to take scientifically valid measurements in the fields of atmosphere, hydrology, soil and land cover/phenology. Students will gain experience in the analysis of scientific data, will design and investigate their own science inquiry, and present oral and written reports to their peers. 3 hr./wk.; 3 cr.

SCIE 4105E: Principles of Atomic Theory
This science course aims to increase teachers’ content knowledge, pedagogical content knowledge, and understanding of science education research, all integrated in the context of the nature of the atom. Content includes analysis of observations and experiments that give rise to the atomic model and atomic interactions. Related perspectives include epistemological approaches, theories of learning, and development of conceptual ideas. 3 hr./wk.; 3 cr.

SCIE 7300E: Laboratory and Demonstration Techniques in the Biological Sciences
Designed to introduce educators to the various laboratory activities, materials, and equipment used to demonstrate biological concepts. Construction and use of materials will be undertaken. 3 hr./wk.; 3 cr.

SCIE 7400E: Laboratory and Demonstration Techniques in the Physical Sciences
Designed to introduce educators to the various laboratory activities, materials, and equipment used to demonstrate physical science concepts. Construction and use of materials will be undertaken. 3 hr./wk.; 3 cr.

SCIE 3200F: Independent Study and Research in Science
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the advisory committee. May be taken for one, two, or three credits per semester, and may be repeated for a maximum of six credits. Variable 1-3 cr./sem.

SCIE 6100F: Seminar in Environmental Sciences
A seminar in which current environmental issues affecting humans, technology, and environment are discussed. Topics include population issues, pesticides, energy, wildlife conservation, and natural resources. Prereq: a course in ecology or conservation or permission of the instructor. 3 hr./wk.; 3 cr.
SCIE 6200F: Salt Marsh Ecology
An on-site study of the energetics, diversity, and structure of salt marshes in the Greater New York area. Field visits to marshes included. 1 hr./wk.; 1 cr.

SCIE 6300F: Molecular Biology
The basic concepts at the cellular and molecular levels of living organisms including metabolism, structure, genetic continuity, and response mechanisms. Prereq: an introductory course in biology or permission of the instructor. 3 hr./wk.; 3 cr.

Sociology
SOCE 2100C: Marriage and the Family
Marriage and the family as social institutions. Changing family forms in Western civilization. Demographic trends and family size. The modern family and its relation to the total society. Marriage and divorce. Given jointly with the Graduate Liberal Arts Program in Sociology. 3 hr./wk.; 3 cr.

SOCE 5100C: The Metropolitan Community
Study of the metropolitan community as a whole, central city and suburbs. Class structure of the city and its satellites. 3 hr./wk.; 3 cr.

SOCE 5200C: The People of the City of New York
The source and growth of the population, and population trends in the past and present. Composition of the population in terms of orthodox sociological variables. Marital status and family size. Immigration and outmigration. Vertical and horizontal mobility. The city as magnet and center of population. Demographic factors and future problems. 3 hr./wk.; 3 cr.

SOCE 6400E: Educational Applications of Group Dynamics
Concepts and methods of group dynamics and social group work, and their application to school situations' use of group process in meeting children's needs for activity, socialization, and emotional security; diagnostic and therapeutic implications. 3 hr./wk.; 3 cr.

SOCE 3200F: Independent Study and Research in Sociology
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. May be taken for one, two, or three credits per semester, and may be repeated for a maximum of six credits. Variable 1-3 cr./sem.

Spanish
SPANE 1200E: Spanish and Spanish-American Poetry
The development of epic, lyric, and narrative poetry in Spain and Spanish America. The cultural history of the Hispanic nations as seen through the works of their principal poets. Conducted in Spanish. 3 hr./wk.; 3 cr.

SPANE 2500E: Civilizations of Latin America
Study of Latin American civilization from the pre-Columbian period to the present in Mexico and Central and South America. Extensive use of visual aids and recordings. 3 hr./wk.; 3 cr.

SPANE 2600E: Spanish Civilization
A survey of Spanish culture and institutions from the Middle Ages to the present. Extensive use of visual aids and recordings. 3 hr./wk.; 3 cr.

SPANE 3200E: Advanced Composition and Expression
A writing course designed to develop ease of expression. The finer shades of meaning of words: idioms, synonyms, and paronyms. Conducted in Spanish. 3 hr./wk.; 3 cr.

SPANE 3300E: Advanced Spanish Grammar
A selected review of Spanish grammar. Particular emphasis on language problems that arise in the high school classroom. 3 hr./wk.; 3 cr.

SPANE 3400E: Advanced Spanish Phonetics
Analysis of Spanish pronunciation, rhythm, and intonation. Practical application of theory to correction of individual speech problems. 3 hr./wk.; 3 cr.

SPANE 3500E: Independent Study and Research in Spanish
Open to qualified graduate students in the School of Education interested in the study of special problems. Hours to be arranged. Requires sponsorship by an appropriate faculty member and approval of the Advisory Committee. May be taken for one, two, or three credits per semester, and may be repeated for a maximum of six credits. Variable 1-3 cr./sem.

SPANE 7200E: Contemporary Spanish Literature
Surveys the novel, drama, poetry, and short story in twentieth century Spain, especially works of major authors studied in secondary schools. Intended for teachers of foreign languages. Conducted in Spanish. 3 hr./wk.; 3 cr.

SPANE 7300E: Contemporary Spanish-American Literature
Study of the principal novelists, playwrights, poets, and short-story writers currently read in secondary schools, to provide a broader understanding of 20th century Spanish-America. Conducted in Spanish. 3 hr./wk.; 3 cr.

SPANE 7400E: Hispanic Literature for High School Students
Analysis of selected literary works suitable for high school classes, with emphasis on teaching literary techniques and methods. Conducted in Spanish. 3 hr./wk.; 3 cr.

Faculty
Shira Eve Epstein, Associate Professor
B.A., Rutgers College, Rutgers Univ.; M.A., Teachers College, Columbia Univ., Ed.D.

Edwin M. Lamboy, Associate Professor and Chair
B.A., Universidad de Puerto Rico, Recinto de Rio Piedras; M.Ed., Lehman College; Ph.D., The Pennsylvania State Univ.

Andrew Ratner, Assistant Professor

Elizabeth Rorschach, Associate Professor
B.A., Carleton College; M.A., Columbia Univ.; Ph.D., New York Univ.

Richard N. Steinberg, Professor
B.S., SUNY Binghamton; M.S., Yale Univ., Ph.D.

Despina A. Stylianou, Professor
B.S., Boston Univ., M.ED.; M.A., Mathematics, Univ. of Pittsburgh; Ed.D., Univ. of Pittsburgh

Sunita Vatuk, Assistant Professor
B.A., University of California at Berkeley; Ph.D., Princeton University

Yael Wyner, Associate Professor
B.S., Yale Univ.; Ph.D. New York Univ./American Museum of Natural History

Affiliate Faculty
Marit Dewhurst, Assistant Professor
B.A., Univ. of Michigan; Ed.M., Harvard University, Ed.D.

Issa I. Salame, Assistant Professor and Master Teaching Fellow
B.S., The City College; M.Ph., Ph.D., The Graduate Center of the City University of New York

Professors Emeriti
Bernard Bernstein
Augustine Brezina
Robert Lento
Joel Mansbach
Martin Marin
Harold J. McKenna
Julius Pastor
Alfred S. Posamentier
Anne S. Peskin
Howard Sasson
Program for Physician Assistants

General Information
The CCNY/Sophie Davis School of Biomedical Education Physician Assistant Program at Harlem Hospital is an upper-division baccalaureate program, which can be completed in 28.5 months. Physician assistants are health professionals licensed to practice medicine with physician supervision. Physician assistants work in a variety of medical settings, ranging from family medicine and primary care to sub-specialty surgery. Physician assistants practice in-patient, out-patient and emergency medicine. The CCNY - Sophie Davis Physician Assistant Program at Harlem Hospital Center is a mission-driven program, attracting students with a commitment to providing excellent care to those in greatest need.

Classes begin with an orientation program. Students study biomedical, behavioral and clinical medicine during the first 16 months, which includes learning skills in interviewing, performing physical examinations, preparing medical documentation, and patient contact. The final 13 months consist of clinical clerkships in various New York City Health and Hospital facilities and neighborhood health care centers.

Accreditation
The program is approved by the New York State Board of Higher Education and the State Board of Regents. The program was reviewed by the Accreditation Review Committee on Education for the Physician Assistant (ARC-PA) June 2011 and granted continuing accreditation September 2011.

The Mission of the Program
The mission of the Physician Assistant Program of the Sophie Davis School of Biomedical Education of The City College of New York is to improve the health of, and eliminate healthcare disparity in, underserved communities by providing increased access to physician assistant education to students from traditionally underrepresented populations. Through education and mentoring, we will create a workforce that will provide highly skilled primary health services to these communities.

Goals:
- Patient Care - we are committed to practice high quality compassionate care, and to develop sensitivity and competence in communication skills with diverse populations
- Scholarship - We are committed to providing the skills necessary to apply new knowledge at the point of care and to engage in scholarly activity relevant to health and disease
- Community: We inspire graduates to work in health workforce shortage communities and with patient populations out of the mainstream of health care delivery. We encourage graduates to be advocates at the local, regional, and national level for the best care for patients and their community and to be activists for social justice.
- Leadership: We promote the assumption of leadership positions within the profession and the community.
- Professionalism - We are committed to creating an environment where collegiality, respect and ethical practice are fostered and valued.
- Interdisciplinary teams - We value collaborative learning and working styles that facilitate full participation in interdisciplinary medical teams.
- Life-long learning: We actively encourage intellectual curiosity and critical thinking necessary for life-long learning leading to the continual transformation of patient care.

Application Process
The application process is competitive.

Applicants must have completed courses with an overall grade point average of 2.5 minimum (science GPA of 2.6 or better), and a minimum of 60 transferable college credits. Without exception, the following prerequisites are required:
- 8 credits of Biology with lab: General Biology I & II or Anatomy & Physiology I & II. No introductory courses are accepted.
- 8 credits of Chemistry with lab: General Chemistry I & 2 or Inorganic 1 & 2 or Organic 1 & 2. No introductory courses accepted.
- 6 credits of English: Non-remedial Literature/ Composition. TOEFL and ESL are unacceptable.
- 3 credits of Math: Pre-Calculus, Calculus or higher. Note: Statistics courses are not acceptable in meeting the math requirements.
- 12 credits in Humanities/Social Science: Humanities in Philosophy, Art, Literature, and Social Sciences in Psychology, Economics, and Sociology.

Applicants must have completed all prerequisite course work by the end of the application deadline and all official transcripts must be received by February 1st.

Applicants to the Physician Assistant Program must submit two separate applications:
7. An application to the P.A. Program.
8. A transfer application to the City University of New York (CUNY), University Application Processing Center (UAPC).

To complete the P.A. Program Application, applicants must:
- Submit a completed P.A. application form directly to the program office at the address listed below;
- Arrange to have original transcripts from all colleges attended forwarded to UAPC and to the P.A. Program;
- Provide the P.A. Program Office with the names and addresses of three unrelated individuals (such as employers, teachers, and community leaders) who are familiar with the applicant’s abilities and who agree to recommend the applicant for admission. All such letters must be received by the January 15th deadline.

The completed application form and all supporting documents, including letters of recommendation, must be postmarked by January 15th and returned to the address below for the applicant to be considered for admission.

City College of New York/Sophie Davis School
Physician Assistant Program at Harlem Hospital
160 Convent Avenue, HR 15
New York, NY 10031
Tel: (212) 650-7745; Fax: (212) 650-6697

If you attended a school outside of the continental U.S. you are advised to send in your application and foreign transcript(s) prior to the January 15th deadline. Foreign transcripts must be evaluated 6-8 months in advance. In addition, all foreign applicants must have completed six credits of College English in the U.S. TOEFL and ESL is not accepted.

All applicants who wish to be considered for admission to the CUNY/CCNY Physician Assistant Program at Harlem Hospital Center should be a citizen or permanent resident of the U.S. In addition, in order to receive licensing privileges by the State of New York, all applicants are required to have a valid social security number before applying to the program. These policies are in conformity with the Sophie Davis School of Biomedical Education, City College of New York and Harlem Hospital Center in New York City.

The CUNY/CCNY P.A. Program currently does not participate in the Central Application Service for Physician Assistants (CASPA). Please follow the directions in filling out the P.A. Program and UAPC applications.

The CUNY Transfer Application
Transfer application forms to The City University of New York may be obtained from the Admissions Office at any unit of CUNY or the P.A. Program office. Applications and materials are also available from:

The Office of Admissions Services
1114 Avenue of Americas @ 42nd Street, 15th Floor
New York, New York 10036
Phone: (212) 997-2869

Or write to:
University Application Processing Center (UAPC)
Box 136, Bay Station
Brooklyn, New York 11235

Completing the Application Process
Completed CUNY applications, along with a $65 non-refundable fee ($70 for transfer applications), should be sent to the University Application Processing Center (UAPC) at the above address (the application fee is subject to change).

- If the CUNY Harlem P.A. Program is your first choice, YOU MUST USE CODE #0166.
- Official transcript(s) from all colleges must be forwarded to UAPC.
- Applications must be received by January 15th. All official transcripts must be received by February 1st.
Program. This fee must be enclosed with your letter of acceptance to the
Program Activity Fee
A non-refundable $800 fee is assessed for costs incurred while in the PA
Program.

Scholarships and Grants
Information concerning scholarships, grants, and loans can be obtained
from the City College Financial Aid Office.

Curriculum
Pre-Clinical Segment
Fall I
PA 30101: Medical Terminology (1 cr.)
PA 38100: Physiology I (4 cr.)
PA 38200: Physiology II (4 cr.)
PA 35100: Gross Anatomy and Embryology (5 cr.)
PA 39100: Microbiology (4 cr.)

Spring I
PA 32202: Pharmacology (4 cr.)
PA 34200: CML Cluster I (2 cr.)
PA 30200: Physical Diagnosis I (1 cr.)
PA 30100: History of the Profession (1 cr.)
PA 36100: Clinical Correlation I (1 cr.)
PA 37100: Behavioral Science (2 cr.)
PA 37200: Interviewing & Counseling (1 cr.)

Summer I
PA 30300: Physical Diagnosis II (1 cr.)
PA 32300: Pathology (1 cr.)
PA 33300: Pediatrics (2 cr.)
PA 34300: CML Cluster II (3 cr.)
PA 33300: HPDP (1 cr.)
PA 36200: Clinical Correlation II (1 cr.)

Fall II
PA 30400: OB/GYN (1 cr.)
PA 32400: Geriatrics (1 cr.)
PA 33400: Surgery (2 cr.)
PA 34400: CML Cluster III (2 cr.)
PA 35400: Emergency Medicine (3 cr.)
PA 37400: Culture, Health & Illness (1 cr.)
PA 38400: Health, Law & Economics (1 cr.)
PA 39401: Epidemiology (1 cr.)
PA 39402: Graduate Pairing (1 cr.)
Clinical Segment (12.5 months)

Spring II
(Rotations Begin in January)

Grading Policies and Academic Standards
To remain in good academic standing in the P.A. Program, students must
receive a passing grade in each required course in accordance with grading
policies and requirements as stated in the P.A. Program Student
Handbook. A student receiving a failing grade in any required course may
be placed on academic probation and may be subject to dismissal. Any
student on academic probation receiving a subsequent failing grade may
be dismissed from the program. Students who fail to comply with the pro-
fessional standards stated in the Student Handbook will also be subject to
probation and dismissal. The P.A. Program’s Committee on Course and
Standing is responsible for enforcing the academic standards, regulations
and degree requirements of the Program and of CCNY.

Degree Requirement and Certification
To qualify for graduation, students must successfully complete all required
courses in the Physician Assistant curriculum. In addition to the baccala-
ureate degree, graduates of the program receive a Certificate of Completion
Graduates can register as Physician Assistants with the New York State
Department of Education and are eligible to take the National Certifying
Examination sponsored by the National Commission on the Certification of
Physician Assistants, Inc.

Physics Assistant Course Descriptions
Lecture Courses
PA 30100: History of the Profession
This course introduces students to the history of the P.A. profession through
an extensive review of original literature, including readings on medical
manpower shortages, patient and provider acceptance, quality of care, substi-
mutability, subspecialty development, and economic issues. The ethics
portion explores contemporary ethical issues in the context of the role of a
dependent practitioner. 15 lect., 1 hr./wk.; 1 cr.

PA 30101: Orientation/Medical Terminology
The course teaches the principles of scientific reasoning through integrated
problem-based learning, study, test taking, scientific reading and writing
skills. Students participate in a three-day team building exercise (Ropes
course) and seminars, which focus on listening and communication skills
development. Students become familiar with the vocabulary of anatomical
structures, disease processes, and the medical disciplines in this self-study
programmed course. The terminology learned provides a foundation for the
study of the preclinical and clinical sciences and enhances effective commu-
nication with other healthcare professionals. 15 lect., 1 hr./wk.; 1 cr.

PA 32202: Pharmacology
Introduction of the general principles of drug actions and characteristics of
classes of drugs currently used in primary care practice; drug safety and effi-
ciency; duration of action; potential side effects or adverse reactions; drug
interactions; prescription writing; and legal considerations. 60 lect., 30 lab, 6
hr./wk.; 4 cr.

PA 35100: Gross Anatomy and Embryology
The objective of Gross Anatomy, Embryology, with Organ Imaging is to pro-
vide students with hands on experience in the study of the structure and
function of the human body, and an understanding of relevant aspects of
human development and its abnormalities. Gross Anatomy is explored via
regional prosection. Students are expected to examine anatomical relation-
ships leading to an integration of anatomic function and embryo-fetal de-
velopment under normal and pathologic conditions. 46 lect., 60 lab hrs. per
semester; 5 cr.

PA 36100/36200: Clinical Correlation I/II
Students learn the critical thought process necessary for the diagnosis and
treatment of clinical problems. 15 lect., 15 lab, 2 hr./wk.; 1 cr.

PA 37100: Behavioral Science
Basic concepts of mental health, signs and symptoms of mental disorders,
methods of gathering data on a patient’s mental status, and methods of
managing mental health problems in primary care setup. The Department of
Psychiatry teaches a sequence in stress management. 30 lect. hrs./sem., 15
lab, 3 hr./wk.; 2 cr.

PA 38100/38200: Physiology I/II
Introduction to the study of the biomedical sciences with emphasis on the
relationship of structure to function, the sources of energy for life processes,
and the quantitative measurement of physiological functions. 60 lect.
hr./sem., 4 hr./wk.; 4 cr.

PA 39100: Microbiology
This course introduces students to the role of bacteria, fungi, viruses, proto-
zoa and parasites in disease, immunity, and public health practice. Emphasis
is on clinical applications and basic laboratory diagnostic procedures. 45 lect.,
45 lab, 6 hr./wk.; 4 cr.
PA 30200/30300: Physical Diagnosis I/II
Students are introduced to the role of the physician assistant-patient interaction; proper methods of obtaining a comprehensive patient history and performing comprehensive physical examination and methods of written case presentations utilizing the problem-oriented medical record. Includes supervised small group practices in the physical examinations. 30 lect., 30 lab, 4 hr./wk.; 1 cr.

PA 34200: CML Cluster I; 34300: CML Cluster II; 34400: CML Cluster III
Introduction to fundamental disease processes constructed in units around the major subspecialties of Internal Medicine: Immunology, Infectious Diseases, Dermatology, Rheumatology, Hematology, Oncology, Cardiology, Endocrinology, Nephrology, Pulmonary, Gastroenterology, and Neurology. Integration of knowledge acquired in preclinical sciences with an understanding of clinical signs and symptoms related to common disease entities; process of diagnostic hypothesis generation; and introduction to the principles of patient management and therapeutics. The section on Radiology introduces the student to the concepts of radiation safety, the indications, contraindications and preparations of routine and special studies. While covering nuclear imaging, CT and MRI studies, more than 2/3 of the section is lect., 15 lab, 3 hr./wk.; 2 cr.

PA 35300: Health Promotion & Disease Prevention (HPDP)
Clinical Labs
This course emphasizes the role of Physician Assistants in educating patients about disease prevention. Principles of behavioral medicine are taught in conjunction with material on promoting healthy lifestyles. 15 lect., 15 lab, 2 hr./wk.; 1 cr.

PA 39300: Pediatrics
Basic introduction to growth and development, well-child care, and evaluation, diagnosis and management of common disorders from conception to young adulthood. Parent education and trauma prevention are stressed. 30 lect., 30 lab, 3 hr./wk.; 1 cr.

PA 35300: Health Promotion & Disease Prevention (HPDP)
Clinical Labs
This course covers the focuses on the cultural patterns of communication affecting the clinician-patient relationship and teaches students effective interviewing techniques. Throughout the course, students are expected to apply the concepts and cognitive skills acquired through the Behavioral Science and Physical Diagnosis courses to clinical situations. 15 lect., 15 Problem-Based Learning hours 2 hr./wk.; 1 cr.

PA 32300: Pathology
This course presents the students with the key concepts of the evolution and expression of disease. The material covered is based upon the clinical importance and heuristic relevance of individual disorders. The lectures are supplemented by computer-assisted instruction. 15 lect., 30 lab, 3 hr./wk.; 1 cr.

PA 33300: Pediatrics
Basic introduction to growth and development, well-child care, and evaluation, diagnosis and management of common disorders from conception to young adulthood. Parent education and trauma prevention are stressed. 30 lect., 15 lab, 3 hr./wk.; 2 cr.

PA 37200: Interviewing and Counseling
This course focuses on the cultural patterns of communication affecting the clinician-patient relationship and teaches students effective interviewing techniques. Throughout the course, students are expected to apply the concepts and cognitive skills acquired through the Behavioral Science and Physical Diagnosis courses to clinical situations. 15 lect., 15 Problem-Based Learning hours 2 hr./wk.; 1 cr.

PA 35300: Health Promotion & Disease Prevention (HPDP)
Clinical Labs
This course emphasizes the role of Physician Assistants in educating patients about disease prevention. Principles of behavioral medicine are taught in conjunction with material on promoting healthy lifestyles. 15 lect., 15 lab, 2 hr./wk.; 1 cr.

PA 30400: OB/GYN
Introduction to routine and problem oriented evaluation of the female patient with emphasis on office Gynecology, AIDS, and high-risk pregnancies. 15 lect., 15 lab, 2 hr./wk.; 1 cr.

PA 32400: Geriatrics
This course introduces the students to the clinical implications of the physiologic changes occurring as a result of the aging process. It also emphasizes the problem with prescriptions and the elderly as well as injury prevention and home visits. 15 lect., 15 lab, 2 hr./wk.; 1 cr.

PA 33400: Surgery
Introduction to selected common disorders warranting general and surgical subspecialty evaluation including pathophysiology, preoperative management, repair, post-operative management and recovery. 30 lect., 15 lab, 3 hr./wk.; 2 cr.

PA 35400: Emergency Medicine
The emergency medicine segment focuses on diagnosis, treatment and referral of medical and surgical conditions frequently encountered in the emergency room setting. 3 hr./wk.; 3 cr.

PA 37400: Culture, Health and Illness
This course has three broad objectives: 1) To acquaint students with the basic tools, concepts and methods of the social sciences in the study of health, illness and community life. 2) To explore a range of health-related issues such as how cultures adapt to environmental circumstances; how cultural traditions influence the way people feel and express distress, explain their illness, manage misfortune and seek help; and how class, gender and ethnic differences are reflected in patterns of sickness and death, and 3) To introduce the students to the peoples, communities, and contemporary problems of New York. 1 hr./wk.; 1 cr.

PA 38400: Health, Law and Economics
This course introduces students to the basic principles of the law as it relates to healthcare and malpractice. 1 hr./wk.; 1 cr.

PA 39401: Epidemiology
This course provides students with a basic understanding of morbidity and mortality rates, incidence and prevalence; the characteristics of persons, place and time as they relate to disease; cohort analysis; risk factors and the calculation of relative risk; and screening methods and the sensitivity and specificity of diagnostic tests. The laboratory exercises with computer applications are field based and designed to give the students practical experience in elements of community health assessment. 15 lect., 20 lab, 2.5 hr./wk.; 1 cr.

PA 39402: Graduate Pairing
This is a continuation of the physical diagnosis course giving students an opportunity to shadow a practicing P.A. in a clinical setting. The student will observe the activities of a senior PA, interview patients, perform focused physical examinations, gain exposure to various medical specialties and acquire the socialization and skills that are pertinent to the profession. 1 hr./wk.; 1 cr.

Clinical Rotations Courses
PA 41500: Emergency Medicine Rotation
This clerkship provides students with practical clinical experience in working in an urban acute care setting. The clerkship helps students develop a focused and systematic approach in diagnosing and treating common medical and surgical emergency problems. 6 weeks or 240 hours at the rotation site. 40 hr./wk.; 3 cr.

PA 42500: Medicine Rotation
This clerkship provides students with practical clinical experience in interpreting and integrating information from a patient's history and physical symptoms in order to reach a diagnosis and formulate a management plan based on general medical knowledge. In addition, students learn the indications and limitations of diagnostic procedures and therapeutic regimens common to internal medicine. 6 weeks or 240 hours at rotation site. 40 hr./wk.; 3 cr.

PA 43500: OB/GYN Rotation
Students gain practical clinical experience in the diagnosis, evaluation and management of normal and abnormal conditions in gynecology and obstetrics. In addition, students learn to provide pre- and post- partum care and counsel to patients on family planning and other concerns. 6 weeks or 240 hours at rotation site. 40 hr./wk.; 3 cr.

PA 44500: Pediatrics Rotation
Students become acquainted with methods of pediatric diagnosis and therapy from birth through adolescence. Emphasis is placed on the diagnosis and management of common childhood illnesses and well-child care. 6 weeks or 240 hours at rotation site. 40 hr./wk.; 3 cr.

PA 45500: Primary Care Rotation
Students in this clerkship gain experience in the effective and compassionate management of the broad spectrum of medical conditions that can be treated in the ambulatory setting. The clerkship emphasizes the importance of providing direct, initial, comprehensive and continuous health care, with a focus on health promotion and disease prevention. Students rotate twice through this clerkship. 6 weeks or 240 hours at rotation site. 40 hr./wk.; 3 cr.

PA 46500: Psychiatry Rotation
This clerkship acquaints students with the diagnosis and management of ambulatory and inpatient psychiatric problems. Students learn to treat both acute and chronic mental health problems as well as affective disorders caused by chemical abuse. 6 weeks or 240 hours at rotation site. 40 hr./wk.; 3 cr.

PA 47500: Surgery Rotation
This clerkship acquaints students with the diagnosis and management of general and subspecialty surgical problems occurring in an ambulatory setting. Students not only learn to assist in surgery, but also gain experience in pre- and post-operative evaluation and management. 6 weeks or 240 hours at rotation site. 40 hr./wk.; 3 cr.

PA 48500: Critical Care/ICU Rotation
Students have an opportunity to participate in the care and management of patients who are critically ill with life-threatening multi-system diseases. Students are exposed to a broad spectrum of invasive physiological monitoring. 4 weeks or 160 hours of clerkship hours at the rotation site. 40 hr./wk.; 2 cr.
PA 49500: Geriatrics Rotation
This clerkship gives students practical clinical experience in the diagnosis and management of common geriatrics medical conditions. Additional emphasis is placed on the rehabilitation techniques and nutritional support appropriate for the elderly patient. 4 weeks or 160 hours of clerkship hours at the rotation site. 40 hr./wk.; 2 cr.

PA 49900: Elective Rotation
This rotation is to expose and educate the P.A. student with clinical experiences with both a pediatric and adult population in Primary Care subspecialty. This rotation entails the development of comprehensive management of a wide variety of common medical problems. All disciplines of medicine are integrated, enabling the student to recognize normalcy and assess its deviations. The student will learn an approach to preventive medicine through the transitions of life - school age, middle age and old age. Preventive care shall be emphasized. The scheduled rotation hours will be determined by the preceptor at the beginning of the rotation and may be subject to change. 4 weeks or 160 hours of clerkship hours at the rotation site. 40 hr./wk.; 2 cr.

PA 40501, 40502, 40503: Physician Assistant National Certifying Examination (PANCE): Clinical Seminars I, II, III
The Physician Assistant National Certifying Examination is equivalent to the National Board Examination - Medicine. Physician Assistant students need specific training in Patient Management Protocols, Clinical Therapeutics and Clinical Interventions in their Senior Year. The new course format will allow students to sign-up each semester for a one-credit hour (15 lecture/laboratory hours) course in Medical Management and will receive a Pass/Fail grade at the end of each semester. 15 lect., 15 lab, 2 hr./wk.; 1 cr. * Note: All course titles, course numbers, credits and course descriptions are subject to change.

Faculty
Theresa Horvath, Assistant Dean and Program Director
B.S., CCNY Certificate, SDSBE P.A. Program, Harlem Hospital Center; M.P.H.
Hunter College

Paul Foster, Clinical Coordinator
B.S., CCNY Certificate, SDSBE P.A. Program, Harlem Hospital Center; M.P.A., Baruch College

Tracy Jackson, Clinical Coordinator
B.S., Lehman College, P.A. Certificate, Bronx Lebanon Hospital Center P.A. Program; M.A. Lehman College

David Lau, Didactic Coordinator
B.S. CCNY Certificate, SDSBE PA Program, Harlem Hospital Center

Emilia Medina-Colon, Director, Academic Coordination
B.S., University of Puerto Rico; P.A. Certificate, Bronx Lebanon Hospital Center P.A. Program
Graduate courses are offered in engineering and computer science. Doctoral and Master’s degrees are awarded for satisfactory completion of approved work in these disciplines. In addition, the Grove School of Engineering offers twelve credit (four-course) programs leading to Advanced Certificates in Special Topics in Civil Engineering. The engineering departments have enlarged their curricula with new state-of-the-art courses in emerging fields and added a number of applied engineering courses to fill the needs of industry-oriented engineers.

The Professional Master’s programs lead to the M.E. degree, and are available to students who enter with a B.E. or a B.S. degree from an accredited engineering curriculum. Qualified students with other B.S. degrees will be awarded M.S. (Engineering) degrees upon completion of 30 credits of approved work.

David B. Steinman Hall (coded ST on maps) is the primary engineering building. Admissions information and online application forms are available on our website: www.ccny.cuny.edu. For additional information visit or write the Graduate Office, Grove School of Engineering, ST-209.

The Associate Dean of Academic Affairs, Professor Ardie D. Walser, ST-209, is responsible for the administration of the doctoral and master’s programs in Biomedical, Chemical, Civil, Electrical, and Mechanical Engineering as well as the master program in Computer Science and Information Systems.

The doctoral degree in Computer Science is administered by the Graduate Center of the City University of New York (CUNY). Professor R. Haralick, whose office is located at the Graduate Center, is the Executive Officer.

For information regarding the Advanced Certificate in Special Topics contact Dr. Edward Camp, NAB/207.

The Grove School of Engineering is an institutional member of the American Society for Engineering Education. It participates in the Society’s Engineering College Administrative Council and in its Engineering College Research Council.

The College reserves the right to change curricular requirements and offerings subject to fiscal and/or resource constraints. Inquire at the Graduate Office for specific information on current requirements.

* Some courses taken for the Professional Master’s degree may not be transferable to the Ph.D. degree.

**Accreditation**

All undergraduate engineering curricula leading to the baccalaureate degree are fully accredited by the Accreditation Board for Engineering and Technology (ABET). The undergraduate curriculum leading to the bachelor’s degree in engineering are registered by the N.Y. State Department of Education as meeting educational requirements for eligibility to take the Fundamentals of Engineering Examination. The graduate curricula leading to the master’s degrees in engineering are registered by the N.Y. State Department of Education as meeting educational requirements which serve as the equivalent of one year of engineering experience for eligibility to take the examination for the license of Professional Engineer in the State of New York. The doctoral programs in Engineering have been approved by the N.Y. State Department of Education. The City College as a whole is also accredited by the N.Y. State Department of Education and by the Middle States Association of Colleges and Secondary Schools.

**Graduate Degrees Offered**

**Doctor of Philosophy (M.Phil./Ph.D.)**
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering

**Master of Engineering (M.E.)**
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering

**Master of Science (M.S.)**
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science
- Earth Systems and Environmental Engineering (interdisciplinary)
- Electrical Engineering
- Information Systems
- Mechanical Engineering
- Translational Medicine

**Advanced Certificate in Special Topics**
- Civil Engineering

In addition, the School offers along with the Spitzer School of Architecture and the Division of Science a joint program:
- **Sustainability and the Urban Environment**

### Requirements for Enrollment in Graduate Courses

Graduate courses are open to everyone who, in the opinion of the Associate Dean for Graduate Studies and the department concerned, is qualified by education and experience to benefit from them. Where specific courses are listed as prerequisites, equivalent knowledge or experience may be accepted instead. In general, any applicant for admission to the engineering program should possess as a minimum qualification a degree of Bachelor of Engineering, Bachelor of Science, or the equivalent obtained with a minimum GPA of 3.0. Applicants for the computer science masters degree should possess a Bachelor of Arts or Science degree with a major in computer science. Applicants for the master’s in information systems should possess a Bachelor degree in an engineering or science discipline.

It should be clearly understood that admission to graduate courses is not equivalent to matriculation for a graduate degree, nor does it carry with it any presumption of subsequent matriculation.

An applicant who has specific background deficiencies may be admitted as a matriculated student with conditions. These conditions must be met before student can register for graduate courses. Students who do not satisfy the imposed admissions conditions may be dismissed from the program.

An applicant who has missed the application deadline or who does not desire a degree, but who wishes credit for one or more courses may, by permission of the Associate Dean of Academic Affairs, enroll as a non-matriculated (non-degree) student. Non-Degree students must meet the same admissions criteria as matriculated students.

Non-matriculated students may enroll for a maximum of six credits. All students must maintain at least a B average. Applicants interested only in specific courses of special interest to practicing engineers may also be admitted as a special student or may enroll in the Advanced Certificates in Special Topics program.

An applicant who does not desire credit for graduate courses may be enrolled as an auditor. Enrollment as an auditor must be approved by the Chair of the department or his or her authorized representatives and the Associate Dean of Academic Affairs. The decision to enroll as an auditor must be made at the time the applicant registers. Auditors will not be required to take any examinations, and the amount of problem work, reports, and other formal preparation they may do is discretionary. No quality grade will be awarded for audited courses and a grade of AUD will be assigned. Audited courses cannot be used for credit. An auditor will pay the same fees as a non-degree student.

Students who have taken graduate work at other institutions may receive up to six transfer credits (nine with the approval of the Committee on Course and Standing) provided that the material is equivalent to a graduate course taught at the College and that it was completed with a grade of B or better within a five-year period preceding matriculation at The City College.

Registration for any course in the graduate program may be permitted only with the specific approval of the department concerned.
Grades Assigned to Graduate Courses

For graduate courses the following grades will be assigned:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, B, C</td>
<td>passing grades (includes + and – grades)</td>
</tr>
<tr>
<td>P</td>
<td>passing, with credit (for graduate seminars or noncredit report)</td>
</tr>
<tr>
<td>AUD</td>
<td>auditor, no credit</td>
</tr>
<tr>
<td>F</td>
<td>failure</td>
</tr>
<tr>
<td>W</td>
<td>resignation without penalty (Not assigned by instructor. Registrar assigns this grade with Dean's approval and recommendation of instructor.)</td>
</tr>
<tr>
<td>WU</td>
<td>failure due to excessive absences</td>
</tr>
<tr>
<td>INC</td>
<td>incomplete (temporary grade)</td>
</tr>
<tr>
<td>FIN</td>
<td>F due to unresolved INC</td>
</tr>
<tr>
<td>SP</td>
<td>Satisfactory Progress, a temporary grade for dissertation (thesis) supervision or certain research courses, like projects and reports, requiring more than one semester for completion.</td>
</tr>
<tr>
<td></td>
<td>For Master's level courses that carry credits (e.g., Master's thesis, 3 credit report, 3 credit project), the SP must be changed to a letter grade (e.g., A, B, C) upon course completion.</td>
</tr>
<tr>
<td></td>
<td>For Ph.D. requirements (e.g., Dissertation Research, Dissertation Supervision), the SP grades are changed to &quot;P&quot; upon completion of the work</td>
</tr>
<tr>
<td>NRP</td>
<td>No record of Progress. The grade may be assigned by dissertation supervisors only to students in 90000 courses (Dissertation Supervision), if the student has done little or no work on the dissertation over the course of the semester.</td>
</tr>
</tbody>
</table>

If a student is absent from the final examination (whether oral or written) in any course, a special examination may be granted only by the engineering faculty Committee on Course and Standing, and normally is granted by that committee only upon the submission of written evidence showing that the student was physically unable to be present at the stated examination.

Such application is to be made directly following the absence, and the special examination must be taken in the Fall term by October 15th and in the Spring term by March 15th.

An INC will become a FIN if the work is not completed by ten weeks into the second semester following the INC grade. These grades are treated the same as F.

For example, if a student receives an incomplete grade (INC) for a fall 2013 course, the work must be completed and the final grade submitted before the end of the tenth week of the fall 2014 semester, otherwise the INC grade becomes a FIN.

The grade of SP, when assigned for a research course, shall stand until the research is completed to the satisfaction of the department concerned and a grade assigned.

Application

The City College of New York application process is self-managed. Responsibility for gathering the required documents such as official transcripts and letters of recommendation rests with the applicant. The applicant (this includes students who are attending or have attended City College) must submit these supporting items as a package to the Office of Admissions, including official documents in their original sealed envelopes.

The applicant must submit the following material to the Office of Admissions, The City College of New York, Wille Administration Building, Room 101, 160 Convent Avenue, New York, NY 10031:
1. Online application (available on the City College website).
2. Two letters of recommendation from faculty members personally acquainted with the applicant’s academic achievement.
4. A personal statement.
5. An official GRE score report should be sent to The City College of New York, institution code 2083. More information on the GRE can be found at www.gre.com.

All documents become the property of The City College and cannot be returned. No original foreign documents can be returned unless accompanied at the time of filing by photostatic copies that have been verified by admissions personnel. All foreign documents must be accompanied by official English translations.

Application Deadline Dates: February 1st for the Fall semester and Nov. 15th for Spring semester.

The Doctor of Philosophy Degree

The City College of New York offers the Doctor of Philosophy Degree in Biomedical, Chemical, Civil, Electrical and Mechanical Engineering. Admissions and financial assistance forms are available online at www.ccny.cuny.edu in the Graduate Admissions section. For further information, consult with or write to the Associate Dean of Academic Affairs, Grove School of Engineering ST-209, The City College, New York, NY 10031.

Application Deadline Dates: February 1st for the Fall semester and Nov. 15th for the Spring semester.

Requirements for Admission to the Ph.D. Programs

A bachelor’s or master’s degree in a branch of engineering, or a closely related area, appropriate to the applicant’s intended field of study, from an accredited institution whose requirements for the degree are substantially equivalent to those of CCNY is required. The academic record must demonstrate promise of superior performance and the ability to carry out research. Adequate preparation in specific courses may be required by the individual department.

International Students

Graduates of foreign institutions who meet standards of admission equivalent to those described above may be considered for admission to the Engineering doctoral programs. The applicant must present authoritative evidence of sufficient competence in the English language to pursue a regular course of study at The City College. An applicant who has not studied in an English-speaking country and who is not a permanent resident (green-card holder) must take the Test of English as a Foreign Language (TOEFL), administered internationally by Educational Testing Service (ETS), and request ETS to report examination results directly to the Admissions Office, The City College of New York, Wille Administration Building, Room 101, 160 Convent Avenue, New York, NY 10031, Institution Code 2083. Inquiries concerning this examination may be made to: Test of English as a Foreign Language (TOEFL), Box 6151, Princeton, New Jersey 08540, U.S.A. or to most American embassies and consulates. A minimum score of 73 (79 for Biomedical Engineering) on the Internet Based Test (IBT) is required.

Requirements for the Doctor of Philosophy Degree

The degree of Doctor of Philosophy in Engineering is awarded for mastery of subject matter and demonstration of research ability. It is given in recognition of the candidate’s superior attainments and ability in his or her field. A student must maintain high academic standards to retain matriculated status in the doctoral program. Normally four or more years of full-time study and research beyond the bachelor's degree are needed to complete the doctoral program. See section on time limits for degree.

Credits

At least 60 credits of approved graduate work, consisting of 48 credits course work and 12 credits Dissertation Research, including the course requirements in the field of specialization, are required for the degree.

Transfer of Credit

A maximum of 30 acceptable graduate credits taken prior to admission to the doctoral program at The City College may be applied toward the degree provided the courses were completed with a grade of B or higher within an appropriate period preceding the time of application and are equivalent to comparable courses at City College. Exceptions to the above regulations may be considered under special circumstances. An evaluation
of previously earned credits will usually be made before the end of the student's first year in residence by the student's program.

Residence
At least 30 of the credits required for the degree must be taken in residence at The City College. Doctoral students are expected to spend at least one year in full-time residence at The City College. Full-time residence consists of a schedule of no fewer than 12 credits or the equivalent for each of two consecutive semesters.

First Examination (Qualifying Exam)
Each student must pass a First Examination in his or her field. The examination shall be written and/or oral and may be administered within a narrow time period or may be administered in parts over a more extended time period. A student may continue in the doctoral program after completing 45 credits only if he or she has passed this examination.

Choice of Mentor
Soon after having completed 30 credits and, in any case, shortly after having passed the qualifying examination, a student must obtain the consent of a member of the doctoral faculty to act as mentor. A memo to this effect will be sent by the faculty member to the Graduate Engineering Office (room: ST -209, phone: 212 - 650 - 8030) for inclusion in the student's file. Finding a mentor is the responsibility of the student.

The Guidance Committee
After a subject for the dissertation has been agreed on, the student, with the approval of the mentor, will solicit the consent of members of the faculty with expertise in the various aspects of his/her research to act as his/her Guidance Committee. In general the Guidance Committee, including the mentor, should number three (3) or four (4) and should include no more than one non-tenured faculty on it. The student will then request the Executive Officer or his/her designee to appoint the Guidance Committee.

The student is required to keep the Guidance Committee informed of the progress of his/her research: as a minimum, a one-page summary must be provided once a year.

The Examinining Committee
The Examinining Committee will have no less than five (5) members; it will consist of the Guidance Committee (3 to 4 members) and at least two faculty members or recognized experts in the field, of which at least one should be from outside of the Grove School of Engineering and, preferably, outside of CUNY. The mentor will serve as chair of the Examining Committee.

Amendments to the proposal, which must be approved by the Guidance Committee.

Second Examination
A research proposal outlining the dissertation research will be prepared as soon as possible and distributed to the Guidance Committee for its approval. Substantial changes to the dissertation aims will be described in amendments to the proposal, which must be approved by the Guidance Committee.

The Examinining Committee has approved the original research proposal, the mentor will request the Office of Graduate Affairs (room: ST -209, phone: 212 - 650 - 8030) to schedule the Second Examination. The request to schedule the Second Exam must be submitted four (4) weeks before the proposed exam date.

A student must prepare a research proposal and present it orally to his/her Examining Committee. The Second Examination is usually taken after the completion of course requirements. A student may be admitted to the Second Examination only upon recommendation of his/her mentor and Guidance Committee.

The Second Examination is expected to test the student's preparation to conduct research in his/her chosen area; the aim is to ensure that the student's preparation is adequate both for the task of completing his/her dissertation research and to allow him/her initial entry as a professional in his/her specialization.

Advancement to Candidacy
Before a student can be certified as a candidate for a doctoral degree, he or she must have completed the following requirements:

- all required course work (of which at least 30 credits must be taken at the City University) with at least an overall B average; the First and Second Examinations; tools of research; and any special departmental requirements for certification.

