

# 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?

Engineers 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 closely 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?

Contact 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 technologists 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;
- ◆ Complete 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

<p><b>GENERAL EDUCATION REQUIREMENTS</b> (33 credits)</p> <p><b>Communications (6 credits)</b> ENG 101 College Composition I 3 ENG 102 College Composition II 3</p> <p><b>Social Science (6 credits)</b> ECO 101 Principles of Economics (Macro) 3 Select one Social Science course from: ANT 101,105; ECO 102; POL 101, 104; PSY 101, 102, 219; SOC 101, 108, 219 3</p> <p><b>Lab Science / Math (12 credits)</b> CHM 103 General Chemistry I 4 MTH 121 Calculus with Analytic Geom. I 4 MTH 122 Calculus with Analytic Geom. II 4</p> <p><b>Humanities (9 credits)</b> Select one History course from: HST 101, 102, 111 112, 121, 122, 131, 132, 134-137, 161,162 One of the following 200-level English lit. courses: ENG 205, 208, 215, 221, 222, 232, 237, 238, 242, 250, 263, or 264 3 ART 100, 101, or 102 or MUS 100, 108, or 109 3</p> <p><b>MAJOR COURSE REQUIREMENTS:</b> (13-16 credits)</p> <p>ENR 103 Engineering Graphics 2 ENR 105 Applied Computer Aided Design 2 Major Elective* 3-4 Major Elective* 3-4 Major Elective* 3-4</p> <p><b>ADDITIONAL COURSE REQUIREMENTS:</b> (19 credits)</p> <p>CSC 112 Comp. Prog. for Engr. &amp; Tech. 3 MTH 221 Calculus with Analytic Geom. III 4 MTH 222 Differential Equations 4 PHY 103 General Physics I 4 PHY 104 General Physics II 4</p> <p><b>Total Credits Required for Degree 65-68</b></p>	<p><b>RECOMMENDED SEQUENCE OF COURSES:*</b></p> <p><b>First Semester</b> ENG 101 College Composition I 3 ENR 103 Engineering Graphics 2 MTH 121 Calculus with Analytic Geom. I 4 PHY 103 General Physics I 4</p> <p><b>Second Semester</b> CHM 103 General Chemistry I 4 ENG 102 College Composition II 3 ENR 105 Applied Computer Aided Design 2 MTH 122 Calculus with Analytic Geom. II 4 PHY 104 General Physics II 4</p> <p><b>Summer</b> ANT 101, POL 104, PSY 101, or SOC 101 3 History Requirement 3</p> <p><b>Third Semester</b> CSC 112 Comp. Prog. For Engr. &amp; Tech 3 MTH 221 Calculus with Analytic Geom. III 4 Major Elective* 3-4 Major Elective* 3-4</p> <p><b>Fourth Semester</b> ECO 101 Principles of Economics (Macro) 3 MTH 222 Differential Equations 4 Major Elective* 3-4 English literature requirement 3 Art/Music requirement 3</p> <p>* With the help of an advisor, select from the major elective courses listed below. (A total of three elective courses must be selected.)</p>
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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.

**\* Major Elective Courses**

<b>Biomedical</b>	<b>BIO 121, BIO 122, MTH 239</b>
<b>Civil</b>	<b>CET 111, CET 211/CET 212, ENR 211, ENR 220</b>
<b>Computer</b>	<b>ELC 230, ELC 218, ELC 228</b>
<b>Electrical</b>	<b>ELC 230, ELC 218, ELC 228</b>
<b>Mechanical</b>	<b>ENR 211, ENR 212, ENR 220</b>
<b>Industrial</b>	<b>ENR 211/ENR 220, ENR 212, MET 202</b>