

**THE CITY COLLEGE – SCHOOL OF ENGINEERING**  
**Earth System Science & Environmental Engineering Curriculum**  
**Fall 2023 – Spring 2024**

November 2, 2023

<b>Math 20100</b> Calculus I Pre: Math 19500 (C min.) 4 cr.		<b>Chem 10301</b> General Chemistry I Pre: Math 19500 (C min.) 4 cr.	<b>Engr 11000</b> <sup>7</sup> Freshman Composition 3 cr.	<b>Engr 10100</b> <sup>7</sup> Engineering Design Pre/Co: Math 19500 (C min.) 1 cr.	<b>Engr 10610</b> Earth System Science & Engr 4 cr.
<b>Math 21200</b> Calculus II Pre: Math 20100 (C min.) 4 cr.	<b>Phys 20700</b> University Physics I Pre/Co: Math 21200 4 cr.	<b>Chem 10401</b> General Chemistry II Pre: Chem 10301 (C min.) 4 cr.	<b>CSc 10200</b> Introduction to Computing Pre: Math 19500 (C min.) or Pre/Co: Math 20100 (C min.) 3 cr.		<b>Liberal Arts</b> <sup>5</sup> 3 cr.
<b>Math 21300</b> Calculus III Pre: Math 21200 (C min.) 4 cr.	<b>Phys 20800</b> University Physics II Pre: Phys 20700 Pre/Co: Math 21300 4 cr.	<b>Engr 20800</b> Computation Methods for ESE Pre: Math 20100 & 21200 (both C min.) Co: Math 21300 2 cr.	<b>EAS 21700</b> Systems Analysis of the Earth Pre: Either EAS 10600 or Engr 10610; and either Phys 20300 or Chem 10301 4 cr.	<b>Engr 21007</b> <sup>9</sup> Writing for Engineering Pre: Engr 11000 3 cr.	
<b>Math 39100</b> Differential Equations Pre: Math 21300 (C min.) 3 cr.	<b>Math 34600</b> Elements of Linear Algebra. Pre: Math 21300 (C min.) 3 cr.	<b>Restricted Engineering Elective (Select One of Three)</b>		<b>Restricted Elective I Thermo (Select One)</b>	
		<b>Engr 20400</b> Electrical Circuits Pre/Co: Phys 20800 (C min.) Math 21300 (C min.) 3 cr.	<b>CE 23100</b> Statics Pre: Phys 20700 (C min.) Math 21200 (C min.) & CSc 10200 3 cr.	<b>Engr 31230</b> Energy & the Environ. Pre: Phys 20800 (C min.) Math 21300 (C min.) & Chem 10301 (C min.) 3 cr.	<b>Engr 23000</b> Thermo Pre: Chem 10301 (C min.) Pre/Co: Phys 20800 (C min.) Math 21300 (C min.) 3 cr.
				<b>ChE 22900</b> Thermo I (Spring Only) Pre: Chem 10401, Phys 20700, Math 39100 3 cr.	<b>ENGR 26400</b> Environmental Engineering Data Analysis Pre: Csc 10200 Pre/Co: Engr 21007, Math 21300 (C min.) or Math 20300 (C min.) 3 cr.
<b>Bio 10100</b> Bio Fundamentals I 4 cr.	<b>Engr 30100</b> Intro. to Remote Sensing Pre: Phys 20800, Math 21300 & (Engr 20800 or Csc 10200) 3 cr.	<b>Fluid Mechanics (Select One)</b>			<b>ENGR 59910 Intro to Geographic Information Systems</b> Pre: ENGR 26400 3 cr.
		<b>ME 35600</b> Fluid Mechanics Pre: Math 39100 (C min.) Phys 20800 (C min.) Pre/Co: Math 39200 3 cr.	<b>ChE 34100</b> Transport Phen I (Fall Only) Pre: Math 39100 (C min.) ChE 22900 3 cr.	<b>CE 35000</b> Fluid Mechanics Pre: CE 23100 (C min.) CSc 10200 Pre/Co: Math 39100 (C min.) 3 cr.	<b>ENGR 27600</b> <sup>9</sup> Engineering Economics Pre: Math 20100 (C min.) 3 cr.
<b>CE 37400</b> Environmental Engineering. Pre: Chem 10401; ENGR 26400; CE 3500, or ME 35600, or ChE 34100 3 cr.	<b>CE 36500</b> Hydraulic Engr Pre for CE majors: CE 35000 (C min.) Pre for ESE majors: CE 35000 or ME 35600 or ChE 34100 3 cr.	<b>CE 37200</b> Environmental Impact Assessment Pre for CE majors: CE 26400, Chem 10401 (C min.) & CE 35000 (C min.) Pre for ESE majors: CE 26400, Chem 10401 (C min.) & [CE 35000 or ME 35600 or ChE 34100] 3 cr.	<b>Restricted Elective II (Select One)</b>		<b>Liberal Arts</b> <sup>5</sup> 3 cr.
			<b>ME 43000</b> Thermal Sys. Anal. Pre: Engr 23000 & ME 35600 3 cr.	<b>ChE 33000</b> Thermo II (Fall Only) Pre: ChE 22900, Math 39100 (C min.) Pre/Co: ChE 22800 (or CE 26400 for ESE), Phys 20800 3 cr.	
<b>Technical Elective</b> <sup>4</sup> See the list below 3 cr.	<b>Technical Elective</b> <sup>4</sup> See the list below 3 cr.	<b>Technical Elective</b> <sup>4</sup> See the list below 3 cr.	<b>Engr 59869</b> ESE Design I (Fall Only) Pre: ENGR 30100, ENGR 59910, CE 36500, CE 37200, CE 37400 Co/Pre: EAS 21700 3 cr.	<b>Liberal Arts</b> <sup>5</sup> 3 cr.	<b>Liberal Arts</b> <sup>5</sup> (20000 or higher) 3 cr.
<b>Technical Elective</b> <sup>4</sup> See the list below 3 cr.	<b>Technical Elective</b> <sup>4</sup> See the list below 3 cr.	<b>Technical Elective</b> <sup>4</sup> See the list below 3 cr.	<b>Engr 59870</b> ESE Design II (Spring Only) Pre: Engr 59869 3 cr.	<b>Liberal Arts</b> <sup>5</sup> 3 cr.	<b>Liberal Arts</b> <sup>5</sup> 3 cr.