Third or Final Examination (Defense)
The defense will be scheduled only after the Examining Committee has given preliminary approval of the draft dissertation. Like the Second Examination, the Third Examination is a public event open to all faculty of the school. Notices announcing them must be circulated among the faculty at least two weeks before the examination date. The request to schedule the Final Exam must be submitted to the Office of Graduate Affairs (room: ST -209, phone: 212 - 650 - 8030) at least four (4) weeks before the proposed examination date.

Doctoral students may attend at the discretion of the chair of the Examining Committee and then only during the presentation by the candidate. Questions by faculty other than those on the Examining Committee will be entertained at the discretion of the chair of the Examining Committee. The deliberations and voting of the committee are private; besides the committee members, only the Executive Officer may attend (with voice but no vote).

The deliberations and voting of the committee are private; besides the committee members, only the Executive Officer may attend (with voice but no vote).

A passing vote can contain no more than one negative vote or abstention. Absent members are deemed to have abstained. If two or more members are absent, the examination will be postponed.

Scheduling of the Third Examination during summer recess should be avoided.

Satisfactory Academic Progress
Students must be making satisfactory progress toward the degree in order to maintain status at the City College of New York, Grove School of Engineering and to be eligible for any student financial assistance. A student is deemed not to be making satisfactory progress if his/she has a grade point average below 3.00, has accumulated more than two open grades (INC, INP, NGR, ABS, and ABP), has completed 45 credits without having passed the First Examination, has completed 8 semesters without having passed the Second Examination, has received two "NRP" grades in succession, or has exceeded the time limit for the degree.

Levels: Doctoral Students
Doctoral tuition charges are based on student's "level," which is determined by a combination of the number of graduate credits completed (including, in the case of transfer students, credits accepted by the Grove School of Engineering) and specific academic accomplishments.

Level I – Students who have completed fewer than 45 credits of graduate work (including approved transfer credits) or who have not passed the First Examination.

At Level I only, students who are New York State residents and enrolled on a part-time basis (total of credits and Weighted Instructional Units or WIUs do not exceed 6) are billed on a per-credit basis. In addition, at Level I, both full-time and part-time out-of-state and international students are billed at the per-credit rate for all credits/WIUs.

Note: For billing purposes, courses taken by Level I student on an audit basis will be treated the same as courses taken for credit and will be included in the assessment of tuition charges.

Level II – From the semester following the completion of 45 credits (fully earned and evaluated and including approved transfer credits) and passing of the First Examination, to advancement to candidacy.

Level III – From the semester following advancement to candidacy.

Level III students registering for courses for credit other than K90000 will be charged additional tuition on a per credit basis. Level III students do not incur additional tuition charged for courses audited.

Petition for a Change of Level
Students are responsible for ascertaining that their tuition level had been properly established. Students who believe they have been billed inappropriately because of an inaccurate level designation must petition the Office of Graduate Affairs for a reassessment of their level by the second week of classes for a reassessment of their level. Unless such a petition is filed by
the deadline, no retroactive changes in level can be made. Special problems should be referred, in writing, to the Associate Dean of Academic Affairs prior to the stated deadline.

Full Time Status: Doctoral Students
A student may attain full-time status for financial-aid purposes either by registering for a minimum of 7 academic units (doctoral degree students) or for a minimum of 12 academic credits (master’s degree students) or by receiving certification for an equivalent academic commitment composed, in part or entirely, of Weighted Instructional Units (WIUs), which are assigned for such activities as teaching, exam preparation, and research. Level I doctoral students whose combined total of course credits and WIUs is 7 or greater are required to pay full-time tuition.

Dissertation
The student must complete a dissertation that embodies original research. The dissertation must be defended at an oral Final Examination and be deposited in The City College library before the degree is granted. In order to defend the dissertation, the student must have been advanced to candidacy. The dissertation must be microfilmed or published. Instructions for preparing the dissertation may be secured from the library at The City College.

The preparation of a dissertation and a defense of it constitute the final evaluation of a candidate’s qualification for the Ph.D. degree in Engineering. Approval by the Grove School of Engineering is typically confirmed by action of The City College Faculty Senate and the City University’s Board of Trustees. Graduate office will announce to the Provost and, by posting and/or other means, to the general public and the members of the committee, the time and date of the defense. Additional examining member(s) may be invited to the Final Examination.

Time Limits for Doctoral Degree
The First Examination is typically completed within 2 – 4 semesters after admission to the program. Students must complete the Second Examination within 8 - 9 semesters after admission. All requirements for the degree must be completed no later than six years (12 semesters) after matriculation. A student who is admitted after the completion of 30 credits of acceptable work must complete all requirements within five years.

Immunization Requirement
In accordance with New York State Public Health Law, Article 21, Title VI, Section 2165, all full- and part-time students born on or after January 1, 1957, must present proof of immunization against measles, mumps, and rubella. The City College will be forced to bar registration or administratively withdraw (with tuition liability) students who do not comply. Health records will be kept confidential and will be available for reference only to those college personnel whose job duties require information from those records. Some students may be exempt from this requirement. A copy of Public Health Law 2165 is available in the Student Services Offices as well as in the Office of the Vice President for Student Affairs.

Schedule Changes
Schedule changes must be approved by the student’s advisor or the Office of Graduate Affairs. The change in schedule must be done accordance with the deadlines published each semester.

Withdrawal
Written notice of voluntary withdrawal from the program must be approved by the Associate Dean of Academic Affairs.

Readmission
Readmission following a withdrawal is at the discretion of the student’s department and Associate Dean for Graduate Studies. A special Application for Readmission must be filed in the Office of the Registrar. It will be forwarded to the appropriate academic office for consideration. A $10 readmission fee will be assessed.

Leave of Absence
A leave of absence will be granted to a student deemed to be in good standing who wishes to interrupt doctoral study. The leave request should be made in writing prior to the semester during which the leave will be taken. Each request for leave must be approved by the department’s Ph.D. advisor and the Associate Dean for Graduate Studies. Requests must be cleared by the Office of Financial Aid, the Library, the Bursar, the Business Office, the Office of International Students (if applicable), and the Office of Residence Life (if applicable). Requests for an extension of a leave of absence, for no more than one additional year, must follow the same procedure. A student cannot be granted a total of more than two years (four semesters) leave of absence during his/her entire period of matriculation. Official leave of absence time is not counted toward the time limit for completion of degree requirements. Any student subject to induction or recall into military service should contact the veterans’ certifying officer before applying for an official leave. A $10 readmission fee will be assessed.

En-Route Master’s Degree
The master’s degree is awarded to enrolled doctoral students who have fulfilled appropriate requirements. The requirements include a minimum of 45 credits with an average grade of B (courses taken for P credit ordinarily cannot be included), passage of the First Examination, and satisfactory completion of a major research paper. Transferred credits from other master’s programs cannot be used to meet the 45 credit requirement.

Master’s of Philosophy
The City College awards the Master of Philosophy degree (M.Phil.) to doctoral students who are advanced to candidacy. It is the responsibility of any student wishing this degree to file an application for the degree with the Registrar. Please note that the date of filing for the degree determines the date upon which the degree will be conferred.

Awarding of Degrees
Degrees are awarded three times per academic year. In order for the degree to be awarded (and for the dissertation to be deposited, if applicable) the candidate must meet academic degree requirements in their program of study and the following enrollment requirement:
For the degree to be awarded in February, candidates must be enrolled the proceeding Fall semester; for May/June, the concurrent Spring semester; for September 30, the preceding Spring semester.

The Master's Degree Program
The programs of course offerings at the master’s level fulfill three vital current needs:

To provide qualified graduates of accredited undergraduate engineering and computer science programs with an opportunity to continue their professional training at an advanced level.

To allow engineers and computer scientists currently employed in industry to enhance their professional training by bringing to them the latest developments in theory and their applications to industrial practice.

To provide graduate students working toward the doctorate and a career in research with a firm grounding in the theoretical foundations necessary for such work.

Requirements for Admission to the Master’s Programs
For matriculation, the undergraduate record shall be in an accredited scholastic curriculum or in one acceptable to the Chair of the department concerned. The applicant’s scholastic record must show a minimum average of B. Applicants are required to complete the Graduate Admissions Application which shall be accompanied by official transcripts from all colleges/universities attended, proof of degree, and two letters of recommendations from faculty. The application can be obtained by visiting the City College website at www.ccny.cuny.edu. Applicants to the Chemical Engineering program are required to take the Graduate Record Examination (verbal, quantitative and analytical sections). Official transcripts of graduate work completed at other institutions, if any, are also required and will be evaluated. All international students with baccalaureate degrees from non-English speaking countries must submit a TOEFL score to be considered for admission. At present, a minimum score of 73 (79 for Bio-medical Engineering) is required for admission.

Requirements for the Master’s Degree
Each candidate for a master’s degree must complete at least 30 credits as approved by the department and the Dean. Some students may be required to complete satisfactorily more than 30 credits because of a lack of specific courses or inadequate preparation in a particular area of study. No course may be credited toward a degree unless specifically approved for that purpose. It is expected that graduate students will maintain a high scholastic standing. Irregularity in attendance or failure to maintain satisfactory scholastic standing will be sufficient grounds for asking a student to withdraw. Satisfactory scholastic standing will be interpreted to mean at least a B average.
The master’s candidate must complete the required course work within a period of five years from the date of admission.

The department Chair will appoint departmental graduate advisors who will make recommendations for the courses to be taken for the degree. These recommendations will be subject to the approval of the department Chair and the Dean of the Grove School of Engineering or their appointed representatives. Students will be required to complete one of the following non-course options within the approved program for the degree:

1. a master’s thesis carrying six credits;
2. a project carrying three credits;
3. a report carrying no credit;
4. a seminar carrying one credit.

Thesis and project credits will be counted towards the 30-credit degree requirement. The seminar credit may be counted towards the 30-credit degree.

The master’s thesis, project or report must be completed before the scheduled final examination week so that a proper grade may be assigned at the end of the final examination period.

Respective departments may prescribe these options in greater detail as a part of their respective degree requirements.

Any student working toward a master’s degree must be matriculated for the last 12 credits toward the degree.

Effective current academic rules, requirements and procedures governing transfer credits, program adjustments, and course grade corrections will be available from the Grove School of Engineering, Office of Graduate Affairs, ST-209.

In addition, regulations governing certification of full-time status, leaves of absence, re-admission, and en-route master’s degrees are described elsewhere in this bulletin.

If a student expects to be graduated at the end of a given term, he/she must file an “Application for Degree” at the Registrar’s office on or before the date set for this purpose during the given term.

Graduate Citation
Master’s graduates who have attained a GPA of 3.90 or better for the required 30 credits (taken at City University) will receive the Grove School of Engineering Graduate Citation.

Advanced Certificates in Special Topics

The Grove School of Engineering offers 12 credit (four-course) programs leading to Advanced Certificates in Special Topics in Civil Engineering and Engineering Management. These programs are organized for degree programs. Students may be entering disciplines requiring knowledge beyond their previous education, and for which they wish to prepare in a short time. Acceptable undergraduate preparation is, of course, required to enter the program.

An Advanced Certificate in Special Topics is awarded by the Grove School of Engineering on satisfactory completion of the course work (minimum GPA of 3.00). Civil Engineering, students completing an advanced certificate program are eligible to enter the master’s program and apply the twelve (12) certificate credits towards a Master’s degree. The specializations offered are:

Civil Engineering
Four courses are required in any one of the following concentrations (courses are described under Civil Engineering section):
- Structures
- Environmental Engineering
- Water Resources
- Transportation

School of Engineering
Engineering Management

The Advanced Certificate in Special Topics in Engineering Management makes it possible for the practicing engineer to acquire fundamental business skills and managerial knowledge.

Choose any four of the following:
- ENGR H3800: Management Concepts for Engineers
- ENGR H7600: Engineering Law
- ENGR H8000: Decision and Planning Techniques for Engineering Management

ENGR H8500: Project Management
ENGR H9300: Economics and Investment Analysis of Engineering Projects

With the approval of the advisor and the Associate Dean for Graduate Studies, students may substitute CE H2000 (Transportation Economics) and CE I2400 (Analytical Techniques in Transportation) for ENGR H9300 and ENGR H8000, respectively.

Requirements for Admission to the Advanced Certificate in Special Topics Programs

The requirements for admission to the Advanced Certificate in Special Topics programs are similar to those required for admissions to the Professional Master’s degree. Application for the program shall be made by way of The City College Graduate Studies Application, indicating the field of study and the specific certificate desired. The application shall be accompanied by an official transcript from the college awarding the bachelor’s degree. The undergraduate record shall be from an accredited scholastic curriculum in the appropriate field.

All international students with baccalaureate degrees from non-English speaking countries must submit a TOEFL score of at least 500, if paper based, and of 61, if computer based, to be considered.

Time for Completion of Advanced Certificate Work

While subject to enrollment, it is expected that a sufficient number of classes will be offered each term so that the certificate work can be completed in 2 semesters.

Course Designations

Courses are listed under the Grove School of Engineering Departments of Biomedical, Chemical, Civil, Electrical and Mechanical Engineering, and Computer Science. Courses with a departmental designation will usually be taught by a member of that department and the class will usually consist of students associated with that department. Courses with the designation "Engineering" are expected to be of interest to more than one of the conventional branches and are listed both in the following group and by departments. The instructor may be drawn from among the several departments and the students may comprise a group associated with several departments.

- F0000 series: Advanced senior-first year graduate courses. No more than two such courses may generally be credited toward a graduate degree.
- G0000 series: Special or experimental courses offered a limited number of times prior to approval by the faculty for inclusion in one of the series below.
- H0000 series: Courses in terminal programs generally credited only toward a master’s degree after approval by the student’s advisor and the department.
- I0000 series: Master’s and doctoral courses.
- J0000 series: Advanced courses.

Note: The five-digit courses occasionally referred to as prerequisites are undergraduate courses in the Grove School of Engineering. Full descriptions of these may be found in the Undergraduate Bulletin of The City College.

Engineering Graduate Courses

The courses in Engineering (designated ENGR) may be taken in any of the engineering master’s curricula. With approval of the Department and the Dean, these courses may be offered for the degree in lieu of the equivalent number of credits in the student’s major field of study.

- ENGR G0000: Selected Topics in Engineering
- ENGR I0000: Seminars
- ENGR I0600: Applied Algebra
- ENGR I0800: Foundations of Fluid Mechanics I

The courses are taken in any of the engineering master’s curricula. With approval of the Department and the Dean, these courses may be taken in any of the engineering master’s curricula. With approval of the Department and the Dean, these courses may be offered for the degree in lieu of the equivalent number of credits in the student’s major field of study.

- ENGR I0600: Applied Algebra
  The fundamentals of topics from algebra that are important in system theory, control theory, network theory and computer science. The topics include set theory, rings, groups, finite-dimensional vector spaces, matrices, Boolean algebra and linear graphs. Prereq: Math 39200. 3 hr./wk.; 3 cr.
- ENGR I0800: Foundations of Fluid Mechanics I
  Extensive physical background; introduction to basic theorems and concepts. Application of vector calculus and tensor analysis to inviscid and viscous steady and unsteady flow. Navier-Stokes equations and Prandtl boundary layer theory; application to incompressible fluid motions. Prereq: ME 35600 or ChE 34200 or CE 35000. 3 hr./wk.; 3 cr.
ENGR I0900: Foundations of Fluid Mechanics II
General theory of compressible, steady and unsteady flows, theory of characteristics. Linear and nonlinear wave propagation. Hypersonic flow. Prereq: ENGR I0800. 3 hr./wk.; 3 cr.

ENGR I1100: Introduction to Engineering Analysis

ENGR I1200: Functions of a Complex Variable

ENGR I1300: Transform Methods in Engineering

ENGR I1400: Applied Partial Differential Equations

ENGR I1500: Introduction to Numerical Methods

ENGR I1600: Advanced Numerical Analysis

ENGR I1700: Finite Element Methods in Engineering
Equilibrium and variational formulations of finite element methods. Plane, axisymmetric, and shell elements. Isoparametric elements. Static and transient response of structures. Applications in potential flow, electrostatic, thermal conduction field problems, and diffusion equations. Students are expected to use available work stations. Prereq: MATH 39200, CE I5400, or home department advisor's approval. 3 hr./wk.; 3 cr.

Introduction to probability theory. Random processes: ergodic, stationary and non-stationary processes. Autocorrelation and cross-correlation functions, power and cross spectra, correlation coefficients. Input-output relations for linear and nonlinear oscillators. Discrete and continuous systems. Zero-crossing and up-crossing process. Stochastic characteristics of maximum response. Applications to vibrations, earthquake and wind engineering. Prereq: ENGR I1100 and CE 59802 or ME 54200 or equivalent. 3 hr./wk.; 3 cr.

ENGR I2400: Turbulent Flows
Origins of turbulence and the qualitative features of turbulent flow. Prandtl's mixing length theory, von Karman's similarity hypothesis, and entrainment theories. Calculations of the behavior of free turbulent flows, including jets, wakes and plumes. Calculations of bounded turbulent flows, including pipe flow and boundary layers. Turbulent dispersion and diffusion. Prereq: ME 35600 or CHE 34100. 3 hr./wk.; 3 cr.

ENGR I3200: Statistical Thermodynamics
An introduction to equilibrium statistical mechanics; ensembles, partition function, relation to classical thermodynamics. Evaluation of thermodynamic and transport properties of dense gases and liquids from molecular theory. Prereq: CHE 12800 or ME I3300. 3 hr./wk.; 3 cr.

ENGR I4200: Continuum Mechanics
Continuum kinematics, formulation of physical principles in the continuum context, the formulation of constitutive equations, the theories of elastic solids, viscous fluids and viscoelastic solids. At the end of the course there will be an emphasis on either deformable porous media or finite deformation elasticity, depending on student interest. Prereq: Basic undergraduate courses in Mechanics of Materials, Fluid Mechanics and Linear Algebra (including vector field theory). 3 hr./wk.; 3 cr.

ENGR I5200: Behavior of Inelastic Bodies and Structures
Linear theory of viscoelasticity with applications to vibrations and buckling. Introduction to the theory of plasticity. Physical basis, yield conditions. Perfectly plastic and strain hardening materials. Drucker's postulates, flow rule. Upper and lower bound theorems. Applications to torsion, indentation and plate theory. Numerical solutions. Prereq: CE I3500. 3 hr./wk.; 3 cr.

ENGR I6400: Wave Propagation in Fluids and Solids
Hyperbolic and dispersive, linear and non-linear waves. Hyperbolic waves: the wave equation, stationary waves, breaking waves, shock waves. Dispersive waves: dispersion relations, group and phase velocities. Non-linear waves and chaos in wave fields. Application to (1) water waves, (2) stress waves in solids (dilation and distortion waves, Rayleigh waves). Prereq: ENGR I1100 or equivalent. 3 hr./wk.; 3 cr.

ENGR I7500: Poroelectrolysis
Incorporating elastic solid properties and Darcy's law, Biot poroelectrolysis is a model for interaction of stress and fluid flow in a porous medium. The Biot Model is used to solve quasistatic problems containing creep, stress relaxation and consolidation as well as wave propagation problems, including the "second sound" prediction and verification. The Biot model is then extended to a continuum mixture model suitable for a description of the mechanical-electro-chemical behaviors associated with deformation and fluid flow in charged-hydrated porous materials. This mixture model provides a flexible and general basis for developing the unified viewpoint for many diverse and perhaps simultaneously occurring phenomena. Prereq: ENGR I1100: Applied partial differential equations and ENGR I4200: Continuum mechanics (or a course in elasticity and fluid mechanics that included viscous fluid theory). 3 hr./wk.; 3 cr.

ENGR I9100: Mass Transfer

ENGR J0100: Fluid Dynamic Stability

ENGR J3100: Irreversible Thermodynamics

ENGR J4000: Perturbation Techniques
The application of perturbation methods in the solution of solid mechanics, fluid mechanics and heat transfer problems. Formulation of the mathematical techniques in perturbation theory. Topics include: regular and singular problems, the method of strained coordinates, and matched asymptotic expansions. Applications to viscous flow at low and high Reynolds numbers, mechanical vibrations, and celestial mechanics problems. Prereq: ENGR I1100 and ENGR I0800. 3 hr./wk.; 3 cr.

ENGR J5000: Theory of Elasticity

ENGR J3800: Management Concepts for Engineers
An analysis of the basic concepts of planning, leading, controlling and organizing in a high technology environment is presented. Topics include:
developing team based organizations, improving communications and interpersonal relations, engineering ethics, decision-making techniques, handling conflicts and effective time management, motivating workforces and developing leadership style. 3 hr./wk.; 3 cr.

**ENGR H7600: Engineering and Business Law**

Environmental law (E.L.) and Contract law (C.L.) are major components. The E.L. portion deals with salient features, particularly important to engineers, of the Clean Air Act, the Clean Water Act and the Resource Conservation and Recovery Act. The C.L. portion deals with engineers’ liabilities, contracts and breaches thereof, bids, bonds, subcontracts, assignments, extra work disputes and arbitration. 3 hr./wk.; 3 cr.

**ENGR H8000: Decision and Planning Techniques for Engineering Management**

Application of quantitative decision and planning tools to the problems of engineering management. Probability concepts. Decision making using probabilities. Inventory management and Just-In-Time tactics. Linear programming for optimal planning. Transportation and assignment problems. Job Shop scheduling. PERT/CPM and project management. Waiting lines. Statistical concepts with applications to quality control. Reliability analysis and maintenance strategy. 3 hr./wk.; 3 cr.

**ENGR H8500: Project Management**

The practical aspects of total engineering project management are discussed and a functional approach for present and future project managers to assure project performance is presented. The course emphasizes the key role of project managers to assure project completion on time and within cost and quality requirements. Techniques of project planning, budgeting, contracting and control are emphasized. 3 hr./wk.; 3 cr.

**ENGR H9300: Economics and Investment Analysis of Engineering Projects**

The practical aspects of economic analysis of engineering projects and their salient investment features. It includes relevant aspects of basic engineering economics and factors affecting project investment decisions. Value of money, present worth and rate of return concepts will be examined. Use of these concepts in project decisions and consideration of alternatives will be discussed. Examples will be taken from state-of-the-art electrical engineering industries. 3 hr./wk.; 3 cr.
Department of Biomedical Engineering

Professor Mitchell B. Schaffler, Chair  •  Department Office: Steinman 564  •  Tel: 212-650-5070

General Information

The City College offers the following graduate degrees in Biomedical Engineering:

M.S. (BME)  
Ph.D. (BME)

M.S. Degree Requirements

To obtain the M.S. degree in Biomedical Engineering, a student must complete the 30-credit course program described below. The courses span four areas: biomedical engineering (at least 12 credits required), mathematics (at least 3 credits required), biomedical science, and traditional engineering. Students must also complete a Master's thesis or project (3-6 credits). The courses are distributed as follows:

Courses within BME (at least 12 credits required)

Choose from the following:
BME G6000: Advanced Biomaterials
BME I2000: Cell and Tissue Engineering
BME I2200: Cell and Tissue Transport
BME I3000: Neural Engineering and Applied Bioelectricity
BME I4200: Organ Transport and Pharmacokinetics
BME I5000: Medical Imaging and Image Processing
BME IS100: Biomedical Signal Processing
BME I7000: Laboratory Molecular and Cell Engineering
BME I7100: Cell and Tissue Mechanics
BME I7300: Cell and Tissue-Biomaterial Interactions
BME I7700: Microfluidic Devices in Biotechnology
BME I8000: Bone Physiology and Biomechanics
BME I9000: Skeletal Soft Tissue Physiology and Biomechanics
BME I9300: Scientific Ethics
BME I9500: Entrepreneurship and Financial Economics
ENGR I4200: Continuum Mechanics (may also count as a Math course)
BME I0000: BME Seminar**

Any new or once-offered graduate course with the "BME" course code

**Required course - must attend for at least one (1) semester

Mathematics (at least 3 credits required)

Choose from the following:
ENGR I1100: Introduction to Engineering Analysis
ENGR I1400: Applied Partial Differential Equations
ENGR I1500: Introduction to Numerical Methods
ENGR I1700: Finite Element Methods in Engineering
ENGR I4200: Continuum Mechanics
BIO V8201: Biostatistics I

Biomedical Science Electives

If desired, students may elect to take biomedical science courses related to the research effort. Choose from courses in physiology (e.g., BME I4300: Physiology for Engineers, biophysics (e.g., PHYS V3800: Biophysics), cell and molecular biology (e.g., BIO V1401: Cell Biology), and neuroscience (e.g., BIO V2301: Neuroscience I). Students should check relevant CUNY listings for additional courses and consult the M.S. advisor to confirm whether a specific course will satisfy the degree requirements. Note that course pre-requisites must be satisfied.

Non-BME Engineering Electives

If desired, students may elect to take other engineering courses in any of the traditional engineering disciplines (ChE, EE, ME, etc.) or computer science. Engineering management courses are not accepted.

Master's Thesis or Project (3-6 credits)

With approval of the M.S. advisor, students may complete a 6-credit thesis (BME I9906: Thesis Research) on an approved topic. It is anticipated that the 6-credit thesis will report on research in biomedical engineering conducted at City College or at a local research hospital with affiliated faculty. The written thesis must be defended orally and approved by a thesis committee consisting of at least three faculty members, with two of the members from the BME department. With approval of the M.S. advisor, a student may replace the 6-credit thesis by a 3-credit project (BME I9800: Project) and an additional course.

Note: With approval of the M.S. advisor, students may register for one 5000-level undergraduate course towards the M.S. degree. This undergraduate course will not be included in the calculation of the G.P.A.

Ph.D. Degree Requirements

To complete the Ph.D. degree in the Biomedical Engineering (BME) program, the student must satisfy the following requirements:

1. Satisfactory completion of 48 credits of approved graduate coursework and 12 credits of Dissertation Research. A minimum 3.3 grade point average in five core BME courses must be achieved before scheduling the First (Qualifying) Examination.
2. Satisfactory completion of the First (Qualifying) Examination, which is a presentation of the dissertation research area that highlights key problems in the field.
3. Satisfactory completion of the Second Examination, which is a defense of the research proposal.
4. Satisfactory completion of the Final Examination, which is a defense of the Ph.D. dissertation.

Ph.D. Coursework

Once any necessary undergraduate courses are completed, students are expected to complete 48 credits of graduate coursework in four areas as outlined below. Students who have transferred credits from a master’s degree must make every effort to complete these requirements by including the equivalent courses taken as part of their master’s degree.

Biomedical Engineering Courses (at least 12 credits)

While students are encouraged to take as many BME courses as possible, a minimum of 12 credits of BME courses must be taken. See the BME core course requirements below for the GPA requirement.

BME G6000: Advanced Biomaterials
BME I2000: Cell and Tissue Engineering
BME I2200: Cell and Tissue Transport
BME I3000: Neural Engineering and Applied Bioelectricity
BME I4200: Organ Transport and Pharmacokinetics
BME I5000: Medical Imaging and Image Processing
BME I7000: Laboratory Molecular and Cell Engineering
BME I7100: Cell and Tissue Mechanics
BME I7300: Cell and Tissue-Biomaterial Interactions
BME I7700: Microfluidic Devices in Biotechnology
BME I8000: Bone Physiology and Biomechanics
BME I9000: Skeletal Soft Tissue Physiology and Biomechanics
BME I9300: Scientific Ethics
BME I9500: Entrepreneurship and Financial Economics

Any new or once-offered graduate course with the "BME" course code

Students are strongly encouraged to take BME I9300: Scientific Ethics, a 1-credit course. Every semester, students are also required to attend BME I0000: Biomedical Engineering Seminar, which consists of weekly speakers from the BME field.

Biomedical Sciences (at least 6 credits)

BME I4300: Physiology for Engineers, a 6-credit course, is required. Additional courses in this area include courses in cell and molecular biology (e.g., BIO V1401 Cell Biology), biophysics (e.g., PHYS V3800 Biophysics), and neuroscience (e.g., BIO V2301 Neuroscience I). Students should check the relevant CUNY listings for additional courses.

Mathematics Courses (at least 6 credits)

At least two math-related courses must be taken, to be chosen from the following partial listing:

ENGR I1100: Introduction to Engineering Analysis
ENGR I1400: Applied Partial Differential Equations
ENGR I1500: Introduction to Numerical Methods
ENGR I1700: Finite Element Methods in Engineering
ENGR I4200: Continuum Mechanics
BIO V8201: Biostatistics I

ENGR I1500: Introduction to Numerical Methods
ENGR I1700: Finite Element Methods in Engineering
ENGR I4200: Continuum Mechanics

Engineering Courses Other than Biomedical (at least 3 credits)

At least one engineering course in a field other than BME must be completed.

BME Core Course Requirements

In order to take the First Examination (the Qualifying Exam), students must obtain a minimum grade point average of 3.3 in five core graduate courses.
This GPA requirement is designed to insure that all Ph.D. students have sufficient understanding of the core biomedical engineering fundamentals to pursue advanced study and professional career opportunities.

At least one course must be taken from each of the five groups below:

- BME 4300: Physiology for Engineers (required)
- ENGR 11100: Introduction to Engineering Analysis
- ENGR 14000: Applied Partial Differential Equations
- PHYS V0100: Mathematical Methods in Physics
- BME 15000: Medical Imaging and Image Processing
- BME 15100: Biomedical Signal Processing
- BME 12200: Cell and Tissue Transport
- BME 17100: Cell and Tissue Mechanics
- BME 12000: Cell and Tissue Engineering
- BME 17300: Cell and Tissue Biomaterial Interactions

Completion of 12 Credits of Doctoral Dissertation Research
Each student must complete 12 credits of the course BME J9900 Doctoral Dissertation Research. The instructor for this course should be the student's Ph.D. mentor.

Advisement
Master's Program
Professor Bing Mei Fu

Doctoral Program
Professor Lucas Parra

Facilities
There are currently twelve Biomedical Engineering research laboratories at City College. These CCNY facilities are amplified by the extensive laboratories at our hospital partners where many of our students do experimental research.

Cardiovascular Dynamics and Biomolecular Transport Laboratory
The Wallace Coulter Laboratory for Cardiovascular Dynamics and Biomolecular Transport studies the role of fluid mechanics and transport processes in the physiological and pathophysiological functions of the cardiovascular system. One of our major efforts is to understand the influence of fluid dynamics in the initiation and progression of atherosclerosis, a degenerative disease of the large human arteries which leads to heart attacks and strokes. We are investigating the fluid mechanics of arteries and the response of arterial cells (endothelial and smooth muscle cells) to fluid mechanical forces using cell culture models in vitro and computer simulations. We were the first group to compute the fluid flow shear stresses on smooth muscle cells (SMCs) induced by transmural flow and have subsequently exposed cultured SMC's to similar stress environments in defined flow fields to determine their biomolecular responses. In complementary research, we have pioneered in vitro studies of convection and diffusion of macromolecules across monolayers of endothelial cells which form the blood contacting surface of all blood vessels. We were the first group to clearly demonstrate that the transport properties of the endothelial layer are very sensitive to their fluid mechanical environment and will respond to changes in fluid shear stress. Studies of the biomolecular mechanisms underlying these responses are in progress.

Microcirculation Laboratory
In the microcirculation laboratory we perform in vivo permeability measurements on intact single microvessels to investigate the mechanisms of microvessel permeability related diseases such as tumor metastasis, thrombosis, strokes, brain injuries and Alzheimer's disease. We use cutting-edge fluorescence image techniques such as in vivo intracellular calcium concentration imaging to explore signal transduction events. We use quantitative fluorescence video, confocal and photometer microscopy to measure microvessel permeability and cell migration rate change caused by mechanical, physical and chemical stimuli. Information obtained from the experiments serves to develop and test mathematical models of microvascular transport based on fundamental principles of biomechanics, in order to advance basic understanding of the role of the microcirculation in maintaining life. The analysis forms the basis to understand various diseases from a cellular and molecular point of view. It also provides information to design new drugs and drug delivery methods.

Microfluidic Devices Laboratory
Our laboratory develops microfluidic devices and nanotechnology that enable measurement, analysis, and imaging of both macromolecules and live cells. Our microdevices are fabricated on site using microcontact printing, which utilizes equipment such as a reactive ion etcher, sputter coater, sputtering machine, and high power density UV light. We have utilized these microfluidic devices to facilitate in vitro studies of chemoattractant cellular activity in collaboration with physicians and researchers from the Hospital for Special Surgery. In addition, our laboratory has adapted these devices to investigate the mechanics of chemoattractant migration of oncogenic cells in collaboration with clinicians and researchers at Memorial Sloan Kettering Cancer Center. Both investigations utilize nanotechnology to label receptor tyrosine kinase signaling during cellular chemotaxis, adhesion, proliferation, and phenotypic changes. Our nanotechnology incorporates Quantum Dot bioconjugates that are surface functionalized and characterized on site using confocal microscopy, atomic force microscopy, and static light scattering. Our research laboratory has also begun investigation of Quantum Dot delivery into live cells using virosomes, which utilize the electron microscopy facility at the New York Center for Structural Biology on campus.

Biosensors and Biomaterials Laboratory
This laboratory is focused on the design of novel biomaterials and biosensors from molecules of cellular origin. These molecules include restructured self-assembling proteins, membrane protein receptors, and thermally stable phospholipids. In most cases the molecules are obtained from cell culture in a lab-scale bioreactor. Molecular engineering and bioconjugate chemistry approaches are applied to alter the properties of the parent molecules purified from cells. In some cases we are building in spectroscopic reporter groups so that the design process is both guided and monitored using biomolecular spectroscopy and surface analysis techniques. The main instruments in use in the laboratory are a bioreactor for cell culture and a time-resolved fluorescence microspectrometer for biomaterial imaging and spectroscopy. The lab is also fully equipped for protein purification, with an HPLC/FPLC setup and prep-scale 2D electrophoresis.

Neural Engineering: Applied Bioelectricity, Neurophysiology, and Medical Devices
Neural engineering includes the application of engineering principles to solve fundamental problems in neuroscience and to produce practical solutions to human neurological problems. The aims of this laboratory include: 1) establishing the mechanisms by which weak (e.g. power line, mobile phone) and strong (electrical prosthesis, deep brain stimulation) electro fields modulate brain function; 2) elucidating the neural network dynamics, including non-synaptic mechanisms, facilitating emergent physiological ("gamma/cognition) and pathological (epilepsy) network oscillations; and 3) rapid-prototyping and validation of innovative therapeutic and diagnostic technologies. The Neurophysiology laboratory is equipped with state-of-the-art electrophysiology/microscopy equipment which allows the monitoring of bioelectrical activity generated by populations of neurons and by single visualized neurons. The lab also exploits shared resources of the Neural Engineering Group for whole-brain electrophysiology (EEG), eye tracking, electrical circuit design, and high-end computing resources.

Neural Engineering: Signals and Computation
Current experimental techniques focus on interpreting and modulating brain activity in humans non-invasively using electroencephalography and trans-cranial electrical stimulation, or in short, "reading" and "writing" the brain with electric fields. The work is often coupled with auditory and visual psychophysics and always incorporates computational or mathematical models, or in short, "modeling" the brain. To establish basic cellular mechanism it also relies on in-vitro electrophysiology. For the work with human subjects, the laboratory has a sound-damped electromagnetically shielded room, a portable 128-channel system and eye tracker with drivers for real-time analysis, and closed-loop stimulation and adaptive displays. Research grade audio equipment is available to perform auditory perception experiments. Our custom equipment for trans-cranial electric stimulation (AC and DC) with simultaneous EEG recording is unique in the world. In addition to data collection, the laboratory performs data analysis of brain signals and images as well as computational modeling of spiking networks using a variety of computational tools. The lab leverages shared resources of the Neural Engineering Group for electrophysiology on the single-neuron, population and whole-brain levels, microscopy, eye tracking, electrical circuit design, and high-end computing resources with modeling software.

Neural Engineering: Systems and Behavior
Our research is focused on measuring and characterizing perceptual and cognitive brain signals that relate to behavior. Through paradigm innovation and signal processing, we strive to link non-invasively recorded electrical brain signals (EEG) in humans to specific neural computations involved in perception, attention, and decision-making. We deploy our paradigms and dependent measures to studies of neurological and psychiatric disorders through several active clinical collaborations. The Neural Systems
Lab is equipped with an acoustically and electromagnetically shielded room, high-resolution eye tracking and a high-density active-electrode system for electroencephalography (EEG). The lab also has access to shared resources of the Neural Engineering Group for electrophysiology on the single-neuron, population, and whole-brain levels, microscopy, electrical circuit design and high-end computing resources with modeling software.

Tissue Mechanics Laboratory

The focus of the Tissue Mechanics Laboratory is to understand the adaptive response of bone to altered mechanical loading, including bone’s mechanosensory system. A major focus of the lab is to investigate fluid flow in bone as a possible mechanism of mechanical signal transduction. The facility is also used to study the microstructure of bone tissue and relate it to the gross structure, material properties, and behavior of whole bones. Equipment in the laboratory includes a MTS Mini-Bionix servohydraulic materials testing system along with high-end PCs used for image analysis and finite element modeling.

Laboratory of Multiscale Biomechanics and Functional Imaging

The Laboratory of Multiscale Biomechanics and Functional Imaging aims to integrate biomechanics, bioinstrumentation, signal and image processing to study health disorders in the osteoarticular and cardiovascular fields. Our laboratory is involved in developing experimental, theoretical and numerical multiscale approaches to determine the biomechanical and functional competence of living tissues before and after their degeneration occurs (i.e., bone fragility, osteoarthrosis, and rupture of thin caps on atherosclerotic blood vessels). To integrate these interdisciplinary goals, our laboratory is equipped with a new Phased Array Ultrasound System, electronics and machine shop, computational infrastructure for three-dimensional imaging processing and Finite Element Modeling, and a wet lab for basic histology processing. Furthermore we are developing an Acoustic Microscope and a small animal facility that will include an operating room, anesthesia machine and a PC-controlled Continued Passive Motion device.

Bone and Joint Laboratory

The major emphasis of the Bone and Joint Laboratory is to understand how skeletal tissues (bone, ligament, cartilage) develop, maintain, and repair themselves in order to meet mechanical demands throughout life. We focus on the cellular processes that control characteristic architectural features of these tissues, and how they respond to physical and metabolic challenges in aging and in diseases such as osteoporosis, genetic defects and diabetes. We are currently investigating fatigue and repair in bone and tendon, with specific emphasis on discovering how living cells in these tissues detect and repair wear and tear damage before it accumulates to the point of tissue failure. We are also examining how osteocytes (the tissue-resident bone cells) influence bone’s mechanical function, both directly by controlling local matrix composition, and indirectly by governing local bone remodeling activity. In related studies, we are examining how osteocytes function as mechanosensors that allow bone to perceive and react to mechanical stimuli. Experimental approaches used in the Bone and Joint Laboratory focus on both the cell and tissue levels, and include mechanical loading studies, finite element and mathematical modeling, microscopy and other imaging modalities, cell culture and molecular biology.

Laboratory for Microfluidic HTS Technology and Tissue Engineering

A major effort in this lab is directed at the development of microfluidic cell chips to study signaling pathways (e.g. apoptosis, inflammation) for the high throughput screening (HTS) of drugs by combining current knowledge in biomedical sciences and advanced technologies in BioMEMS. The second focus is 3D tissue engineering in synthetic extracellular matrices using stem cells and micropatterning technology for regenerative medicine and toxicity studies. The final activity is in thermal medicine combining nanotechnology and heat shock proteins for cancer therapy and tissue injury protection.

Connective Tissue Engineering Laboratory

Research in the Connective Tissue Engineering Laboratory incorporates the principles of cell and molecular biology, materials science, and mechanical engineering toward the development of living tissue surrogates for connective tissue restoration. A prevailing theme in each of the major research thrusts is understanding how environmental stimuli (i.e., mechanical forces and biochemical mediators) direct the differentiation of novel progenitor cells (i.e., human dermal fibroblasts, fetal cells) toward specialized lineages, including cartilage and bone cells. Efforts are also focused on the design of new biomaterials, such as photo-crosslinked cellulosic hydrogels, to modulate cellular phenotype and functional tissue growth.

Biomedical Engineering Course Descriptions

BME 66000: Advanced Biomaterials

This course is concerned with the design and fabrication of advanced biomaterials for clinical applications. The major classes of materials and characterization methods are presented to provide a foundation for more specialized topics focusing on novel materials with tailored structural and biological properties to facilitate interactions with living tissue. Topics to be discussed include surface modification to engineer cell-instructive materials, self-assembled and nanostructured materials, hybrid composite materials, environmentally responsive "smart" biomaterials, and decellularized natural matrices. 3 hr./wk.; 3 cr.

BME 10000: Biomedical Engineering Seminar

Research seminar with invited speakers. 1 hr./wk.; 1 cr.

BME 12000: Cell and Tissue Engineering

The course covers the underlying mechanisms of cell/tissue fate processes and their interaction with biomaterials as well as how to study them quantitatively using engineering methods. Students will gain knowledge of current products of bioartificial organs in research, clinical trials and industry, their limitations and prospects. The course will prepare students with the ability to identify challenges in the field of tissue engineering and provide feasible solutions through the writing of term papers in the format of a research proposal. Prereq: Undergraduate student and molecular biology and biochemistry. 3 hr./wk.; 3 cr.

BME 12200: Cell and Tissue Transport

The course will start with an analysis of water, solute, gas, and heat exchange in the microcirculation and the relationship between structure and function. Active transport across membranes will be considered and applied to the kidney and secretory organs. Transport in biological porous media will be examined and applied to bone, cartilage, and arterial wall. An introduction to receptors and their role in transport, cell adhesion, and intracellular signaling will be presented. The course will conclude with student presentations on topics of current interest. Prereq: Undergraduate fluid mechanics or transport course. 3 hr./wk.; 3 cr.

BME 13000: Neural Engineering and Applied Bioelectricity

An overview of the field of neural engineering including neuronal biophysics, synaptic and non-synaptic communication, electrophysiological techniques, field potential and current source density analysis. The course introduces fundamentals of applied bioelectricity/electrical prosthetic (FES) including electric field-neuronal interactions and electrocution hazards. Prereq: An undergraduate circuits course. 3 hr./wk.; 3 cr.

BME 14200: Organ Transport and Pharmacokinetics

Application of basic transport principles, conservation of mass and momentum equations) to major animal and human organ systems. Topics include mechanisms of regulation and homeostasis, anatomical, physiological, and pathological features of the cerebral, respiratory, renal, cutaneous and gastrointestinal systems. Basic concepts in pharmacokinetic analysis for drug administration are also discussed. Related and recent research articles will be discussed. Students will be guided to write up a proposal regarding a current topic. Prereq: Undergraduate fluid mechanics or transport course. 3 hr./wk.; 3 cr.

BME 14300: Physiology for Biomedical Engineers

This course is designed to provide biomedical engineering students with a comprehensive understanding of the principles of human physiology. It covers a broad range of topics, from cellular physiology to the physiology of organs and organ systems. The course includes units devoted to the study of membrane solute transport, nerve and muscle functions, functions of the autonomic nervous system, cardiovascular system as well as renal, respiratory, gastrointestinal and endocrine systems. Instructional activities include lectures, case presentations, laboratories and special conferences. Prereq: Students with no biology background should complete an undergraduate biology course before taking this course. 7 hr./wk.; 6 cr.

