

Engineering Program

A Dual Admissions Program with NJIT

Division of Engineering Technologies and Computer Sciences — Curriculum Code: 0399
Will Earn Upon Program Completion: Associate in Science (A.S.) Degree

Why major in Engineering?

Engineering design processes and materials used to manufacture equipment, structures, devices, and systems of all types and sizes based on scientific and technological principles. The challenge is to continually improve these processes and materials to meet the needs of society with respect to health, safety, the environment, and energy while maintaining cost effectiveness. ECC's Engineering A.S. degree program college matches the first two years of B.S. degree programs in Engineering offered at four-year colleges. Students select one of the following branches of engineering: electrical, computer, biomedical, chemical, industrial, civil, or mechanical.

If I major in Engineering, can I transfer to an upper-division college or university?

Yes. The seven branches of engineering listed above are offered at the nearby New Jersey Institute of Technology with which Essex County College has a dual admissions agreement. Upon graduation from Essex your credits will be applied to the first two years of the bachelor's degree program in any of those branches. Or you may choose to transfer your credits to one of five other colleges in New Jersey and numerous others in the New York metropolitan area that offer the baccalaureate in Engineering.

Are there any requirements I must satisfy before I start taking courses in my major?

All new students must take a basic skills competency test. Based on the results of the test, you may be required to take developmental courses in reading, English, and/or mathematics.

How long will it take for me to complete this degree?

If you do not need developmental course work and you attend full time, you can complete the degree in two years. Part-time students can complete the program in three or four-years.

Where should I direct specific questions about this program?

Call the Division at (973) 877-4400.

Upon completion of this program, graduates will be able to:

- ◆ Analyze engineering drawings, demonstrating an understanding of the concept of scale and orthographic projection
- ◆ Assist engineers and technologist in performing tasks relevant to the chosen branch of engineering;
- ◆ Complete written engineering reports using skills acquired in ECC's science, engineering, and English courses;
- ◆ Write computer programs to solve engineering based problems using skills acquired in ECC's computer science and engineering courses;
- ◆ Computer aided design (CAD) drawings;
- ◆ For civil, industrial and mechanical engineering majors, demonstrate knowledge of fundamental principles of engineering mechanics and strength of materials;
- ◆ For electrical and computer engineering majors, demonstrate knowledge of electrical circuits;
- ◆ For biomedical or chemical engineering majors, demonstrate knowledge of biology or organic chemistry; and
- ◆ Utilize computer software applications used in engineering such as spreadsheets, word processing and basic programming.

Note: In addition to the engineering program, ECC offers engineering technology programs in the following branches: Civil, electrical, mechanical, and manufacturing. Consult the program coordinator for a complete explanation of the difference between engineering and engineering technology.

Engineering — A. S. Degree Program

GENERAL EDUCATION REQUIREMENTS:	RECOMMENDED SEQUENCE OF COURSES:*
(33 credits)	First Semester
Communications (6 credits)	ENG 101 College Composition I 3
ENG 101 College Composition I 3	CSC 112 Comp. Prog. for Engr. & Tech. ³ or 3-4
ENG 102 College Composition II 3	CSC 121 Computer Science I ³
Social Sciences (6 credits)	MTH 121 Calculus with Analytic Geom. I 4
ECO 101 Principles of Economics (Macro) 3	CHM 103 General Chemistry I 4
Select one Social Science course from: ANT 101, 105; 3	PHY 103 General Physics I 4
ECO 102; POL 101,104; PSY 101, 102, 219;	
SOC 101, 108, 219	Second Semester
Lab Science (12 credits)	ENG 102 College Composition II 3
CHM 103 General Chemistry I 4	ENR 103 Engineering Graphics 2
MTH 121 Calculus with Analytic Geom. I 4	MTH 122 Calculus with Analytic Geom. II 4
MTH 122 Calculus with Analytic Geom. II 4	CHM 104 General Chemistry II ⁴ or 4
	CSC 122 Computer Science II ⁴
	PHY 104 General Physics II 4
Humanities (9 credits)	Summer
Select a History course from: HST 101, 111,112, 121, 3	ANT 101, POL 104, PSY 101, or SOC 101 3
122, 131, 132, 134, 135, 136, 137, 161 or 162	History requirement 3
One of the following 200-level English Lit. courses: 3	
ENG 205, 208, 215, 221, 222, 232, 237, 238, 242, 250, 263, or 264	Third Semester
MUS 100, 108, or 109 3	ENR 105 Applied Computer Aided Design 2
	MTH 221 Calculus with Analytic Geom. III 4
MAJOR COURSE REQUIREMENTS	ELC 230 Circuits & Systems for Engr. ¹ or 3-4
(11-16 credits)	BIO 103 General Biology I ¹ or
ENR 103 Engineering Graphics 2	CHM 203 Organic Chemistry I ¹ or
ENR 105 Applied Computer Aided Design 2	ENR 211 Engr. Mechanics I ¹
ELC 230 or BIO 103 or CHM 203 or ENR 111 ¹ 3-4	Major requirements ² 2-4
Major requirements ² 2-4	Fourth Semester
Major requirements ² 2-4	ECO 101 Principles of Economics (Macro) 3
	MTH 222 Differential Equations 4
ADDITIONAL COURSE REQUIREMENTS	Major requirements ² 2-4
(23-24 credits)	English Literature requirements 3
CSC 112 Comp. Prog. for Engr. & Tech. ³ or 3-4	Art/Music requirement 3
CSC 121 Computer Science I ³	
CHM 104 General Chemistry II ⁴ or 4	Notes
CSC 122 Computer Science II ⁴	¹ Computer Engineering and Electrical Engineering branches take ELC 230. Bio-Medical Engineering take BIO 103. Chemical Engineering take CHM 203. Industrial Engineering, Civil Engineering and Mechanical Engineering take ENR 211.
MTH 221 Calculus with Analytic Geom. III 4	² Select from ENR 212, BIO 104, CHM 204, MTH 239, or other applicable 200-level ECC or NJIT courses, depending on branch. See and ECC advisor for the full list of applicable courses and their prerequisites.
MTH 222 Differential Equations 4	³ Computer Engineering and Electrical Engineering branches take CSC 121. All other branches take CSC 112 or CSC 121.
PHY 103 General Physics I 4	⁴ All take CHM 104 with the following exception: Computer Engineering and Electrical Engineering branches take CSC 122.
PHY 104 General Physics II 4	
Total Credits required for Degree	67-73

*NOTE: This plan assumes the completion of all required developmental courses in reading, writing, and mathematics as well as other pre- and co-requisites for some of the courses, as listed in the Course Descriptions section.