<b>Engineering Technical Electives</b>	<b>Science Technical Electives</b>
CHE 34200 Transport Phenomena II CE 48200 Water & Waste Trement Desgn CE 56600 Engineering Hydrology CE 57100 Water Quality Analysis CE 58300 Air Pollution and Control CE 58400 Solid Waste Management EE 20500 Linear System Analysis I EE 31100 Probability and Statistics EE 33000 Electromagnetics EE 35700 Electric Power Engineering EE 42800* Photonics Lab EE 45500 Elements of Power Sys EE 46200 Photonics Engineering EE G6800 Optical Remote Sensing ME 32200 Computer Methods in Engr	ME 43300 Heat Transfer ME 47100 Energy Systems Design ME 53600 Energy Conversion ME 53700 Turbomachinery Design ME 54700 Environmental Control ME 55600 Advanced Fluid Mechanics ENGR 31230 Energy and the Environment ENGR 41230 The Management of Hazardous Wastes ENGR 5100X* Spec Projects in ESE ENGR 55400 Reactor Physics and Engineering ENGR 55500 Reactor Thermal Hydraulics ENGR 55600 Nuclear Reactor Design, Operation and Safety ENGR 55680 Special Topics in RS ENGR 59803 Industrial Ecology ENGR 59920 Bldg Mod & Simulatn ENGR 59950 Special Topics in Earth System and Environmental Engr

- The latest version of the curriculum sheet supersedes any curriculum and pre/coreq information in the Undergraduate Bulletin or online.
- “C” Passing Grade Requirement: Courses in shaded area  require a minimum passing grade of “C”.
- Skills tests: Certain students may be required to pass CUNY Assessment Tests in one or more subjects within 1 or 2 years of admission.
- Technical Elective Requirements: These are to be selected from the list of approved engineering and science technical electives (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.
- Liberal Arts electives: ESE students must take six approved courses, of which at least two must have course numbers of 20000 or higher. Four of the courses should satisfy Flexible Core (Pathways) liberal arts requirements in the Creative Expression (CE), World Cultures & Global Issues (WCGI), Individual & Society (IS), and U.S. Experience (US) areas. Prior courses in these four areas from other colleges can satisfy the electives. The remaining two courses must be chosen from the list on the Grove School of Engineering web site at [cnny.cuny.edu/engineering/gen-ed](http://cnny.cuny.edu/engineering/gen-ed).  
See [cnny.cuny.edu/engineering/pathways](http://cnny.cuny.edu/engineering/pathways) for details and the Pathways course lists. A prior degree may remove the requirement of all six courses
- 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.
- Transfer students with credit for Math 21200 (Calculus II) are considered too advanced for Engr 10100. They should take a 1-credit ESE advanced laboratory elective course instead. FIQWS 10026 fulfills the requirements for Engr 11000 and Engr 10100.
- 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 Academic Affairs (ST-209).
- ENGL 21007 (Writing for Engineering) and ENGR 27600 (Engineering Economics) are required courses in the Earth System Science & Environmental Engineering curriculum instead of General Education requirements. ENGR 27600 satisfies one of the 2000 level course requirement.
- Of the 130 credits for the degree at least 30 credits must be in Liberal Arts & Sciences (RLA) courses and 45 credits must be in Engineering courses.

**Total Credits: 130**