BME 15000: Medical Imaging and Image Processing

This course introduces basic medical imaging methods such as computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET). Students will gain understanding in the basic physics of image acquisition and the algorithms required for image generation. Basic image enhancement, and image analysis will be presented in the context of X-ray imaging and microscopy. The course will include linear systems, random variables, and estimation theory. Students will gain hands-on experience in image processing through MATLAB programming in class and in assignments. Prereq: An undergraduate linear systems course and an undergraduate linear algebra course. 3 hr./wk.; 3 cr.
BME I5100: Biomedical Signal Processing
This course introduces two fundamental concepts of signal processing: linear systems and stochastic processes. Various estimation, detection and filtering methods are developed and demonstrated on biomedical signals. The methods include harmonic analysis, auto-regressive model, Wiener and Matched filters, linear discriminates, and independent components. All methods will be developed to answer concrete questions on specific data sets such as electro-cardiograms, eletro-encephalography, acoustic signals, or neural spike trains. The lectures will be accompanied by data analysis assignments using MATLAB. Prereq: An undergraduate linear systems course and an undergraduate linear algebra course. 3 hr./wk.; 3 cr.

BME I6600: Capstone design 2: Conceptual Innovation
This second course of a three course sequence in which a yearlong group project will be undertaken to design and construct a biomedical engineering device or system. This second course focuses on the development of a conceptual solution to the pharmaceutical, biotechnological or medical device need identified in Capstone 1 course, taking advantage of the creative group process and the power of computer design and prototyping to evaluate innovative conceptual solutions. The content of this course will include Ideation and Brainstorming, Concept Screening, Prototyping, and Final Concept Selection. 1 hr lecture and 2 hr lab/wk.; 3 cr.

BME I6720: Capstone Design 3: Translational solutions
The third course of a three course sequence in which a yearlong group project will be undertaken to design and construct a biomedical engineering device or system. This third course focuses on the implementation of the conceptual design solution defined in Capstone 2 course. The conceptual design and prototype will be transformed into a product that can be marketed and used at the bedside to treat patients. The content of this course will focus on final product development, testing and clinical validation methods as well as presentation of final product documentation and regulatory submission. Students will learn to develop a translational solution to a biomedical need within the constraints of a real world problem including quality and process management, reimbursement strategy, marketing and stakeholder strategy, sales and distribution strategy, competitive advantage and business strategy, operating plan and financial model, business plan development, funding sources, and licensing and alternate pathways. 1 hr lecture and 2 hr lab/wk.; 3 cr.

BME I7000: Laboratory in Cellular and Molecular Engineering
The course covers current biotechnologies used in molecular, cell and tissue engineering research labs as well as biotech industries through lectures and hands-on labs. There are four modules: (1) cell processing, basic microscopy & tissue engineering, (2) gene manipulation and genetic engineering, (3) advanced microscopy and fluorescent probes, and (4) probing biocomplexity and protein analysis. The students are required to design their own experimental methods to solve the given biomedical problems according to the basic protocols in manuals/books/papers provided by the instructor. Prereq: BIO 22900 and BME 31000, or equivalent. 4 hr./wk.; 3 cr.

BME I7100: Cell and Tissue Mechanics
Mechanical properties of hard and soft tissue are presented with emphasis on the stress adaptive processes that enable cells to adapt the mechanical/structural properties of tissue in which they live to the environment they experience. Topics to be covered include whole body biomechanics, occupational and sports injury, impact biomechanics, and tissue level biomechanics. The biomechanics of implants and cell biomechanics will be described briefly and their interrelationship explored. The mechanical properties of tissues will be reviewed, with an emphasis on the structure-function relationship. The stress adaptive mechanisms of tissues will be noted, with special emphasis on the stress adaptation observed in bone (Wolff’s law) and in the arterial wall (Murray’s law). The structural properties of cells, including their strength, deformability, and adhesive properties, will be covered, as well as the adaptation of cell structural properties. Cell receptors and cell signaling mechanisms will be described. Prereq: Undergraduate strength of materials course and ENGR I4200. 3 hr./wk.; 3 cr.

BME I7300: Cell and Tissue–Biomaterial Interactions
This course is concerned with the reaction and interaction of both inert and bioactive foreign materials placed in the living human body. Topics to be discussed include atomic structure and bulk properties of the major classes of implantable materials; biocompatibility; characterization of non-living biomaterials; reaction of biological molecules with biomaterial surfaces; host response to implants; hemocompatibility; effects of degradation on implant materials; bioactive surfaces and bioactive implant materials; standardization, sterilization and regulation of implant materials; in vitro and in vivo biomaterial testing methods; and introduction to tissue engineering. Case studies and presentations of current literature focusing on novel materials and new clinical applications will also be included to identify future directions in biomaterials research. Prereq: Undergraduate materials or transport course. 3 hr./wk.; 3 cr.

BME I7700: Microfluidic Devices in Biotechnology
Fundamentals of modern microfluidic devices with applications to biomedical measurements, e.g., electrophoretic systems, flow cytometers, and immunoassays. Review of fundamental properties of microfluidic systems including the effects of fluid mechanics, heat transfer, and electromagnetics on phenomena on biological systems. Theory of Navier-Stokes, Nerst-Planck and convection transfer equations will be discussed. Critical overview of design, manufacture, and operation of micrometer scale systems that use photolithographic and surface treatment techniques for device development. Special projects will also be used to analyze biomedical inventions on the horizon. Prereq: Undergraduate courses in fluid mechanics and differential equations. 3 hr./wk.; 3 cr.

BME I8000: Bone Physiology and Biomechanics
This course is concerned with the normal mechanical and biological functions of bone, as well as the clinical problems in metabolic bone disease and orthopaedic treatment. Specific topics will examine how bone cells produce matrix material and structure, restructure it during life to optimize bone mechanical function, and then maintain the material vs. structural properties throughout life. Bone organ, tissue and cellular-molecular level processes will be examined as integrated hierarchical systems contributing to mechanical function, presented from lectures, case studies and presentations of critical literature identifying central principles in bone biomechanics. Discussions will seek to identify fundamental questions and directions for future research. Prereq: Undergraduate courses in physiology, cell biology, and mechanics, or permission of the instructor. 3 hr./wk.; 3 cr.

BME I9000: Skeletal Soft Tissue Physiology and Biomechanics
This course is concerned with the physiology and biomechanics of the skeletal soft tissues (cartilage, tendon, ligament, intervertebral disc). The course will examine how specialized connective tissue cells produce their matrices and organize themselves hierarchically into tissues with unique mechanical properties. How tissue and biomechanical properties of the various skeletal soft tissues are maintained in life or fail in skeletal disease will also be examined. Case studies and presentations of critical literature will be used to identify fundamental questions and directions for future research. Prereq: Undergraduate courses in physiology, cell biology, and mechanics, or permission of the instructor. 3 hr./wk.; 3 cr.

BME I9300: Scientific Ethics
This ethics course will introduce integrity in scientific research. The topics include scientific misconduct (fabrication, falsification, plagiarism), authorship, writing lab notes, writing research articles, obtaining funding, developing intellectual property, job hunting, and professionalism. It will also discuss the societal impact of biotechnology, nanotechnology, and information technology. 1 hr./wk.; 1 cr.

BME I9500: Entrepreneurship and Financial Economics
Technological innovation has led to the development of an extraordinary number of new and emerging growth companies. The purpose of this course is to provide a practical exposure to the methods used, for students of all backgrounds. Strengths upon leaving this course arise from the diverse student background and content presentation by an instructor with real-world, decision-making experience in all topics covered. Creative problem solvers for economic development and recovery are in high demand, and success will require innovation, not only in new products and services, but in the development of new business models themselves. Class participation and projects using real funds are implemented. 2 hr./wk.; 2 cr.

BME I9700: Report
In-depth analysis of a specific biomedical engineering topic by means of a written report that utilizes a number of technical sources. Topics to be chosen by the student in consultation with a supervising faculty member. Prereq: Completion of 12 credits toward the master's degree in Biomedical Engineering. 0 cr.

BME I9800: Project
A research project performed under the supervision of a faculty mentor. A final written report is required. Prereq: approval of the departmental advisor. 3 cr.

BME I9900: Research for Master's Thesis
Prereq: approval of the departmental advisor. 3-6 cr.

BME J9900: Research for Doctoral Dissertation
Prereq: approval of the departmental Ph.D. advisor. Variable cr. (Up to 12 cr.)

BME K9000: Doctoral Dissertation Supervision
Prereq: approval of the departmental Ph.D. advisor. 1 credit repeatable up to 6 credits.

Che G5300: Bioprocess Engineering: Principles and Applications
Future advances in bioprocess engineering will extend the leading edge of biotechnology and spur crucial developments in biomedicine, chemical
reaction engineering and materials science. This course covers the basic biochemical engineering concepts underlying the behavior of bioprocesses. Topics include enzyme kinetics and biocatalysis, microbial growth and product formation, bioreactor design, transport in bioreactors, and bioprocess recovery. In the final part of the course we examine recent applications in industrial enzyme catalysis, immobilized enzymes and cells, and production of therapeutic proteins. 3 hr./wk; 3 cr.

BME 6100: Intellectual Property, Regulation and Quality Assurance
This course comprises the study of fundamental topics of intellectual property (IP), such as copyright and related rights, trademarks, and patents. Contemporary issues of the IP field, including unfair competition, enforcement of IP rights and emerging issues in IP are also discussed. Regulation of pharmaceutical drugs and medical devices will cover applicable laws and regulations in the strategic planning, development, manufacture and commercialization of healthcare products. These topics will be analyzed with a focus on safety, surveillance, business, law, and international procedures surrounding the regulations in the health care industry. Students will be prepared to work within regulatory and quality assurance constraints necessary for development of medical products, drug manufacturing, and clinical investigations. 3 hr./wk; 3 cr.

BME 6200: Cost Analysis and the business of translation
This course focuses on business fundamentals inherent to translational product development, including R&D, market analysis, and business model projection. Selected devices will be used as case studies to illustrate the areas of cost considerations in the translational process and cost impact of new products and reimbursement strategies in context to the healthcare market and business environments. 1 hr./wk.; 1 cr.

BME 6300: Engineering, Entrepreneurship and Business Leadership
This course will compare the "Lean Start-up Method" that has come to dominate the high-tech and start-up worlds versus traditional business planning approaches for launching new ventures. The Lean Start-Up Method favors experimentation, customer feedback and iterative design over traditional business approaches that rely on big design and planning and big design up front. Students will learn how to use a combination of business-hypothesis-driven experimentation, feedback and iterative product releases to speed product development cycles, understand capital market and risk, and strategies for product launches. Students will participate in comparison studies of start-up approaches versus traditional business planning models. 3 hr./wk.; 3 cr.

BME 6400: Translational Challenges in Diagnostics, Devices and Therapeutics
This course covers a broad range of topics in the development and operation of medical diagnostics, devices, and therapeutics and combines lectures, readings, case studies, and class discussion. Biomedical Engineering and clinical faculty will discuss the challenges they encounter in their practice, and opportunities for advancing their fields by new inventions, and discoveries. Focus will be on existing and emerging biomedical technologies, in terms of their core physiology and engineering, and their societal and economic costs. Students will actively participate in organizing the lectures and discussing potential experimental solutions to these problems. 3 hr./wk.; 3 cr.

BME 6500: Capstone Design I: Identifying the problem
The first course of a three course sequence in which a yearlong group project will be undertaken to design and construct a biomedical engineering device or system. This first course emphasizes the identification of a need for a biomedical device/system/drug. Students will learn to perform a high-level assessment of the characteristics of the medical area in which a biomedical need should be identified. The course will include topics such as strategic focus, observation and problem identification, need statement development, disease state fundamentals and treatment options. This course must be taken at the same time as BME 6200 Cost analysis and the business of translation. 1hr lecture and 1hr lab/wk; 2 credits

BME G6600: Biodesign 2: Conceptual Innovation
The second course of a three course sequence in which a yearlong group project will be undertaken to design and construct a biomedical engineering device or system. This second course focuses on the development of a conceptual solution to the pharmaceutical, biotechnological or medical device need identified in Capstone 1 course, taking advantage of the creative group process and the power of computer design and prototyping to evaluate innovative conceptual solutions. The content of this course will include Ideation and Brainstorming, Concept Screening, Prototyping, and Final Concept Selection Pre-requisite: BME G6500 1 hour lecture and 2 hour lab/week; 3 credits.

BME G6700: Biodesign 3: Translational Solutions
The third course of a three course sequence in which a yearlong group project will be undertaken to design and construct a biomedical engineering device or system. This third course focuses on the implementation of the conceptual design solution defined in Capstone 2 course. The conceptual design and prototype will be transformed into a product that can be marketed and used at the bedside to treat patients. The content of this course will focus on final product development, testing and clinical validation methods as well as preparation of documents for regulatory submission. Students will learn to develop a translational solution to a biomedical need within the constraints of a real world problem including quality and process management, reimbursement strategy, marketing and stakeholder strategy, sales and distribution strategy, competitive advantage and business strategy, operating plan and financial model, business plan development, funding sources, and licensing and alternate pathways. Pre-requisite: BME G6600. 1 hour lecture and 2 hour lab/week; 3 credits

Faculty
Debra T. Auguste, Associate Professor
B.S. (CHE), Massachusetts Inst. of Tech.; Ph.D. (CHE), Princeton Univ.

Marom Bikson, Associate Professor
B.S. (BME), Johns Hopkins Univ.; Ph.D., Case Western Reserve

Stephen C. Cowin, Distinguished Professor
B.S. (ICE), Johns Hopkins Univ.; Ph.D. (Engr. Mechanics), Penn State Univ.

Susannah P. Fritton, Associate Professor
B.S. (BME), Tulane Univ., M.S., Ph.D.

Bingmei Fu, Professor
B.S., Univ. of Science and Technology (China), M.Eng.; Ph.D., CUNY

Simon P. Kelly, Assistant Professor
B.E. (EE), University College Dublin, Ph.D. (BME)

Luis Cardosa Landa, Associate Professor
B.E. (BME), National Polytechnic Institute (Mexico); Ph.D., Univ. of Paris

Steven B. Nicoll, Associate Professor
B.S. (Bioeng.), Univ. of Pennsylvania; Ph.D. (Bioeng.), Univ. of California, Berkeley and San Francisco

Lucas C. Parra, Professor
B.S. (Physics), Ludwig Maximilian Univ. (Germany), Ph.D., Physics

Mitchell B. Schaffler, Presidential Professor
B.S. (Biology), SUNY Stony Brook; Ph.D. (Anatomy), West Virginia Univ.

John M. Tarbell, Distinguished Professor and Chair
B.S. (CHE), Rutgers Univ.; Ph.D. (CHE), Univ. of Delaware

Sihong Wang, Assistant Professor
B.S. (BME), Shanghai Jiao Tong Univ.; M.S. (BME), Univ. of Memphis; Ph.D. (BME), Univ. of Texas

Professor Emeritus
Sheldon Weinbaum
The CUNY Institute for Biomedical Engineering (NYCBE), or New York Center for Biomedical Engineering (NYCBE), is a consortium of the Grove School of Engineering at The City College and several of the prominent health care institutions in New York City. It was formed in 1994 with the support of the Whitaker Foundation.

A unique feature of this effort is that it involves a synergistic cooperation between the nation’s largest urban public university and a consortium of highly endowed, world-class private medical institutions. The current consortium in the NYCBE consists of the Grove School of Engineering and the Sophie Davis School of Biomedical Education at CCNY, the CUNY Graduate School, and a citywide network of collaborators at most of the premier health care institutions in New York City, where CCNY undergraduate and graduate students are actively engaged in research.

Our current NYCBE partners are:
- Albert Einstein College of Medicine
- Cardiovascular Research Foundation
- Columbia College of Physicians and Surgeons
- Hospital for Special Surgery
- Mount Sinai School of Medicine
- New York University School of Medicine
- Memorial Sloan-Kettering Cancer Center
- Weill Medical College of Cornell University

The NYCBE has an internationally recognized faculty of more than 30 researchers (from CUNY and eight affiliated institutions) in the areas of arterial fluid mechanics and transport, cartilage and ligament mechanics, tissue-biomaterial interaction, microvascular exchange, bone remodeling, renal modeling, quantitative image analysis for diagnostic pathology, biomedical signal processing and instrumentation, pattern recognition and vision. The outstanding quality and diversity of the faculty are reflected in their society affiliations, membership on select panels of the National Institutes of Health, National Research Council, NASA, and editorships and associate editorships of major journals. The faculty have won many of the most prestigious awards and honors in fields related to biomedical engineering, including election to the National Academy of Science, the National Academy of Engineering, and the Institute of Medicine.

Presidential Professor Mitchell Schaffler is the director of the NYCBE.

**Faculty**

In addition to the Department of Biomedical Engineering faculty listed in the previous section of this Bulletin, The NYCBE faculty includes more than twenty members from CCNY and its affiliated institutions:

Adle Boskey  
*Starr Chair in Mineralized Tissue Research, Hospital for Special Surgery*

Candido Cabo  
*Professor, Department of Computer Systems, New York City College of Technology*

Edward J. Ciaccio  
*Associate Research Scientist, Pharmacology, Columbia College of Physicians and Surgeons*

Kevin Costa  
*Associate Professor, Cardiology, Mount Sinai School of Medicine*

Stephen B. Doty  
*Senior Scientist, The Hospital for Special Surgery*

Jay Edelman  
*Associate Professor, Biology, The City College*

Zahi Fayad  
*Professor, Radiology, Mount Sinai School of Medicine*

Marilyn Gunner  
*Professor, Physics, The City College*

Vernon Houston  
*Associate Professor, Rehabilitation Medicine, New York University*

James Iatridis  
*Professor, Orthopaedics, Mount Sinai School of Medicine*

Kung-Ming Jan  
*Associate Professor of Clinical Medicine, Columbia College of Physicians and Surgeons*

Themis Lazaridis  
*Associate Professor, Chemistry, The City College*

David S. Rumschitzki  
*Professor, Chemical Engineering, The City College*

Ali Sadegh  
*Professor, Mechanical Engineering, The City College*

Lisa Satlin  
*Chief, Division of Pediatric Nephrology; Mount Sinai School of Medicine*

Lawrence Sirovich  
*Professor, Biomedical Sciences, Mount Sinai School of Medicine*

David Spray  
*Professor, Neuroscience, Albert Einstein College of Medicine*

Herb R. Sun  
*Associate Professor, Orthopaedic Survey, Albert Einstein College of Medicine*

Cheuk Tang  
*Associate Professor, Radiology, Mount Sinai School of Medicine*

Peter A. Torzilli  
*Senior Scientist, The Hospital for Special Surgery*

Peter Walker  
*Orthopaedic Surgery, New York University*

Alan Weinstein  
*Professor, Physiology and Medicine, Weill Medical College of Cornell University*

Timothy Wright  
*Senior Scientist, Hospital for Special Surgery, Professor of Applied Biomechanics, Weill Medical College of Cornell University*
Department of Chemical Engineering

Professor Ilona Kretzschmar, Chair • Department Office: Steinman 322 • Tel: 212-650-6769

General Information

The City College offers the following graduate degrees in Chemical Engineering:

M.E. (Ch.E.) (Professional Master’s Degree)
M.S. (Engineering)
Ph.D. (Ch.E.)

Degree Requirements

Professional Master's Degree

Engineering Core Courses:
- ChE I3300: Advanced Chemical Reaction Engineering (3 cr.)
- ChE I4100: Chemical Process Economics (3 cr.)

Engineering Management
- Two of the following:
  - ENGR H3800: Management Concepts for Engineers (3 cr.)
  - ENGR H7600: Engineering Law (3 cr.)
  - ENGR H8000: Decision and Planning Techniques for Engineers (3 cr.)

Focus Areas in Chemical Engineering

Three courses in one of the following focus areas:
A. Polymers and Materials
- ChE I5500: Interfacial Phenomena (3 cr.)
- ChE I5700: Advanced Materials (3 cr.)
- ChE I6100: Polymer Science and Engineering (3 cr.)
- ChE I6200: Polymer Surfaces and Interfaces (3 cr.)
- ChE I6300: Thin Organic Films and Their Analysis (3 cr.)
- ChE I6400: Rheology of Soft Materials (3 cr.)
- ChE I6500: Mechanics of Polymer Melt Processing (3 cr.)
- ChE I8900: Nanotechnology (3 cr.)
- ENGR I9100: Mass Transfer (3 cr.)
- ChE I9200: Soft Materials Lab (3 cr.)
- B. Solids Processing
- ChE I3200: Powder Science and Technology (3 cr.)
- ChE I6500: Mechanics of Polymer Melt Processing (3 cr.)
- ChE I8100: Fluid-Particle Systems (3 cr.)
- C. Systems Engineering
- ChE I3000: Chemical Process Simulation (3 cr.)
- ChE I4000: Energy Systems Engineering for Global Sustainability (3 cr.)
- ChE I5800: Molecular Simulation (3 cr.)
- ChE I7700: Process Dynamics and Control (3 cr.)
- ChE I8600: Equilibrium Staged Separations (3 cr.)
- ChE I8800: Bioseparations (3 cr.)
- ChE I9000: Bioprocess Engineering (3 cr.)

Technical Electives

Any other three courses in Chemical Engineering. Courses in other areas by approval of the department.

Report
- ChE I9700: Report (0 cr.)

Total credits

M.S. (Engineering) Degree in Chemical Engineering

Required Courses

ENGR I1100: Introduction to Engineering Analysis (3 cr.)
ChE I2800: Advanced Chemical Thermodynamics (3 cr.)
ChE I3300: Advanced Chemical Reaction Engineering (3 cr.)

Two of the following three courses:
- ENGR I0800: Foundations of Fluid Mechanics (3 cr.)
- ME G3400: Advanced Heat Transfer (3 cr.)
- ChE I9100: Mass Transfer (3 cr.)

Elective Courses

Three to five additional courses in Chemical Engineering

One of the following:
- ChE I9700: Report (0 cr.)
- ChE I9900: Thesis Research (3-6 cr.)
- ChE I9800: Master’s Project (3 cr.)

Total credits

Additional Requirements

All full-time graduate students are expected to engage in research.

Thesis: Optional. Requires prior departmental approval.

Ph.D. (Ch.E.) Degree

Required Courses:
- ChE I0000: Seminar (1-3 cr.)
- ENGR I1100: Engineering Analysis (3 cr.)
- ChE I3300: Advanced Chemical Reaction Engineering (3 cr.)
- ChE I9600: Introduction to Research Fundamentals (3 cr.)

One of these two courses:
- ChE I2800: Advanced Chemical Thermodynamics (3 cr.)
- ChE I3200: Statistical Mechanics (3 cr.)

Two of these three courses:
- ENGR I0800: Foundations of Fluid Mechanics (3 cr.)
- ChE I9100: Mass Transfer (3 cr.)
- ME G3400: Advanced Heat Transfer (3 cr.)

Elective Courses:
- ChE I9900: Doctoral Dissertation Research (1-12 cr.)
- ChE I9000: Doctoral Supervision (1 cr.)

The following electives have been offered through the ChE Department. Please, check the current schedule for information as to which courses are offered in which semester.

Ph.D. (Ch.E.) Degree

ChE I5200: Powder Science and Technology
ChE I5500: Interfacial Phenomena
ChE I5700: Advanced Materials Engineering
ChE I5800: Molecular Simulation
ChE I6100: Polymer Surfaces and Interfaces
ChE I6400: Rheology of Soft Materials
ChE I8100: Fluid-Particle Systems
ChE I8800: Bioseparations
ChE I8900: Nanotechnology
ChE I9000: Bioprocess Engineering
ChE I9200: Soft Materials Laboratory

Advisement

Masters Program
Professor C. Steiner
Doctoral Program
Associate Professor R. S. Tu

Department Facilities

In addition to the laboratories operated by the Grove School of Engineering in Steinman Hall, the Department of Chemical Engineering provides separate teaching laboratories for the study of powder technology and soft materials. In addition, it has facilities for a number of advanced experiments in materials science, a virtual computation center as well as numerous laboratories for advanced research.

Powder Science and Technology Laboratory

This laboratory is attached to the course with the same name (ChE I5200) and is given together with it as demonstration of theoretical principles presented in class. The students are first introduced to powder characterization such as particle size, size distribution (using standard sieves and a light scattering instrument) and shape and surface structure using optical and electron microscopes. Instruments to measure powder specific surface area and pore volume using gas adsorption (BET and gas pycnometry) and mercury intrusion are also presented. Characterization of bulk powders in materials science, virtual computation center as well as numerous laboratories for advanced research.
powder granulation (size-enlargement). Principles of these processes are also demonstrated to students using the existing research equipment. **Soft Materials Laboratory**

The course provides students with exposure to surface modification chemistry and the standard techniques used for the characterization of surface properties. Written and verbal reports are required. In addition to use of instrumentation, students will familiarize themselves with surface preparation and modification techniques, including self-assembly, evaporation, spin coating, and Langmuir-Blodgett techniques. The modules currently available are:

- Contact angle goniometry, which will be used to measure the surface energy for various materials. Students will compare the surface properties of hydrophilic and hydrophobic surfaces and mixed surfaces prepared via self-assembly and Langmuir-Blodgett transfer techniques and/or plasma or corona treatment.
- Air-liquid and liquid-liquid interfacial tension measurement using shape characterization (pendant drop and bubble techniques) and the interfacial balance (Kahn Balance). The effects of surfactants present at these interfaces will be investigated, as well as surfactant transport to the interfaces.
- Fluorescence imaging and Brewster Angle Microscopy (BAM) investigation of surfactant phase behavior at fluid-fluid interfaces and its effect on the interfacial properties of the system.
- Spectroscopy (reflection infrared spectroscopy) will be used to determine the surface coverage and ordering of surfaces prepared by the students.
- Ellipsometric measurement of thin films fabricated by the students via evaporation, spin coating, Langmuir-Blodgett films, and self-assembly.
- Students will utilize atomic force microscopy (AFM) characterization of surfaces, and compare the constant force, lateral force, and tapping modes.
- Colloidal particle size distributions and particle stability measurements will be made using light backscattering.

**Materials Science Facilities**

State-of-the-art equipment is available for advanced materials science laboratory experiments. These include two Fourier-Transform Infra-Red spectrometers, a Differential Scanning Calorimeter, a Thermal Mechanical Analyzer, an Atomic Force Microscope, Single-wavelength Ellipsometer, three Langmuir-Blodgett Troughs, a Fluorescence Microscope, High-Speed Video Cameras (up to 100000 fps), three high resolution optical microscopes with image analysis capabilities, a Contact Angle Goniometer, an Argon Plasma Cleaner, a Light Scattering instrument, a UV-spectrometer, an Atomic Absorption Spectrometer, a Refractometer, a Confocal Microscope, and a Scanning Electron Microscope. For soft materials studies, Air-liquid and liquid-liquid interfacial tension measurement using shape characterization (pendant drop and bubble techniques) and the interfacial balance (Kahn Balance). The effects of surfactants present at these interfaces will be investigated, as well as surfactant transport to the interfaces.

**The A.X. Schmidt Virtual Computer Laboratory**

The Chemical Engineering Department is equipped with a Citrix Server System that can be used by students for their coursework. All students have access to the Internet and E-mail. Application software available on the network includes ASPEN, Mathematica, Matlab, COMSOL, and Visio, Super- Pro Designer. Many courses make use of the Citrix network and software. The virtual laboratory is available for unlimited student use including external access. All students are expected to become proficient in its use.

**Chemical Engineering Course Descriptions**

**CHE F6700: Polymer Science and Engineering**

The chemistry and physics of polymeric materials. The kinetics and control of polymerization reactions. Analysis of the mechanical, thermal and flow behavior of polymeric solids and melts. Prereq: CHEM 26300, CHE 22800, CHE 33000, CHE 34200, CHE 43200. This course is not open to students who have taken CHE 46700 or its equivalent. 3 hr./wk.; 3 cr.

**CHE G0000: Selected Topics in Chemical Engineering**

Advanced topics selected for their current interest to graduate students. 3 hr./wk.; 3 cr.

**CHE G2400: Viscous Flow I**

**CHE G2500: Viscous Flow II**

**CHE G2900: Dynamics and Stability of Chemically Reacting Systems**

**CHE G3600: Catalyst Design and Catalytic Reaction Engineering**

**CHE I0000: Seminar**

Invited speakers and reports of graduate student research. 1 hr./wk.; 1 cr.

**CHE I2200: Biofluid Mechanics**

**CHE I2300: Non-Newtonian Fluid Mechanics**


**CHE I2800: Advanced Chemical Thermodynamics**

Classical thermodynamics; batch and flow systems; homogeneous and heterogeneous systems, physical and chemical equilibria, energy effects. Correlation and approximation methods. Prereq: CHE 33000 or ENGR 23000. 3 hr./wk.; 3 cr.

**CHE I3000: Chemical Process Simulation**

Steady-state simulation using ASPEN Plus for flow sheet calculations and economic evaluations. Dynamic simulation for process control studies, hazard analyses and batch process scheduling. Special purpose simulations of reactors and separation systems. Emphasis on the underlying numerical methods and sensitivity to modeling errors. 3 hr./wk.; 3 cr.

**CHE I3200: Statistical Mechanics I**


**CHE I3300: Advanced Chemical Reaction Engineering**

The analysis of non-ideal chemical reactor systems. Both homogeneous and heterogeneous reactor systems. Industrial catalytic reactor design and troubleshooting. Prereq: CHE 45200. 3 hr./wk.; 3 cr.

**CHE I3500: Statistical Mechanics II**


**CHE I3800: Radiation Heat Transfer**

**CHE I4000: Energy Systems Engineering for Global Sustainability**

This course is intended to provide students with the background and tools to analyze energy choices for the future. World energy supplies, demand, and trends. The politics of energy. The scientific basis for anthropogenic global warming and its impact on climate and planetary ecosystems. Characterization and analysis of conventional sources of energy and fuels production including refineries, fossil fuel fired power plants, and gas turbine combined-cycle systems from both thermodynamic and environmental points of view. Alternate sources of power including nuclear, wind farms, solar (both photovoltaic and thermal), and biomass. Energy consumption by the transportation, manufacturing, and space heating and cooling segments of the economy. The hydrogen economy. Social barriers such as denial, lock-in, and NIMBY. Prereq: Undergraduate degree in engineering, or permission of the instructor. 3 hr./wk.; 3 cr.

**CHE I4100: Chemical Process Economics**

Basic principles; break-even and shut-down studies; profitability criteria; plant location; market research; project analysis and optimization. 3 hr./wk.; 3 cr.

**CHE I5200: Powder Science and Technology**

Powder metrology: Characterization of particles and particle assemblies; packing of granular solids; interparticle forces and tribology in particulate systems; continuum powder mechanics; design of hoppers; population balance modeling of mixing, segregation, agglomeration and comminution. Bulk Powder handling: conveying and storing. 3 hr./wk.; 3 cr.

**CHE I5500: Interfacial Phenomena**

Interfacial thermodynamics. The theory of the electrical double layer. Interfacial and the Young-Laplace equation. Interfacial fluid mechanics and stability. Applications such as surface waves and Marangoni flows are included. 3 hr./wk.; 3 cr.

**CHE I5700: Advanced Materials Engineering**

Method of studying polymer behavior at the particle scale; mixing, diffusion and dispersion; two-phase mixture analysis

- Statistical mechanics of polymer chains. Polymer rheology. Scaling concepts in polymer solutions. Behavior of polymer blends, interpenetrating polymer networks, and polymer/mixed solvent systems. Polymer/particle interactions. Prereq: CHE 46700 or permission of instructor. 3 hr./wk.; 3 cr.

- Polymer Science and Engineering
  Statistical mechanics of polymer chains. Polymer rheology. Scaling concepts in polymer solutions. Behavior of polymer blends, interpenetrating polymer networks, and polymer/mixed solvent systems. Polymer/particle interactions. Prereq: CHE 46700 or permission of instructor. 3 hr./wk.; 3 cr.

- Polymer Surfaces and Interfaces
  This course introduces the students to the surface phenomena related to polymers. Topics covered are: Statistical Nature of Polymers, Polydispersity & Branching; Molecular Weight and its Distribution; Flexibility; Global versus Local Properties; Average Dimensions of Polymer; Polymer Structure and Physical Properties; Diffusion Modes-Reconfiguration and Center of Mass Transport; Interfacial Thermodynamics; Molecular Interactions in Polymers (Van der Waals Forces, Additivity and Fractional Contributions of Various Types of Molecular Forces, Introduction to Mean-field and Monte Carlo approximation to polymers molecular configurations); Surface Energies of Polymers (Measurement of Surface Tension, Calculation of Surface tension, Measurement of Solubility, Calculation of Solubility); Polymer-Liquid Interactions (Equilibrium Spreading Pressure, Polarity of Liquids, Contact Angle, Measurement and Prediction); Polymer-Polymer Interactions (Solubility of Polymers, Measurement of Solubility, Calculation of Solubility, Prediction of Interfacial Tension of Polymers, in the melt and solid state); Applications (Adhesion, Blending, Adsorption, Permeation). Prereq: Undergraduate degree in engineering, or permission of the instructor. 3 hr./wk.; 3 cr.

- Thin Organic Films and Their Analysis
  This course introduces the students to the concepts of supported thin organic films and their analysis: Langmuir-Blodgett Films; Self-Assembled Monolayers; Polymer Films; Homopolymers; Block Copolymers; Polyelectrolytes (Layer by Layer); Optical Techniques (Ellipsometry, Second Harmonic Generation); Electroanalytical Techniques (Surface Potential); Physicochemical Techniques (Wettability); Spectroscopic Techniques (Infrared Spectroscopy, FT-IR, Raman Spectroscopy, X-Ray Photoelectron Spectroscopy (XPS), Secondary Ion Mass Spectroscopy (SIMS)); Scanning Probe Microscopy (Atomic Force, Scanning Tunneling); Scattering Techniques (Neutron Scattering, X-Ray Scattering, X-Ray Diffraction, Light Scattering). Prereq: Undergraduate degree in engineering, or permission of the instructor. 3 hr./wk.; 3 cr.

- Rheology of Soft Materials
  Rheological measurement. Linear and nonlinear viscoelasticity. Rheology of polymers, liquid crystals, emulsions, gels, and other complex fluids and soft solids. Continuum and molecular theories of viscoelasticity. Prereq: Undergraduate degree in a physical science or engineering discipline, or permission of the instructor. 3 hr./wk.; 3 cr.

- Mechanics of Polymer Melt Processing

- Process Dynamics and Control
  Dynamic behavior and control of process equipment and flow systems. Behavior and stability of linear and non-linear systems, long-range examples from chemical reactors, distillation columns and heat transfer equipment. Prereq: CHE 47900. 3 hr./wk.; 3 cr.

- Fluid Particle Systems
  Course covers equilibrium and flow properties of mixtures containing solid particles in viscous fluids, providing an overview of basic analytical, theoretical and modeling concepts, with an introduction to certain simulational and experimental methods. Recent scientific understanding in the field is reviewed. Topics include: general conservation laws and constitutive descriptions for continuous materials; microhydrodynamics, i.e. flow and interaction at the particle scale; mixing, diffusion and dispersion; two-phase mixture conservation equations, their general features, consequences and solution methods; statistical mechanical approaches applied to low-Reynolds-number suspensions: microstructure, rheology and bulk flow; inertial effects including weak inertia, inertial particle hydrodynamics, turbulence in mixture flows; experimental and simulational tools; mixture flow applications in industry. 3 hr./wk.; 3 cr.

- Equilibrium Staged Separations
  Analysis, design and simulation of the major separation operations of distillation, absorption and extraction. Both staged and continuous countercurrent modes of operation are covered. Choice of vapor-liquid and liquid-liquid equilibria models, data regression and prediction methods. Process synthesis of sequences of separation operations; heat integration for efficient energy utilization. Introduction to column dynamics and control strategies. 3 hr./wk.; 3 cr.

- Bioseparations
  Modeling and simulation of the dynamic behavior of staged and plug flow separation operations. Batch distillation. Adsorption techniques including chromatographic separations and pressure swing adsorption. Membrane technologies such as reverse osmosis and gas separation. Separations involving solids including filtration and crystallization. Separations for biotechnology. 3 hr./wk.; 3 cr.

- Nanotechnology
  Introduction to nanotechnology and its applications in the development and synthesis of soft materials. Prereq: CHE 12800 and ENGR 19100. 3 hr./wk.; 3 cr.

- Bioprocess Engineering: Mammalian Cell Biotechnology
  Basics of biochemistry and cell structure with emphasis on eucaryotic cells. Introduction to recombinant DNA technology and protein engineering. Introduction to cell culture bioreactors. Production of glycosylated proteins. Biochemical engineering aspects of stem cells. Prereq: CHE 12800 and ENGR 19100. 3 hr./wk.; 3 cr.

- Mass Transfer

- Soft Materials Lab
  The course provides students with exposure to some surface modification chemistry and the standard techniques used for the characterization of surface properties. In addition to use of instrumentation, students will familiarize themselves with surface preparation and modification techniques, including self-assembly, evaporation, spin coating, and Langmuir-Blodgett techniques. There are seven experimental modules: contact angle goniometry; air-liquid and liquid-liquid interfacial tension measurement; fluorescence imaging and Brewster Angle Microscopy; reflection infrared spectroscopic determination of surface coverage; ellipsometric measurement of thin films; atomic force microscopy (AFM) characterization of surfaces; and colloidal particle size distribution measurement and particle stability using light backscattering. Written and verbal reports are required. Prereq: Undergraduate degree in engineering, or permission of the instructor. 3 hr./wk.; 3 cr.

- Research Report
  In-depth analysis by means of written reports of a number of technical papers, reports or articles on a specific topic of interest to chemical engineers. Topics to be chosen by the student after consultation with a professor in the department. An oral presentation of the written report may be required at the departmental seminar. Prereq: completion of 12 credits toward the master's degree in CHE. Not applicable for credit toward the Ph.D. 0 cr.

- Master's Project
  Theoretical or experimental project under the supervision of a faculty advisor. Student submits a written proposal, performs the required work, and submits a written final report. Prereq: written departmental approval. 3 cr.

- Research for the Master's Thesis
  Variable cr., up to 6 cr.

- Introduction to Research Fundamentals
  This course will introduce various research areas of the Chemical Engineering Department at CCNY. Professors will introduce their current and planned research work. Students will be expected to regularly read current research articles. Students will be expected to comprehend the motivation and methodology presented in as well as critique scientific articles suggesting future work. Students will also be introduced to methodologies for literature awareness, research ethics, safety, and professional communications. 3 cr.

- Research for the Doctoral Dissertation
  Variable cr., up to 12 cr.
Other Engineering Courses

Other appropriate Engineering courses are listed under Graduate Engineering courses in the front section of the Grove School of Engineering.

ENGR H8000: Decision and Planning Techniques for Engineering Management
Application of quantitative decision and planning tools to the problems of engineering management. Probability concepts. Decision making using probabilities. Inventory management and Just-In-Time tactics. Linear programming for optimal planning. Transportation and assignment problems. Job Shop scheduling. PERT/CPM and project management. Waiting lines. Statistical concepts with applications to quality control. Reliability analysis and maintenance strategy. 3 hr./wk.; 3 cr.

ENGR I0800: Foundations of Fluid Mechanics I
Extensive physical background; introduction to basic theorems and concepts. Application of vector calculus and tensor analysis to incompressible and viscous steady and unsteady flow. Navier-Stokes equations and Prandtl boundary layer theory; application to in-compressible fluid motions. Prereq: ME 35600 or ChE 34200 or CE 35000. 3 hr./wk.; 3 cr.

ENGR I0900: Foundations of Fluid Mechanics II
General theory of compressible, steady and unsteady flows, theory of characteristics. Linear and nonlinear wave propagation. Hypersonic flow. Prereq: ENGR I0800. 3 hr./wk.; 3 cr.

ENGR I1100: Introduction to Engineering Analysis

ENGR I1200: Functions of a Complex Variable

ENGR I1300: Transform Methods in Engineering

ENGR I1400: Applied Partial Differential Equations

ENGR I1500: Introduction to Numerical Methods

ENGR I2400: Turbulent Flows
Origins of turbulence and the qualitative features of turbulent flow. Prandtl’s mixing length theory, von Karman’s similarity hypothesis, and entrainment theories. Calculations of the behavior of free turbulent flows, including jets, wakes and plumes. Calculations of bounded turbulent flows, including pipe flow and boundary layers. Turbulent dispersion and diffusion. Prereq: ME 35600 or ChE 341000. 3 hr./wk.; 3 cr.

ENGR I9100: Mass Transfer
Definitions of concentrations, velocities and mass fluxes. Conservation of species equation; multicomponent diffusion; Stefan-Maxwell equations. Transient diffusion in semi-infinite media. Definition of transfer coefficients with mass addition. Application of film, penetration and boundary layer the-
The Energy Institute

Professor Sanjoy Banerjee, Director • Institute Office: Steinman 3rd Floor • Tel: 212-650-5728

The Energy Institute, formerly the Clean Fuels Institute, is a new research center whose mission is to advance the science and engineering of sources of sustainable energy. It is a CUNY-wide multidisciplinary institute which includes faculty from CCNY’s Grove School of Engineering as well as other CUNY Colleges and Departments. Its top priority at present is the development of energy storage systems that will allow the large-scale utilization of excess night-time electrical capacity and energy from renewable, but intermittent, sources such as the sun and the wind. Several major projects are underway. One is to develop solid-state and flow batteries for load leveling/peak shaving and plug-in hybrids and electric vehicles that are cost-effective, reliable, and long-lived. Another is the advancement of thermal storage systems for concentrated solar power. Each of these projects involves a blend of fundamental research, empirical development, and process systems engineering. The work of the Energy Institute is part of the CUNY sustainability program. It also involves extensive collaboration with industry including such organizations at The Solar Energy Consortium (TSEC). Other areas of active research include energy storage in gas hydrates and flow assurance for oil-gas pipelines.
The Benjamin Levich Institute for Physico-Chemical Hydrodynamics

Professor Morton Denn, Director • Institute Office: Steinman 1M • Tel: 212-650-8157

Benjamin Levich Institute for Physico-Chemical Hydrodynamics, an internationally recognized research center for the study of fundamental problems of flow and transport in complex fluids, fluid-like media and interfaces headed by Albert Einstein Professor Morton Denn, includes faculty from the Departments of Chemical Engineering and Physics. The current scope of the Institute’s research is in five major areas: granular flows, low Reynolds number hydrodynamics, non-Newtonian fluid mechanics, computational fluid mechanics, and transport along interfaces. Examples include experimental granular kinetic theory, granular compaction, particle migration in concentrated suspensions undergoing shear, the influence of surfactants on the motion of drops and bubbles, microscopic fluid mechanics using molecular dynamics simulations, and droplet mechanics in liquid-crystalline polymer blends. The Institute has excellent laboratory and computational facilities.
General Information

The City College offers the following graduate degrees in Civil Engineering:

M.E. (C.E.) (Professional Master's Degree)

M.S. (Engineering) (Degree is awarded to students who do not have a bachelor's degree in engineering)

Ph.D. (C.E.)

Programs and Objectives

For both Master's and Ph.D. degrees, the Department of Civil Engineering offers program of graduate study in the following areas:

Structural Engineering and Mechanics

Water Resources and Environmental Engineering

Transportation Engineering

M.E. Degree Requirements

Required Courses by Specialization

Structural Engineering and Mechanics
CE H1000: Analytical Methods in Civil Engineering 3
CE I3000: Structural Dynamics 3
CE I7700: Finite Element Methods in Engineering 3
CE I3500: Applied Elasticity and Plasticity 3

Water Resources and Environmental Engineering
Choose three courses from the below list:
CE H0700: Advanced Hydraulics 3
CE H1200: Engineering Hydrology 3
CE H8300: Air Pollution and Control 3
CE H7200: Principles of Water and Waste Water Quality 3

Transportation Engineering
CE H1000: Analytical Methods in Civil Engineering 3
CE H2000: Transportation Economics 3
CE H1400: Analytical Techniques in Transportation 3
CE I2600: Urban Transportation Planning 3

Elective Courses
Other graduate courses 9-18
Report/Project/Thesis 0-6
At least one of the following courses:
CE I9700: Master's Report (0 cr.)
CE I9800: Master's Project (3 cr.)
CE I9900: Master's Thesis (6 cr.)

