

Engineering Technology & Advanced Manufacturing

Degree Type

Associate in Science

The Engineering Technology and Advanced Manufacturing Associate in Science program of study is designed to give students the core skills and knowledge needed to be successful in acquiring a Bachelor of Science degree in Engineering. The program is structured to be completed within two years and with careful advisor assisted selection of the engineering, mathematics, and science electives a student can be prepared to transfer to almost any college or university offering a baccalaureate in engineering or manufacturing program. Furthermore, the student should be able to complete remaining Bachelor of Science requirements within 2 to 3 years.

Students take four math courses, Calculus I, Calculus II, Calculus III, and Differential Equations, as they will be applying high levels of math throughout their engineering program education. Additionally, they learn the advanced physics and computer-aided design concepts that underlie modern engineering/manufacturing processes and procedures. They hone their critical thinking skills and become versed in the processes needed to systematically solve problems and to develop an idea into a finished product. Direct hands-on experience in the application and use of state-of-the-art engineering and manufacturing equipment is gained through laboratory sessions that are associated with the majority of the program specific courses.

Pursuing the Engineering Technology and Advanced Manufacturing Associate in Science program at Cape Cod Community College provides students access to a full suite of prerequisite and remedial courses when course pre-requirements need to be met, additionally a smaller class size with more individualized attention will generally be found, and there is a significantly lower price point than that at most four year institutions.

Note: COL101 The College Experience is recommended for students who are exploring careers in the Engineering Pathway. This degree has advanced mathematics requirements: Calculus I, Calculus II, Calculus III, and Differential Equations.

Learn more about the program and apply at [Associate in Science - Engineering Technology and Advanced Manufacturing](#)

Requirements

First Semester

| Item # | Title | Credits |
|--------|------------------------|---------|
| ENL101 | English Composition I | 3 |
| | Humanities & Fine Arts | 3 |
| CHM151 | General Chemistry I | 4 |
| ENR106 | 3D Design & Analysis I | 3 |
| MAT240 | Calculus I | 4 |

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Second Semester

| Item # | Title | Credits |
|--------|------------------------------|---------|
| COM103 | Human Communication | 3 |
| | Behavioral & Social Sciences | 3 |
| | ENR107 or ENL102 | 3 |
| MAT250 | Calculus II | 4 |
| ENR103 | Introduction to Robotics | 4 |

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Third Semester

| Item # | Title | Credits |
|--------|----------------------------------------------------------|---------|
| | Behavioral & Social Sciences | 3 |
| PHY211 | University Physics I | 4 |
| MAT260 | Calculus III | 4 |
| | Engineering Technology & Advanced Manufacturing Elective | 3-4 |
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Fourth Semester

| Item # | Title | Credits |
|--------|----------------------------------------------------------|--------------|
| PHY212 | University Physics II | 4 |
| MAT270 | Differential Equations | 3 |
| | Engineering Technology & Advanced Manufacturing Elective | 3-4 |
| | Engineering Technology & Advanced Manufacturing Elective | 3-4 |
| | Total Credits | 64-68 |



Transfer Information

Transfer Agreements:

[Engineering Transfer Options](#)

Career Outlook

The Engineering and Advanced Manufacturing Associate in Science degree provides the skills for an entry level general engineering/manufacturing technician or draftsman. Graduates work as automation specialists, manufacturing technicians, design technicians, CAD designers, engineering aides, field service technicians, technical representatives, and maintenance technicians. It will open employment doors to many jobs that require multidisciplinary competencies. Employment of engineering technicians is projected to grow 5 percent from 2012 to 2022.

This [occupational profile](#) is provided by O*NET.

See also: [What can I do with this major?](#)

Program Outcomes

Upon completion of the Engineering Technology and Advanced Manufacturing program, students are able to:

- Work as part of a team to plan, design, and fabricate an electro-mechanical device.
- Describe and follow the engineering analysis and design process.
- Organize, schedule, and complete an engineering design project that may require one to collect and interpret technical data as well as exhibit proficiency in software programming.
- Reverse engineer the design of an existing product or service.
- Test and evaluate an engineering design against a set of requirements, design and conduct experiments, interpret results, and apply results to improve processes.
- Use a variety of instruments and software for taking measurements and or solving problems.
- Be effective communicators in written, oral and graphical communications, and in documentation of work.
- Conduct research from a variety of sources and have an ability to identify and incorporate appropriate technical literature.
- Apply mathematical methods for problem-solving and analyze working models of basic engineering systems to solve open-end problems.

- Demonstrate the skills and behaviors of engineering professionals, including lifelong learning, professional development, ethics, teamwork, quality improvement, and a respect for diversity; and a commitment to apply them to their work.