### Math 20100
- Calculus I
  - Pre: Math 19500 (C min.)
  - 3 cr.

### Math 20200
- Calculus II
  - Pre: Math 20100 (C min.)
  - 3 cr.

### Math 20300
- Calculus III
  - Pre: Math 20200 (C min.)
  - 4 cr.

### Math 39100
- Differential Equations
  - Pre: Math 20300
  - 3 cr.

### Bio 10100
- Bio Fundamentals I
  - Pre: Phys 20800, Math 20300 & Engr 10300 or Csc 10200
  - 3 cr.

### Technical Elective 1
- See the list below

### Technical Elective 2
- See the list below

### Engineering Technical Electives
- ME3208: Computer Methods in Engr
- ME4300: Heat Transfer
- ME47100: Energy Systems Design
- MS3600: Energy Conversion
- ME34700: Environmental Control
- ME3500: Advanced Fluid Mechanics
- ME5790: Turbomachinery Design
- ENGR5400: Reactor Physics and Engineering
- ENGR5550: Reactor Thermal Hydraulics
- ENGRI550: Nuclear Reactor Design. Operation and Safety
- ENGR5990: Special Topics in Engr
- ENGR5100: Spec Projects in ESE
- ENGR5560: Special Topics in RS
- ENGR5980: Industrial Ecology

### Liberal Arts
- 3 cr.

### Chemistry 10301
- General Chemistry I
  - Pre: Math 19500
  - 4 cr.

### Chem 10401
- General Chemistry II
  - Pre: Chem 10301
  - 4 cr.

### CSE 10200
- Introduction to Computing
  - Pre: Math 19500 (C min.)
  - Pre/Co: Math 20100
  - 3 cr.

### ENGR 10100
- Engineering Design
  - Pre/Co: Math 19500 (min.C)
  - 1 cr.

### ESE 10610
- Earth System Science & Engr
  - 4 cr.

### Math 10300
- Analysis Tools for Engineers
  - Pre: Math 20100 (C min.)
  - 2 cr.

### ENGR 23000
- Thermodynamics
  - Pre: Phys 20700 (C min.), Math 20200 (C min.) & Csc 10200
  - 3 cr.

### CE 23100
- Structural Mechanics
  - Pre: Math 20700 (C min.), Math 20200 (C min.) & Csc 10200
  - 3 cr.

### Fluid Mechanics
- ME 35600: Fluid Mechanics I (Fall Only)
- ME 35700: Fluid Mechanics II (Spring Only)
- Pre: Math 39100
- Pre/Co: Math 19100

### Restricted Elective I
- Thermodynamics
  - Pre: Phys 20700 (C min.), Math 20200 (C min.) & Csc 10200
  - 3 cr.

### ENGR 59869
- ESE Design I (Fall Only)
  - Pre: Seniors Only
  - 3 cr.

### ENGR 59870
- ESE Design II (Spring Only)
  - Pre: Engr 59869
  - 3 cr.

### Science Technical Electives
- CHEM2400: Quantitative Analysis
- CHEM2601: Organic Chemistry I
- CHEM2650: Organic Chemistry II
- CHEM2720: Organic Chemistry Lab
- CHEM3100: Physical Chemistry I
- CHEM3200: Physical Chemistry II
- CHEM46000:1: Environ. Chem.
- PChem & Chem Instr Lab
- PHYS32300: Quantum Mechanics
- PHYS42100: Modern Physics
- PHYS45200: Optics

1. The latest version of the curriculum sheet supersedes any curriculum and pre/coreq information in the Undergraduate Bulletin or online.

2. “C” Passing Grade Requirement: Courses in shaded area require a minimum passing grade of “C”.

3. Skills tests: Certain students may be required to pass CUNY Assessment Tests in one or more subjects within 1 or 2 years of admission.

4. Technical Elective Requirements: There are to be selected from the list of approved engineering and science courses (see table). An appropriate sequence of courses will be selected based on student interest. All technical electives MUST be approved by an advisor. Of the 18 credits for electives, a minimum of 9 credits must come from Engineering courses.

5. General Education/Liberal Arts electives: ESE students must take six approved courses (18 credits) of which at least two (6 credits) must be at the 20000 level or higher. A list of approved courses is posted on the School of Engineering web site at http://www.ccnyc.cuny.edu/engineering/genreq.html and can be viewed at the Office of Undergraduate Affairs (ST-209) or the Office of Student Programs (ST-2M7). Each course falls into one or more general education clusters, specified in the list. The six courses must collectively occupy at least three clusters. The four clusters are: (f) Professional and Ethical Responsibilities, (g) Communication, (h) Global and Societal Context, and (j) Contemporary Issues.

6. Other Graduation Requirements: Apply for graduation during registration for the last semester. Minimum GPA of 2.00. Minimum QPA of zero. Residency Requirement: 33 credits of 30000-level or higher Earth System Science & Environmental Engineering courses taken at CCNY.

7. FIQWS 10026 fulfills the requirements for Engl 11000 and Engr 10100. Transfer students with credit for Math 20200 are considered too advanced for Engr 10100. They should take a 1-credit ESE advanced laboratory elective course instead.

8. Program Changes: Substitution of other courses for required courses must be approved by the Director of the Earth System Science & Environmental Engineering Program (ST-553), and the Associate Dean of the Office of Undergraduate Affairs (ST-209).

9. Senior status is defined as being no more than three semesters away from graduation.

Total Credits: 127