Total credits 30

Note: With departmental approval, students may register for two 50000-level undergraduate courses towards the master's degree (grades of B or better only). These undergraduate courses will not be included in the calculation of the G.P.A.

Ph.D. Degree Requirements

Requirements for Admission
To be eligible for admission, an applicant must possess a bachelor's degree in Civil Engineering or in a closely related area appropriate to the intended field of study from an accredited institution. The applicant’s academic record must demonstrate promise of superior performance in advanced study and research. The general Graduate Record Examination is recommended, and International students from non-English speaking countries must submit a TOEFL (Test of English as a Foreign Language) score of 550 or better to be considered for admission.

Requirements for the Ph.D.
Candidates for the Ph.D. degree must:

1. Obtain, by completion of 30 credits of graduate work, the consent of a faculty member to act as his/her research mentor
2. Satisfactorily complete 60 credits of approved graduate work (30 credits beyond the masters degree), of which at least 30 must be taken at the City University; (up to 12 of these credits may be in research).
3. Pass a qualifying examination in Civil Engineering, consisting of tests in three general subjects from first year graduate civil engineering curriculum, with a grade of excellent or high pass (First Examination)
4. Demonstrate proficiency in those research tools considered appropriate by the faculty in the field of specialization
5. Present orally and in writing and defend a plan of proposed research (Second Examination)
6. Satisfactorily complete, not later than 8 years after matriculation, a dissertation which embodies original research and is a publishable contribution to engineering and/or science; for a student who is matriculated after the completion of at least 30 credits of acceptable work, this time will be reduced to 7 years
7. Present and orally defend the dissertation (Third Examination).

Advisement

For Master's Program
Water Resources and Environmental Engineering
Professor H. Tang

Structural Engineering and Mechanics
Professor F.B. Lin

Transportation Engineering
Professor M. Allahviranloo

For Doctoral Program in all three areas
Professor A. Agrawal

Advanced Certificate in Special Topics in Civil Engineering

The Department of Civil Engineering offers Advanced Certificates in Special Topics in the seven areas listed below. For more information contact the Chair of the Department.

A. Structural Engineering
CE H5300: Advanced Structural Design
CE H5500: Advanced Reinforced Concrete
CE H4400: Elastic and Inelastic Analysis of Structures
And one of the following:
CE H5200: Bridge Engineering
CE H5100: Prestressed Concrete
CE 59000: Foundation Engineering

B. Environmental Engineering
CE H3100: Environmental Engineering Analysis
CE H7500: Unit Operations in Environmental Engineering
CE H7600: Unit Processes in Environmental Engineering
And one of the following:
CE H7400: Industrial Wastewater Treatment
CE H7000: Wastewater Treatment Plant Design

C. Water Resources Engineering
CE H6300: Groundwater Hydrology and Contamination
CE H0700: Advanced Hydraulics
CE H1200: Engineering Hydrology
And one of the following:
CE I6300: Water Resource Modeling
CE H0800: Applied Hydraulics in Engineering

D. Transportation Engineering
Three courses from the following list:
CE H0200: Transportation Economics 3
CE H2000: Traffic Engineering 3
CE H4500: Urban Transportation 3
CE H7400: Urban Freight and City Logistics 3
CE H4800: Transit Systems: Planning and Operations 3
CE I2600: Urban Transportation Planning 3
CE I2300: Pavement Management Systems 3
An approved transportation elective (can be from the list above)
Laboratories

Computational Facilities
The Department has two instructional laboratories with PCs.

Materials of Engineering Laboratory
The Materials of Engineering Laboratory houses an Instron 8500 series Testing Machine. This is a computer controlled servo-hydraulic machine and capable of applying 55 kips (250 kN) dynamic loads. Supporting electronic control, data acquisition and computer software systems are available. Additional equipment for the static, dynamic and fatigue testing of materials include testing machines for tension, compression, transverse-bending and torsion investigation. The laboratory contains hardness testing machines, impact testers, strain signal conditioning consoles, and assorted peripheral equipment. Facilities for preparing and curing concrete include walk-in temperature humidity control chambers. Optical Systems for surface strain measurements using digital image correlation are available. Electrochemical facilities for determination of the rate of corrosion of steel allow for potentiostatic, galvanostatic and frequency response analysis. Nondestructive testing facilities include 4-channel acoustic emission system for early detection of incipient defect growth, ultrasonic V-meter, ultrasonic signal generation, digitalization and analysis capacities.

Soil Mechanics Laboratory
The Soil Mechanics Laboratory is equipped to perform standard identification tests of soils, such as grain size distribution, liquid and plastic limits and compression properties. In addition, facilities to perform detailed testing of undistributed samples (consolidation and triaxial shear) are available. A moist room is available for long term sample storage.

Fluid Mechanics Laboratory
The Fluid Mechanics Laboratory is equipped for studying both compressible and incompressible fluid media. Flow rates of up to 5 cubic feet per second of water are provided by each of the three independent high-pressure systems equipped with constant head controls. Two constant-head supply tanks located in the laboratory provide needed discharge capacities. The laboratory contains a tilting flume 52 ft. long, a water tunnel, pumps, turbines, a hydraulic bench, and various units for the study of frictional phenomena involving water and oil. A one-dimensional Laser Doppler Anemometer is used for the study of flow velocities in pipes and near boundaries. In addition, the Lab has a state-of-the-art walk tank. A tank with a depth of 6 feet wide 4 feet high and 40 feet long. It is equipped with a computer controlled five-paddle generator. This system can produce single waves, random waves, and angle waves. A two-dimensional Laser Doppler Velocimeter (LDV) equipped with computer controlled 3-D traverse and fully automated data acquisition system are used in the wave tank for studying beach hydraulics and offshore similitudes. In addition, a Particle Image Velocimeter (PIV) is available for analysis of particles in a flow field. The Lab is also equipped with a tilting sand flume for studying flow through porous media and groundwater contamination. A fully automated freeze and thaw machine is also available for graduate research work.

Environmental Engineering Laboratory
The Environmental Engineering Laboratory is equipped for experimental evaluation of unit processes and operations in water and wastewater treatment as well as analysis of all physical, chemical and microbiological water quality parameters. The experimental facilities include settling columns, suspended and attached growth biological reactors, computer controlled bioreactors for kinetic studies, a bench scale UV chamber, a 12 gpm 15-foot bubble contactor for ozone studies complete with ozone generator, gas and liquid phase ozone residual monitors and off-gas destructor, TOC/TN Analyzer, BIOFLO 310 Autoclavable Benchtop Fermentation System, IMM System MULTIDOC-IT/LM-263, TF-7300 RT PCR System for DNA/RNA Analysis and all conventional experimental devices used in the determination of chemical dose requirements for water and wastewater processing. An environmental chamber for temperature controlled experiments is also available.

The analytical capabilities of the laboratory include gas chromatograph-mass spectrometer/ECD with purge/ trap, inductive coupled plasma spectrometer (ICP) gas chromatograph with EC and FID detectors, total organic carbon analyzer, Dionex, dual channel ion chromatography system, water quality autoanalyzer, UV-visible double beam spectrophotometer with stopped-flow device, and phase contrast/epifluorescence research microscope. Field monitoring equipment include water quality monitors with multiple probes and fluorometers.

Dynamics and Structural Control Laboratory
The Dynamics and Structural Control Laboratory (DSCL) facilitates advanced research in earthquake engineering, and the development of smart and intelligent structural systems. A smart and intelligent structural system has in-built capability to sense the vibration due to natural hazards such as earthquakes and extreme wind loads, and modify its behavior to minimize vibration, damage and discomfort to occupants of the structure. The DSCL is equipped with a 30 feet by 15 feet strong floor system with 100 kips inserts for static and dynamic testing of structures, a state-of-the-art 10,000 lb one directional (horizontal) shaking table system capable of simulating near-field ground motions with velocities up to 2 meters per second, a 6 story building frame model with replaceable elements to simulated nonlinear response of structures, 24 channel 2 MHz simultaneous data acquisition system, 24 channel d-space controller for real time implementation of controllers using MATLAB, and a computer based visualization and image correlation system for damage detection in structural systems being tested on the strong floor.

Civil Engineering Course Descriptions
CE G0000: Selected Topics in Civil Engineering
Advanced topics chosen for their current interest to graduate students. 3 hr./wk.; 3 cr.
CE G2000: High-Rise Building Design and Analysis
CE G3000: FRP Composites in Structural Engineering
CE G8000: Numerical Methods and Simulation of Fluid Flow
CE G9500: Remote Sensing in Water Resources
CE G1300: Wind Effects on Structures
CE G4200: GIS Transportation Data Modeling
CE G4500: Advanced Transportation Analysis
CE G4600: Sustainable Transportation
CE G4900: Transportation Network Analysis
CE G5600: Advanced Traffic Engineering
CE G7100: Water and Wastewater Treatment
CE G7300: Surface Water Quality Modeling
CE G7400: Remediation Technologies for Hazardous Wastes and Sites
CE G7800: Solid Waste Reuse and Recycling
CE G8100: Macro-Scale Hydrology
CE G8400: Air Quality Modeling
CE G8600: Air Pollution Measurement
CE G9100: Water Resources Systems Analysis
CE G9500: Remote Sensing in Water Resources and Environmental Engineering
CE G9700: Numerical Methods and Simulation of Fluid Flow
CE G9800: Sustainability in Engineering

CE G1300: Wind Effects on Structures
CE G2500: Construction Engineering
CE G3500: Transportation
CE G4200: GIS Transportation Data Modeling
CE G4500: Advanced Transportation Analysis
CE G4900: Transportation Network Analysis
CE G7100: Water and Wastewater Treatment
CE G7300: Surface Water Quality Modeling
CE G7400: Remediation Technologies for Hazardous Wastes and Sites
CE G9100: Water Resources Systems Analysis
CE H0200: Transportation Economics
The basic economics of transportation and the tools of economic analysis used to analyze transportation activities, firms and government policies. Prereq: undergraduate courses in economics and calculus. 3 hr./wk.; 3 cr.
CE H0700: Advanced Hydraulics
Open channel hydraulics of artificial and natural water-courses, including roughness and shape characteristics; surface curve calculation by step methods and by integration methods. Delivery of canals. Hydraulics of spillways and stilling basins, including chute spillways, drop structures, gate and side channel spillways. Prereq: CE 36500. 3 hr./wk.; 3 cr.
CE H0800: Applied Hydraulics in Engineering
Hydraulic principles utilized in design of structures, such as spillways, dams, drop structures, gate and side channel spillways, and water transport systems. Studies of erosion, sediments, their transport and deposition. Similarity, dimensional analysis, and modeling techniques as applied to hydraulic systems. Prereq: CE 36500. 3 hr./wk.; 3 cr.
CE H1000: Analytical Methods in Civil Engineering  
Survey of analytical methods encountered in Civil Engineering: ordinary differential equations (first and second order), linear algebra (inverse matrices, eigenvectors), differential equations systems, partial differential equations, Laplace transforms, Fourier Analysis, vector analysis (line and surface integrals, Green, Stokes and Gauss theorems), probability and statistics (probability distributions, sampling distributions of mean and standard deviation), and optimization (gradient search, simplex method). Applications in Structural, Geotechnical, Environmental, Water Resources, and Transportation Engineering. 3 hr./wk.; 3 cr.

CE H1100: Engineering Hydrology  

CE H2000: Traffic Engineering  
Traffic flow theory, including fundamental diagram, microscopic models, and macroscopic models. Analysis of traffic data, including capacity and performance assessment. Network models and simulation. Advanced technology applications for data collection, traffic control, and real-time system management. Graduate standing is required. Students who have completed CE 52000 are not permitted to register for this course. 3 hr./wk. 3 cr.

CE H2400: Airport Design and Planning  
Planning of individual airports and statewide airport systems. Functional design of air and land facilities. Orientation, number, and length of runways. Concepts of airport capacity. Passenger and freight terminal facility requirements. Airport access systems. FAA operating requirements. Financial, safety, and security issues. Design and planning for maintenance, rehabilitation and upgrading. 3 hr./wk.; 3 cr.

CE H4100: Highway and Airport Construction  
Overview of highway and airport engineering and construction; highway vs. airports; urban vs. rural highways. Construction planning, organization and cost estimating; construction scheduling using computer packages, e.g. Primavera; construction operations, mobilization, removal, disposal, placement; management of equipment, material, labor, money; cash flow accounting. Construction specifications; quality assurance/quality control (QA/QC); investigation of environmental impacts and mitigation measures. Site investigation and project preparation. Prereq: CE 33500. 3 hr./wk.; 3 cr.

CE H4500: Urban Transportation  
Historical development of urban surface transportation systems. Stakeholders, users and operating characteristics, and infrastructure elements for passenger motor vehicle, transit, bicycle, pedestrian, and freight modes. Safety, environmental, and financial considerations. Orientation/flocculation, discrete/flocculant settling, filtration, air stripping, disinfection. Process kinetics, ideal/nonideal reactor design, mixing, coagulation/flocculation, discrete/floculent settling, filtration, air stripping, disinfection, adsorption, ion exchange and membrane technologies. Prereq: CE 35000. 3 hr./wk.; 3 cr.

CE H4600: Environmental Issues in Transportation  

CE H4700: Urban Freight and City Logistics  
Core concepts, challenges and methods of urban freight and city logistics. Fundamentals of urban spatial structure, drivers of urban changes. Freight distribution methods and stakeholders. Externalities of freight operations. Urban freight data sources and data collection strategies. Policies and mitigation strategies, and analytical methodologies supporting decision-making. Illustrative case studies. Graduate standing is required. Students who have completed CE 54700 are not permitted to register for this course. 3 hr./wk.; 3 cr.

CE H4800: Transit Systems: Planning and Operations  
Basic techniques of service area analysis, route development, scheduling, revenue estimation, and service improvements for fixed route bus and rail transit. Integration of fixed route transit with paratransit, matching mode with service area, relationship of transportation department with other departments, budgeting, and policy setting also will be discussed. Graduate standing is required. Students who have completed CE 54800 are not permitted to register for this course. 3 hr./wk.; 3 cr.

CE H5100: Prestressed Concrete  
Properties of prestressed concrete materials. Simple, composite and continuous prestressed beams. Prestressed rigid frames, buildings and bridges. Prereq: CE 33500, CE 44100. 3 hr./wk.; 3 cr.

CE H5200: Bridge Engineering  

CE H5300: Advanced Structural Design  

CE H5700: Condition Assessment and Rehabilitation of Structures  

CE H6300: Groundwater Hydrology and Contamination  
Course provides introduction to governing equations of flow and transport in groundwater. Topics include Darcy’s Law, the flow equation, piezometric contours, confined and unconfined flow in aquifers, radial flow towards wells, flow through leaky layers and transient flow due to compressibility effects. Flow and retention in the unsaturated zone, soil-water characteristic curves and the Richards equation are examined. Course also covers material on contaminant transport in groundwater including the advection-dispersion equation, transport through heterogeneous media and the transformation and retardation of solutes. Prereq: CE 35000. 3 hr./wk.; 3 cr.

CE H6400: Environmental Engineering Analysis  
Study of microorganisms and biochemical reactions involved in the purification of wastewaters by both aerobic and anaerobic treatment systems. Metabolic reactions, growth patterns and population dynamics. Review of chemical reactions as they relate to the analysis and purification of water. Data collection and interpretation. Prereq: CE 47400 or departmental approval. 3 hr./wk.; 3 cr.

CE H7400: Industrial Wastewater Treatment  
Sources, volumes, and characteristics of industrial wastewaters. Federal and local pretreatment regulations, including categorical standards. Uses of applicable biological, absorption, stripping, precipitation, chemical oxidation, reverse osmosis, ultrafiltration processes. Recovery methods and sludge handling and disposal. Prereq: CE 57100. 3 hr./wk.; 3 cr.

CE H7500: Unit Operations in Environmental Engineering  
Physical-chemical unit operations in drinking water and wastewater purification. Process kinetics, ideal/nonideal reactor design, mixing, coagulation/flocculation, discrete/floculent settling, filtration, air stripping, disinfection, adsorption, ion exchange and membrane technologies. Prereq: CE 57100. 3 hr./wk.; 3 cr.

CE H7600: Unit Processes in Environmental Engineering  
Biological processes used to treat municipal wastewaters for BOD and nutrient removal: Activated sludge, trickling filters, rotating biological contactors. Use of applicable biological, absorption, stripping, precipitation, chemical oxidation, reverse osmosis, ultrafiltration processes. Recovery methods and sludge handling and disposal. Prereq: CE 57100. 3 hr./wk.; 3 cr.

CE H7700: Biological Systems in Environmental Engineering  
Procarytic and eukaryotic cell structure, origin and evolution of modern eukaryotes, microbial diversity and classification. Energy sources, chemo- lithotrophs, photolithotrophs, chemooorganotrophs, fermentation, respiration. Culture of microorganisms, types of culture media, enumeration of microbes in natural populations. Effects of environmental factors on growth. Virus structure, quantification, replication lysogenic, microbial genetics, mutations, recombinations, transformations, eukaryotic microbial genetics. Biogeochemical mineral cycling, detritus, wastewater microbiology, eutrophication. 3 hr./wk.; 3 cr.
CE H8300: Air Pollution and Control

CE H8400: Solid Waste Management

CE H9000: Advanced Foundation Engineering

CE I0000: Seminars
Recent developments in civil engineering; students report on assigned subjects. Topics to be announced. Variable cr.

CE I1700: Finite Element Methods in Engineering

CE I1900: Advanced Finite Elements

CE I2000: Travel Demand Forecasting
Consumer demand theory. Travel demand functions. Transportation cost and supply functions. Disaggregate and aggregate travel destination, route and modal choice models. Illustrations in practical situations for various modes. Prereq: CE I2400 or approval of the instructor. 3 hr./wk.; 3 cr.

CE I2200: Transportation Asset Management
Definition of asset and asset management systems: definition, attributes, components, goals and objectives, benefits; consequences of poor asset management. Transportation assets: physical plant, equipment, real estate, employees, customer goodwill, investments, funding sources. Valuation and preservation of value: replacement asset value vs. depreciated asset value; minimizing real depreciation, maintaining asset value. Direct vs. indirect revenues; balance sheets: assets and liabilities, revenues and expenditures, return on investment; cash flow and income statements; depreciation schedules. Life-cycle cost analysis. Application to road, rail, airport, port, bridges, buses, trains, utilities, human resources, etc., with student projects and presentations. 3 hr./wk.; 3 cr.

CE I2300: Pavement Management Systems

CE I2400: Analytical Techniques in Transportation
A survey of quantitative methods useful in transportation and traffic engineering. Network analysis. Decision theory. Data analysis and statistical inference. Computer simulation. Prereq: basic probability and statistics (e.g. CE 26400). 3 hr./wk.; 3 cr.

CE I2600: Urban Transportation Planning
Transportation planning in context of U.S. federal policy and legislative planning mandates. The structure of the transportation planning process. Travel behavior, accessibility, mobility and land use. Role of demand and supply models. Evaluation of alternatives. Air quality and congestion and their impacts. Role of revenue and funding, Regional examples. 3 hr./wk.; 3 cr.

CE I2700: Transportation Policy
Role of policy and policy makers. Legislation and its impact on transportation systems, system performance, and land use. Transportation institutions and their responsibilities. Models of policy formulation and policy analysis. Regional examples. 3 hr./wk.; 3 cr.

CE I2800: Transit Systems: Planning and Operations
Basic techniques of service area analysis, route development, scheduling, revenue estimation, and service improvements for fixed route bus and rail transit. Integration of fixed route transit with paratransit, matching mode with service area, relationship of transportation department with other departments, budgeting, and policy setting also will be discussed. 3 hr./wk.; 3 cr.

CE I2900: Transportation Project Evaluation
Methods of evaluating proposed projects including cost benefit analysis and alternative methods. How to value non-monetary impacts, e.g., time, life, clean air. Role of project evaluation within the planning process; evaluation criteria. Monitoring and evaluation of existing projects. 3 hr./wk.; 3 cr.

CE I3000: Structural Dynamics

CE I3500: Applied Elasticity and Plasticity

CE I3600: Fracture Mechanics
Review of fracture patterns in solids. Griffith-Intowick crack theory; stress analysis and crack tip stress-intensity factors; fracture toughness; crack extension force. Surface flows; plate thickness, and temperature effects; fatigue-crack propagation and stress-corrosion cracking. Application to structural analysis and design to avoid failures; fracture control plans. Prereq: CE I3500. 3 hr./wk.; 3 cr.

CE I3800: Plates and Shells
Exact and approximate methods of solution for various types of supports and various shapes of plates in polar and rectangular coordinates. Effect of large deflections. Cylindrical and spherical shells; elastic and inelastic buckling of shells. Thermal stresses in plates and shells. Pre- or corequisites(s): CE H1000. 3 hr./wk.; 3 cr.

CE I4000: Traffic Control
Traffic laws and ordinances; regulatory measures; traffic control devices; markings, signs and signals; timing of isolated signals; timing and coordination of arterial signal systems; operational controls; flow, speed, parking; principles of Transportation System Management/Administration; highway lighting. State-of-the-art surveillance and detection devices and techniques. Prereq: CE 52000 or CE H2000. 3 hr./wk.; 3 cr.

CE I4100: Intelligent Transportation Systems (ITS): Fundamentals and Applications
Historical background of ITS, ITS functional areas and interrelationships: Advanced Traveler Information Systems (ATIS), Commercial Vehicle Operations (CVO), etc. ITS system architecture requirements. ITS technology and operational and implementation issues. Due to the cutting edge nature of the course, it is taught in a collaborative manner with outside speakers giving presentations on ITS implementation and technology and students presenting papers. 3 hr./wk.; 3 cr.

CE I4500: Advanced Transportation Planning
Current techniques of planning will be applied to a regional case study. Survey techniques, travel behavior, travel demand management strategies, project evaluation and ISTEA/CAAA constraints will be reviewed for the study. 3 hr./wk.; 3 cr.

CE I4700: Planning and Design of Passenger Terminals
Passenger terminal as modal interface. Concepts of passenger levels of service. Simulation and queuing theory. Issues of security, access, location, and role in community. 3 hr./wk.; 3 cr.

CE I5400: Linear and Nonlinear Analysis of Structures
CE I5500: Stability of Structures

CE I5600: Earthquake Engineering

CE I5800: Structural Reliability

CE I6300: Water Resources Modeling
Finite-difference modeling and its application to groundwater flow problems. Topics include classification of second order partial differential equations, boundary and initial conditions, method of characteristics, Taylor series and control volume approaches to discretization, truncation and roundoff errors, and numerical stability, convergence and consistency. Numerical schemes are principally applied to the groundwater flow and advection-dispersion equations. Methods of integrating physical and hydrogeo logic data into groundwater flow models are examined. Course also provides introduction to commercial groundwater flow software. Prereq: CE 45100, CE H1000; knowledge of a programming language. 3 hr./wk.; 3 cr.

CE I7000: Wastewater Treatment Plant Design
Codes, regulations, and current practices used in design of municipal wastewater treatment facilities. Total facility planning and component design layout on typical site. Hydraulic profile, site grading, outline specifications, and preliminary report preparation. Field trips required. Prereq: CE H6400. 3 hr./wk.; 3 cr.

CE I9100: Soil Dynamics

CE I9200: Advanced Soil Mechanics

CE I9700: Report
Examinations, exploration, analysis, and chronicle of an engineering design, project, or system, from its inception through its development, consummation and consequent impacts. Written final report. Prereq: completion of nine CE credits applicable to master’s degree. 0 cr.

CE I9800: Project
Analytical or experimental project, preferably of student’s own choice. Under direction of a faculty advisor, student submits written proposal, performs the required task, and submits a written final report. Prereq: completion of nine CE credits applicable to master’s degree. 3 cr.

CE I9900: Research for the Master’s Thesis
6 cr.

CE J9900: Research for the Doctoral Dissertation
Variable cr.

CE K9000: Doctoral Dissertation Supervision
Prereq: approval of the departmental Ph.D. advisor. 1 credit repeatable up to 6 credits.

Other Engineering Courses
Other appropriate Engineering courses are listed under Graduate Engineering courses in the front section of the Grove School of Engineering.

ENGR I0800: Foundations of Fluid Mechanics I
Extensive physical background; introduction to basic theorems and concepts. Application of vector calculus and tensor analysis to inviscid and viscous steady and unsteady flow. Navier-Stokes equations and Prandtl boundary layer theory; application to in-compressible fluid motions. Prereq: ME 35600 or CH 34200 or CE 35000. 3 hr./wk.; 3 cr.

ENGR I1100: Introduction to Engineering Analysis

ENGR I1400: Applied Partial Differential Equations

ENGR I5200: Behavior of Inelastic Bodies and Structures
Linear theory of viscoelasticity with applications to vibrations and buckling. Introduction to the theory of plasticity. Physical basis, yield conditions. Perfectly plastic and strain hardening materials. Drucker’s postulates, flow rule. Upper and lower bound theorems. Applications to torsion, indentation and plate theory. Numerical solutions. Prereq: CE I3500. 3 hr./wk.; 3 cr.

ENGR I6400: Wave Propagation in Fluids and Solids
Hyperbolic and dispersive, linear and non-linear waves. Hyperbolic waves: the wave equation, stationary waves, breaking waves, shock waves. Dispersive waves: dispersion relations, group and phase velocities. Non-linear waves and chaos in wave fields. Application to (1) water waves, (2) stress waves in solids (dilation and distortion waves, Rayleigh waves). Prereq: ENGR I1100 or equivalent. 3 hr./wk.; 3 cr.

ENGR J4000: Perturbation Techniques
The application of perturbation methods in the solution of solid mechanics, fluid mechanics and heat transfer problems. Formulation of the mathematical techniques in perturbation theory. Topics include: regular and singular problems, the method of strained coordinates, and matched asymptotic expansions. Applications to viscous flow at low and high Reynolds numbers, mechanical vibrations, and celestial mechanics problems. Prereq: ENGR I1100 and ENGR I0800. 3 hr./wk.; 3 cr.

ENGR J5000: Theory of Elasticity

Faculty
Anil Agrawal, Professor
B.Tech. (C.E.), IIT (India); M.Eng.(C.E.), Univ. of Tokyo; Ph.D. (C.E.), Univ. of California (Irvine); P.E. (New York)

Mahdieh Allahviranloo, Assistant Professor
B.E. (C.E.), Sharif Univ. of Tech., M.S. (C.E.), Iran Univ. of Science and Tech.; Ph.D. (C.E.) Univ. of California (Irvine)

Lawrence C. Bank, Professor
B.S. (C.E.), Technion; M.S. (C.E.), Columbia Univ., Ph.D. (C.E.)

Candace E. Brakewood, Assistant Professor
B.S. (Mech. Eng.), Johns Hopkins; M.S. (Transportation, Technology Policy), MIT; Ph.D. (C.E.) Georgia Tech

Alison Conway, Assistant Professor
B.S. (C.E.), Univ. of Delaware; M.S. (C.E.), Univ. of Texas (Austin); Ph.D. (C.E.)

Julio Dvalos, Professor and Chair
B.S. (C.E.), Virginia Tech.; M.S. (C.E.); Ph.D. (Structural Mechanics)
Naresh Devineni, Assistant Professor  
B.E. (C.E.), Osmania University, India; M.S. (C.E.); Ph. D. (C.E.), North Carolina State University (Raleigh).

Vasil Diyamandoglu, Assistant Professor  
B.S.(C.E.), Bogazici Univ. (Turkey), M.S.(C.E.); Ph.D.(C.E.), Univ. of California (Berkeley)

Balazs M. Fekete, Assistant Professor  
M.S. (C.E.), Technical Univ. of Budapest (Hungary); Ph.D. (Earth Sciences), Univ. of New Hampshire

John Fillos, Professor  

Michel Ghosn, Professor  
B.S. (C.E.), Case Western Reserve Univ., M.S. (C.E.), Ph.D. (C.E.)

Camille Kamga, Assistant Professor  
B.S. (C.E.), Univ. of Moncton (Canada); M.E. (C.E.), CCNY; Ph.D. (C.E.)

Reza M. Khanbilvardi, Professor  
B.S. (C.E.), Pahlavi Univ. (Iran); M.S., Pennsylvania State Univ., Ph.D.; P.E. (New York, Connecticut)

Nir Krakauer, Associate Professor  
B.S.E. (Engr. Physics), Univ. of Michigan (Ann Arbor); M.S. (Geochemistry), California Inst, of Technology; Ph.D. (Geochemistry)

Feng–Bao Lin, Associate Professor  
B.S. (C.E.), National Taiwan Univ., M.S. (C.E.); Ph.D., Northwestern Univ.; P.E. (New York, Connecticut)

Robert E. Paaswell, Distinguished Professor  
B.E. (C.E.), Columbia Univ., M.S. (C.E.); Ph.D. (C.E.), Rutgers Univ.; P.E. (New York)

Michael Piasecki, Associate Professor  
Engr. Dipl. (C.E.), Univ. of Hanover (Germany); Ph.D. (C.E.), Univ. of Michigan (Ann Arbor)

Hansong Tang, Associate Professor  
B.S., Wuhan Univ., M.S. (C.E.); D.Sc. (Math), Peking Univ.; Ph.D. (C.E.), Georgia Tech.

Charles Vörösmarty, Presidential Professor  
B.S., Cornell Univ.; M.S. (C.E.), Univ. of New Hampshire; Ph.D. (Engineering Systems Design)

Ann E. (Beth) Wittig, Associate Professor  
B.S., Univ. of California (L.A.); Ph.D., Univ. of Texas (Austin)

Ardavan Yazdanbakhsh, Assistant Professor  
B.S. (C.E.), Azad Univ. (Central Branch); M.S. (C.E./Structural Engr.), Univ. of Sharjah (UAE); Ph.D. (C.E.), Texas A&M Univ.

Professors Emeriti  
J. E. Benveniste  
G. Donald Brandt  
Carl J. Costantino  
Norman C. Jen  
Claire E. McKnight  
Norbert Oppenheim  
Gerald Palevsky  
George Papoulas  
Neville Parker  
Ming L. Pei  
Joseph Pistrang  
Eli Plaxe  
Morris D. Silberberg  
James R. Steven
Earth System Science and Environmental Engineering Program

An Interdisciplinary Program between the Grove School of Engineering and the Division of Science

Professor Marco J. Castaldi, Program Director • ST417 • Tel: 212-650-6679
Professor Kyle McDonald, Deputy Director • MR834 • Tel 212-650-8218
Dr. Liubov Kreminska, Program Administrator • Program Office: ST-421 • Tel: 212-650-8299

General Information
The City College offers the following master’s degree in master’s degree:

M.S. in Earth Systems and Environmental Science and Technology

Objectives
This program will prepare students of diverse backgrounds with the science and technology skills needed to understand and develop solutions to solve complex environmental problems. Current and emerging challenges such as climate change, coastal flooding, energy production and pollution requires a training approach that includes both program breadth and depth and moves beyond the narrow disciplinary perspectives of the past. While our program will focus on specific knowledge and skills, the real-world applications and highlight interconnections across environmental science and engineering fields will be incorporated.

Students entering this program are offered two tracks:

Master of Science

The Professional Science Master which is affiliated with the Professional Science Master’s National Office and is designed to be a terminal degree.

Our diverse multidisciplinary curriculum gives us the flexibility to offer research training in the following concentration areas:

Water Resource Engineering Management (WREM)
Climate and Remote Sensing (CRS)
Geoinformatics and GIS (GIS)
Energy and Environment

Degree Requirements
For the Master’s degree in ESEST, a student must complete the 30-credit course program described below.

4 required courses covering core topics 12
2 distribution courses (6 credits) 6
3 courses in a specific area of concentration 9
Final project: a research project with a faculty member. (3 credits) 3

The PSM Degree in ESEST requires minimum 30 credits, including

4 required courses covering core topics 12
1 distribution course and Internship 6
3 courses in a specific area of concentration 9
Final project: Internship with an employer in industry, government, or non-profit organization (3 credits) 3

Students will be required to take four core courses for a total of 12 credits:

1) EE G6904: Advanced Statistics and Non-linear Analysis
2) ENGR G6601: Env Mod Earth Syst
3) SUS 7200C: Aquatic Terrestrial Atmospheric Systems
4) One approved Non-STEM course from the list:
   EES 71600: Environmental Ethics
   EES 79903: Political Ecology/Environmental Justice

EES 79903: Environmental Social Science I: Interdisciplinary Perspective
PSM B1600: Management of Public Organizations
ECO B6000: Introduction to Economic Development
UD 61004: Urban Ecologies I
ENGR H7600: Engineering and Business Law

Areas of Concentration
In the second semester of the program, students will begin taking a series of three courses in their specific area of concentration, for a total of 9 credits. At least one of these courses must be an engineering course. Enrollment in these specialized courses will be dependent on specific course offerings based on availability. Appropriate course sequences will be selected in conjunction with the program advisor.

For students with an interest in Water Resource Engineering Management, the following list of courses is recommended:

(D*) CE G7100: Water/Wastewater Treatment
E G7300: Surface Water Quality Modeling
(D*) CE G8100: Macro-Scale Hydrology
CE G9100: Water Resources Systems Analysis
CE H0700: Advanced Hydraulics
CE H0800: Applied Hydraulics Engineering
CE H1200: Engineering Hydrology
(D*) CHEM A1100: Environmental Chemistry
CHEM A1200: Environmental Organic Chemistry
CE H7700: Biological systems
EAS A1300: Environmental Geochemistry
EAS A2300: Subsurface Remediation
EAS B4500: Hydrology
EAS B4600: Ground-Water Hydrology

For students with an interest in Climate and Remote Sensing, the following list of courses is recommended:

(D*) EE G6800: Introduction to Optical Remote Sensing
EE G6902: Remote Sensing Surveillance
(D*) EE G6903: Advanced Topics in Remote Sensing
EE I0100: Probability and Stochastic Processes
CSC/EE I0807: Image Processing
(D*) EAS B8800: Climate and Climate Change
EAS B9014: Fundamentals of Atmospheric Sciences
EAS B9105: Remote Sensing Projects and Fieldwork
* EES 79903: Environmental Remote Sensing

For students with an interest in Geoinformatics and GIS, the following list of courses is recommended:

(D*) CE G0800/1: GIS in Water Resources
EE G6902: Remote Sensing Surveillance
AS B9012: Advanced GIS
* EES 79904: GIS for Earth/Environmental Science
(D*) CSC I6730: Data Reduction in the Physical Sciences
(D*) EES 79904: Data Acquisition Methods in GIS is not offered.
(D*) EAS B4400: Global Environmental Hazards
For students with an interest in Energy and Environment, the following list of courses is recommended:

SUS 7300A: Low Energy Building
SUS 7900B: Sust Enrg Conv Syst

(D*) SUS 7600B: Design of Mechanical Systems for Sustainable Buildings
(D*) ME G3300: Solar Energy

*The courses are described in the bulletin of The Graduate School of the City University of New York.
D* These courses are also distribution courses described in the next section

Distribution Courses
Distribution courses are designed to provide students with introductory knowledge of concentration areas other than their chosen one. Students must take distribution courses (marked with D*) from areas outside of their chosen concentration. At least one of these courses must be an engineering course.

Additional Requirements
All courses are to be chosen in consultation with the student’s advisor and are subject to the approval of the Program’s Graduate Studies Committee.

MS students are not allowed to take courses which are cross-listed with the undergraduate courses, if the student took corresponding course as an undergraduate student.

A maximum of six credits in other departments or divisions of the College, units of CUNY or external universities may be transferred toward the M.S. degree in ESEST unless waived by the program director.

Advisement
For general academic advisement for all program options:
Professor Barry Gross
ST-416; 212-650-5325.

Student Pathways
Full-time students in the ESEST master’s program will typically earn their degrees in 2-3 academic semesters. Full-time students following the PSM ESEST curriculum will typically earn their degrees in 2 academic semesters (1 year) and one summer. For those who prefer to earn their degree part-time, a part-time pathway requiring 4 academic semesters and one summer is available.

ESEST Course Descriptions

ENGR G6601: Environmental Modeling for Earth Systems Sciences and Engineering
Nature and purpose of environmental modeling; definition of fundamental concepts in environmental modeling; mathematical and numerical concepts involved in designing and building an environmental model; calibration, verification and validation of models; scale dependency; sensitivity analysis; characteristics, architecture and functioning of selected environmental models; practice by code development and use; contemporary applications to water resources, atmospheric processes, and climate dynamics processes. Pre-req: Graduate student standing in ESEST and a suitable GIS Introductory Course. 3 hr./wk.; 3 cr.

Faculty
Samir Ahmed
Herbert Kayser Professor, Electrical Engineering
Teresa Bandosz
Professor, Chemistry
Sanjoy Banerjee
Distinguished Professor, Chemical Engineering Director of CUNY Energy Institute
Karin Block
Associate Professor, Earth and Atmospheric Sciences
Marco J. Castaldi
Associate Professor, Chemical Engineering
Vasil Diyamandoglu
Assistant Professor, Civil Engineering
Balaz M. Fekete
Assistant Professor, Civil Engineering
John Fillos
Professor, Civil Engineering
Alexander Gilerson
Associate Professor, Electrical Engineering
Irina Gladkova
Professor, Computer Science
Jorge Gonzalez
Professor, Mechanical Engineering
Barry Gross
Professor, Electrical Engineering
Michael Grossberg
Assistant Professor, Computer Science
Urs Jans
Associate Professor, Chemistry
Patricia Kenyon
Associate Professor, Earth and Atmospheric Sciences
Reza Khanbilvardi
Professor, Civil Engineering
NOAA Chair
Nir Krakauer
Assistant Professor, Civil Engineering
Jae Lee
Associate Professor, Chemical Engineering
Z. Johnny Luo
Associate Professor, Earth and Atmospheric Sciences
Prathap Ramamurthy
Assistant Professor, Mechanical Engineering
William Rossow
Distinguished Professor, Electrical Engineering
Hansong Tang
Associate Professor, Civil Engineering
Marco Tedesco
Associate Professor, Earth and Atmospheric Sciences
Maria Tzortziou
Associate Professor, Earth and Atmospheric Sciences
Charles Vorosmarty
Presidential Professor, Civil Engineering
Zhengroy Wang
Professor, Earth and Atmospheric Sciences
Beth Wittig
Associate Professor, Civil Engineering
Pengfei Zhang
Professor and Chair, Earth and Atmospheric Sciences
General Information
The Institute for Municipal Waste Research, a University-wide institute chartered in 1991, is headquartered in the Grove School of Engineering. It was formed to mobilize the intellectual resources of the university to assist New York City and other urban communities across the nation in finding and implementing solutions to the problems of municipal waste. It conducts research on the generation, treatment, processing, recycling, and disposal of municipal waste, as well as on other related topics. The research encompasses both technical and federal agencies having responsibility for municipal waste, as well as organizations representing the public interest. Areas of current technical interest include improved methods for water and waste treatment, heat treatment of sewage sludge to increase methane production, groundwater contamination, incinerator modeling and simulation, and alternatives to landfill disposal (e.g., utilization of incinerator ash in concrete).

Current Research Areas
The Institute is currently involved in several projects that are funded by federal, state and city agencies. These projects are primarily involved with water quality issues. Water disinfection and biostability of drinking water systems are of primary concern. Different disinfection alternatives using chlorine and ozone are being considered. By-product formation and identification during disinfection is an additional area of interest in ongoing and proposed projects.

Water pollution control represents another active area of research that is currently funded. As a result of the Long Island Sound Study, nitrogen has been identified as the limiting nutrient of concern in the Sound. A mass balance performed on the Sound indicated that point sources such as discharges from wastewater treatment plants are significant contributors of nitrogen. The Institute, working with the New York City Department of Environmental Protection, is developing and testing innovative technologies that can be implemented at existing treatment plants to improve nitrogen removal from municipal wastewaters. The studies involve bench-scale experiments and demonstration of selected technologies in full scale treatment facilities.

Graduate Study in Environmental Engineering and Water Resources
Graduate programs in environmental engineering and water resources are offered by the Department of Civil Engineering. Students with a Bachelor of Engineering or Bachelor of Science degree can enroll in the graduate program and earn either a Master of Science or a Master of Engineering degree. Professionals who are currently practicing in different disciplines of Engineering may also enroll in the Department and earn a Certificate of Advanced Study in environmental engineering or water resources.

Further information may be obtained from the Civil Engineering Department.
Institute for Transportation Systems

General Information

The CUNY Institute for Transportation Systems is a multi-disciplinary inter-college effort which addresses transportation issues affecting the economic and social life of the city, state, and region. Institute activities include pure and applied research, policy analysis, analysis of urban transportation systems, pavement and bridge asset management systems, intelligent transportation systems, transportation economics, modeling, forecasting, professional training and development, outreach to inform and attract students to careers in engineering and transportation, and outreach to inform and empower the public concerning transportation issues.

Founded in 1985, the Institute conducts research on all forms of surface transportation including the movement of people and goods, and the provision of services. Among the objectives of the Institute are to disseminate research findings and to serve as a resource to New York City and New York State agencies involved with transportation issues. Some of the current research topics are recycled and composite materials for pavements, life cycle cost analysis of new and rehabilitated pavements, non-destructive testing of urban street pavements, utility cut restoration techniques, urban pavement management systems, transit management, incident management and urban goods movement. Several laboratories are affiliated with the Institute, including Transportation Engineering (Civil Engineering), Powder Technology (Chemical Engineering), and Materials Characterization (Mechanical Engineering).

The Institute’s current outreach efforts include the Transportation Careers (TRAC) program and the Federal Highway Administration-sponsored Summer Transportation Institute (STI) targeting high school students; and the development of a plain English transportation empowerment guide for grassroots community dissemination. Past outreach efforts included the U. S. Department of Transportation Office of Small Business Development Utilization-sponsored Electronic Training and Technical Assistance Program (ETTAP) targeting S/DBE’s, and the Metranet Project (1986 to 1990), a program which fostered communication between public officials and private providers of transportation. The Metranet project sponsored forums, conferences and workshops, and published a newsletter. Over 5,000 people were involved in the Metranet programs, which were sponsored by the Urban Mass Transportation Administration of the U. S. Department of Transportation.

The Institute offers an ongoing professional training program for foreign transportation professionals in cooperation with the International Road Federation, with funding from such multinational agencies as the World Bank and the African Development Bank. These programs are normally intensive menus of coursework, individualized instruction and on-site exposure and training, specifically tailored to the needs of one or more individuals from a designated highway or road authority, and extend from 12 weeks to 18 months. To date these professionals have included officials from Korea, Japan, West Bank, Ethiopia, China, Taiwan, Eritrea, Ghana, Zambia, Tanzania, Lesotho and Syria. Professional training is also offered to city, state and regional agency/industry professionals in the form of both short and “long” courses, some of which are tailored to the specific needs of a requesting agency.

The CUNY Institute for Transportation Systems is the lead institution for a consortium of twelve universities that have been designated as a federally sponsored University Transportation Research Center (Region II). The Center serves New York, New Jersey, Puerto Rico, and the Virgin Islands. Consortium members include: Princeton, Cornell, New York University, Polytechnic University, Rensselaer Polytechnic Institute, New Jersey Institute of Technology, Rutgers University, University of Puerto Rico, and University of the Virgin Islands. Participating CUNY colleges in the Institute are City, Baruch, Bronx Community, the Graduate School, Hunter, John Jay, LaGuardia Community and New York City Technical. The Institute also includes Hostos and Lehman colleges in its outreach programs. The Institute is located at The City College.

The Institute is an active member in a number of professional associations such as the American Road and Transportation Builders Association, the International Road Federation, New York Public Transit Association, the American Public Transit Association, and the Women’s Transportation Seminar.
Center for Water Resources and Environmental Research (International Center for Environmental Resources and Development)

Professor Reza M. Khanbilvardi, Director • Office: Steinman 107 • Tel: 212-650-8200

General Information

The Center for Water Resources and Environmental Research (CWRER) coordinates the resources of the College's world-class engineering and science faculty as well as those at other CUNY campuses and professional communities to address a broad array of environmental problems.

CWRER is tackling the diverse problems of water resources and environmental issues with broad approaches beginning with research on the sources of natural hazards, pollution movement, surface water and groundwater cleanup, wetland preservation, reservoir protection, environmental remote sensing, hydraulics and hydrology of natural flow systems, non-point source pollution, preservation of ecology, and related topics. Included are both technical and social/political issues arising from these problems.

The Center’s objectives are:

To conduct multi-disciplinary research on protection of the environment and minimization of pollution hazards to water resources, hydrological and ecological systems;

- To develop and demonstrate new technologies for the treatment and disposal of natural water supplies and waste water;
- To develop robust remote sensing to manage and protect our nation's national resources;
- To cooperate on a global scale to protect the precious resources that sustain human life;
- To educate and train personnel for management, supervision and operation of environmental and water resources management systems;
- To develop and execute training programs in corporate and community communications, marketing and international business and financial management.

CWRER comprises two divisions:

Water Resources and Environmental Research

In addition to water resources and environmental research, this division focuses on air and water pollution crisis management, remote sensing and global change impact, environmental technology and research, and education and training programs within economic, political and social contexts.

The division also offers educational course work in water resources, environmental engineering and ecology for career development, operator training and public information.

Remote Sensing Science and Technology

A program which provides scholarships to recruit and educate students from underrepresented minorities for professional opportunities within the National Oceanic and Atmospheric Administration, and to conduct research consistent with NOAA’s mission: environmental assessment; prediction; and stewardship. A multi-institutional center (NOAA-CREST) led by The City University of New York (CUNY), including The City College, Lehman College, the CUNY Graduate Center and Bronx Community College, in collaboration with Hampton University in Virginia, the University of Puerto Rico at Mayaguez, the University of Maryland Baltimore County, Bowie State University in Maryland and Columbia University.

CWRER activities cover the following areas:

Groundwater Problems

- Pore-scale and field-scale modeling of contaminant transport in unsaturated and saturated soils
- Experimental studies for parameter estimation in porous media
- Development of technology for contaminant detection and monitoring in groundwater systems

Waste Treatment Problems

- Treatment and disposal of municipal and industrial wastewater and solid waste
- Alternative disinfection in wastewater treatment

Surface Water Problems

- Application of advanced technology, such as Geographic Information Systems and remote sensing, for hydrological evaluation of watersheds
- Development of mathematical models for prediction and evaluation of non-point source pollution
- Development of alternatives for proper water resources planning and management
- Effect of climate changes on hydraulics and hydrology of water resources

Environmental Remote Sensing

- Assessment of regional air quality
- Monitoring diverse conditions of coastal and inland waters
- Improve climate and environmental observation to predict changes in the Earth’s environment

Land and Coastal Problems

- Development of technology for beach protection
- Mathematical modeling for evaluation and protection of tidal wetlands
- Theoretical and experimental studies of beach erosion
- Studies of soil erosion and its control
- Land loss processes, such as landslides: study and control

Water Treatment Problems

- Chemistry of ozonation and chloramination in combined application
- Application of aeration processes for the removal of volatile organics
- Removal of lead

Ecological and Health Problems

- New methods and technologies of detecting contaminates in the air
- Job-related solid particles in the air and their health importance
- Studying the fate of radioactive wastes
- Pollution ecology of water bodies
- Relationship between aquaculture and environment

Geographically, the Center is not only active in the USA, but foreign countries as well. Agreements on multi-national cooperation have been reached with some former republics of the USSR and Macedonia.

Facilities Available for the Center

- Hydraulics Laboratory
- Soil Mechanics Laboratory
- Environmental Engineering Laboratory
- Experimental Fluid Mechanics and Aerodynamics Laboratory
- Weather Station
- Photonics Engineering Laboratories
- Environmental Remote Sensing Laboratory
- Biology Department Facilities:
  - Laboratory for Invertebrate Ecology
  - Laboratory for Microbial Ecology
  - Laboratory for Genetics of Phytoplankton
  - Laboratory for Wetland Ecology
  - Biomedical Laboratory
  - Electron Microscope Laboratory
  - Radiobiology Laboratory
New Facilities
Recently three major facilities have been implemented: (a) a state-of-the-art wave tank with fully automated 2-D Laser Doppler Anemometer and Particle Image Velocimetry devices, (b) a mobile laboratory equipped with laser and electronic sensors for field monitoring and pollution detection in natural water bodies, and (c) Geographical Information Science (GIS) laboratory, funded by NASA, with a multimedia classroom facility and computational facilities for remote sensing and GIS applications. These two last additions are believed to be the only ones in the Northeast.

Funding Agencies
Below is a list of some agencies providing funding for the projects carried out by faculty members of the CWRER:
US Department of Agriculture
US Agency for International Development
US Department of Defense
US Department of Transportation
US Army Corps of Engineers
National Science Foundation
NASA
NOAA
EarthWatch
New York City Department of Environmental Protection
New York City Department of Sanitation
New York State Energy Research and Development Authority
New York State Institute for Solid Waste Combustion
Suffolk County Department of Public Works
Civilian Research and Development Corporation
Sloan Foundation
General Information

The City College offers the following Master’s degrees in Computer Science:

M.S. (C.Sc.)

M.I.S.

M.S. Degree Requirements

Required Courses

Choose six courses (3 cr. each) from those listed below with at least two courses in each area.

Computation Theory

CSc I0600: Fundamental Algorithms
CSc I0900: Graph Theory and Algorithms
CSc I1200: Topics in Algorithms, including any course numbered I12XX
CSc I1400: Analysis of Parallel Algorithms
CSc I2000: Introduction to Theoretical Computer Science
CSc I2100: Finite Automata and Models of Computation
CSc I2200: Theory of Computability
CSc I2400: Formal Language Theory
CSc I2600: Computational Complexity
CSc I2800: Topics in the Theory of Computing
CSc I4800: Codes, Cryptography, and Secure Communication
CSc I4900: Computer Security
CSc I6000: Mathematics for the Analysis of Algorithms

Computer Organization and Software

CSc I0400: Operating Systems
CSc I0700: Compiler Construction
CSc I0800: Topics in Software Systems, including any course numbered I08XX
CSc I1000: Database Systems I
CSc I1100: Database Systems II
CSc I2300: Symbolic Computation
CSc I4200: Computer Architecture
CSc I4300: Computer Communication
CSc I4330: Advanced Topics in Internet Programming
CSc I4600: Topics in Computer Architecture
CSc I4700: Topics in Computer Communications, including any course numbered I47XX

Computing Methodologies and Mathematical Computing

CSc I0500: Computer Graphics
CSc I1500: Artificial Intelligence
CSc I1600: Natural Language Processing
CSc I1800: Topics in Artificial Intelligence
CSc I1900: Pattern Recognition and Machine Learning
CSc I3100: Seminar in Information Systems, including any course numbered I31XX
CSc I6100: Mathematical Programming I
CSc I6200: Mathematical Programming II
CSc I6300: Decision Analysis
CSc I6400: Topics in System Simulation
CSc I6600: Probabilistic Models in Computer Science
CSc I6700: Topics in Scientific and Statistical Computing, including any course numbered I67XX

Additional Requirements

Students must either:

- complete 3 graduate courses in Computer Science and one course with number I96XX and its associated zero-credit report I9700;
- with permission of the department, complete 3 graduate courses in Computer Science and a 3 credit project (CSc I9800) under the direction of a member of the faculty;
- or with permission of the department, complete 2 graduate courses in Computer Science and a 6 credit thesis (CSc I9900) under the direction of a member of the faculty

With the approval of the student’s graduate advisor, one course in another Engineering discipline may be substituted for one of the Computer Science courses used to fulfill the Additional Requirements.

Total credits 18

M.I.S. Degree Requirements

Required Courses

Choose six courses (3 cr. each) from those listed below with at least two courses in each area.

Computation Theory

CSc I0600: Fundamental Algorithms
CSc I0900: Graph Theory and Algorithms
CSc I1200: Topics in Algorithms, including any course numbered I12XX
CSc I1400: Analysis of Parallel Algorithms
CSc I2000: Introduction to Theoretical Computer Science
CSc I2100: Finite Automata and Models of Computation
CSc I2200: Theory of Computability
CSc I2400: Formal Language Theory
CSc I2600: Computational Complexity
CSc I2800: Topics in the Theory of Computing
CSc I4800: Codes, Cryptography, and Secure Communication
CSc I4900: Computer Security
CSc I6000: Mathematics for the Analysis of Algorithms

Computer Organization and Software

CSc I0400: Operating Systems
CSc I0700: Compiler Construction
CSc I0800: Topics in Software Systems, including any course numbered I08XX
CSc I1000: Database Systems I
CSc I1100: Database Systems II
CSc I2300: Symbolic Computation
CSc I4200: Computer Architecture
CSc I4300: Computer Communication
CSc I4330: Advanced Topics in Internet Programming
CSc I4600: Topics in Computer Architecture
CSc I4700: Topics in Computer Communications, including any course numbered I47XX

Computing Methodologies and Mathematical Computing

CSc I0500: Computer Graphics
CSc I1500: Artificial Intelligence
CSc I1600: Natural Language Processing
CSc I1800: Topics in Artificial Intelligence
CSc I1900: Pattern Recognition and Machine Learning
CSc I3100: Seminar in Information Systems, including any course numbered I31XX
CSc I6100: Mathematical Programming I
CSc I6200: Mathematical Programming II
CSc I6300: Decision Analysis
CSc I6400: Topics in System Simulation
CSc I6600: Probabilistic Models in Computer Science
CSc I6700: Topics in Scientific and Statistical Computing, including any course numbered I67XX

Additional Requirements

Students must either:

- complete 3 graduate courses in Computer Science and one course with number I96XX and its associated zero-credit report I9700;

MIS G1010: Statistics and Decision Making
MIS G2010: Object-Oriented Design and Software Engineering
MIS G2020: Database Management
MIS G2030: Networking and Security
MIS G4010: System Analysis and Design
MIS G3010: Managerial Economics (Economics B9513)
MIS G3020: Developing Management Skills
MIS G3030: Organization and Management (Economics B9514)
MIS G5010: Seminar in Information System Management

Additional Requirements

Students must complete two of the following 3 credit courses in the same semester:

MIS G5020: Project in Information System Management

Total credits 30

Computing Facilities

An extensive array of computing facilities is available to Computer Science students. The Department has several laboratories equipped with state-of-the-art computers and workstations which support teaching and research. These computers are connected to the Grove School of Engineering network which is linked to the Internet.

Computer Science Course Descriptions

CSc I0400: Operating Systems

Underlying theoretical structure of operating systems; input-output and storage systems, data management and processing; assembly and executive systems, monitors; multiprogramming. Prereq: CSc 33200 or an equivalent undergraduate course. 3 hr./wk.; 3 cr.

CSc I0500: Computer Graphics

An intensive introduction to computer graphics hardware, design of graphics packages, geometric transformations, 3D viewing and projections, raster scan conversion, visible surface determination, lighting, and shading. 3D shape representation, and splines. Emphasis is on implementation of important graphics algorithms. Prereq: CSc 33200 and MATH 34600 or equivalent. 3 hr./wk.; 3 cr.

CSc I0600: Fundamental Algorithms

An intensive study of advanced non-numerical programming techniques. Data representation; list, tree and string manipulation algorithms. Recursive programming. Introduction to searching and sorting. Storage management algorithms. Comparative efficiency of algorithms. Prereq: CSc 22000 or equivalent. 3 hr./wk.; 3 cr.

CSc I0700: Compiler Construction

Techniques involved in analysis of source languages and generation of efficient object code. Parsing methods, storage allocation, programming language semantics, optimization techniques, interpreters, study of existing compilers and their special features. Prereq: CSc 22000 and CSc 30400 or equivalent. 3 hr./wk.; 3 cr.

CSc I0800: Topics in Software Systems

Selected topics of current interest. Recent offerings have included computer games, concurrent and distributed processing, search technologies, internet programming and information management. Prereq: CSc 33200 or equivalent. 3 hr./wk.; 3 cr.

CSc I0807: Image Processing

An intensive introduction to imaging intended for graduate students and advanced undergraduates. Topics include digital filtering theory, image enhancement, image reconstruction, anti-aliasing, warping, and state-of-the-art special effects. These topics form the basis of high quality rendering in computer graphics, as well as low-level processing for computer vision, remote sensing, and medical imaging. Emphasizes computational techniques for implementing useful image processing functions. Programming assignments
will reinforce material covered in class. Prereq: CSc 32200 or equivalent. 3 hr./wk.; 3 cr.

CSc 10900: Graph Theory and Algorithms

CSc 11000: Database Systems I
An introduction to database architecture. Levels of abstraction in a database system, physical data organization, abstract data models, relational database systems, and their query language. Prereq: CSc 22000 and CSc 33200 or equivalent. 3 hr./wk.; 3 cr.

CSc 11100: Database Systems II
Logical models for database management systems, especially relational, hierarchical and network. Case studies illustrating their implications for applications system development. Physical implementation of advanced data and storage structures. Prereq: CSc 11000 or equivalent. 3 hr./wk.; 3 cr.

CSc 11200: Topics in Algorithms
Current developments in the design, analysis and implementation of algorithms and their applications. Recent offerings have included packing and covering, randomized algorithms, geometric graphs, computational geometry, combinatorics, and algorithms in bioinformatics. Prereq: CSc 22000 and CSc 30400 or equivalent. 3 hr./wk.; 3 cr.

CSc 11400: Parallel Algorithms
Techniques of efficient program design. Analysis of parallel algorithms chosen from information storage and retrieval, graph theory, pattern matching, matrix operations, etc., and their time, space, and other resource requirements. Lower bounds for the intrinsic computational difficulty of some of these programs. Prereq: CSc 22000 and CSc 30400 or equivalent. 3 hr./wk.; 3 cr.

CSc 11500: Artificial Intelligence
The study of how to make the computer behave intelligently. State-space methods of problem solving, heuristic search techniques, representation and use of knowledge, mechanical theorem proving, psychological implications. Examples of game playing, problem solving, or other systems. Prereq: CSc 22000 and CSc 30400 or equivalent. 3 hr./wk.; 3 cr.

CSc 11600: Natural Language Processing
Methods for processing English texts and dialogues on the computer. Parsing, transformational analysis, semantic analysis, interfacing; examples of natural language systems for carrying on dialogues and performing tests. Prereq: CSc 44800, or CSc 11500 or equivalent. 3 hr./wk.; 3 cr.

CSc 11800: Topics in Artificial Intelligence
Selected topics from expert systems, automated systems and robotics; automated reasoning; computer vision. Prereq: CSc 44800 or CSc 11500 or equivalent. 3 hr./wk.; 3 cr.

CSc 11896: Computer Vision
A survey of the techniques used in computer vision, which recovers information from images. Topics include: the geometry of image formation; multiple 2D techniques for feature detection, image segmentation, object recognition, and texture; 3D shape from shading, stereo and motion. Some mathematical maturity is assumed, including familiarity with linear algebra, multidimensional calculus and simple statistics. Prereq: CSc 22000, CSc 22100 and MATH 34600 or equivalent. 3 hr./wk.; 3 cr.

CSc 11900: Pattern Recognition and Machine Learning
Generalization and classification; pattern recognition and perception; concept formation; remembering and forgetting; learning and hypothesis formation. Prereq: CSc 44800 or CSc 11500 or equivalent, and knowledge of Linear Algebra. 3 hr./wk.; 3 cr.

CSc 12000: Introduction to Theoretical Computer Science
Fundamental concepts from logic, models of computation, and complexity theory. Scope and limitations of various formalisms. The Chomsky hierarchy of languages and machines. Basic ideas for recursive functions. Impact on programming systems. Prereq: CSc 30400 or equivalent. 3 hr./wk.; 3 cr.

CSc 12100: Finite Automata and Models of Computation
A review of the basic definitions, concepts and results concerning finite automata (e.g. Myhill-Nerode Theorem). Applications of finite state automata in the modeling of circuits for fast arithmetic computation, exploring graphs and robotic computations, pseudorandom number generators for internet protocols, recent physical and biological applications (e.g. Watson-Crick finite automata). Prereq: CSc 30400 or CSc 12000 or equivalent. 3 hr./wk.; 3 cr.

CSc 12200: Theory of Computability
Formulations of effective computability: Post machines, Turing-type models, recursive functions, and semi-True systems. The equivalence of the various formulations. Church’s Thesis. Fundamental theorems of computability: universal machines, S-M-N, and recursion theorem. Unsolvable problems. Recursively enumerable sets. Prereq: CSc 30400 or CSc 12000 or equivalent. 3 hr./wk.; 3 cr.

CSc 12300: Symbolic Computation
A comparative study of the structure and use of various functional, logical and sequential languages used in symbolic computation and artificial intelligence. Choice of appropriate programming tools for specific applications. Comparison of user-machine interfaces. Prereq: CSc 30400 or CSc 12000, or equivalent. 3 hr./wk.; 3 cr.

CSc 12400: Formal Language Theory
Classification of languages by grammars and automata. The Chomsky hierarchy: regular, context free, context sensitive and recursively enumerable languages and their associated grammars and automata. Closure properties for families of languages. Decision problems for grammars and automata. Prereq: CSc 30400 or CSc 12000 or equivalent. 3 hr./wk.; 3 cr.

CSc 12600: Computational Complexity
Complexity measures for algorithmic systems, determinism vs. non-determinism, time vs. space, complexity hierarchies, aspects of the P-NP question, inherent complexity of specific algorithmic problems, recent applications to cryptography. Prereq: CSc 30400 and CSc 12000 or CSc 10600. 3 hr./wk.; 3 cr.

CSc 12800: Topics in the Theory of Computing
Topics of current interest, such as quantum computing, biological computing, automated reasoning, parallel computation, advanced topics in complexity, algebraic and symbolic computation, historical issues and open problems. Prereq: CSc 12000 or departmental approval. 3 hr./wk.; 3 cr.

CSc 13100: Seminar in Information Systems
Topics of current interest in computer-based information systems. Possible topics include computer-human interaction, virtual organization, decision support systems, knowledge management, and systems analysis. Students are required to complete a project on an approved topic in the course. Prereq: CSc 11000. 3 hr./wk.; 3 cr.

CSc 13110: The Information Marketplace
All aspects of the market for computer-based information products and services. Course objectives are to define and characterize the information marketplace, to present concepts and methods for analyzing behavior within the marketplace, and review public and private policy implications of the information marketplace. Prereq: strong background in Economics and permission of the instructor. 3 hr./wk.; 3 cr.

CSc 14200: Computer Architecture
Quantitative principles of computer design. Instruction-level parallelism (ILP). Exploiting ILP using Dynamic Scheduling, multiple issue, and speculation. Issues in thread-level parallelism using ILP. Multiprocessors and thread-level parallelism. Symmetric shared memory architectures. Distributed shared memory multiprocessors. Memory hierarchy design. Virtual machines. Advanced topics in storage systems. Prereq: CSc 34200/34300 or equivalent. 3 hr./wk.; 3 cr.

CSc 14300: Computer Communications

CSc 14330: Advanced Topics in Internet Programming
The first part of the course will deal with platform-independent software and data for Internet programming. The second part will address Web Services—messaging over standard web protocols. Students will be exposed to current technologies and standards. Topics discussed may include: distributed objects and remote invocation, messaging, name services, security. Prereq: CSc 22100 or equivalent. 3 hr./wk.; 3 cr.

CSc 14600: Topics in Computer Architecture
Selected topics from the current literature in computer architecture. Prereq: CSc 34200/34300 or CSc 14200 or equivalent. 3 hr./wk.; 3 cr.
CSc I4633: Multimedia
Algorithms and software that handle and manipulate interactively digital sound, image, animation and video. Topics covered include digital sound formats and conversion factors affecting sound quality, digital image formats and conversion, image compression and factors affecting image quality, digital video formats and standards, video compression methods, videoconferencing and interactive media. Prereq: CSc 32200 and good programming knowledge. 3 hr./wk.; 3 cr.

CSc I4700: Topics in Computer Communications
Selected topics from the current literature in computer communications. Prereq: CSc I4300 or equivalent. 3 hr./wk.; 3 cr.

CSc I4800: Codes, Cryptography, and Secure Communication
Concepts from probability and information theory entropy, codes for compression, error-correcting codes, secrecy codes, block ciphers and public key cryptosystems, cryptographic protocols for secure communication, introduction to quantum cryptography. Prereq: CSc 30400 and CSc 34200 or equivalent. 3 hr./wk.; 3 cr.

CSc I4900: Computer Security
An introduction to the principles and practices of computer security in various computing environments. Conventional encryption systems and classical cryptanalysis. Confidentiality using conventional encryption. Public key encryption and protocols for authentication and digital signatures. Recent cryptanalytic attacks on conventional and public key systems. Intruders, viruses, and trusted systems. Firewalls and internetwork security. A survey of applications and problems arising in contemporary computer security. Prereq: CSc 30400 and CSc 22000 or equivalent. 3 hr./wk.; 3 cr.

CSc I6000: Mathematics for the Analysis of Algorithms
Those areas of mathematics necessary for the advanced analysis of algorithms: manipulation of sums, solving recurrences, number theory, binomial coefficients, special sequences, generating functions, and asymptotics. Prereq: CSc 22000 or CSc 10600. 3 hr./wk.; 3 cr.

CSc I6100: Mathematical Programming I
The simplex method. Duality theory and related methods. The revised simplex method, decomposition, and partitioning methods for large structural problems. Network flow problems: max-flow, min-cut theorem, special algorithms for transportation, shortest route, and assignment problems. Aspects of computer implementation. Prereq: CSc 22000 or CSc 10600, and MATH 34600 or equivalent. 3 hr./wk.; 3 cr.

CSc I6200: Mathematical Programming II

CSc I6300: Decision Analysis
An introduction to decision-making under uncertainty. Bayes and minimax criteria. Utility theory, treatment of risk, and the value of information. Two-person and n-person games, stochastic linear programming models, policy improvement algorithm. Markovian decision processes. Application to system design, management, and production. Prereq: CSc 22000 or CSc 10600, and an undergraduate course in probability. 3 hr./wk.; 3 cr.

CSc I6400: Topics in System Simulation
Simulation methodology, design, and analysis of simulation experiments. Generation and testing of random variates. Variance reduction techniques. Simulation languages. Analysis of queuing models on computer systems simulation. Prereq: CSc 22000 and CSc 21700 or equivalent. 3 hr./wk.; 3 cr.

CSc I6600: Probabilistic Models in Computer Science
Integration to queuing theory. Birth and death processes. Single server and multiple server queuing systems. Priority disciplines. Time sharing and multi-programming models. Selected topics in system reliability theory. Prereq: CSc 22000 or CSc 10600. 3 hr./wk.; 3 cr.

CSc I6700: Topics in Scientific and Statistical Computing
Selected topics from computer algebra, advanced numerical methods, advanced numerical computation, advanced operations research, combinatorial computing, graph algorithms, cryptography. Recent offerings have included computer vision, cluster computing, digital libraries, pattern recognition and satellite image processing. Prereq: CSc 22000 or CSc 10600. 3 hr./wk.; 3 cr.

CSc I6730: Data Reduction in the Physical Sciences
A course in the reduction of data sets gathered by government agencies (NOAA and NASA). Data comes from satellite remote sensing and other atmospheric and oceanographic measuring systems. Prereq: Permission of the instructor. 3 hr./wk.; 3 cr.

CSc I6744: Neural Computing
An introduction to neural networks and their applications. Material to be covered includes: models of a neuron, network architectures, visualization processes and artificial intelligence in neural networks, learning processes, the perceptron, multilayer perceptrons. Prereq: MATH 20300, MATH 34600 and a working knowledge of C or Fortran. 3 hr./wk.; 3 cr.

CSc I9600: Special Topics in Contemporary Computer Science
A research seminar course, focusing on a specialized and contemporary topical areas of computer science. The course will present research articles and technology papers to students in the chosen topic, actively engaging them in the presented materials through their interactive discussions, writing of short summary reports, team projects, literature search and/or exams. Prereq: advanced graduate standing and permission of the instructor. 3 hr./wk.; 3 cr.

CSc I9700: Report
Co-requisite: CSc I96XX. 0 cr.; satisfies non-course requirement.

CSc I9800: Project
Experimental or theoretical project under the direction of a faculty advisor. Student submits proposal, performs the required studies, submits a written final report, and gives a comprehensive oral presentation to the department or an approved forum. Prereq: departmental approval. 3 cr.; satisfies non-course requirement.

CSc I9900: Research for Master's Thesis
Departmental approval required. 6 cr.; satisfies non-course requirement.

MIS G1010: Statistics and Decision Making
The objective of this course is to analyze data and use methods of statistical inference in making business decisions. This course will focus on the application of fundamental concepts covered in Probability and Decision Making to the problem of drawing inferences from data on observed outcomes. Topics covered during the first part of the course will include statistical sampling and sampling distributions, point estimation and confidence intervals, hypothesis testing, and correlations among variables. The second part of the course will focus on multivariate analysis, with special attention paid to the inferences that may draw with respect to prediction and causality. Microcomputer statistical packages support the course content.

MIS G2010: Object-Oriented Design and Software Engineering
This course provides an introduction to the software engineering discipline and the roles within it. Students will learn how each phase of the life cycle contributes to a product that satisfies user/client requirements. The following issues will be addressed: Delivering high-quality, maintainable software projects on time and within budget; selecting an appropriate software development life cycle model for a project; applying appropriate requirements, analysis, design and testing methodologies; identifying and assessing language, database, software architecture and quality issues; exploiting verification and validation activities throughout the life cycle; employing techniques that help achieve SEI CMMI and IEEE 9000 goals; enhancing the impact of CASE tools, formal methods and Web engineering techniques. Students will apply software engineering techniques in homework assignments and mini-projects throughout the course. The objective of the laboratory portion of the course is to expose students to commonly used tools for software engineering. Students will have opportunities to develop and/or improve their technical writing and software development skills during the course of the term, with particular emphasis placed on analysis and design.

MIS G2020: Database Management
This course is concerned with the use of Database Management Systems (DBMS) to solve a wide range of information storage, management and retrieval problems, in organizations ranging from large corporations to personal applications, such as research data management. The course combines the practical aspects of DBMS use with more theoretical discussions of database design methodologies and the "internals" of database systems. The course will give the student a basic overview of Relational Database Systems and Relational Database Design. The student will acquire a working knowledge of Microsoft ACCESS and the ISO standard SQL language. Students will work individually on a series of small projects, and one larger project encompassing all phases of database design and implementation.

MIS G2030: Networking and Security
This course provides an overview of security issues in computer networks. Basic concepts of computer security will be introduced and illustrated by means of case studies. Topics to be covered include: risk analysis and security planning; access controls; program security in relation to malicious code such as Trojan horses, viruses, and worms; security policies and models; trusted systems and the TCSEC (Orange Book); cryptography and hashing; encryption-based protocols; authentication/PKI and network security.
MIS G3010: Managerial Economics (Economics B9513)
Managerial economics integrates microeconomic theories, statistics inference and other quantitative methods into a well-grounded subject so as to make optimum managerial decisions in a dynamic business world. It includes the theory of optimization, case studies and business strategies in managerial decision-making. Major topics include pricing strategies, estimating and forecasting market demand/supply, optimal production and input usages as well as long range planning for modern corporations. Prereq: Econ 10000 or 10101 or 10200 or 10300 or 10400 and Econ 20000 or its equivalent. 3 cr.

MIS G3020: Developing Management Skills
The purpose of this course is to prepare students for future management and leadership positions, including developing the personal skills that are needed when working with other individuals and teams in modern organizations. Topics include: problem solving, stress management, managing and motivating others, coaching and counseling, managing conflict, and leading change. Students are provided with a solid background in fundamentals. They are also introduced to the assessment tools, tests, and exercises that help gauge their personal development in each area. 3 cr.

MIS G3030: Organization and Management (Economics B9514)
The modern corporation and its historic development; principal functions of management and its social role; structure of the management decision process; choice of management tools for analyzing decisions and coping with outcome uncertainty.

MIS G4010: System Analysis and Design
The objective of this course is to introduce methods to efficiently organize and manage software projects using advanced software engineering class tools including Rhapsody (ibm) and Rational (IBM). Topics to be covered include: the software development life cycle, specification, analysis, design, implementation and testing; modular top-down analysis, design and testing, CASE tools for system analysis and design, data modeling and processing modeling tools (data flow diagrams, entity relationship diagrams) traditional and prototyping approaches, design and development of relational database systems, U/O design, input validation and user interface design (GUI), project management tools and source code control systems (SCCS), required communication skills for the systems analyst, and fact finding and interviewing techniques.

MIS G5010: Seminar in Information System Management
This course presents an in-depth look at an area of specialization such as financial computing, business process management or medical informatics. Description of the specialization offered for coverage is as follows:

Financial Computing
This specialization presents theories and computational methods for analyzing and modeling various aspects of financial markets. It aims to provide students considering careers in Investment Banking with an in-depth understanding of financial services and significant computing and statistical skills. The topics in this area would introduce students to the modeling of asset values and financial derivatives and the software implementation of these models for pricing, simulations and scenario analysis. Also included would be an introduction to markets and financial derivatives, and a development of the necessary tools from the theories of stochastic processes and parabolic differential equations. Extensive use is made of financial information sources and software packages available on the Internet for modeling and analysis.

Semantic Business Process Management (SBPM)
Business Process Management can be viewed as a mapping between a business requirements process space of an enterprise and the actual process space of this enterprise comprised of IT systems, resources, and human labor. One paradigm of SBPM is to represent both spheres using Semantic Web Technology and then to process the information content, rather than just presenting the information. The Ontology Web Language (OWL), a language for defining and instantiating Web ontologies, which is seen as a major technology for the future implementation of Semantic Web, will be discussed. Laboratory work will form an integral part of this specialization. Projects will introduce students to Ontology Building tools, and Ontology Editors (e.g. Protégé from Stanford, and SemanticWorks, an OWL editor from ALTO-VA).

Medical Informatics
The emerging field of Medical Informatics is dedicated to improving healthcare outcomes through the application of information technologies. This field blends healthcare management and information systems. The specialization in medical informatics aims to provide a balance of both conceptual and applied knowledge, preparing graduates for career paths in the field of medical information management. The topics in this specialization will cover a subset of the following: Computer-Based Patient Records; Medical Decision Support Systems; Support in Web-Based Enterprise Computing; Clinical Data Acquisition and Analysis; and Telemedicine.

MIS G5020: Project in Information System Management
The project will focus on real-world systems in the chosen area of specialization as described in course G5010. Students will be required to gain hands-on experience with a major computer-based information system, and to prepare a report based on their experience detailing the features, applications and limitations of the system.

Faculty
Peter Brass, Professor
Dipl. Math, Dr. rer. nat. (Math), Technical Univ. of Braunschweig
Nelly Fazio, Associate Professor
Laurea (CSc), Universita di Catania (Italy); M.Sc. (CSc), New York University, Ph.D. (CSc)
Rosario Gennaro, Professor
Laurea (CSc), Universita di Catania (Italy); M.Sc. (CSc), Massachusetts Institute of Technology, Ph.D. (CSc)
Izidor Gertner, Professor
M.S. (EE), KPI, Kaunas, Lithuania; Ph.D. (EECE), Technion (Israel)
Irina Gladkova, Associate Professor
B.S. (Mathematics), Donetsk State Univ.; Ph.D. (Mathematics) CUNY
Michael D. Grossberg, Associate Professor
B.A., Univ. of Penn.; Ph.D., MIT
Leonid Gurvits, Professor
M.Sc. (Math), Chernivtsi State University, USSR; Ph.D. (Math), Gorky State University, USSR
Akira Kawaguchi, Professor and Chair
Devendra Kumar, Associate Professor
B.Tech. (E.E.), Indian Institute of Technology (Kanpur); M.A. (C.Sc.), Univ. of Texas at Austin, Ph.D.
Stephen Lucci, Associate Professor
B.S. (Math), SUNY (Stony Brook); M.S. (C.Sc.), The City College; Ph.D. (C.Sc.), CUNY
Abbe Mowshowitz, Professor
B.S. (Math), Univ. of Chicago; M.S. (Math), Univ. of Michigan, Ph.D. (C.Sc.)
Zheng Peng, Assistant Professor
B.S. (C.Sc. Tech.), B.S. (Contr. Sc. Engr.), Zhejiang Univ. (China); M.E. (C. Cs. Engr.), Univ. of Electronic Science and Tech. (China); Ph.D. (C.Sc. Engr.), Univ. of Connecticut
Kaliappa Ravindran, Professor
B.E. (E.E.), Indian Institute of Science; M.E. (C.Sc.), Univ. of British Columbia, Ph.D. (C.Sc.)
William E. Skeith, Assistant Professor
B.S. (Math), Pepperdine Univ., BA (CSc); Univ. of Los Angeles, MA (Math), Ph.D. Douglass R. Troeger, Professor
A.B. (Phil), Brown Univ., Sc. B. (Chem); M.Sc., Stevens Inst. of Tech., Ph.D. (Math)
Huy T. Vo, Assistant Professor
B.S. (C沈.), University of Utah,Ph.D. (C沈.)

Michael Vulis, Associate Professor
B.S. (Math), Leningrad State Univ. (Russia); M.S. (C.Sc.), CUNY, Ph.D. (Math)
Jie Wei, Professor
B.S. (C.Sc.), Univ. of Sci. & Tech. of China (China); M.S. (C.Sc.), Chinese Academy of Sciences (China); Ph.D. (C.Sc.), Simon Fraser Univ. (Canada)
George Wolberg, Professor
B.E. (EE), Cooper Union, M.E. (EE); Ph.D. (C.Sc.), Columbia Univ.
Jianting Zhang, Assistant Professor
B.S. (Water Resources and Environment), Nanjing Univ. (China); M.S. (Physical Geography), Nanjing Univ. (China); M.S. (C.Sc), Univ. of Oklahoma; Ph.D. (CSc), Univ. of Oklahoma
Zhigang Zhu, Herbert G. Kayser Professor
B.S., (CSc.), Tsinghua Univ., M.E., Ph.D.

Professors Emeriti
Michael Anshel
Octavio Betancourt
Stefan A. Burr
Stanley Habib
Department of Electrical Engineering

Professor Roger Dorsinville, Chair • Department Office: Steinman 602 • Tel: 212-650-7248

General Information

The City College offers the following graduate degrees in Electrical Engineering:

M.E. (E.E.) (Professional Master’s Degree)

M.S. (Engineering) (For students preparing for the Ph.D. program; Degree is also awarded to students who do not have a bachelor’s degree in engineering)

Ph.D. (E.E.)

Degree Requirements

Professional Master’s Degree

Engineering Core Courses 12

Four courses from one of the following concentrations (all courses are three credits):

A. Computer Engineering
EE I3800: VLSI Design for Testability Technology I
EE I3900: VLSI Design for Testability Technology II
EE I2200: Image Processing
EE I2300: Digital Computers I
EE I2400: Digital Computers II
EE I2700: Parallel Computer Architecture
EE I4700: Introduction to Neural Networks
EE I5500: Introduction to Robotics
EE I5600: Advanced Topics in Mobile Robotics
EE I5700: Digital Integrated Circuits
EE I6000: Computer Communications Systems
EE I6100: Integrated Circuits: Design and Fabrication I
EE I6400: Computer-Aided Digital VLSI Design
EE I6600: Communications Protocol Engineering
EE I7000: Local Area Networks
EE I9400: High Speed Networks

B. Systems Engineering
EE I3600: Elements of Control Theory
EE I3400: Analysis of Random Systems
EE I0100: Probability and Stochastic Processes
EE I0400: Signal Theory
EE I0500: Theory of Linear Systems
EE I1600: Digital Signal Processing Algorithms
EE I2200: Image Processing
EE I4100: Introduction to Modern Control Theory
EE I4500: Direct Energy Conversion
EE I4700: Introduction to Neural Networks
EE I5300: Digital Signal Processing

C. Telecommunications Engineering
EE I0100: Probability and Stochastic Processes
EE I5100: Communication Electronics
EE I5200: Fiber Optic Communications I
EE I6000: Computer Communication Systems
EE I6300: Wireless Communication
EE I6600: Communication Systems Engineering
EE I6700: IP Routing
EE I6800: Telecommunication Network Elements Engineering
EE I7000: Network and Security
EE I7100: Statistical Communication Theory
EE I7300: Digital Communication
EE I7400: Data Communications
EE I7500: Advanced Wireless Networks
EE I8300: Fiber Optic Communications II
EE I9400: High Speed Networks

D. Photonics Engineering
EE I0300: Electrodynamics
EE I0400: Direct Energy Conversion
EE I5200: Fiber Optic Communications I
EE I5400: Physical Electronics I
EE I5800: Introduction to Lasers
EE I6200: Principles of Photonics Engineering
EE I8200: Electro-Optics
EE I8300: Fiber Optic Communications II
EE I8500: Optical Signal Processing
EE I0100: Probability and Stochastic Processes
EE I3200: Analog Integrated Circuits
EE I3600: MOS Devices and Circuits
EE I5100: Communication Electronics
EE I5200: Fiber Optic Communications I
EE I5400: Physical Electronics I
EE I5700: Digital Integrated Circuits
EE I6100: Integrated Circuits: Design and Fabrication I
EE I6300: Wireless Communications
EE I6400: Computer-Aided Digital VLSI Design
EE I7100: Statistical Communication
EE I8300: Fiber Optic Communications II

Technical Electives: 0-6
Take courses from any of the above concentration areas, or any G0000, I0000 and J0000 sequence course that may be offered except Engineering Management Courses.

Report/Project/Thesis: 0-6
At least one of the following courses:
EE I0000: Seminar (1 cr.)
EE I9600: Master’s Report (0 cr.)
EE I9700: Master’s Project (3 cr.)
EE I9900: Master’s Thesis (6 cr.)

Total credits: 30

Note: A minimum GPA of 3.0 is required for graduation.

M.S. (Engineering) Degree

At least four courses from one of the specific concentration areas A, B, C, D, or E above:
At least two of the following courses:
Electrical Engineering:
EE I0100: Probability and Stochastic Processes
EE I0500: Theory of Linear Systems
Engineering:
ENGR I0600: Applied Algebra
ENGR I1100: Engineering Analysis
ENGR I1200: Functions of Complex Variables

At least one of the following courses:
Electrical Engineering:
EE I0000: Seminar (1 cr.)
EE I9600: Master’s Report (0 cr.)
EE I9700: Master’s Project (3 cr.)
EE I9900: Master’s Thesis (6 cr.)

Elective Courses: 6-12
Additional Graduate Electrical Engineering courses (from EE G0000, I0000, and J0000 sequence) except Engineering Management Courses. Prior approval of master’s advisor is needed for non-EE electives.

Note: A minimum GPA of 3.0 is required for graduation.

Total credits: 30

Ph.D. (E.E.) Degree

Upon completion of the Ph.D. Program in Electrical Engineering, students should be able to:
A. Apply knowledge of mathematics, science, and engineering to solve engineering problems and undertake teaching and research
B. Assume leadership roles in academia, industry and government
C. Plan and conduct scholarly activities that make original contributions to the knowledge base in one or more areas of specialization within Electrical Engineering discipline
D. Communicate effectively both as individuals and leaders of multidisciplinary and multicultural teams in a diverse global economy
E. Recognize the need for and engage in life-long learning as independent professional scholars
F. Understand the importance of the ethical, safety, socio-economic, and environmental issues related to the Electrical Engineering profession.

Requirements for Admission to the Ph.D. Programs

- A bachelor’s degree from a college or university of accredited standing in a branch of engineering, or a closely related area, appropriate to the applicant’s intended field of study.
- An academic record demonstrating promise of superior performance in advanced study and research.
- Adequate preparation in specific courses as may be required by the individual departments.

Additional Requirements for the Ph.D. Guidance and Program Planning

- Soon after being notified of admission, and preferably before registration, the student should arrange for an appointment with a departmental advisor. This can be done through the Graduate Engineering Office. This advisor will help the student plan an approved sequence of courses.
- Soon after completing 30 credits, or soon after admission with this level of work, a student must obtain the consent of a faculty member to act as his or her research mentor and must then request the Dean to assign a guidance committee. The student's planned program of courses and research program must be submitted to the guidance committee for approval.

University Requirements

The student will be required to comply with the University Requirements for Admission and for Graduate Degrees as published in the bulletin of The Graduate School of The City University of New York. It is also helpful to consult the Graduate School Student Handbook. These requirements include the following:

- A student may continue in a doctoral program in The City University after he or she has completed 45 credits only if he or she has passed a First Examination in the area of specialization with a grade of excellence or high pass.
- Satisfactory completion of 60 credits of approved graduate work, of which at least 30 must be taken at The City University.
- Completion of the course requirements in the field of specialization.
- Satisfactory completion of a Second Examination of at least two hours duration usually taken after the completion of course requirements. The student may be admitted to the second examination only upon the recommendation of a mentor.
- The student shall demonstrate proficiency in those research tools considered appropriate by the faculty in the field of specialization.
- Satisfactory completion, not later than eight years after matriculation, of a dissertation which embodies original research. For a student who is matriculated after the completion of at least 30 credits of acceptable work, this time will be reduced to seven years.
- The dissertation will be defended at an oral final examination.

Advisement

Master’s Program
Professor Barry Gross

Doctoral Program
Professor Jizhang Xiao

Department Facilities

Current EE Research Laboratories include:

Sponsored Centers:
- Cooperative Remote Sensing Science and Technology (CREST) Center sponsored by National Oceanographic and Atmospheric Administration (NOAA). CREST is a consortium of five universities led by CCNY.

CCNY Centers:
- Center for Information Networking and Telecommunications (CINT)
- Institute for Ultrafast Spectroscopy and Lasers (IUSL)
- International Center for Environmental Resources and Development (ICERD)
- Photonics Engineering Center

Research Laboratories
Advanced Wireless Networks Laboratory, Optical Networking Laboratory, Photonics Applications Lab, Photonics Simulations Lab, Metamaterials Laboratory, Nonlinear Optics Laboratory, Optical Remote Sensing Laboratory, Remote Sensing/Geographical Information Systems Lab, Advanced Integrated Photonics Lab, Robotics and Intelligence Systems Lab.

Other Research Facilities

Multi-wavelength Laser Radar (LIDAR) observatory, mobile remote sensing facility, pico and femtosecond laser facilities, semiconductors diode lasers, streak cameras, spectrophotometers and multichannel optical analyzers, IC probe stations, and darkroom and mask fabrication facilities, digital pattern generator and error detector, network analyzer, 60 GHz communication signal analyzer, multimedia communication facilities, wireless sensor network test bed, wireless network sniffer, imbedded system programming tools, robotics platforms, fast prototyping machine, Mask aligner, Photo-resist spinner, Thermal evaporator, Sputtering system, Dry etch system, Surface profiler, Digital triple grating spectrometer, NEXUS 670 FTIR, Continuum IR microscope with camera.

Major computational facilities in the department include a network of 150 workstations. In addition, a network of PC computers is used by graduate students and faculty researchers in the telecommunications and remote sensing areas. These networks are connected to other research facilities located on campus and to the CUNY Computational Center, as well as to the National Computational Facilities through the Internet.

Electrical Engineering Course Descriptions

EE F5600: Elements of Control Theory
Treatment of performance through indices such as integral square error, integral time absolute error, etc. State Variable Design. Continuous and discrete systems. Prereq: EE 37100. 3 hr./wk.; 3 cr.

EE G3400: Analysis of Random Systems
Analysis of dynamic systems with random inputs, including: definitions of discrete and continuous random processes and the Markov property, processes with independent increments, Wiener and Poisson processes, forward and backward Kolmogorov equations, introduction to stochastic differential equations and the Ito calculus, and applications involving stochastic stability and optimal filtering. Prereq: EE 01000. 3 hr./wk.; 3 cr.

EE G3800: VLSI Design for Testability Technology I
This course is to cover concepts such as Economics of IC Test, Methods of Test, Testability and Measurements, Fault Models and Simulation, Test Pattern Generation, LogicTest, Memory Test, the IBM Level Sensitive Scan Design (LSSD) methodology, General Scan Design (GDS) methodology, Partial-and Full Scan designs, the IEEE 1149 boundary scan standards. Along with lectures, homework assignments, and exams, students are required to conduct at least one DFT design project to demonstrate understanding of DFT principles and methods. The main outcome is the basic understanding of DFT concepts and methods. 3 hr./wk.; 3 cr.

EE G3900: VLSI Design for Testability Technology II
This course is geared towards understanding of IC and SoC design methodologies such as IBM’s and TSMC’s ASIC sign-off processes, full-and partial-scan insertions, boundary scan insertion, synthesis of BST structures, robust delay testing, test resource management, the IEEE 1500 standard for SoC solutions, and other advanced topics such as low-pin count testing and mixed-signal testing. Students are required to perform design projects using CAD software systems such as Cadence Design System and SynTest Technologies’ DEF solutions. The main outcome is the understanding of state-of-art technologies demonstrated through commercial CAD software systems, as well as learning and practicing industry solutions. Advanced students will be encouraged to explore new ideas in research projects. 3 hr./wk.; 3 cr.

EE I0000: Seminar
Invited speakers and reports of graduate student research. 1 hr./wk.; 1 cr (Repeatable).

EE I0100: Probability and Stochastic Processes
Probability space, outcomes and events, random variables, distribution and density functions, limit theorems, functions of random variables, discrete and continuous stochastic processes, mean square estimation and prediction problems. 3 hr./wk.; 3 cr.

EE I0400: Signal Theory
Signal representations and transforms; Banach and Hilbert signal spaces; Orthogonal decompositions, wavelets; duality; signal theory in distribution spaces; convergence, differentiation and convolution of distributions; Laplace and Fourier transforms of distributions; systems theory in distribution spaces, convolutional systems; operational calculus; spectral properties of signals; generalized sampling theory. 3 hr./wk.; 3 cr.
EE I0500: Theory of Linear Systems
Review of time and frequency domain analysis of continuous and discrete linear systems. Extension to time varying cases. States and state variables. Matrix formulation and general solutions. State transition matrix, adjoint systems; stability, observability, and controllability. Minimal realization. 3 hr./wk.; 3 cr.

EE I1600: Digital Signal Processing Algorithms
The latest developments in Digital Signal Processing (DSP) algorithms and their implementation on various computers. A survey of basic algebra is given, the tensor product will be a recurring theme. The Cooley-Tukey FFT algorithm, and its variants are unified under the banner of tensor product formulation. The Good-Thomas Prime Factor algorithm is also reformulated in this way. Various linear and cyclic convolution algorithms are described; results of the Cook-Toom and the Winograd are emphasized. Newly developed multiplicative FFT algorithms will be introduced. Techniques of writing efficient FORTRAN code. Prereq: EE 30600 and EE I5300. 3 hr./wk.; 3 cr.

EE I2200: Image Processing
Image acquisition and representation of monochromatic and color images. Data compression techniques for image transmission including predictive and transform coding. Practical compression techniques, including progressive transmission, JPEG and MPEG. Prereq: EE I5300 and EE I0100. 3 hr./wk.; 3 cr.

EE I2300: Digital Computers I
The structure and design of digital computing systems; a subsystem's approach to the behavior and implementation of computer arithmetic and logic circuitry, storage systems, control circuitry, and input-output. Algorithms and flow charting; computer codes; utilization of combinational and sequential switching theory in design of computer logic circuits; organization of storage systems. A modular approach to computer construction and ultimate use in higher phases of the hierarchy of machine structures. Prereq: EE I5400. 3 hr./wk.; 3 cr.

EE I2400: Digital Computers II
Study of complex processors, multiprocessors, time sharing systems, and real time systems. Case histories in system architecture and design; impact of future technologies on computing machinery; concepts and design of ultra-reliable, ultra-available digital computers. Prereq: EE I2300. 3 hr./wk.; 3 cr.

EE I3200: Analog Integrated Circuits
Design of analog integrated circuits. Modeling of integrated circuits components. Current mirrors; Differential amplifiers with active loads; Band gap references; operational amplifiers; Feedback; Noise in integrated circuits. Prereq: EE 34200. 3 hr./wk.; 3 cr.

EE I4500: Direct Energy Conversion
Review of principles underlying modern development for energy conversion. Applications to energy storage, photovoltaic conversion, thermoelectricity, fuel cells, and magnetohydrodynamic generation, thermionic generation. Economics of direct energy conversion systems. Prereq: EE 33300, EE 33900. 3 hr./wk.; 3 cr.

EE I4600: Analysis and Design of Intelligent Systems
Analysis of intelligent systems, such as those that can solve differential equations in symbolic form, understand human speech, and recognize objects in a scene. Methods of solving problems in artificial intelligence areas will be discussed. Predicate calculus. Rule based deduction system. Expert systems. 3 hr./wk.; 3 cr.

EE I4700: Introduction to Neural Networks
Overview of Neurocomputing, definition of neural network, motivation to use neural network, simple perceptron, its capability and limitations, learning laws in perceptron, linear, nonlinear and stochastic units, multilayer networks. Introduction to artificial neural network models, specific applications in pattern recognition and image processing problems. Corequisite(s): EE 10100. 3 hr./wk.; 3 cr.

EE I5100: Communication Electronics
Components of end-to-end communications systems. Noise of circuits and systems. Behavior of wide-band and tuned amplifiers; limits on small signal operation. Gain controlled amplifiers. Limiters, frequency multiplexers, oscillators, coupling networks, non-linear elements; distortion, amplitude frequency and phase modulators, transmitters and low noise receivers. Prereq: EE 31200. 3 hr./wk.; 3 cr.

EE I5200: Fiber Optic Communications I
An overview of the fundamental components of an optical fiber link. Degradation, attenuation, and distortion mechanisms in fibers. LED and laser sources. Detectors and receivers. Analog and digital modulation formats. Performance analysis. 3 hr./wk.; 3 cr.

EE I5300: Digital Signal Processing
The finite Fourier transform, cyclic convolution, digital filters, Z-transform. Design of algorithms computing the finite Fourier transform and cyclic convolution, Cooley-Tukey and Winograd algorithms and other topics as appropriate. 3 hr./wk.; 3 cr.

EE I5400: Physical Electronics I
Crystal Structures, reciprocal lattice, phonons, free electron model of metals, periodic potentials and energy bands, Fermi surface and conduction in metals, semiconductor materials. Prereq: EE 33300, EE 33900. 3 hr./wk.; 3 cr.

EE I5500: Introduction to Robotics
Introduction: historical development of robotic systems, research perspectives; Robot Manipulators: Homogeneous representation, robot kinematics and dynamics models, path and trajectory planning, robot motion control; Mobile Robots: kinematics model and dynamic model of wheeled mobile robots, motion planning and trajectory generation, navigation and mapping; Robot Sensing: visual and non-visual sensors. Prereq: EE 37100. 3 hr./wk.; 3 cr.

EE I5600: Advanced Mobile Robotics
This course is an in-depth study of state-of-the-art technologies and methods of mobile robotics. The course consists of two components: lectures on theory and course projects. Lectures will draw from textbooks and current research literature with several readings for discussion classes. In the project component of this class, students will do computer simulations or implement algorithms on mobile robot platforms at the CCNY Robotics Lab. The primary topics include control architectures, motion planning, localization and mapping, navigation, adaptation and learning, and multi-robot systems. Prereq: EE I5500. 3 hr./wk.; 3 cr.

EE I5700: Digital Integrated Circuits
Design of logic circuits; TTL, MOS, ECL. Design of flip-flops and memories at the transistor level. Design of analog to digital converters. Digital to analog converters. Simple and hold circuits, and timing circuits. Interconnecting logic gates using transmission lines. 3 hr./wk.; 3 cr.

EE I5800: Introduction to Lasers
Review of Maxwell’s equations, geometrical optics, stability of optical cavities, Gaussian beam propagation and Gaussian beams in optical cavities, properties of resonant optical cavities, classical and Einstein model of the interaction of light and matter, laser oscillation and amplification. Gas, semiconductor and solid state lasers. Prereq: EE 33300. 3 hr./wk.; 3 cr.

EE I5900: Microprocessors

EE I6000: Computer Communication Systems
Queueing theory, Markovian networks, message packet and circuit switching, assignment of link capacities and flows, routing algorithms, stability, flow control and error control. Introduction to data networks and internet, OSI/ISO model, data link layer protocols: HDLC, PPP, 802.3, TCP and flow control, queuing systems M/M/1, M/G/1, Markovian Systems, principles of IP routing algorithms. Prereq: EE I0100. 3 hr./wk.; 3 cr.

EE I6100: Integrated Circuits: Design and Fabrication I
Introduction to physics of IC processing: epitaxial growth, diffusion, oxidation, ion implantation, evaporation, and sputtering. Bipolar IC processing function, oxide and air isolation, analog IC design, OP amps and other circuits. MOS processing; metal and poly gate and self aligned structure, CMOS. Digital IC design. Analysis of ECL, TTL, I2L and MOS logic design. 3 hr./wk.; 3 cr.

EE I6200: Principles of Photonics Engineering
Principles and CAD tools for the design of photonic systems and devices. Topics from ray tracing, lens design, optical imaging systems design and analysis, interferometry, Fourier optics, fibers, and waveguides, optical detectors, videodiscs, spectroscopy. Prereq: EE 33300. 3 hr./wk.; 3 cr.

EE I6300: Wireless Communications
Cellular systems: frequency reuse, co-channel and adjacent channel interference, capacity improvement. Wireless channel characteristics: long term fading, short term fading. Diversity techniques: space, frequency, time, polarization. Combining techniques. Digital modulation techniques: DPSK, QPSK, QAM, MSK, GMSK. Multiple Access Techniques for wireless communications: FDMA, TDMA, CDMA. Personal Communication Services. Current standards of PCS and cellular systems. Other topics may be added as appropriate. 3 hr./wk.; 3 cr.
EE I6400: Computer-Aided Digital VLSI Circuits Design
This course presents a systematic approach to the design of full-custom, very and ultra large scale integration (VLSI and ULSI) circuits, utilizing state-of-the-art electronic design automation (EDA) commercial engineering software – the Cadence Design System. It is to cover three major areas: CMOS Processing Technologies, High Performance Circuit Design techniques and Practices, Advanced EDA CAD Software Applications, coupled with relatively large scale (>one-million transistors) design projects. Prereq: EE 44100, EE 44400 and EE 45700 (or equivalent). 3 hr./wk.; 3 cr.

EE I6600: Communications Protocol Engineering
Open systems interconnection (OSI) reference model, modeling communica-
tions protocols using finite and extended finite state machines, formal lan-
guages for protocol specification, real-life protocol specifications, verification of communications protocols, conformance testing methods, synchronization issues in testing, test representation languages. Prereq: EE 46000 or EE 46000. 3 hr./wk.; 3 cr.

EE I6700: IP Routing
Principles of IP routing protocols such as OSPF, RIP, and BGP are covered. Analysis of connection oriented networks protocols such as MPLS, and VLANS is provided. RSVP: Signaling protocol and DiffServ are analyzed. Finally methods of traffic engineering in IP networks are discussed. Familiar-

EE I6800: Telecommunication Network Element Engineering
This course provides an introduction to a broad spectrum of network and element level management protocols, software entities, and information databases. Students will gain theoretical and practical knowledge of network management concepts. Topics include network management architectures, protocols, modeling, information databases, network management applica-
tions (such as Configuration, Fault, and Performance Management), and telecommunications management network fundamentals. Prereq: EE 46000. 3 hr./wk.; 3 cr.

EE I7500: Advanced Wireless Networks
Advances in wireless communications, especially in the area of bandwidth and mobility, made it possible for users to communicate using multiple media, ranging from low rate applications as in wireless sensor networks, to high rate applications as in HDTV, to high mobility networks as in Vehicle to Vehi-
cle (V2V) networks. This course emphasizes current and future advanced wireless networking technologies to support a wide range of applications, including WPAN, WLAN, WMAN, and WWAN like advanced LTE. It also pre-
sents the convergence of various networks and services. Discussion covers technical issues from Physical layer to Application Layer, as well as a few contemporary issues of wireless communication networks using recent pa-
pers from IEEE and ACM journals and conference papers. Normally, a com-
puter project is required. Familiarity with certain background information is highly desirable including the subjects of wireless and computer communica-
tions networks such as modulation and detection, media access control, and network protocols. Prereq: None. 3 hr./wk.; 3 cr.

EE I9400: High Speed Networks
Fundamentals of high speed transport network (SONET) are discussed. De-
tails of ATM transport networks are provided. Principles of IP optical networks including optical cross-connects are discussed. Case studies of next genera-
tion networks architecture and protocols are studied. Familiarity with data networks protocols is desirable. 3 hr./wk.; 3 cr.

EE I7000: Network and Security
The first half of the course will cover multiple access schemes and various LAN technology as well as IP protocol and TCP. The Second half of the course will cover network security including cryptography, symmetric-key and public key-encryption, digital signatures, management of public keys and communications security. Pre-req EE I6000 or equivalent or instructor approval. 3 hr./wk.; 3 cr.

EE I7100: Statistical Communication Theory
Review of probability and stochastic processes, limit theorems, correlation function, power spectral density, vector channels, optimum decision regions, optimum receivers, probability of error; determination of bounds on error rates. Prereq: EE I0100. 3 hr./wk.; 3 cr.

EE I7200: Spread Spectrum
Review of digital communication; comparison of digital modulation tech-
niques such as PSK, DPSK, QPSK, MSK, and combined phase-amplitude data systems; autocorrelation and spectral characteristics of a spread spectrum signal. Response of a direct sequence spread spectrum signal to unwanted signals and to random noise. Pseudorandom codes, Gold codes, characteris-
tics of codes used for spread spectrum; frequency-hopping. The phase locked loop; bit synchronization, Costas receiver, tracking using the Delay locked loop and the Taudither loop; acquisition techniques; applications of spread spectrum to TDMA, navigation, RPV; state-of-the-art in spread spectrum hardware. Prereq: EE I0100. 3 hr./wk.; 3 cr.

EE I7300: Digital Communication I
Source coding. Characterization of communication signals and systems, optimum receivers for additive Gaussian noise channel, carrier and symbol synchronization, channel capacity and coding, block and convolutional channel codes. Prereq: EE 10100. 3 hr./wk.; 3 cr.

EE I7400: Digital Data Communications II
Signal design for band-limited channels, communication through band-limited linear filter channels, adaptive equalization, multicarrier and multichannel systems, spread spectrum signals for digital communications, digital communications through fading multipath channels, multuser commu-

EE I8200: Electro-Optics
Beam propagation in anisotropic media, Faraday rotation, birefringence, beam propagation in periodic media, Bragg scattering and Bragg filters, acousto-optic effect and devices, electro-optic effect and devices, photo-

EE I8300: Fiber Optic Communications II
Basic building blocks of an all optical network with particular emphasis on optical amplifiers including both Semiconductor Optical Amplifiers (SOAs) and Erbium-Doped Fiber Amplifiers (EDFAs), System architecture for: I) the point-to-point link, II) the single station-to-multistation multipoint network, and III) the any-to-any connected network. Wavelength-Division Multi-Access (WDMA) and Time-division Multi-access networks (TDMA). Prereq: EE I5200. 3 hr./wk.; 3 cr.

EE I8500: Optical Signal Processing
Signal Parameters. Review of geometric optics, wave optics, and aberrations. Fresnel transform. Fourier transform optics. Information capacity and maxi-
mum packing density. System coherence, spectral analysis, spatial filtering and filtering systems. Acousto-optic devices. Prereq: EE I6200. 3 hr./wk.; 3 cr.

EE I9600: Report
In depth analysis by means of a written report using a number of technical papers, reports or articles on a specific topic. Topics to be chosen by the student after consultation with a professor. An oral presentation of the writ-
ten report may be required at the departmental seminar. Prereq: completion of 15 credits toward the master’s degree in EE. 0 cr.

EE I9700: Master’s Project
Analytical or experimental project, preferably of student’s own choice. Under direction of a faculty advisor, student submits written proposal, performs the required task, and submits a written final report. Prereq: departmental mas-
ter’s advisor’s approval. 3 cr. Credit will be granted for either I9700 or I9900, not both.

EE I9800: Graduate Laboratory
Experimental project. Topic must be approved by a faculty member as well as the departmental master’s advisor. 3 cr.

EE I9900: Research for the Master’s Thesis
Prereq: departmental master’s advisor’s approval. 6 cr. Credit will be grant-
ed for either EE I9700 or EE I9900, not both.

EE J0000: Advanced Seminar
Advanced developments in electrical engineering. Students and instructor report on topics of interest. Prereq: departmental Ph.D. advisor’s approval. Credit varies.

EE J2700: Multidimensional Signal Processing
Multidimensional signals and systems. DFT, FIR, IIR filters design. Stability. Prereq: EE I5300 and ENGR 11200. 3 hr./wk.; 3 cr.

EE J9900: Research for Doctoral Dissertation
Variable credit (12 cr. Maximum)

EE K9000: Doctoral Dissertation Supervision
Prereq: approval of the departmental Ph.D. advisor. 1 credit repeatable up to 6 credits.

EE R0100: Special Topics in Advanced Electrical Engineering
Prereq: Third-level standing in the doctoral program.
Faculty

Samir Ahmed, Herbert Kayser Professor  
B.A., Cambridge Univ., M.A.; Ph.D., Univ. College (UK)

Mohamed A. Ali, Professor  
B.S., Azar Univ. (Egypt); M.S., The City College; Ph.D., CUNY

Joseph Barba, Professor, School of Engineering  
B.E., The City College, M.E.; Ph.D., CUNY

Michael Conner, Professor  
B.S.E., Johns Hopkins Univ.; M.S., Univ. of Maryland, Ph.D.

Roger Dorsinville, Professor and Chair  
B.S., Moscow State Univ. (Russia), M.S., Ph.D.

Alexander Giler, Associate Professor  
B.S., Technical Univ. (Kazan, Russia), M.S., Ph.D.

Barry M. Gross, Professor  
B.A. (Physics/Math), Yeshiva Univ.; M.S., The City College; Ph.D., CUNY

Ibrahim W. Habib, Professor  
B.S., Ain Shams Univ. (Egypt); M.S., Polytechnic Univ. of New York; Ph.D., CUNY

Ping-Pei Ho, Professor  
B.S., Tsing-Hun Univ. (Taiwan); M.B.A., Kent State Univ.; Ph.D., CUNY

Alexander Khanikaev, Associate Professor  
B.S., Moscow State Univ. (Russia), M.S., Ph.D.

Bruce Kim, Associate Professor  
B.S., Univ. of California, Irvine; M.S., Univ. of Arizona; Ph.D. (ECE), Georgia Inst. of Technology

Myung Jong Lee, Professor  
B.S., Seoul National Univ. (Korea); M.S., Ph.D., Columbia Univ.

Nicholas Madamopoulos, Associate Professor  
B.S., University of Patras (Greece); M.S., CREOL/School of Optics, Ph.D.

Jamal T. Manassah, Professor  
B.S., American Univ. of Beirut (Lebanon); M.A., Columbia Univ., Ph.D.

Ahmed Mohamed, Assistant Professor  
B.S., Minia University (Egypt); M.S., Florida International University, Ph.D.

Fred Moshary, Professor  

Truong-Than Nguyen, Associate Professor  
M.Sc., Princeton Univ.; Ph.D., Columbia Univ.

William Rossow, Distinguished Professor  
B.A., Hanover College; M.S., Cornell Univ., Ph.D.

Leonid Roytman, Professor  
B.S., Moscow Polytechnical (Russia), M.S.; Ph.D., Novosibirsk Polytechnical Inst. (Russia)

Tarek N. Saadawi, Professor  
B.Sc., Cairo Univ. (Egypt), M.Sc.; Ph.D., Univ. of Maryland

Norman Scheinberg, Professor  
B.E.E., Cooper Union; M.S., M.I.T.; Ph.D., CUNY

Sang-Woo Seo, Associate Professor  
B.S., Ajou University (Korea); M.S., Kwanju Institute of Science and Technology (Korea); Ph.D., Georgia Institute of Technology

Aidong Shen, Professor  
B.S., Xiamen Univ. (China); Ph.D., SIOFM (China)

Kenneth Sobel, Professor  
B.E., The City College; M.E., Rensselaer Polytechnic Inst., Ph.D.

Yi Sun, Assistant Professor  
B.S., Shanghai Jiao Tong Univ. (China), M.S.; Ph.D., Univ. of Minnesota

Yingli Tian, Professor  
B.S., Tianjin Univ., M.S.; Ph.D., Chinese Univ. of Hong Kong

M. Ümit Uyar, Professor  
B.S., Istanbul Teknik Univ. (Turkey); M.S., Cornell Univ., Ph.D.

Ardie D. Walser, Professor and Associate Dean  
B.E., The City College, M.E.; Ph.D., CUNY

Jizhong Xiao, Professor  
B.S., East China Inst. of Tech. (China); M.S. (EE), Nanyang Tech. Univ. (China); Ph.D. (ECE), Michigan State Univ.

Bo Yuan, Assistant Professor  
B.S., M.S., Nanjing University (China). Ph.D., University of Minnesota, Minneapolis
The group’s faculty members play a major part in teaching the undergra
duate and graduate networking courses offered by the Electrical engineering
and Computer Science departments at The City College.

Current Research Areas

CINT areas of research cover many aspects of mobile communications and
information distribution. CINT faculty have recently made a number of con-	ributions in the area of AD-HOC mobile Networking. These networks provide
the capability to establish communications between various heterogeneous
mobile users without the need to involve the wire/wireless infrastructure
network. Routing algorithms as well as new transport protocols and MAC
layer protocols are being developed for AD-HOC mobile networks.

This research has a great impact on military networking as well as on com-
mercial applications. Further research concerns:

- Qos Support for Real-Time Services such as video, voice, and data
- Probabilistic Reasoning Mobile Agent System for Network Testing
- Mobile IPSystems
- MPEG-4 and MPEG-2 Video over ATM synchronization
- Adaptive Multimedia Synchronization for Teleconferencing
- Empirical Qos Study of Hybrid Terrestrial-Satellite ATM Network
- Core-Manager Based Multi-Cast Routing (CMMR)
- Mobility Support for CMMR
- Multimedia Conferencing System with Multi-Casting
- Optimal Buffer Allocation in ATM Switches
- Use of Genetic Algorithms in Mobile Agent Generation for Network Se-
curity
- Conformance Testing and Verification of Communication Protocols
- Artificial Intelligence in Telecommunications
- Neural Network Applications in ATM Resource Allocations
- Optical Communications
- Wireless Communications
- Policy-Driven Networks
- Network Infrastructures for Bio-Medical Applications
- User-Centered Mechanisms for Distributed Collaborations

Facilities of the Networking Systems Laboratory

The networking Systems Laboratory has the following facilities:

- ATM Test Equipment: ATM Generator and Analyzer
- IP Telephony Gateway
- 20 + Ultra Workstations (with Enterprise Server), PC Network

Plans for the Future of CINT

The Center plans to pursue three additional major areas of activity in the near
future:

1. A program of cross-disciplinary research which stresses the theoretical,
analytical and experimental aspects of telecommunications and informa-
tion networking, consisting of high-speed multimedia networking,
next generation internet protocols, mobile communications, photonics
engineering, optical communications and information distribution. Key
areas of research include quality of service requirements, mobility and
wireless networking, optical Communications and optical switching,
video and image communications, and internet protocols. In addition,
considerable attention is to be paid to the economics pricing/business
aspects of telecommunications and information services. Research with
respect to network security will play a considerable part.

2. An expanded program of education for City College Master’s and doc-
toral students will involve the development of new advanced courses in
networking and information distribution.

3. A program of industry/university/government cooperation which will
stress the importance of knowledge and technology transfer between
these entities. This implies the exploration of similarities between mili-
tary command and control systems and such civilian applications as traf-
cic control, emergency management, and the security of financial institu-
tions.
Department of Mechanical Engineering

Professor Feridun Delale, Chair • Department Office: Steinman 235 • Tel: 212-650-5224

General Information
The City College offers the following graduate degrees in Mechanical Engineering:

M.E. (M.E.) Professional Master's Degree
M.S. (Engineering)
Ph.D. (M.E.)

Degree Requirements
Professional Master’s Degree
Engineering Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME G0200</td>
<td>Applied Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>ME G4000</td>
<td>Applied Stress Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ME I5400</td>
<td>Elasticity</td>
<td>3</td>
</tr>
<tr>
<td>ENGR I1100</td>
<td>Introduction to Engineering Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Technical Electives
Five to seven courses from the following list:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME G0500</td>
<td>Mechanical Vibrations</td>
<td>3</td>
</tr>
<tr>
<td>ME G0600</td>
<td>Thermal Systems Design</td>
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<td>ME G2300</td>
<td>Heating, Ventilating and Air Conditioning</td>
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<td>ME G3300</td>
<td>Solar Energy Thermal Processes</td>
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<td>ME G4300</td>
<td>Non-Newtonian Fluid Mechanics</td>
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<td>ME G4400</td>
<td>Nano/Micromechanics</td>
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<td>ME G4500</td>
<td>Mechanics and Physics of Material Behavior</td>
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<td>ME G4600</td>
<td>Computational Fluid Dynamics</td>
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<td>ME G4700</td>
<td>Physical Properties of Materials</td>
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<td>ME G4800</td>
<td>Auto Safety Design</td>
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<tr>
<td>ME G4900</td>
<td>Advanced Topics in Fluid Dynamics</td>
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<tr>
<td>ME G5000</td>
<td>Advanced Computational Fluid Dynamics</td>
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<td>ME G5100</td>
<td>Vehicular Power Systems</td>
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<td>ME I3100</td>
<td>Steam and Gas Turbines</td>
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<td>ME I3600</td>
<td>Conduction Heat Transfer</td>
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<td>ME I3700</td>
<td>Convection Heat Transfer</td>
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<tr>
<td>ME I5800</td>
<td>Trajectories and Orbits</td>
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<tr>
<td>ME I6200</td>
<td>Advanced Concepts in Mechanical Vibrations</td>
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<tr>
<td>ME I6500</td>
<td>Computer Aided Design</td>
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<td>ME I6600</td>
<td>Boundary Element Method</td>
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<tr>
<td>ME I6700</td>
<td>Composite Materials</td>
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<tr>
<td>ME I6800</td>
<td>Nonlinear Dynamics &amp; Chaos</td>
<td>3</td>
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<tr>
<td>ME I6900</td>
<td>Experimental Methods in Fluid Mechanics &amp; Combustion Engineering</td>
<td>3</td>
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<tr>
<td>ENGR G5200</td>
<td>Nuclear Reactor Physics &amp; Engineering</td>
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<tr>
<td>ENGR G5300</td>
<td>Nuclear Reactor Thermal Hydraulics</td>
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<tr>
<td>ENGR G5600</td>
<td>Nuclear Reactor Design, Operation and Safety</td>
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<tr>
<td>ENGR I1700</td>
<td>Finite Element Methods in Engineering</td>
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<tr>
<td>ENGR I4200</td>
<td>Continuum Mechanics</td>
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<tr>
<td>ENGR I4400</td>
<td>Applied Partial Differential Equations</td>
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<tr>
<td>ENGR I5000</td>
<td>Introduction to Numerical Methods</td>
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<tr>
<td>ENGR I2400</td>
<td>Turbulent Flows</td>
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<td>ENGR I5200</td>
<td>Behavior of Inelastic Bodies and Structures</td>
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<tr>
<td>ENGR I6400</td>
<td>Wave Propagation in Fluids and Solids</td>
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</table>

Any graduate course in the Grove School of Engineering with the approval of the departmental advisor.

One course from list below may be taken in place of a technical elective:

Engineering Management Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGR H3800</td>
<td>Management Concepts for Engineers (3 cr.)</td>
<td>3</td>
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<tr>
<td>ENGR H7600</td>
<td>Engineering Law (3 cr.)</td>
<td>3</td>
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<tr>
<td>ENGR H8000</td>
<td>Decision and Planning Techniques for Engineers (3 cr.)</td>
<td>3</td>
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<tr>
<td>ENGR H8500</td>
<td>Project Management (3 cr.)</td>
<td>3</td>
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<tr>
<td>ENGR H9300</td>
<td>Economics and Investment Analysis of Engineering Projects (3 cr.)</td>
<td>3</td>
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Report/Project/Thesis

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ME I9700</td>
<td>Report (0 cr.)</td>
<td>0</td>
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<tr>
<td>ME I9800</td>
<td>Project (3 cr.)</td>
<td>3</td>
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<tr>
<td>ME G0400</td>
<td>Industry Oriented Design Project (3 cr.)</td>
<td>3</td>
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<tr>
<td>ME I9900</td>
<td>Research for the Master’s Thesis (6 cr.)</td>
<td>6</td>
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</table>

Total credits: 15-21

M.S. Degree
The M.S. degree is awarded to students who do not have a bachelor’s degree in engineering.

Ph.D. Requirements
Requirements for Admission
To be eligible for admission, an applicant must possess a bachelor’s degree in Mechanical Engineering or in a closely related area appropriate to the intended field of study from an accredited institution. The applicant’s academic record must demonstrate promise of superior performance in advanced study and research. The general Graduate Record Examination is recommended, and International students from non-English speaking countries must submit a TOEFL (Test of English as a Foreign Language) score of 550 or better to be considered for admission.

Requirements for the Ph.D.
Candidates for the Ph.D. degree must:

1. Obtain, by completion of 30 credits of graduate work, the consent of a faculty member to act as their research mentor
2. Students enrolled are required to take ME I0000: Seminars for 3 semesters.
3. Satisfactorily complete 60 credits of approved graduate work (30 credits beyond the masters degree), of which at least 30 must be taken at the City University; (up to 12 of these credits may be in research).
4. Pass a qualifying examination in Mechanical Engineering, consisting of tests in three general subjects from first year graduate mechanical engineering curriculum, with a grade of excellent or high pass (First Examination)
5. Demonstrate proficiency in those research tools considered appropriate by the faculty in the field of specialization
6. Present orally and in writing and defend a plan of proposed research (Second Examination)
7. Satisfactorily complete, no later than 8 years after matriculation, a dissertation which embodies original research and is a publishable contribution to engineering and/or science; for students who are matriculated after the completion of at least 30 credits of acceptable work, this time will be reduced to 7 years
8. Present and orally defend the dissertation (Third Examination).

Advisement
Master's Program
Professor C. Bapat
T-219; 212-650-5214

Doctoral Program
Professor Y. Andreopoulos
T-253, 212-650-5206

Laboratories
In addition to the undergraduate laboratories, the Department has established specialized laboratories to carry out research in advanced materials and fracture mechanics, environmental and fluid sciences, aerosciences, and bioengineering.

Experimental Fluid Mechanics and Aerodynamics Laboratory
Turbulent flows encountered in engineering applications is the focus of research carried out in this laboratory. In particular the behavior of small scales of turbulence is studied by carrying out measurements with high spatial and temporal resolution. The facilities and equipment in this lab include a 4 ft. x 4 ft. x 25 ft. low speed wind tunnel; a large scale compressible flow shock tube of 12 in. diameter, 74 ft. length and 3,000 psi maximum pressure; a YAG laser and other accessories for Rayleigh scattering; an Argon laser for laser Doppler anemometry; 2 CCD cameras sensitive in the ultraviolet range; fast data acquisition systems; and a stereo particle image velocimeter.

Biomechanics Laboratory
The Biomechanics Laboratory is engaged in research investigating bone mechanics, bone implant interaction and mechanisms of sport or accidental injuries. Current areas of research include modeling, simulation and...
analysis of traumatic brain injury (TBI) caused by non-contact (angular acceleration) or blunt head impacts, mainly due to vehicular collisions, contact sports or falls; damping characteristics of subarachnoid space through invivo and invitro experiments; investigating cervical spine injuries and instabilities due to contact sport and automobile accidents; and biodynamic modeling and simulations to access human and machine interaction.

**Solid Mechanics/Materials Research Laboratory**

This laboratory is devoted to research involving solid mechanics and materials processing, testing and evaluation, with emphasis on the study of fracture and damage mechanics, composite and nanocomposite materials, high and low temperature behaviors, and micro- and nanomechanics for micro- and nanostructural design. Various modern testing and processing techniques, such as micromechanical in situ testing, static, fatigue, vibration and impact testing at high, low and room temperatures, non-destructive evaluation and digital image processing are used. Currently, it has a very high-speed digital camera, a servo-hydraulic universal testing machine with an environmental chamber, a computer controlled drop weight impact tester with an environmental chamber, two gas guns for high-speed ballistic impact, a split Hopkinson bar, a computer-controlled vibration shaker system with a precision temperature/humidity chamber, an immersion and a spray ultrasonic scanning system, a compression/transfer molding hydraulic press, a universal measuring microscope, and a microhardness tester.

**Ferroelectric and Active Materials Research Laboratory**

The major goal of this laboratory is to conduct experimental and analytical research on ferroelectric and other active materials such as ferroelectrets, ferroelectric alloys, and their composites. It also provides students opportunities to have hands-on and research experiences on active materials and structures. Currently the lab is equipped with an electro-mechanical coupling testing machine, a high voltage amplifier, a displacement sensor machine, a vacuum bagging system and a custom built autoclave for polymer-matrix composites processing, a refrigerated circulating digital liquid bath, and a piezoelectric d33 tester.

**Microelectromechanical Systems (MEMS) Laboratory**

In the Microelectromechanical Systems (MEMS) Laboratory, miniature sensor and actuator systems made using microfabrication processes, especially Complementary Metal Oxide Semiconductor (CMOS) processes are being developed. Research in this area is motivated by the potential to produce high-performance, low-cost, miniature sensors and actuators. Smart sensors are made using micromachined structures and circuits on a single silicon chip. Specific research areas of interest include nano- and microcantilever beams, biosensors based on porous silicon, single walled carbon nanotubes (SWCNT) sensors and microfluidic channels for electro-physiological studies of single cells.

**Computer Aided Design and Engineering (CAD/CAE) Facilities**

The Department of Mechanical Engineering maintains a Computer Aided Design Laboratory which is used for engineering analysis and design. It consists of twenty-six Dell Optiplex 960 MT Computers, two HP Color LaserJet 4700dn printers, one HP LaserJet P4015dn printer, one HP DesignJet 36-inch poster printer, a Sony LCD projector and Ibid computerized whiteboard. The Department has established a Nuclear Engineering Computer Laboratory containing twenty Dell Optiplex 960 MT Computers for running specialized nuclear engineering software. The Department also has a Multimedia Facility which includes twenty-six Dell Dimension PCs, one Dell Optiplex PC, document camera, LCD projector, computerized whiteboard, and two HP LaserJet P3005dn printers. In addition, the Department maintains a UNIX laboratory with twenty-eight workstations, a Dell Optiplex PC, HP Color LaserJet 4600dn printer, HP LaserJet 5100tn printer, LC projector and document camera. When any of these laboratories are being used for classroom instruction, students may use an additional computer laboratory containing fifteen Dell Optiplex PCs, HP LaserJet 4250dn printer and one HP LaserJet 2300n printer. These systems are equipped with mechanism design, mathematics, finite element, boundary element and computer-aided manufacturing and simulation software including SolidWorks, ANSYS, Fluent, Comsol, Matlab, Mathcad, Mathematica, Working Model, EES (Engineering Equation Solver), and STK (Satellite Tool Kit).

**Mechanical Engineering Course Descriptions**

**ME G0000: Selected Topics in Mechanical Engineering**

Advanced topics selected for their timeliness and current interest. **Variable cr.**

**ME I0200: Applied Fluid Mechanics**

This course presents the fundamentals of fluid mechanics with a balance between physics, mathematics and applications. It includes application of conservation laws in control volumes with moving boundaries in tensor notation, high medium and low Reynolds number flows, momentum integrals in boundary layers, jets and wakes. Also described adiabatic frictional flows, flows with heat addition and energy related issues. Final project. **Prerequisite: Undergraduate fluid mechanics ME 35600 or equivalent with departmental approval, symbolic language Matlab. 3hr./wk/ 3cr.**

**ME G0400: Industry Oriented Design Project**

**ME I6200: Mechanical Vibration**

This course is the first course in Mechanical Vibration and includes developing equations for a single-degree-of-freedom system (SDOF) model based on concepts such as equivalent mass, stiffness and damping. Laplace transform approach is used to obtain response due to initial conditions, sinusoidal forced or base excitation and rotating unbalance. Vibrations under general forcing functions such as periodic inputs and nonperiodic inputs also studied using frequency response function and convolution integral respectively. Above mentioned approaches are modified and used to investigate multi-degree-of-freedom system (MDOF). Modal analysis is introduced to find natural frequencies and mode shapes. As an application of MDOF undamped and damped vibration absorbers are introduced to reduce resonant vibrations. The use of MATLAB software in vibration analysis is emphasized. 3hr./wk. 3cr.

**ME G0600: Thermal Systems Design**

**ME G2300: Heating, Ventilating and Air Conditioning**

**ME I0390: Solar Energy Engineering**

This course studies the fundamentals of solar radiation, its measurement methods and estimation. Selected topics in heat transfer relevant to systems design applications of solar energy such as flat plate and focusing collectors, energy storage systems, heating and cooling systems, power generation systems and distillation processes. Principles of Photovoltaic systems design for direct conversion of solar energy to electricity. **Prerequisite: Undergraduate heat transfer ME 43000 or equivalent with departmental approval; symbolic language Matlab or EES. 3hr./wk/ 3cr.**

**ME I4200: Applied Stress Analysis**

Linear elastic theory of solid mechanics. Includes concepts of stress and strain, governing equations of linear elastic theory, setup of boundary value problem, and two dimensional examples. Stress analysis of structural members. Includes failure criteria of materials, yielding, fracture and fatigue; Prandtle Torsion theory, torsion of thin walled structure; Bending of asymmetric beams and curved beam; and Energy methods for structural members and general solids. **Prerequisite: Mechanics of Materials ME 33000 or equivalent with departmental permission. 3hr./wk/ 3cr.**

**ME G4300: Non-Newtonian Fluid Mechanics**

**ME I4400: Nano/Micromechanics**

Nano/Micromechanics encompass mechanics related to nano- and micro-structures of materials. In this course, the introduction to nano-scale science will be given first. Then the existing methods used to study nano-mechanics of materials and the current research status on nanomechanics will be presented. In contrast to nanomechanics, micromechanics theory has been better developed. Green’s function and Eshelby’s solution of an ellipsoidal inclusion will be introduced first. Then the variety methods including self-consistent method, generalized self-consistent scheme, Mori-Tanaka’s method, and differential scheme will be studied. Finally, a hierarchical approach from nano- to micro- to meso- to macro-scale will be discussed. **Prerequisite: Undergraduate mechanics of materials ME 33000 or equivalent with departmental permission; symbolic language Matlab. 3hr. /wk. 3cr.**

**ME I4500: Mechanics and Physics of Solids**

A survey course covering several topics in solid mechanics and mechanical behavior of materials. Combines the experimental observations, underlying physical mechanisms and mathematical models. The measurable mechanical properties are discussed in the content of specific mechanics models. The topics include elastic deformation and stress, thermal stress, vibration, wave propagation, plasticity, fracture, fatigue, and linear viscoelasticity. **Prerequisite: Mechanics of Materials ME 33000 or equivalent with departmental permission. 3hr./wk. 3cr.**

**ME I4600: Computational Fluid Dynamics**

Governing equation and models of fluid flow and heat transfer; basic numerical techniques for solution; estimation of accuracy and stability of the numerical approximations; boundary conditions; grid generation; structure and performance of commercial software for applications in analysis and design of thermo-fluid systems; Final project. **Prerequisite: Undergraduate fluid me-
ME I4700: Physical Properties of Materials
In this course, we first discuss the equilibrium properties of crystals such as permittivity, piezoelectricity, elasticity etc. The essential mathematical formula such as tensor and matrix notations will be used to describe the fundamental properties of materials. The focus of the course is to introduce the students with a broader view on all physical properties of materials including mechanical, electric, thermal and magnetic properties and their coupling behaviors based on the structure and symmetry of the material. Also the transport properties will be introduced at the end of the class. Some basic principles of transport phenomena and irreversible thermodynamics will be briefly introduced. Hopefully this course will provide the essential mathematical framework for the constitutive relations of the material.
Prerequisite: Undergraduate mechanics of materials ME 33000 & Engineering Materials ME 46100 or equivalent with departmental permission.
3 hr./wk. 3 cr.

ME I4800: Accidental Injury Biomechanics
In this course the principles of mechanics and/or biomechanics are used to understand how accidental injuries happen. The topics covered in this course are: biomechanics of human body and injuries including head, spine, abdominal and extremities; injury classification criteria; methods in trauma biomechanics such as: accident reconstruction, experimental and numerical methods; automotive accidental injuries and restraint systems; sport injuries; slip and fall injuries; safety standards; ergonomics and human factor; human body dynamics; and accident prevention. In addition, automotive safety features will be discussed.
Prerequisite: Undergraduate ME 47200 or equivalent, ME 37100 or equivalent, ME 33000 or equivalent with departmental permission.
Knowledge of CAD/FE software is also required.
3 hr./wk. 3 cr.

ME G4900: Advanced Topics in Fluid Dynamics
ME I5000: Advanced Computational Fluid Mechanics
Theory of finite element methods, Iterative solution methods, High-performance computing, Solution of incompressible Navier-Stokes equations (Projection methods, artificial compressibility methods, penalty methods, DAE), Applications in heat and fluid dynamics (in 1D and 2D), Final project.
Prerequisite: Computational Fluid Mechanics G4600 or equivalent with departmental permission; Introduction to Numerical Method II500.
3 hr./wk. 3 cr.

ME G5100: Vehicular Power Systems
ME I0100: Introduction to Research
This course will introduce PhD students into developing skills and knowledge in research tools and methods, safety and ethics in research, technical research writing, professional communications and critical thinking. The students will be required to apprentice in various research laboratories in the department, familiarize themselves with the ongoing research and write reports with critical view of the research topics.
3 hr./wk.; 3 cr. Prerequisite: Enrollment in Mechanical Engineering PhD program.

ME I0000: Seminars
Recent developments in mechanical engineering and related fields; economic and social effects. The students report on assigned subjects. Prereq: departmental approval. Variable cr.

ME I3100: Steam and Gas Turbines
Classification of modern turbomachines. Concepts in applied thermo-fluid mechanics. Similarity in design; wind tunnels and cascade of aerofoils; loss mechanisms; radial equilibrium theory; performance prediction; erosion and mechanics. Similarity in design; wind tunnels and cascade of aerofoils; loss mechanisms; radial equilibrium theory; performance prediction; erosion and mechanics. Losses in wind tunnels and cascade of aerofoils; loss mechanisms; radial equilibrium theory; performance prediction; erosion and mechanics. Losses in wind tunnels and cascade of aerofoils; loss mechanisms; radial equilibrium theory; performance prediction; erosion and mechanics.
3 hr./wk. 3 cr.

ME I3600: Conduction Heat Transfer
Formulation of the basic governing equations in rectangular, cylindrical and spherical coordinates. Consideration of linear and nonlinear problems. Topics include: conduction with energy generation, transpiration cooling, conduction in non-stationary systems, phase transformation, and ablation. Exact analytic solutions. Application of the integral method.
Prereq: ME 33000, ME 35600. 3 hr./wk.; 3 cr.

ME I3700: Convection Heat Transfer
Prereq: ME 43300 or CH 34200. 3 hr./wk.; 3 cr.

ME I5200: Applied Plasticity
3 hr./wk.; 3 cr.

ME I5800: Trajectories and Orbits
Prereq: ME 24700 or equivalent. 3 hr./wk.; 3 cr.

ME I6200: Mechanical Vibration
This course is the first course in Mechanical Vibration and includes developing equations for a single-degree-of-freedom system (SDOF) model based on concepts such as equivalent mass, stiffness and damping. Laplace transform approach is used to obtain response due to initial conditions, sinusoidal forced or base excitation and rotating unbalance. Vibrations under general forcing functions such as periodic inputs and nonperiodic inputs also studied using frequency response function and convolution integral respectively. Above mentioned approaches are modified and used to investigate multi-degree-of-freedom system (MDOF). Modal analysis is introduced to find natural frequencies and mode shapes. As an application of MDOF un-damped and damped vibration absorbers are introduced to reduce resonant vibrations.
The use of MATLAB software in vibration analysis is emphasized. 3 hr./wk. 3 cr.

ME I6400: Wave Propagation in Solids
Prerequisite: Department permission. Corequisite: None.
3 hr./wk. 3 cr.

ME I6500: Computer Aided Design
Computer aided engineering design methodology; components of hardware, software and the use of commercial CAD systems in mechanical engineering design. Basic concepts of CAD and engineering analysis. Pro-Engineering Analysis Code; Splines and Coons’ surfaces; geometric and wire frame modeling techniques. Simulation and modeling of an engineering problem; engineering assumptions. Introduction to finite element methods; mesh generation; simulation of loadings, and boundary conditions. Postprocessing and evaluation of results. Applications of these concepts to specific engineering design projects.
Prereq: ME 14500, ME 33000, ME 47200 (or equivalent), MATH 39200. 3 hr./wk.; 3 cr.

ME I6600: Boundary Element Method
Prereq: ENGR 1100. 3 hr./wk.; 3 cr.

ME I6700: Composite Materials
Prereq: ME 33000 or equivalent. 3 hr./wk.; 3 cr.

ME I6800: Nonlinear Dynamics and Chaos
This course is built around a concrete mechanical system, for example, the pendulum. Definition of dynamical systems, phase space flows and invariant subspaces. Local and global bifurcation theory: Saddle-node, transcritical, pitchfork, and Hopf bifurcations, sability of homoclinic orbits, center manifolds and normal forms. Chaos: fractal geometry and dimension, Lyapunov exponents, routes to chaos (period doubling, quasi-periodicity, intermittency), spatio-temporal chaos. Prereq: MATH 39100 or equivalent. 3 hr./wk.; 3 cr.

ME I6900: Experimental Methods in Fluid Mechanics & Combustion
ME I1700: Finite Element Methods
Equilibrium and energy based formulations of the finite element method. Review of the direct stiffness method, Truss, beam, plane and three dimensional element formulations, including isoparametric elements. Static and transient response of structures with applications in solid mechanics. Students are expected to use the available workstations to complete a project. Prerequisite: Departmental permission. Corequisite: None 3 hr./wk.; 3 cr.

ME I9700: Report
In-depth analysis of a specific topic by means of a written report using a number of technical papers, reports or articles as references. Topic to be chosen by student in consultation with a professor. Prerequisite: completion of 12 credits toward the master's degree in Mechanical Engineering. 0 cr.

ME I9800: Project
Theoretical or experimental project under the supervision of a faculty advisor. Student submits a written proposal, performs the required work, and submits a written final report. Prerequisite: written departmental approval. 3 cr.

ME I9900: Research for the Master's Thesis
6 cr.

ME J9900: Research for the Doctoral Dissertation
Variable cr. (Up to 12 cr.)

ME K9000: Doctoral Dissertation Supervision
Prerequisite: approval of the departmental Ph.D. advisor. 1 credit repeatable up to 6 credits.

Other Engineering Courses
Other appropriate Engineering courses are listed in the engineering introductory section of this Bulletin and include the following:

ENGR G5200: Nuclear Reactor Physics and Engineering
ENGR G5300: Nuclear Reactor Thermal Hydraulics
ENGR G5600: Nuclear Reactor Design, Operation and Safety

ENGR I1100: Introduction to Engineering Analysis
Function of matrices, application to systems of ordinary differential and difference equations. Definitions and basic properties of Legendre, Bessel, and other special functions. Common problems in partial differential equations and solution by separation of variables. Eigenfunction expansions. Fourier integral. Applications of Laplace and Fourier transforms. Prerequisite: MATH 39200. 3 hr./wk.; 3 cr.

ENGR I1400: Applied Partial Differential Equations

ENGR I1500: Introduction to Numerical Methods

ENGR I1700: Finite Element Methods in Engineering
Equilibrium and variational formulations of finite element methods. Plane, axisymmetric, and shell elements. Isoparametric elements. Static and transient response of structures. Applications in potential flow, electrostatic, thermal conduction field problems, and diffusion equations. Students are expected to use available work stations. Prerequisite: MATH 39200, CE 15400, or home department advisor's approval. 3 hr./wk.; 3 cr.

ENGR I2400: Turbulent Flows
Origins of turbulence and the qualitative features of turbulent flow. Prandtl's mixing length theory, von Karman's similarity hypothesis, and entrainment theories. Calculations of the behavior of free turbulent flows, including jets, wakes and plumes. Calculations of bounded turbulent flows, including pipe flow and boundary layers. Turbulent dispersion and diffusion. Prerequisite: ME 35500 or CHE 34100. 3 hr./wk.; 3 cr.

ENGR I4200: Continuum Mechanics
Continuum kinematics, formulation of physical principles in the continuum context, the formulation of constitutive equations, the theories of elastic solids, viscous fluids and viscoelastic solids. At the end of the course there will be an emphasis on either deformable porous media or finite deformation elasticity, depending on student interest. Prerequisite: Basic undergraduate courses in Mechanics of Materials, Fluid Mechanics and Linear Algebra (including vector field theory). 3 hr./wk.; 3 cr.

ENGR I5200: Behavior of Inelastic Bodies and Structures
Linear theory of viscoelasticity with applications to vibrations and buckling. Introduction to the theory of plasticity. Physical basis, yield conditions. Perfectly plastic and strain hardening materials. Drucker's postulates, flow rule. Upper and lower bound theorems. Applications to torsion, indentation and plate theory. Numerical solutions. Prerequisite: CE 13500. 3 hr./wk.; 3 cr.

ENGR I6400: Wave Propagation in Fluids and Solids
Hyperbolic and dispersive, linear and non-linear waves. Hyperbolic waves: the wave equation, stationary waves, breaking waves, shock waves. Dispersive waves: dispersion relations, group and phase velocities. Non-linear waves and chaos in wave fields. Application to (1) water waves, (2) stress waves in solids (dilation and distortion waves, Rayleigh waves). Prerequisite: ENGR I1100 or equivalent. 3 hr./wk.; 3 cr.

Faculty
Yiannis Andreadopoulos, Michael Pope Chair and Professor

Charusheel N. Bapat, Associate Professor
B.E., Poona College of Engineering (India); M.Tech., Indian Inst. Of Technology; Ph.D., Univ. of Manitoba

Gary F. Benenson, Professor
B.S. (Physics), Univ. of Chicago; M.S. (Eng. Sci.), Rensselaer Polytechnic Inst; P.E. (New York)

Zeev Dagan, Professor
B.E. (ME), The City College, M.E. (ME); Ph.D., CUNY

Feridun Delale, Professor and Chair
B.S. (CE), Istanbul Tech. Univ., M.S. (CE); Ph.D., Lehigh Univ.

Niell Elvin, Associate Professor
B.S. (CE), University of Witwatersrand (South Africa); M.S. (CE), M.S. (Aeronautics and Astronautics), Ph.D. (CE), M.I.T.

Peter Ganatos, Professor
B.E. (ME), The City College, M.E. (ME); Ph.D. (Eng.), CUNY

Jorge Gonzalez-Cruz, Professor
B.S. (ME), Univ. of Puerto Rico, Mayaguez, M.S./ME; Ph.D., Georgia Institute of Technology

Peyman Honarmandi, Lecturer
B.S. (ME), Sharif Univ. of Technology; M.S. (ME), Amirkabir Univ. of Technology; Ph.D. (ME), Univ. of Toronto

Masahiro Kawaji, Professor
B.S. (CHE), Univ. of Tokyo; M.S. (ME), Univ. of California, Berkeley, Ph.D.

Taehun Lee, Associate Professor
B.S. (ME), Seoul National University, M.S. (ME); Ph.D., Univ. of Iowa

Jacqueline Jie Li, Professor
B.S. (Mech), Peking Univ.; M.E. (Applied Mech), Beijing Inst. of Technology; Ph.D. (ME), Rutgers Univ

Been-Ming Benjamin Liaw, Professor
B.S. (ME), National Tsinghua Univ., M.S. (ME); Ph.D., Univ. of Washington

Rishi Raj, Professor
B.S., Punjab Univ.; B.S., P.F. Univ., Moscow; M.S.; Ph.D., Penn State Univ.

Prathom Ramamurthy, Assistant Professor
B.E./M.E., Madras Univ., M.S./ME. Univ. of Utah, Ph.D., Univ. of Utah

Ali M. Sadegh, Professor
B.S. (ME), Arya-Mehr Univ. of Technology; M.S., Michigan State, Ph.D.; P.E. (Michigan); CmfgE

Ioana R. Voicescu, Associate Professor
M.S. (ME), Technical University (Romania), Ph.D. (ME); Ph.D., George Washington Univ.

Latif M. Jiji, Herbert Kayser Professor

Masahiro Kawaji, Professor
B.S. (CHE), Univ. of Tokyo; M.S. (ME), Univ. of California, Berkeley, Ph.D.

Taehun Lee, Associate Professor
B.S. (ME), Seoul National University, M.S. (ME); Ph.D., Univ. of Iowa

Jacqueline Jie Li, Professor
B.S. (Mech), Peking Univ.; M.E. (Applied Mech), Beijing Inst. of Technology; Ph.D. (ME), Rutgers Univ.
Been-Ming Benjamin Liaw, Professor
B.S. (ME), National Tsinghua Univ., M.S. (ME); Ph.D., Univ. of Washington

Rishi Raj, Professor
B.S., Punjab Univ.; B.S., P.F. Univ., Moscow, M.S.; Ph.D., Penn State Univ.

Ali M. Sadeh, Professor
B.S. (ME), Arya-Mehr Univ. of Technology; M.S., (ME), Michigan State, Ph.D.; P.E. (Michigan); CmfgE

Ioana R. Voiculescu, Assistant Professor
M.S. (ME), Technical University (Romania), Ph.D. (ME); Ph.D., George Washington Univ.

Charles B. Watkins, Professor
B.S. (ME) Howard Univ.; M.S., Univ. of New York, Ph.D.; P.E. (District of Columbia)

Honghui Yu, Associate Professor

Professors Emeriti
Antonio Baldo
Latif M. Jiji
Myron Levitsky
Anton L. Steinhauser
Henry T. Updegrove, Jr.
Sheldon Weinbaum
**Master’s in Translational Medicine Program (MTM)**

**Jeffrey S. Garanich, Ph.D., Director**  
Department Office: Steinman 503 • Tel: 212-650-5330

**General Information**

The City College offers the following graduate degree in Translational Medicine:

**M.S. (Translational Medicine)**

**M.S. Degree Requirements**

To obtain the M.S. degree in Translational Medicine, a student must complete the 30-credit course program described below. Core courses (24 credits) are concentrated in three areas: (1) Biomedical and Clinical Sciences and Engineering, (2) Clinical Evaluation, and (3) Business Principles and Entrepreneurship. In addition to core requirements, students are required to enroll in 6 credits of technical elective courses.

Core courses are as follows:

- **BME 16100: Intellectual Property, Regulation, and Quality Assurance**
- **BME 16200: Cost Analysis and the Business of Translation**
- **BME 16300: Engineering, Entrepreneurship, and Business Leadership**
- **BME 16400: Translational Challenges in Diagnostics, Devices, and Therapeutics**
- **BME 16500: BioDesign 1: Need Finding and Screening**
- **BME 16600: BioDesign 2: Conceptual Innovation**
- **BME 16700: BioDesign 3: Translational Solutions**
- **MEDS 17100: Translational Challenges in Clinical Medicine**
- **MEDS 18100: Biomedical Ethics and Responsible Conduct of Research**
- **MEDS 18200: Translational Research Design**

**Advisors**

Jeffrey S. Garanich, PhD, Director  
Sabriya A. Stukes, PhD, Assistant Director

**Core Course Descriptions**

**BME 16100: Intellectual Property, Regulation and Quality Assurance**

This course comprises the study of fundamental topics of intellectual property (IP), such as copyright and related rights, trademarks, and patents. Contemporary issues of the IP field, including unfair competition, enforcement of IP rights and emerging issues in IP are also discussed. FDA approval processes and regulation of pharmaceutical drugs and medical devices will cover applicable laws and regulations in the strategic planning, development, manufacture and commercialization of health care products. These topics are analyzed with a focus on safety, surveillance, business, law, and international procedures surrounding the regulations in the health care industry. Students will be prepared to work within regulatory and quality assurance constraints necessary for development of medical products, drug manufacturing, and clinical investigations. 3 hr./wk.; 3 cr.

**BME 16200: Cost Analysis and The Business of Translation**

This course focuses on business fundamentals inherent to translational product development, including R&D, market analysis, and business model projections. Selected devices are used as case studies to illustrate the areas of cost considerations in the translational process and cost impact of new products and reimbursement strategies in the context of the health care market and business environments. 1cr./1 hr.

**BME 16300: Engineering, Entrepreneurship and Business Leadership**

This course compares the “Lean Start-up Method” that has come to dominate the high-tech and start-up worlds to traditional business planning approaches for launching new ventures. The Lean Start-up Method favors experimentation, customer feedback and iterative design over traditional business approaches that rely on planning and big design up front. Students learn how to use a combination of business-hypothesis-driven experimentation, feedback and iterative product releases to speed product development cycles, understand capital market and risk, and strategies for product launches. Students participate in comparison studies of start-up approaches versus traditional business planning models. 3 hr./wk.; 3 cr.

**BME 16400: Translational Challenges in Diagnostics, Devices, and Therapeutics**

This course covers a broad range of topics in the development and operation of medical diagnostics, devices, and therapeutics and combines lectures, readings, case studies, and class discussion. Engineering and clinical faculty discuss the challenges they encounter in their practice, and opportunities for advances in research, i.e., any research that has individuals. Focus is on the existing and emerging biomedical technologies, in terms of their core physiology and engineering, and their societal and economic costs. Students actively participate in organizing the lectures and discussing potential experimental solutions to these problems. 3 hr./wk.; 3 cr.

**BME 16500: BioDesign 1: Need finding and screening**

The first course of a three-course sequence in which a year-long group project is undertaken to design and construct a biomedical engineering device or system. This first course emphasizes the identification of a need for a biomedical system/device. Students learn to perform a high-level assessment of the characteristics of the medical area in which a biomedical need should be identified. The course includes topics such as strategic focus, observation and problem identification, need statement development, disease state fundamentals, and treatment options. 2 hr./wk.; 2 cr.

**BME 16600: BioDesign 2: Conceptual Innovation**

The second course of a three-course sequence in which a year-long group project is undertaken to design and construct a biomedical engineering device or system. This second course focuses on the development of a solution to the pharmaceutical, biotechnological, drug delivery or medical device need identified in the BioDesign 1 course, taking advantage of the creative group process and the power of computer design and prototyping to evaluate innovative conceptual solutions. The content of this course includes Ideation and Brainstorming, Concept Screening, Prototyping, and Final Concept Selection. 3 hr./wk.; 3 cr.

**BME 16700: BioDesign 3: Translational Solutions**

The third course of a three-course sequence in which a year-long group project is undertaken to design and construct a biomedical engineering device or system. This third course focuses on the implementation of the conceptual design solution defined in BioDesign 2 course. The conceptual design and prototype is transformed into a product that can be marketed and used at the bedside to treat patients. The content of this course focuses on final product development, testing, and clinical validation methods as well as preparation of documents for regulatory submission. Students will learn to develop a translational solution to a biomedical need within the constraints of real-world problem including quality and process management, reimbursement strategy, marketing and stakeholder strategy, sales and distribution strategy, competitive advantage and business strategy, operating plan and financial model, business plan development, funding sources, and licensing and alternate pathways. 3 hr./wk.; 3 cr.

**MEDS 17100: Translational Challenges in Medicine**

The course provides a basic understanding of current technical and scientific challenges and limitations in treating people with serious diseases. Clinical faculty present the challenges they encounter in their practice, and opportunities for advancing their fields by new discoveries. Students actively participate in organizing the lectures and discussing potential experimental solutions to these problems. Course includes a survey of basic ethical and legal concepts with emphasis on biomedical issues. 3 hr./wk.; 3 cr.

**MEDS 18100: Biomedical Ethics and Responsible Conduct of Research**

This course introduces the value of integrity in biomedical and scientific research. The topics include scientific misconduct, ownership of data and discoveries, documentation, ethics of animal and human research, and ethical challenges in the digital world. 1 hr./wk.; 1 cr.

**MEDS 18200: Translational Research Design**

This course provides an introduction to the processes used in clinical and translational research, defined broadly as patient-oriented, translational, epidemiologic, comparative effectiveness, behavioral, outcomes, or health services research that has individual human beings or groups of human beings as its unit of observation. Students are exposed to overarching concepts and essential vocabulary for designing and interpreting clinical and translation research. This is primarily accomplished by in-
structing students in the creation of a research protocol, which is intended to address a relevant research question in their specific discipline. 2 hr./wk.; 2 cr.

**Elective Courses (minimum 6 credits)**

Chosen from:
- All graduate courses in Biomedical Engineering, including maximum of one eligible 400 and 500 level courses (see list below)
- Selected graduate courses in Chemical Engineering, Electrical Engineering, and Computer Engineering (optics, photonics, control systems) including maximum of one eligible 400 and 500 level.
- Special topics in CUNY School of Medicine in applied pharmacotherapeutics, pharmaceutical product development, and neuroscience.
- Additional graduate courses by permission of MTM Advisor(s).

**BME G6600: Advanced Biomaterials**

This course is concerned with the design and fabrication of advanced biomaterials for clinical applications. The major classes of materials and characterization methods are presented to provide a foundation for more specialized topics focusing on novel materials with tailored structural and biological properties to facilitate interactions with living tissue. Topics to be discussed include surface modification to engineer cell-instructive materials, self-assembled and nanostructured materials, hybrid composite materials, environmentally responsive "smart" biomaterials, and decellularized natural matrices. 3 hr./wk.; 3 cr.

**BME I2000: Cell and Tissue Engineering**

The course covers the underlying mechanisms of cell/tissue fate processes and their interaction with biomaterials as well as how to study them quantitatively using engineering methods. Students will gain knowledge of current products of bioartificial organs in research, clinical trials and industry, their limitations and prospects. The course will prepare students with the ability to identify challenges in the field of tissue engineering and provide feasible solutions through the writing of term papers in the format of a research proposal. Prereq: Undergraduate cell and molecular biology and biochemistry. 3 hr./wk.; 3 cr.

**BME I2200: Cell and Tissue Transport**

The course will start with an analysis of water, solute, gas, and heat exchange in the microcirculation and the relationship between structure and function. Active transport across membranes will be considered and applied to the kidney and secretory organs. Transport in biological porous media will be examined and applied to bone, cartilage, and arterial wall. An introduction to receptors and their role in transport, cell adhesion, and intracellular signaling will be presented. The course will conclude with student presentations on topics of current interest. Prereq: Undergraduate fluid mechanics or transport course. 3 hr./wk.; 3 cr.

**BME I3000: Neural Engineering and Applied Bioelectricity**

An overview of the field of neural engineering including neuronal biophysics, synaptic and non-synaptic communication, electrophysiological techniques, field potential and current source density analysis. The course introduces fundamentals of applied bioelectricity/electrical prosthetic (FES) including electric field-neuronal interactions and electrocution hazards. Prereq: An undergraduate circuits course. 3 hr./wk.; 3 cr.

**BME I4200: Organ Transport and Pharmakokinetics**

Application of basic transport principles (conservation of mass and momentum equations) to major animal and human organ systems. Topics include mechanisms of regulation and homeostasis, anatomical, physiological, and pathological features of the cerebral, respiratory, renal, cutaneous and gastrointestinal systems. Basic concepts in pharmacokinetic analysis for drug administration are also discussed. Related and recent research articles will be discussed. Students will be guided to write up a proposal regarding a current topic. Prereq: Undergraduate fluid mechanics or transport course. 3 hr./wk.; 3 cr.

**BME I4300: Physiology for Biomedical Engineers**

This course is designed to provide biomedical engineering students with a comprehensive understanding of the principles of human physiology. It covers a broad range of topics, from cellular physiology to the physiology of organs and organ systems. The course includes units devoted to the study of membrane solute transport, nerve and muscle functions, functions of the autonomic nervous system, cardiovascular system as well as renal, respiratory, gastrointestinal, and endocrine systems. Instructional activities include lectures, case presentations, laboratories and special conferences. Prereq: Students with no biology background should complete an undergraduate biology course before taking this course. 7 hr./wk.; 6 cr.

**BME I5000: Medical Imaging and Image Processing**

This course introduces basic medical imaging methods such as computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET). Students will gain understanding in the basic physics of image acquisition and the algorithms required for image generation. Basic image enhancement, and image analysis will be presented in the context of X-ray imaging and microscopy. The course will include linear systems, random variables, and estimation theory. Students will gain hands-on experience in image processing through MATLAB programming in class and in assignments. Prereq: An undergraduarie linear systems course and an undergraduate linear algebra course. 3 hr./wk.; 3 cr.

**BME I5100: Biomedical Signal Processing**

This course introduces two fundamental concepts of signal processing: linear systems and stochastic processes. Various advanced estimation, detection and filtering methods are developed and demonstrated on biomedical signals. The methods include harmonic analysis, auto-regressive model, Wiener and Matched filters, linear discriminates, and independent components. All methods will be developed to answer concrete questions on specific data sets such as electro-cardiograms, electro-encephalography, acoustic signals, or neural spike trains. The lectures will be accompanied by data analysis assignments using MATLAB. Prereq: An undergraduate linear systems course and an undergraduate linear algebra course. 3 hr./wk.; 3 cr.

**BME I7000: Laboratory in Cellular and Molecular Engineering**

The course covers current biotechnologies used in molecular, cell and tissue engineering research labs as well as biotech industries through lectures and hands-on labs. There are four modules: (1) cell processing, basic microscopy & tissue engineering, (2) gene manipulation and genetic engineering, (3) advanced microscopy and fluorescent probes, and (4) probing biocomplexity and protein analysis. The students are required to design their own experimental methods to solve the given biomedical problems according to the basic protocols in manuals/book/papers provided by the instructor. Prereq: BME 22900 and BME 31000, or equivalent. 4 hr./wk.; 3 cr.

**BME I7100: Cell and Tissue Mechanics**

Mechanical properties of hard and soft tissue are presented with emphasis on the stress adaptive processes that enable cells to adapt the mechanical/structural properties of tissue in which they live to the environment they experience. Topics to be covered include whole body biomechanics, occupational and sports injury, impact biomechanics, and tissue level biomechanics. The biomechanics of implants and cell biomechanics will be described briefly and their interrelationship explored. The mechanical properties of tissues will be reviewed, with an emphasis on the structure-function relationship. The stress adaptive mechanisms of tissues will be noted, with special emphasis on the stress adaptation observed in bone ( Wolff's law) and in the arterial wall (Murray's law). The structural properties of cells, including their strength, deformability, and adhesive properties, will be covered, as well as the adaptation of cell structural properties. Cell receptors and cell signaling mechanisms will be described. Prereq: Undergraduate strength of materials course and ENGR I4200. 3 hr./wk.; 3 cr.

**BME I7300: Cell and Tissue-Biomaterial Interactions**

This course is concerned with the reaction and interaction of both inert and bioactive foreign materials placed in the living human body. Topics to be discussed include atomic structure and bulk properties of the major classes of implantable materials; biocompatibility; characterization of non-living biomaterials; reaction of biological molecules with biomaterial surfaces; host response to implants; hemocompatibility; effects of degradation on implant materials; bioactive surfaces; remodelling implant materials; sterilization and regulation of implant materials; in vitro and in vivo biomaterial testing methods; and introduction to tissue engineering. Case studies and presentations of current literature focusing on novel materials and new clinical applications will also be included to identify future directions in biomaterials research. Prereq: Undergraduate materials or transport course. 3 hr./wk.; 3 cr.

**BME I7700: Microfluidic Devices in Biotechnology**

Fundamentals of modern microfluidic devices with applications to biomedical measurements, e.g., electrophoretic systems, flow cytometers, and immunoassays. Review of fundamental properties of microfluidic systems including the effects of fluid mechanics, heat transfer, and electromagnetic phenomena on biological systems. Theory of Navier-Stokes, Nernst-Planck and convection transfer equations will be discussed. Critical overview of design, manufacture, and operation of micrometer scale systems that use photolithography and surface treatment techniques for device development. Special projects will also be used to analyze biomedical inventions on the horizon. Prereq: Undergraduate courses in fluid mechanics and differential equations. 3 hr./wk.; 3 cr.
BME 18000: Bone Physiology and Biomechanics
This course is concerned with the normal mechanical and biological functions of bone, as well as the clinical problems in metabolic bone disease and orthopedic treatment. Specific topics will examine how bone cells produce matrix material and structure, restructure it during life to optimize bone mechanical function, and then maintain the material vs. structural properties throughout life. Bone organ, tissue and cellular-molecular level processes will be examined as integrated hierarchical systems contributing to mechanical function, presented from lectures, case studies and presentations of critical literature identifying central principles in bone biomechanics. Discussions will seek to identify fundamental questions and directions for future research. Prereq: Undergraduate courses in physiology, cell biology, and mechanics, or permission of the instructor. 3 hr./wk.; 3 cr.

BME 19000: Skeletal Soft Tissue Physiology and Biomechanics
This course is concerned with the physiology and biomechanics of the skeletal soft tissues (cartilage, tendon, ligament, intervertebral disc). The course will examine how specialized connective tissue cells produce their matrices and organize them hierarchically into tissues with unique mechanical properties. How tissue and biomechanical properties of the various skeletal soft tissues are maintained in life or fail in skeletal disease will also be examined. Case studies and presentations of critical literature will be used to identify fundamental questions and directions for future research. Prereq: Undergraduate courses in physiology, cell biology, and mechanics, or permission of the instructor. 3 hr./wk.; 3 cr.

Faculty
Jeffrey S. Garanich, Ph.D Director, Master’s in Translational Medicine Program
Assistant Professor, Biomedical Engineering
B.S. (Mechanical Engineering) Penn State University; Ph.D. (Bioengineering) Penn State University

Gilda Barabino, Ph.D Dean, Grove School of Engineering Berg Professor, Biomedical Engineering
B.S. (Chemistry), Xavier University of Louisiana; Ph.D. (Chemical Engineering), Rice University

Maurizio Trevisan, MD, MS, Dean, CUNY School of Medicine
Anne and Irving Brodsky Medical Professor, CUNY School of Medicine
M.S. SUNY Buffalo; M.D, University of Naples

Ashiwel Undieh, MPharm, PhD, Associate Provost for Research Medical Professor, CUNY School of Medicine
B.Pharm. (Pharmacy), University of Nigeria; M.Pharm. (Pharmacology), University of Nigeria; Ph.D. (Pharmacology), Medical College of Pennsylvania

Mitchell Schaffer, Ph.D., CUNY and Wallace Coulter Distinguished Professor, Biomedical Engineering Chairman, Biomedical Engineering
B.S. (Biology), SUNY Stony Brook; Ph.D. (Anatomy), West Virginia University

Maribel Vazquez, Sc.D. Associate Professor, Biomedical Engineering
B.S. (Mechanical and Aerospace Engineering), Cornell University; M.S. (Mechanical Engineering), Massachusetts Inst. of Tech; Sc.D. (Mechanical Engineering), Massachusetts Inst. of Tech

Joan M. Dorn, Ph.D., Medical Professor, CUNY School of Medicine Chair, Department of Community Health and Social Medicine
B.S., Ithaca College; M.S., State University of New York at Cortland; Ph.D., State University of New York at Buffalo

Lola A. Brown, Ph.D., Assistant Dean of Academic Initiatives, Grove School of Engineering, Adjunct Assistant Professor, Biomedical Engineering
Sc.B.(Biology) Brown University; M.S. (Biomedical Engineering) Emory University/Georgia Tech; Ph.D. (Biochemistry/Molecular Biology) University of Maryland Baltimore County

John A. Blaho, Ph.D., Director, Industrial-Academic Research, CUNY Central Office of Research, Adjunct Professor, Biomedical Engineering
B.E. (Chemical Engineering), Manhattan College; Ph.D. (Biochemistry), University of Alabama School of Medicine

Abhishek Datta, Ph.D., Scientist/Chief Technology Officer, Soterix Medical, Adjunct Professor, Biomedical Engineering
M.S. (Electrical Engineering), Stony Brook University; Ph.D. (Biomedical Engineering) City University of New York

Katherine Mendis, M.Phil., Adjunct Lecturer, CUNY School of Medicine
A.B. (History), The University of Chicago; M.A. (Philosophy)
Sustainability in the Urban Environment

Dr. Latif Jiji, Founding Program Director
Prof. Alan Feigenberg, Current Director
George Smith, Program Manager
Steinman 301B • Tel: 212-650-6974

General Information

This program offers the Master of Science in Sustainability degree. This innovative, interdisciplinary program draws upon emerging approaches in each of the disciplines of architecture, engineering, and science, and prepares students for the burgeoning field of sustainability. The program’s goal is to train current, emerging, and next-generation professionals to solve pressing regional, and global sustainability problems. The curriculum is designed to prepare students to plan and implement strategies for sustainable development of buildings, open spaces and infrastructure, energy, water resources, air quality, land use, waste management, transportation, urban planning, and construction. The curriculum enables students to acquire experience in interdisciplinary analysis of advanced concepts, principles, and methodologies for solving a wide range of challenging sustainability problems. Graduates are trained to work in diverse professional settings involving collaboration, interaction, and communication with teams of scientists, engineers, architects, and others.

Requirements for Admission to the Master’s Program

Students are admitted to the Master of Science in Sustainability program after completing a Bachelor’s degree in Architecture, Sciences, or Engineering. Applicants with degrees in other fields—especially Social Sciences—may qualify for admission to the program depending on their experience and academic background. Applicants must have achieved at least a 3.0 average in their undergraduate work. Applicants are required to complete the Graduate Admissions Application (online) and provide an official transcript from the college awarding the Bachelor’s degree and three letters of recommendation. The application package can be obtained online from www.ccnysuny.edu. Students with baccalaureate degrees from non-English-speaking countries must submit an IBT TOEFL score of at least 79.

Requirements for the Master’s Degree

Each candidate for a master’s degree must complete at least 30 credits: 18 in the Core Curriculum, and 12 from a diverse collection of Architecture or, Engineering-Science, and Social Sciences elective courses. The core includes a key sequence of courses, the Capstone Interdisciplinary Team Project (I and II), which accounts for 6 credits and involves diverse teams of students who will cooperate to solve real-world sustainability problems.

Sustainability in the Urban Environment

Course Descriptions

Sustainability in the Urban Environment courses carry a designation of SUS xxxxC for Core courses, SUS xxxxA for the Architecture Concentration, and SUS xxxxB for the Engineering-Science Concentration.

Core Courses

SUS 7100C: Cities and Sustainability

This course will set out several frameworks for approaching sustainability, explore its foundational principles, and examine tools and metrics for measuring social, economic and environmental progress. The course will explore positive roles cities can play in safeguarding the sustainability of natural systems. It will look at policies and practices played out through both traditional and alternative forms of governance – processes based on greater inclusion and participation across the various urban sectors. Through case studies, individual and team assignments, students will become familiar with the dimensions of more ecologically sound design decision-making. The course will combine seminar lectures, participant presentation of assignment exercises, and presentations of final papers. Prerequisite(s): Undergraduate degree. 3 hr./wk; 3 cr.

SUS 7200C: Sustainable Aquatic, Terrestrial and Atmospheric Systems

This course provides students with a reasonably comprehensive understanding of local ecosystems and the threats and challenges of global human activity to its sustainability. This course is structured into five modules pertaining to particular systems and culminating in a section that addresses systems interactions: Aquatic systems, terrestrial systems, atmospheric systems, human impact and the future and systems interactions. Each class will consist of one hour overview, one hour addressing case studies, and one hour of discussion or group project. After completing the course, students should (1) Be familiar with the global environmental picture, (2) Understand ecosystems, their structure, how they function, and challenges to their sustainability, (3) Know the causes, dynamics and consequences of human population growth, (4) Have knowledge of renewable resources such as water and its ownership, soil and its degradation, and the production and distribution of food, (5) Appreciate the value of ecosystems and biodiversity in terms of services provided and aesthetics, (6) Understand energy usage and production including renewable resources, (7) Know about the various sources of global pollution and its hazards, pest control, solid waste and hazardous chemicals, (8) Understand atmospheric processes and involvement in ecosystem interactions, and (9) Comprehend the dimensions of the sustainability challenge in terms of economics, resources, the public and public policy and urban sprawl. Prerequisite: MATH 19500, PHYS 21900 or equivalent, or consent of instructor. 3 hr./wk; 3 cr.

SUS 7300C: Industrial Ecology and Life Cycle Analysis

Students will be introduced to the purpose, philosophy, and applications of Industrial Ecology, as well as the status of environmental and urban resources. The basis and use of tools to assess Industrial Ecology will be reviewed, focusing on Life Cycle Analysis (LCA) and Carbon Footprinting. Several case studies that use the philosophy of Industrial Ecology to manage resources in the built environment will be presented and discussed: energy, agriculture, commerce, transportation systems, manufacturing, and waste management. Next steps will be discussed. Prerequisite: Math 190 or equivalent, or consent of instructor. 3 hr./wk; 3 cr.

SUS 7400C: Economics of Sustainability

Learn basic economic principles in the context of investigations of how consumer and producer choices affect the sustainability of economic development both regionally and globally. Theory of optimal allocation of resources and when markets fail to provide it. Inquiry into social institutions and government policies that correct market failures. Prerequisite: Undergraduate degree. 3 hr./wk; 3 cr.

SUS 7501C: Capstone Interdisciplinary Team Project - I

This course is designed to teach skills that are required in addressing interdisciplinary problems in sustainability. Students learn to work in teams on projects in disciplines unfamiliar to them. They develop confidence in tackling and solving problems where technology, economics and environmental issues intersect. Teams are assembled from more than one concentration. Lectures on project management and team work are given early in the semester. Project topics are either selected from a list or proposed by students. Seminars by invited speakers on topics of interest to team assignments are given during class hours. Depending on the nature of a project, outside experts may be engaged as mentors. A formal report is prepared and submitted by the team at the end of the term. Prerequisite: Permission by project committee. 3 hr./wk; 3 cr. Materials fee: $25.

SUS 7502C: Capstone Interdisciplinary Team Project - II

This course is designed to teach skills that are required in addressing interdisciplinary problems in sustainability. Students learn to work in teams on projects in disciplines unfamiliar to them. They develop confidence in tackling and solving problems where technology, economics and environmental issues intersect. Teams are assembled from more than one concentration. Lectures on project management and team work are given early in the semester. Project topics are either selected from a list or proposed by students. Seminars by invited speakers on topics of interest to team assignments are given during class hours. Depending on the nature of a project, outside experts may be engaged as mentors. A formal report is prepared and submitted by the team at the end of the term. Prerequisite: Permission by project committee. 3 hr./wk; 3 cr. Materials fee: $25.

Architecture Elective Courses

SUS 7100A: Environmental Planning

This course provides an overview of the physical environment of the New York City metropolitan region including geology, soils, surface water, dominant water systems, the changing climate, plant communities, wildlife habitat, and regional design style trends. The region serves as a case study site for multi-layered analysis. Each student prepares a colloquium presentation (short paper and slides) on a particular aspect of New York City regional ecology, design, local material, or historical feature. Presentations are compiled into a web format for future reference. The examination of the under-
lying environmental systems of New York City and the evolution of infra-
structure in the city provides a case study for exploring the interplay of soci-
ety, culture, and environment in sustainable design practice. Prereq: Under-
grade degree. 3 hr./wk.; 3 cr.

SUS 7200A: Urbanism
This course provides students with a comprehensive overview of the history, theories, methods and values of urbanism, its positive and negative so-
cial/environmental attributes, addressing cities, suburbs and peripheral set-
tlements in the United States and across the globe. Newly emerging models for sustainable urban design and planning are considered in the context of current imperatives to design and retrofit urbanized areas for social and physical resiliency. Prereq: Undergraduate degree. 3 hr./wk.; 3 cr.

SUS 7300A: Low-Energy Buildings
The aim of the course is to introduce state-of-the-art methodologies and tools for integrated design and optimization of energy efficient buildings with a good indoor environment. Focus is on the first part of the design pro-
cess. The methodology for integrated design is based on listing the func-
tional requirements of buildings, preparation of space of solutions, generat-
ing of design proposals, and optimization analyses and decision processes. The participants will, on individual basis, work on development of the inte-
grated design processes in relation to their own research projects. Prereq: MATH 19000; MATH 195000; ARCH 61100 or ARCH 61001 or LAAR 61100; ARCH 35201 or LAAR 62600; and ARCH 35301. Any of these prerequisites may be waived upon consent of instructor. 3 hr./wk.; 3 cr.

SUS 7400A: Case Studies in Sustainability
This course will be structured to enable students to more broadly appreciate the complex dynamics of, and processes involved in, implementing success-
fuful sustainable development initiatives. Students will study and critique completed (or in some cases ‘in-progress’) projects. These may vary in terms of scale and in typology from individual buildings, to urban or neighborhood developments, or more complex civil infrastructural systems. The organiza-
tion of the course will reveal a critical point of view and thematic approach to sustainability that unifies the projects being explored in detail. Lectures and readings will emphasize the crucial role of stakeholder involvement and cross-disciplinary partnership that are the basis of holistic, integrated des-
ign. The course will combine seminar lectures, participant presentation of assignment exercises, and presentations of final projects. Prereq: Under-
graduate degree. 3 hr./wk.; 3 cr.

SUS 7600A: Perspectives on Sustainable Materials
This course provides students with a critical understanding of practicing responsible architecture and engineering from a materials and products perspective. It will cover the full range of complex issues involved in materi-
AL selection and specification: critical health and environmental issues and life-
cycle analysis. Using current evaluation tools (Athena, Pharas Lens, CSI Green Spec, and others) students will research materials and products ac-
cording to cost, availability, and environmental performance criteria to in-
clude embodied energy, life-cycle LEED criteria such as salvaged, renewable, and recycled design materials or products with recycled-content. “Smart materials” will also be considered. The seminar will produce a first draft of green specifications for a generic project. Prereq: Undergraduate degree. 3 hr./wk.; 3 cr.

SUS 7700A: Sustainable Soil and Water
Via lectures and field work, explores topics related to the conservation of soil, surface water and groundwater in urban settings; understanding floodplains; treating polluted brownfields; the relation of soil and groundwater in natural and urban/designed settings; “sustainable details” such as porous infrastruc-
ture and pavements; and field methods for understanding soil and ground-
water. Prereq: Undergraduate degree. 3 hr./wk.; 3 cr.

SUS 7800A: Natural Resources: Types, Sources, Supplies, Reuse, and Sustainability
Examines the types, sources, supplies, and reuse/repurposing of natural resources and their products to achieve sustainability goals. Covers minerals, metals, fossil fuels, forestry, and other natural resources involved in land use and design of built spaces. Examines resource limits; substitutive options; and how conservation, recycling, and repurposing can extend resources. Focuses on the triple bottom line framework of Environment, Economy, and Community. Prereq: Undergraduate degree. 3 hr./wk.; 3 cr.

Engineering-Science Elective Courses
SUS 7100B: Sustainable Transportation
The course will review the role transportation plays in US society using a demand-supply economic perspective. Both freight and passenger move-
ments will be considered. The first half of the course will establish transporta-
tion use and its impact on land use, energy consumption, air quality and related environmental issues. Development of basic economic models used to evaluate the impacts of transportation will be established. There will be a review of legislation and regulations as well as system funding that define how transport investment choices are made. The second half of the course will address current and evolving models addressing sustainability. These will include technical solutions to reduce carbon emissions, life and transport shifts, including transit-oriented design, and information technology substitu-
tions for transportation. Prereq: Math 19000 or equivalent, or consent of instructor. 3 hr./wk.; 3 cr.

SUS 7200B: Energy Systems Engineering for Global Sustainability (CHE 14000)
This course is intended to provide students with the background and tools to analyze energy choices for the future. World energy supplies, demand, and trends. The politics of energy. The scientific basis for anthropogenic global warming and its impacts on climate and planetary ecosystems. Characterization and analysis of conventional sources of energy and fuels production including refineries, fossil fuel fired power plants, and gas tur-
bine combined-cycle systems from both thermodynamic and environ-
mental points of view. Alternate sources of power including nuclear, wind farms, solar (both photovoltaic and thermal), and biomass. Energy con-
sumption by the transportation, manufacturing, and space heating and cooling segments of the economy. The hydrogen economy. Social barriers such as denial, lock-in, and NIMBY. After completing this course, students should: (1) Have a working knowledge of the supply and demand compo-
ants of energy usage on both a national and global scale and the impact of the near-term end of cheap oil. (2) Have an understanding of the scientific basis of global warming and climate change, the predicted global impacts and the prospects based on various mitigation scenarios. (3) Have an understanding of the technological, environmental and economic aspects of producing and distributing energy from the entire range of inputs such as fossil fuels, nuclear fuels, solar insolation, wind, hydro, and bio-
mass. (4) Be able to analyze, based on thermodynamic, safety, and eco-
nomic considerations, the prospects for new energy technologies. (5) Be able to perform a systems engineering, life-cycle analysis of proposed technologies to reduce energy consumption. (6) Understand the societal and political factors that can inhibit the introduction of new approaches to dealing with our energy crisis, factors such as technological and economic lock in, perceived risk versus actual risk, and changes in lifestyle. Prereq: CHE 22900 or ENGR 23000 or CHEM 33200. 3 hr./wk.; 3 cr.

SUS 7300B: Climate and Climate Change (EAS 88800)
We are in an era of rapid global warming and climate change. There is a large body of evidence that this is due to humankind’s excessive use of en-
ergy, mainly derived from fossil fuels. So much misinformation has been disseminated that it is not clear to most what should be done. The purpose of this course is to separate the wheat of truth from this chaff of misinfor-
mation and to provide our students with a thorough understanding of the scientific basis for global warming and an appreciation of the potential out-
comes of pursuing various scenarios for adaption and mitigation. That we have an informed citizenry is extremely important because the time left for effective action may be much shorter than we believe and the consequences of inadequate action are potentially much more cata-

crophic than previously anticipated. Prerequisite(s): MATH 19000, MATH 173000, MATH 195000, PHYS 21900, SUS 7200C, equivalent or consent of in-
structor. 3 hr./wk.; 3 cr.

SUS 7400B: Water Resources and Sustainability
Water and water resources are critical issues for the sustenance of nearly every society. This course examines the occurrence, use, management, and conservation of water and water resources in the U.S. and around the world. It further discusses the environmental, economic, and social implications of floods, droughts, dams, and water usage as well as current issues in water quality, water pollution, and water resource regulation. Students will gain an understanding of the environmental, societal, and political impacts of water, water resources, and changes in water supply and availability, and they will be introduced to current and emerging trends in water resource issues, de-
velopment, and technology. Prerequisite(s): SUS 7200C or consent of in-
structor. 3 hr./wk.; 3 cr.

SUS 7500B: Green Chemistry
Principles of green chemistry/engineering. Focuses on the processes af-
flecting anthropogenic organic compounds in the environment. Uses mol-
ecular structure-reactivity relationships to estimate chemical, photochemi-
al, and biochemical transformation rates. Biomimetic process in materials chemistry. Awareness of current energy sources and energy management. Alternate and future sources (feedstock) for energy, chemicals, pharmaceuti-
cals and materials from Biomass. Biofinery concept. Prerequisite(s): CHEM 26100. 3 hr./wk.; 3 cr.
SUS 7600B: Design of Mechanical Systems for Sustainable Buildings


SUS 7700B: Solid Waste Reuse and Recycling

Characterization of solid waste streams. Solid waste generation in municipal, commercial and industrial sectors. Waste minimization by waste reuse and recycling. Analysis of state-of-the-art reuse and recycling technologies. Economics of waste and its impact on reuse/recycling. Implementation of reuse and recycling technologies in major commercial and industrial sectors such as paper, glass, plastics, metals, wood, tire, electronics and construction/maintenance wastes. Local, state and national legislative trends and regulatory requirements. Impact of reuse and recycling of wastes on CO2 emissions, urban sustainability and global warming. Examples of public and private reuse and recycling programs in New York City. Field trips. Invited speakers. The goals of the course are to familiarize the students with: (1) Generation, characterization and disposal methods for domestic, commercial and industrial solid wastes. (2) Environmental, societal and economic considerations in handling of solid wastes. (3) Current state of the art technologies for processing of solid wastes for recycling, including their implementation in selected industries. (4) Laws and local ordinances regulating recycling and reuse of solid wastes. (5) The impact of materials reuse on CO2 emissions and urban sustainability, and energy consumption with specific examples from local and national reuse industries. (6) Factors affecting the success or failure of reuse and recycling in urban systems. Prerequisites(s): CE 37200 equivalent or graduate standing. 3 hr./wk.; 3 cr.

SUS 7800B: Sustainability in Infrastructure

Develop conceptual and mathematical tools for considering the sustainability and environmental impact of infrastructure projects. Topics studied include mass and energy balance, thermo-dynamic analysis (energy and energy efficiency), life cycle analysis (ecological footprint, carbon footprint), global warming, and standards and regulations for energy and water efficiency (LEED, EnergyStar, Global Reporting Initiative), with applications and case studies in water, food, energy, and building systems. Lectures, assignments, student presentations and discussions, and a term project. Prerequisite: CHEM 10401, MATH 20200, PHYS 20800, or permission of instructor. 3 hr./wk.; 3 cr.

SUS 7900B: Sustainable Energy Conversion Systems

Examines energy resources, contemporary energy conversion systems, and factors affecting the rate of global energy consumption. Compares conventional and renewable energy conversion systems with respect to efficiencies and other characteristics. On-site energy-generation systems. District cooling and heating systems. Principles of HVAC systems. Renewable energy in buildings. On-site energy-generation systems. Prerequisite(s): Undergraduate course in heat transfer or transport phenomenon. 3 hr./wk.; 3 cr.

SUS 8100-8199: Selected Topics in Sustainability

Offers selected topics that provide critical review, analysis, and evaluation of emerging issues in sustainability. Particular course contents may include topics related to energy, architecture, urbanism, environmental science, law, policy, management, economics, urban infrastructure, industrial ecology, etc. Prerequisite: Undergraduate degree. 3 hr./wk.; 3 cr.

Social Science Elective Courses

SUS 7200S: Selected Topics in Environmental Psychology, Education, and Communication

Offers selected topics that explore the myriad ways that human thinking influences sustainability issues: communicating and promoting environmentally responsible behaviors and organizations. Change, environmental conflict management and dispute resolution, and environmental risk assessment and response. Will help students develop the insights of established social sciences to more effectively articulate and communicate sustainability issues and solutions to individuals and organizations. Prerequisite: Undergraduate degree. 3 hr./wk.; 3 cr.

SUS 7300S: Sustainable Business Practices

Examines how sustainability intersects with the contemporary business environment. Explores how businesses can lessen the negative environmental impacts of their operations, supply chains, and products. Covers CSR (Corporate Social Responsibility), sustainability, and notions of “shared value.” Aims to help students distinguish “greenwashing” from sound practice with an objectively-grounded understanding of how sustainability and business practices come together. Prerequisite: Undergraduate degree. 3 hr./wk.; 3 cr.

SUS 7600C: Environmental Policymaking

Broadly examines environmental policymaking—the process of managing human activities in order to prevent or reduce harmful impacts on the natural world and humans. Examines how sound environmental policymaking must be fully attuned to the evolving international policy and legal environment. Gives special attention to the policymaking point of view, i.e., the active creation and shaping of environmental policy. Prerequisite: Undergraduate degree. 3 hr./wk.; 3 cr.

Faculty

Yiannis Andreopoulos, Michael Pope Chair and Professor, Mechanical Engineering


Amy Berkov, Assistant Professor, Biology

BFA, Univ. Colorado; Ph.D., CUNY.

Karim Block, Assistant Professor, Earth and Atmospheric Science

A.B., Univ. of Michigan; Ph.D., CUNY.

Simon Bresler, Professor, Architecture

M. Arch., Yale Univ.; F.A.I.A.

Jane L. Brown, ACSA Distinguished Professor, Architecture

B.A., Harvard Univ., M.Arch. (Urban Design); R.A., A.I.A., A.C.S.C., D.P.

Matthew W. Daus, Esq., CUNY Distinguished Lecturer

B.A. Brooklyn College, M. Law, NYU; J.D., Touro College.

Vasil Diyamandouglo, Assistant Professor, Civil Engineering

B.S. (CE.), Bogazici Univ. (Istanbul, Turkey), M.S. (CE.); Ph.D. (CE.), Univ. of California (Berkeley).

Kevin Foster, Associate Professor, Economics

B.A., Bard College; M.A., Yale Univ., Ph.D.

Jae Gallagher, Professor, Biology

B.S.-A.M., Stanford Univ., Ph.D., Univ. of Rhode Island.

Gordon A. Gebert, Professor, Architecture

B.Arch., M.I.T.; M.Arch., Princeton Univ.; R.A.

Peter Gisolfi, Professor and Chair, Architecture

B.A., Yale Univ.; M.Arch., M.L.A., Univ. of Pennsylvania; R.A.; R.L.A.

Jorge E. Gonzalez-Cruz, Professor, Mechanical Engineering

B.S. (ME), Univ. of Puerto Rico, Mayaguez, (ME); Ph.D., Georgia Institute of Technology.

Toni L. Griffin, Director, J. Max Bond Architectural Center; Professor, Architecture

B.Arch., Notre Dame; Loeb Fellow, Harvard Univ.; R.A.

Barry Gross, Associate Professor, Electrical Engineering

B.A. (Physics/Math), Yeshiva Univ.; M.S., The City College; Ph.D., CUNY.

Denise Hoffman-Brandt, Associate Professor, Architecture

B.A., Univ. of Pennsylvania; M.F.A., Pratt Institute.

George John, Associate Professor, Chemistry

B.S., Univ. of Kerala (India), Ph.D.

Nir Y. Krakauer, Assistant Professor, Civil Engineering

Ph.D., Cal Tech.

Johnny Luo, Assistant Professor, Earth and Atmospheric Science

B.S., Peking Univ. (China); M.Phil., Columbia Univ., Ph.D.

Kyle McDonald, Terry Elkes Professor, Earth and Atmospheric Sciences

B.S.(E.E.), Georgia Inst. of Tech.; M.S., Johns Hopkins Univ.; M.S. (E.E.), Univ. of Michigan, Ph.D.

Nicholas Madamopoulos, Associate Professor, Electrical Engineering

B.S., University of Patras (Greece), M.S., CREOL/School of Optics, PhD.

Fred Moshary, Professor, Electrical Engineering


Robert E. Paaswell, Distinguished Professor, Civil Engineering


Michael Piazecki, Associate Professor, Civil Engineering

Diploma (D.C.E.), Univ. of Hannover, Germany; Ph.D. Univ. of Michigan.

Federica Raia, Associate Professor, Earth and Atmospheric Science

B.S., Univ. of Naples, Ph.D.

Ali Sadegh, Professor, Mechanical Engineering

B.S. (ME), Arye-Mehr Univ. of Technology; M.S. (ME), Michigan State, Ph.D.; P.E. (Michigan); CMfgE.

Michael Sorkin, Distinguished Professor, Architecture

B.A., Univ. of Chicago; M.A., Columbia Univ., M.Arch., M.I.T.
Achva Benzinberg Stein, Professor, Architecture  
B.A., Univ. of Calif. (Berkeley); M.L.A., Harvard Univ., F.A.I.A.

Hansong Tang, Assistant Professor, Civil Engineering  
B.S. (M.E.) Wuhan Univ., M.S. (C.E.); D.Sc. (Math), Peking Univ.; Ph.D. (C.E.), Georgia Tech.

Christian Volkmann, Associate Professor, Architecture  
Dipl. Arch. ETH, Eidgenossische Technische Hochschule (Switzerland).

June Williamson, Associate Professor, Architecture  

Ann E. (Beth) Wittig, Assistant Professor, Civil Engineering  
B.S., Univ. of California (L.A.); Ph.D., Univ. of Texas (Austin).

Yael Wyner, Assistant Professor, Secondary Education/Biology  
B.S. (Biology), Yale Univ.; Ph.D. (Biology), New York University.

Pengfei Zhang, Associate Professor, Earth and Atmospheric Sciences  
B.S. Univ. of Science & Technology of China; M.S., Montana Tech of the Univ. of Montana; Ph.D., Univ. of Utah.
Appendix A

Governance

The Governance of The City College is the concern of all its members. All its constituencies—students, faculty, and administration—contribute to the maintenance and development of the College; each of the constituencies has its particular area of concern.

Because each constituency has the right to govern itself in areas that are its exclusive concern and responsibility, the Governance Charter sets forth the powers and organization of the various bodies within the College, and guarantees their autonomy on matters exclusively within their jurisdiction. But because the constituencies are interrelated, and because all must participate in the well-being of the College as a whole, the Governance Charter also provides for communication between constituencies and advisory roles and joint participation on matters of mutual or general concern.

The following governance bodies carry out these duties.

The Undergraduate Student Senate and the Graduate Student Council, elected annually from and by their appropriate constituencies, represent the interests of the students. It is from among these bodies that student representation on college-wide bodies is drawn for consultative purposes.

The Faculty of each school (organized into a representative, elected council when there are more than 150 faculty members) approve courses, curricula, degree requirements, and criteria for student progress and retention. The College of Liberal Arts and Science has a general Faculty Council, plus one each for its divisions—Humanities and the Arts; Science and The Colin L. Powell School for Civic and Global Leadership (formerly Social Science); and the Division of Interdisciplinary Arts and Sciences. In each of the College’s professional schools—the Sophie Davis School of Biomedical Education; the Grove School of Engineering; the Anne and Bernard Spitzer School of Architecture; and the School of Education—each school’s entire faculty serves as its faculty council.

The Faculty Senate draws its elected representatives from the constituent academic units of the College and deals with such college-wide matters as inter-divisional programs, academic freedom, educational policy, and the allocation of the College’s resources. Senators are elected by the faculty for three-year terms. In addition to the faculty, the following are members ex officio, without vote: the President, the Provost, all deans and vice presidents, and representatives of the student senators.

The Policy Advisory Council serves as a consultative body to the President on all major policy matters affecting the College and its members. It draws its members from all groups at the College, including the part-time instructional staff and the non-teaching staff.

Alumni Association of The College

The first graduating class of 1853 of the New York Free Academy (as The City College of New York was originally known) organized the Alumni Association to form a community of friends with a shared experience and common goals. In 1913, the Association was incorporated, and is governed by a Board of Directors. At the Annual Meeting held in the Spring, dues paying members elect the officers of the corporation who guide its affairs.

Officers who are elected annually include the President, three Vice Presidents, Secretary, Treasurer, and Historian. In addition, thirty-six Directors from the membership-at-large are selected for staggered three-year terms. Two to three Directors from each of the special interest groups (affiliate groups and constituent societies), including their respective Presidents, are elected annually for one-year terms. Completing the Board of Directors are Honorary Directors selected by the President of the Corporation, and Life Directors, who are former Presidents. The Board of Directors meets a minimum of four times a year.

The purpose and objectives of the Alumni Association are to advance the interests and welfare of the College, foster a spirit of fraternity/sorority and goodwill among graduate, service alumni and to offer financial, technical and networking support for today’s students.

Representing special concerns, interests and educational specialties, the Association serves as the umbrella or parent to fourteen affiliate groups and two constituent societies including Alumni Varsity, Architecture Alumni, Art Alumni, Asian Alumni, Black Alumni, Center for Worker Education Alumni, Communications Alumni, Education Alumni, Latino Alumni, Political Science Alumni, ROTC Alumni, Science Alumni, Young Alumni, Psychology Alumni and the Business/Economics Alumni Society and Engineering School Alumni.

The groups are each governed by a voluntary Board of Directors with officers and conduct activities to benefit alumni and today’s students.

In recognition of the growing geographical diversity of alumni, the chartering of Alumni Chapters began after World War II. Fifty dues paying members living in a city outside the New York metropolitan area can secure a charter from the Alumni Association as an official Chapter. There are currently twelve active Chapters across the country including Washington D.C.; Palm Beach; South Florida; Northern California; Southern California; Orange County/San Diego, California; Northern Nevada; Houston, Texas; Northern New Jersey; New England; Greater Chicago and most recently, Connecticut.

Rules and Regulations for the Maintenance of Public Order Pursuant to Article 129-a of the Education Law


Students Rights and Responsibilities

http://policy.cuny.edu/bylaws/article_xv/text/#Navigation_Location

CUNY Policy on Academic Integrity

City College’s policy is the CUNY Policy on Academic Integrity:

http://www.cuny.edu/about/administration/offices/ia/Academic_Integrity_Policy.pdf

In the City College, academic integrity issues are handled by the Academic Integrity Committee. This body handles complaints for all students, including undergraduates and graduates, those affiliated with Professional Schools and CLAS. Additional information may be found on the City College Academic Affairs web site.

http://www.ccny.cuny.edu/academicaffairs/integrity-policies.cfm

The City University of New York Policy on Acceptable Use of Computer Resources

http://policy.cuny.edu/manual_of_general_policy/article_iv/policy_4.01/textarea_navigation_location

Domestic Violence and the Workplace

http://policy.cuny.edu/manual_of_general_policy/article_v/policy_5.061/textarea_navigation_location

Notice of Access to Campus Crime Statistics, the Campus Security Report, and Information on Registered Sex Offenders

The College Advisory Committee on Campus Safety will provide upon request all campus crime statistics as reported to the U.S. Department of Education, as well as the annual campus security report. The campus security can be found at https://www.ccny.cuny.edu/safety/report

Public Safety On-campus resources:

- Public Safety: Room NAC 4/201, (212) 650-7777
- Counseling Center: MR J-15, 212-650-8222
- Student Health Services: MR J-15 212-650-8222

Student Activity Fees and Auxiliary Enterprises

http://policy.cuny.edu/bylaws/article_xvi/text/#Navigation_Location

New York State Education Law, Article 5: § 224-a. Students unable because of religious beliefs to Register or attend classes on certain days.

1. No person shall be expelled from or be refused admission as a student to an institution of higher education for the reason that he or she is unable, because of his or her religious beliefs, to register or attend classes or to par-
2. Any student in an institution of higher education who is unable, because of his or her religious beliefs, to attend classes on a particular day or days shall, because of such absence on the particular day or days, be excused from any examination or any study or work requirements.

3. It shall be the responsibility of the faculty and of the administrative officials of each institution of higher education to make available to each student who is absent from school, because of his or her religious beliefs, an equivalent opportunity to register for classes or make up any examination, study or work requirements which he or she may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the institution for making available to the said student such equivalent opportunity.

4. If registration, classes, examinations, study or work requirements are held on Friday after four o’clock post meridian or on Saturday, similar or makeup classes, examinations, study or work requirements or opportunity to register shall be made available on other days, where it is possible and practicable to do so. No special fees shall be charged to the student for these classes, examinations, study or work requirements or registration held on other days.

5. In effectuating the provisions of this section, it shall be the duty of the faculty and of the administrative officials of each institution of higher education to exercise the fullest measure of good faith. No adverse or prejudicial effects shall result to any student because of his or her availing himself or herself of the provisions of this section.

6. Any student, who is aggrieved by the alleged failure of any faculty or administrative officials to comply in good faith with the provisions of this section, shall be entitled to maintain an action or proceeding in the supreme court of the county in which such institution of higher education is located for the enforcement of his or her rights under this section.

6-a. It shall be the responsibility of the administrative officials of each institution of higher education to give written notice to students of their rights under this section, informing them that each student who is absent from school, because of his or her religious beliefs, must be given an equivalent opportunity to register for classes or make up any examination, study or work requirements which he or she may have missed because of such absence on any particular day or days. No fees of any kind shall be charged by the institution for making available to such student such equivalent opportunity.

7. As used in this section, the term “institution of higher education” shall mean any institution of higher education, recognized and approved by the regents of the University of the State of New York, which provides a course of study leading to the granting of a post-secondary degree or diploma. Such term shall not include any institution which is operated, supervised or controlled by a church or by a religious or denominational organization whose educational programs are principally designed for the purpose of training ministers or other religious functionaries or for the purpose of propagating religious doctrines. As used in this section, the term “religious belief” shall mean beliefs associated with any corporation organized and operated exclusively for religious purposes, which is not disqualified for tax exemption under section 501 of the United States Code.

Notification Under the Family Educational Rights and Privacy Act of Student Rights Concerning Education Records and Directory Information

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. They can be found at https://www.ccny.cuny.edu/registrar/ferpa

Amendment To The Policy On Withholding Student Records

RESOLVED, That the existing Board of Trustees policy with respect to the withholding of student records as last amended on February 22, 1993, Cal. No. 7.c., be amended as follows:

Students who are delinquent and/or in default in any of their financial accounts with the college, the university or an appropriate state or federal agency for which the university acts as either a disbursing or certifying agent, and students who have not completed exit interviews as required by the Federal Perkins Loan Program, the federal Family Education Loan Programs, the William D. Ford Federal Direct Loan Program, and the Nursing Student Loan Program, are not to be permitted to complete registration, or issued a copy of their grades, a transcript of academic record, certificate, or degree, nor are they to receive funds under the federal campus-based student assistance programs or the federal Pell Grant Program unless the designated officer, in exceptional hardship cases and consistent with federal and state regulations, waives in writing the application of this regulation.

Freedom of Information Law Notice

Requests to inspect public records at the college under the Freedom of Information Law Notice, should be forwarded in writing to the Office of the Executive Council to the President at; The City College of New York, 160 Convent Avenue, Administration Building, Room 200, New York, NY 10031. Public records are available for inspection by appointment only at a location to be designated. You have the right to appeal any alleged denial of a request for access to records to; The City University of New York, Office of the General Counsel and Senior Vice Chancellor for Legal Affairs, 205 East 42nd Street, New York, NY, 10017. Copies of the CUNY procedures for access to public records and the appeal form are available at the reference desk of the library and the university website. http://www.cuny.edu/about/administration/offices/la.html

Special Provisions for Students in the Military

The following policies apply to students who leave CUNY to fulfill military obligations.

I. Students called up to the reserves or drafted before the end of the semester.

Grades. In order to obtain a grade, a student must attend 13 weeks (five weeks for summer session).

Refunds. A student called up to the reserves or drafted who does not attend for sufficient time to qualify for a grade is entitled to a 100% refund of tuition and all other fees except application fees.

II. Students who volunteer (enlist) for the military.

Grades. Same provision as for students called up to the reserves. In order to obtain a grade, a student must attend 13 weeks (five weeks for summer session).

Refunds. Students called to active duty who do not meet attendance requirements sufficient to earn a grade are entitled to a 100% refund of tuition and fees, except application fees. For students who enlist in the military, the amount of the refund depends upon whether the withdrawal is before the 5th week of classes. Students withdrawing prior to the beginning of the 5th week (3rd week in the Summer Session/Winter Session) are entitled to 100% refund of tuition and all fees except application fees. Students withdrawing after the 5th week (or the 3rd week for Summer Session/Winter Session) are entitled to a 50% refund of tuition and fees.

III. Other Provisions for Military Service:

Resident Tuition Rates. These lower rates are applicable to all members of the armed services, their spouses and their dependent children, on full-time active duty and stationed in the State of New York.

Re-enrollment of Veterans. Veterans who are returning students are given preferred treatment in the following ways:

Veterans who were former students with unsatisfactory scholastic records, may be readmitted with a probation program.

Veterans, upon their return, may register even after normal registration periods, without late fees.

Granting of college credit for military service and armed forces instructional courses.

Veterans returning too late to register may audit classes without charge.

Late Admissions. Veterans with no previous college experience are permitted to file applications up to the date of registration, and are allowed to begin classes pending completion of their application and provision of supporting documents.

Readmission Fee. Upon return from military service, a student will not be charged a Readmission Fee to register at the same college.

Veterans Tuition Deferrals. Veterans are entitled to defer the payment of tuition pending receipt of veterans’ benefits.

New York National Guard Tuition Waivers. Active members of the New York National Guard, who are legal residents of New York State and who do not have a baccalaureate degree, are eligible for a tuition waiver for undergraduates.
Immunization Requirements

New York State Public Health Law (PHL) 2165 requires that post-secondary students provide proof of immunity to measles, mumps and rubella (MMR) as a condition for attendance. The College reserves the right to prevent the registration of any applicant who fails to provide a record of immunization or who otherwise provides a health risk to the College community. It is University policy that all full-time and part-time students born on or after January 1, 1957, registered for six or more credits/ equivalent credits per semester must submit proof of MMR immunization. Students may be exempt from MMR immunization requirements for medical or religious reasons. Students must contact Student Health Services (SHS) to determine if they qualify for an exemption.

Public Health Law 2167 requires that post-secondary institutions provide written information about meningococcal meningitis to its students and that students complete, sign, and return a meningococcal meningitis response form regardless of how many credits they take in college. Public Health Law 2167 does not require that students be immunized against meningitis.

Students who do not submit proof of measles, mumps and rubella (MMR) immunization or who fail to return the meningococcal meningitis response form within a statutory grace period shall be prohibited from attending the institution.

For additional information, you should contact Student Health Services located in Marshak Science Building (MR), Room J-15, at the following number (212) 650-8222.

Students may download immunization forms from the Student Health Services website:
http://www1.ccny.cuny.edu/current/student/services/wellness/immunization.cfm

Policy for web publication to the City College Main Website

The City College main website, managed by the Office of Communications and Marketing, is a forward facing information and marketing vehicle. Information published on the main college website is meant for the general public. Internal, administrative office information/applications or academic support content should be hosted on other college servers.

The City College main website is accessed via a content management system. Departments and offices manage the content of their respective office websites. Department heads/chairs appoint content editors to update content. While the Office of Communications and Marketing reviews the site frequently to ensure proper accessibility, all content posted by content editors or other individuals is the responsibility of those departments and those individuals giving editing rights.

Though departments maintain their own content, the Office of Communications and Marketing reserves the right to delete/modify content where necessary. This is not the case with web sites or content on other web servers on campus.

Regarding websites for faculty, staff and students and their organizations – these may reside on campus servers external to the main website CMS if approved by the CCNY IT Department. In that case, the IT department and the department chairperson as the Fact Finder. The chairperson may also appear to have merit, that person may, in his or her sole discretion, replace any person’s stead. Further, the college president may re-assign investigations as necessary, including but not limited to situations in which a Fact Finder has not completed an investigation in a timely manner. In addition, during any time that no department chairperson is available to investigate a complaint, the college president may assign an administrator to investigate.

The college president may assign an administrator to investigate.

Informal Resolution. Students are encouraged to attempt to resolve complaints informally with the faculty member or to seek the assistance of the department chairperson or campus ombudsman to facilitate informal resolution.

Formal Complaint. If the student does not pursue informal resolution, or if informal resolution is unsuccessful, the student may file a written complaint with the department chairperson or, if the chairperson is the subject of the complaint, with the academic dean or a senior faculty member designated by the college president. (This person will be referred to below as the Fact Finder.) Only students in a faculty member’s class or present in another academic setting where the alleged conduct occurred may file complaints against that faculty member.

The complaint shall be filed within 30 calendar days of the alleged conduct unless there is good cause shown for delay, including but not limited to delay caused by an attempt at informal resolution. The complaint shall be as specific as possible in describing the conduct complained of.

Any person who uses the WWW whose actions involving the WWW violate this, or any other College policy or regulation, may be subject to limitations or eliminations of WWW privileges as well as other disciplinary actions.

Policy Against Sexual Harassment

It is the policy of The City University of New York to promote a cooperative work and academic environment in which there exists mutual respect for all University students, faculty, and staff. Harassment of employees or students based upon sex is inconsistent with this objective and contrary to the University policy of equal employment and academic opportunity without regard to age, sex, sexual orientation, alienage or citizenship, religion, race, color, national or ethnic origin, handicap, and veteran or marital status. Sexual harassment is illegal under State, and City laws, and will not be tolerated within the University. For more information go to: https://www.ccny.cuny.edu/safety/title-ix-sexual-assault-policy

Procedures For Handling Student Complaints About Faculty Conduct In Academic Settings

Introduction. The University and its Colleges have a variety of procedures for dealing with student-related issues, including grade appeals, academic integrity violations, student discipline, disclosure of student records, student elections, sexual harassment complaints, disability accommodations, and discrimination. One area not generally covered by other procedures concerns student complaints about faculty conduct in the classroom or other formal academic settings. The University respects the academic freedom of the faculty and will not interfere with it as it relates to the content or style of teaching activities. Indeed, academic freedom is and should be of paramount importance. At the same time the University recognizes its responsibility to provide students with a procedure for addressing complaints about faculty treatment of students that are not protected by academic freedom and are not covered by other procedures. Examples might include incompetent or inefficient service, neglect of duty, physical or mental incapacity and conduct unbecoming a member of the staff.

Determination of Appropriate Procedure. If students have any question about the applicable procedure to follow for a particular complaint, they should consult with the chief student affairs officer. In particular, the chief student affairs officer should advise a student if some other procedure is applicable to the type of complaint the student has.

III. Informal Resolution. Students are encouraged to attempt to resolve complaints informally with the faculty member or to seek the assistance of the department chairperson or campus ombudsman to facilitate informal resolution.

IV. Formal Complaint. If the student does not pursue informal resolution, or if informal resolution is unsuccessful, the student may file a written complaint with the department chairperson or, if the chairperson is the subject of the complaint, with the academic dean or a senior faculty member designated by the college president. (This person will be referred to below as the Fact Finder.) Only students in a faculty member’s class or present in another academic setting where the alleged conduct occurred may file complaints against that faculty member.

A. The complaint shall be filed within 30 calendar days of the alleged conduct unless there is good cause shown for delay, including but not limited to delay caused by an attempt at informal resolution. The complaint shall be as specific as possible in describing the conduct complained of.

B. The Fact Finder shall promptly send a copy to the faculty member about whom the complaint is made, along with a letter stating that the filing of the complaint does not imply that any wrongdoing has occurred and that a faculty member must not retaliate in any way against a student for having made a complaint. If either the student or the faculty member has reason to believe that the department chairperson may be biased or otherwise unable to deal with the complaint in a fair and objective manner, he or she may submit to the academic dean or the senior faculty member designated by the college president a written request stating the reasons for that belief; if the request appears to have merit, that person may, in his or her sole discretion, replace the department chairperson as the Fact Finder. The chairperson may also submit a written request for recusal for good cause to the academic dean or senior faculty member designated by the college president to review such request. If recusal is granted, a different department chairperson shall conduct the investigation, or, if no other chairperson is available, an administrator designated by the college president shall serve in the chairperson’s stead. Further, the college president may re-assign investigations as necessary, including but not limited to situations in which a Fact Finder has not completed an investigation in a timely manner. In addition, during any time that no department chairperson is available to investigate a complaint, the college president may assign an administrator to investigate.

C. The Fact Finder shall meet with the complaining student and faculty member, either separately or together, to discuss the complaint and to try to resolve it. The Fact Finder may seek the assistance of the campus ombudsman or other appropriate person to facilitate informal resolution.

D. If resolution is not possible, and the Fact Finder concludes that the facts alleged by the student, taken as true and viewed in the light most favorable to the student, establish that the conduct complained of is clearly protected by academic freedom, he or she shall issue a written report dismissing the
complaint and setting forth the reasons for dismissal and send a copy to the complaining student, the faculty member, the chief academic officer and the chief student affairs officer. Otherwise, the Fact Finder shall conduct an investigation. The Fact Finder shall separately interview the complaining student, the faculty member and other persons with relevant knowledge and information and shall also consult with the chief student affairs officer and, if appropriate, the college ombudsman. The Fact Finder shall not reveal the identity of the complaining student and the faculty member to others except to the extent necessary to conduct the investigation. If the Fact Finder believes it would be helpful, he or she may meet again with the student and faculty member after completing the investigation in an effort to resolve the matter. The complaining student and the faculty member shall have the right to have a representative (including a union representative, student government representative or attorney) present during the initial meeting, the interview and any post-investigation meeting.

E. In cases where there is strong preliminary evidence that a student’s complaint is meritorious and that the student may suffer immediate and irreparable harm, the Fact Finder may provide appropriate interim relief to the complaining student pending the completion of the investigation. The affected faculty member may appeal such interim relief to the chief academic officer.

F. At the end of the investigation, the Fact Finder shall issue a written report setting forth his or her findings and recommendations, with particular focus on whether the conduct in question is protected by academic freedom, and send a copy to the complaining student, the faculty member, the chief academic officer and the chief student affairs officer. In ordinary cases, it is expected that the investigation and written report should be completed within 30 calendar days of the date the complaint was filed.

V. Appeals Procedure. If either the student or the faculty member is not satisfied with the report of the Fact Finder, the student or faculty member may file a written appeal to the chief academic officer within 10 calendar days of receiving the report, which time period may be extended for good cause shown. The chief academic officer shall convene and serve as the chairperson of an Appeals Committee, which shall also include the chief student affairs officer, two faculty members elected annually by the faculty council or senate and one student elected annually by the student senate. The Appeals Committee shall review the findings and recommendations of the report, with particular focus on whether the conduct in question is protected by academic freedom. The Appeals Committee shall not conduct a new factual investigation or overturn any factual findings contained in the report unless they are clearly erroneous. If the Appeals Committee decides to reverse the Fact Finder in a case where there has not been an investigation because the Fact Finder erroneously found that the alleged conduct was protected by academic freedom, it may remand to the Fact Finder for further proceedings. The committee shall issue a written decision within 20 calendar days of receiving the appeal. A copy of the decision shall be sent to the student, the faculty member, the department chairperson and the president.

VI. Subsequent Action. Following the completion of these procedures, the appropriate college official shall decide the appropriate action, if any, to take. For example, the department chairperson may decide to place a report in the faculty member’s personnel file or the president may bring disciplinary charges against the faculty member. Disciplinary charges may also be brought in extremely serious cases even though the college has not completed the entire investigative process described above; in that case, the bringing of disciplinary charges shall automatically suspend that process. Any action taken by a college, whether interim or final, must comply with the bylaws of the University and the collective bargaining agreement between the University and the Professional Staff Congress.

VII. Campus Implementation. Each campus shall implement these procedures and shall distribute them widely to administrators, faculty members and students and post them on the college website.

Approved by the Board of Trustees on April 26, 2010, effective May 1, 2010.

Policy 7.041 Drugs and Alcohol

The City University of New York (“CUNY”) is an institution committed to promoting the physical, intellectual, and social development of all individuals. As such, CUNY seeks to prevent the abuse of drugs and alcohol, which can adversely impact performance and threaten the health safety of students, employees, their families, and the general public. CUNY complies with all federal, state, and local laws concerning the unlawful possession, use, and distribution of drugs and alcohol.

Federal law requires that CUNY adopt and implement a program to prevent the use of illicit drugs and abuse of alcohol by students and employees. As part of its program, CUNY has adopted this policy, which sets forth (1) the standards of conduct that students and employees are expected to follow; (2) CUNY sanctions for the violation of this policy; and (3) responsibilities of the CUNY colleges/units in enforcing this policy. CUNY’s policy also (1) sets forth the procedures for disseminating the policy, as well as information about the health risks of illegal drug and alcohol use, criminal sanctions for such use, and available counseling, treatment, or rehabilitation programs, to students and employees; and (2) requires each college to conduct a biennial review of drug and alcohol use and prevention on its campus.

This policy applies to all CUNY students, employees and visitors when they are on CUNY property, including CUNY residence halls, as well as when they are engaged in any CUNY-sponsored activities off campus.

1 Standards of Conduct

The unlawful manufacture, distribution, dispensation, possession, or use of drugs or alcohol by anyone, on CUNY property (including CUNY residence halls), in CUNY buses or vans, or at CUNY-sponsored activities, is prohibited. In addition, CUNY employees are prohibited from illegally providing drugs or alcohol to CUNY students. Finally, no student may possess or consume alcoholic beverages in any CUNY residence hall, regardless of whether the student is of lawful age, except for students living in the Graduate School and University Center’s graduate housing facilities who may lawfully possess and consume alcoholic beverages. For purposes of this policy, a CUNY residence hall means a residence hall owned and/or operated by CUNY, or operated by a private management company on CUNY’s behalf.

In order to make informed choices about the use of drugs and alcohol, CUNY students and employees are expected to familiarize themselves with the information provided by CUNY about the physiological, psychological, and social consequences of substance abuse.

2 Sanctions

Employees and students who violate this policy are subject to sanctions under University policies, procedures and collective bargaining agreements, as described below. Employees and students should be aware that, in addition to these CUNY sanctions, the University will contact appropriate law enforcement agencies if they believe that a violation of the policy should also be treated as a criminal matter.

3 Students

Students are expected to comply with the CUNY and college policies with respect to drugs and alcohol. Any student found in violation may be subject to disciplinary action under Article 15 of the Bylaws of the Board of Trustees, which may result in sanctions up to and including expulsion from the University.

In addition, any student who resides in a CUNY residence hall and who is found to have violated any CUNY or college policy with respect to drugs and alcohol may be subject to sanctions under the CUNY Residence Hall Disciplinary Procedures, up to and including expulsion from the residence hall.

In lieu of formal disciplinary action, CUNY may, in appropriate cases, seek to resolve the matter through an agreement pursuant to which the student must see a counselor or successfully participate in a drug and alcohol treatment program.

In accordance with the Federal Educational Rights and Privacy Act (“FERPA”), CUNY may also choose—when appropriate—to contact parents or legal guardians of students who have violated the CUNY policy on drugs and alcohol.

4 Employees

Any employee found to have violated this CUNY policy may be subject to disciplinary action, in accordance with the procedures set forth in applicable CUNY policies, rules, regulations, and collective bargaining agreements. Sanctions may include a reprimand, suspension without pay, or termination of employment. In lieu of formal disciplinary action, CUNY may, in appropriate cases, seek to resolve the matter through an agreement pursuant to which the employee must successfully participate in a drug or alcohol treatment program.

5 Responsibilities of Colleges/Units

Each college or unit of the University should make its best efforts to educate employees and students about this policy and the risks associated with the unlawful possession, use, or distribution of illegal drugs and alcohol. The President of each college or unit may choose to ban alcohol at on-campus functions or at any particular function. This policy, together with information about the health risks of illegal drug and alcohol use, criminal sanctions for such use, and counseling, treatment, or rehabilitation programs available to employees or students, must be distributed annually to all employees and students. The Chief Student Affairs Officer
shall be responsible for the distribution of this material to students, and the Director of Human Resources shall be responsible for the distribution of the material to employees.

The Vice President for Administration, or person performing the equivalent function at each college or unit of CUNY, shall be responsible for conducting a biennial review to determine the effectiveness of CUNY’s drug and alcohol program at its college or unit, and to ensure that sanctions for drug and alcohol violations are consistently enforced. Upon completion, the biennial review must be sent to the University’s Executive Vice Chancellor and Chief Operating Officer. This biennial review must include the number of drug and alcohol-related violations and fatalities that occur on the college’s campus or as part of the college’s activities, as well as the number and type of sanctions imposed as a result of drug and alcohol-related violations and fatalities that occur at the college as part of its activities.

(Board of Trustees Minutes, 2009,06-22,7,A. Amended: Board of Trustees Minutes,2011,05-02,5,A)

If you are experiencing difficulty with alcohol or chemical dependency City College can help you find counseling services or rehabilitation programs that will help you with your problem.

Counseling Services available at City College can be had by contacting the Counseling Center: MR J-15 212-650-8222, http://www.ccny.cuny.edu/counseling/community-resources.cfm
Appendix B

How to File a Complaint

1. The person should first try to resolve the complaint directly with the institution by following the internal complaint procedures provided by the institution. An institution of higher education is required to publish its internal complaint procedure in a primary information document such as the catalog or student handbook. (The Department suggests that the complainant keep copies of all correspondence with the institution.)

2. If a person is unable to resolve the complaint with the institution or believes that the institution has not properly addressed the concerns, he or she may send a letter or telephone the Postsecondary Complaint Registry to request a complaint form. Please telephone (212) 951-6493 or write to:

New York State Education Department
Postsecondary Complaint Registry
One Park Avenue, 6th Floor
New York, NY 10016

3. The Postsecondary Complaint Registry Form should be completed, signed, and sent to the above address. The completed form should indicate the resolution being sought and any efforts that have been made to resolve the complaint through the institution’s internal complaint processes. Copies of all relevant documents should be included.

4. After receiving the completed form, the Department will notify the complainant of its receipt and make any necessary request for further information. When appropriate, the Department will also advise the institution that a complaint has been made and, when appropriate, the nature of the complaint. The complainant will also be notified of the name of the evaluator assigned to address the specific complaint. The evaluator may contact the complainant for additional information.

5. The Department will make every effort to address and resolve complaints within ninety days from receipt of the complaint form.

Complaint Resolution

Some complaints may fall within the jurisdiction of an agency or organization other than the State Education Department. These complaints will be referred to the entity with appropriate jurisdiction. When a complaint concerns a matter that falls solely within the jurisdiction of the institution of higher education, the complainant will be notified and the Department will refer the complaint to the institution in question and request that the matter receive a review and response.

Upon conclusion of the Department’s complaint review or upon a disposition of the complaint by referral to another agency or organization, or to the institution of higher education, the Department will issue a written notice to the complainant describing the resolution of the complaint. The complainant may contact the Department evaluator directly for follow-up information or for additional assistance.
Appendix C

The City University of New York Board Of Trustees

William C. Thompson, Jr.
Chairman of the Board

Members Of The Board
Wellington Z. Chen
Una S. T-Clarke
Lorraine Cortés-Vázquez
Rita Dimartino
Fernando Ferrer
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Jill O'donnell-Tormey
Charles A. Shorter
Ken Sunshine
Sandra Wilkin
Chika Onyejiukwa
Katherine M. Conway

http://www2.cuny.edu/about/trustees/the-board-of-trustees/
Appendix D

Officers of the Administration

Vincent Boudreau
Interim President
B.A., M.A., Ph.D.

Maurizio Trevisan
Anna & Irving Brodsky Medical Professor
Dean of The CUNY Medical School
M.S., M.D

Michele Baptiste
Dean, Diversity and Compliance
J.D.

Gilda Barabino
Dean, Grove School of Engineering
B.S., Ph.D.

E. Maudette Brownlee
Director, Special Programs/SEEK
B.A., Ph.D.

Doris Cintron
Senior Associate Provost for Academic Affairs, Assessment, and Accreditation
Ed.D

Mary Driscoll
Interim Senior VP & Provost
B.A., M.A., Ed.D.

Gretchen Johnson
Interim Dean of Education
B.S., M.S., Ph.D

Erica Friedman
Deputy Dean of Sophie Davis
B.S., M.D.

Deborah Hartnett
Senior Advisor to the President and Chief of Staff
B.S., M.B.A., J.D.

Deidra Hill
Vice President for Communications
B.A.

Theresa Horvath
Assistant Dean of PA Program – Sophie Davis
B.S., M.D.

Eric Koch
Dean of Humanities & Arts
B.A., M.Phil., Ph.D.

Felix Lam
Vice President of Finance and C.F.O.
B.A., M.P.A.

Tony Liss
Dean, Division of Science
B.A., M.S., Ph.D.

Celia P. Lloyd
Assistant VP for CUNYfirst Integration
B.S., M.B.A.

Jeffrey Machi
Vice President for Development and Institutional Advancement
B.A.

Karen Mackey-Witherspoon
Vice President for Government, Community and Cultural Affairs
B.A.

Laurent Mars
Associate Dean of Science
M.S., Ph.D.

Dani McBeth
Associate Dean for Student Affairs, Sophie Davis School of Biomedical Education
Ph.D.

Juan Carlos Mercado
Dean, Division of Interdisciplinary Arts and Sciences/Center for Worker Education
B.A., M.A., Ph.D.

Paul Occhialogrosso
Executive Counsel to the President
J.D.

Leonardo Leon
Deputy Chief Information Officer
B.S. and M.S.

Gordon Gebert
Acting Dean, School of Architecture
B. Architecture, M. Architecture, R.A.

Juana Reina
Vice President for Student Affairs
B.A., M.Ed.

Kevin R. Foster
Interim Dean, Division of The Colin Powell School for Civic and Global Leadership
B.A., M.A., Ph.D.

David Robinson
Assistant Vice President for Campus Planning and Facilities Management
B.S.

John Siderakis
Assistant Vice President for Human Resources
B.S., M.B.A.

Charles Stewart
Associate Dean and Chief Librarian
B.A., M.S., M.L.S.

Mary Ruth Strzeszewski
Associate Provost for Academic Services
Ph.D.

Wendy Thornton
Assistant Dean for Student Affairs
M.A.

Ardie D. Walser
Associate Dean of Academic Affairs for Graduate & Undergraduate Studies, Executive Officer, Graduate Center of CUNY
B.E., M.E., Ph.D.
## Appendix E

### Approved Graduate Degree Programs

**The College of Liberal Arts And Science**

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*Offered jointly by The City College and The City University Graduate School and University Center*

**The School of Education**

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