

Associate in Science Engineering Technology & Advanced Manufacturing

To graduate in the Engineering Technology and Advanced Manufacturing Program, a student must complete the following required course of study. This degree has advanced mathematics requirements: Calculus I, Calculus II, Calculus III, and Differential Equations.

Course #	Course Title	Credits	Prerequisites	Semester Offered	Semester Taken	Grade Earned
First Semester						
ENL101	English Composition I	3	Appropriate scores in Reading Comprehension & in Sentence Skills on CPT or grade of C or better in ENL020 & ENL050 or ESL201	Fall, Spring, Summer		
CHM151	General Chemistry I	4	MAT040 or MAT045 and ENL020, ENL050 or satisfactory basic skills assessment scores	Fall, Summer		
ENR101	Introduction to Engineering and Advanced Manufacturing	4	ENL020 and ENL050 or satisfactory basic skills assessment scores	Varies		
MAT240	Calculus I	4	MAT190 or MAT195 or satisfactory basic skills assessment scores	Fall, Spring, Summer		
Second Semester						
COM103	Human Communication	3	ENL010 or ESL102 or satisfactory basic skills assessment score	Fall, Spring, Summer		
	Behavioral and Social Sciences	3		Varies		
ENR102	3D Mechanical Design I	4	MAT030, ENL020, and ENL050 or satisfactory basic skills assessment scores	Varies		
MAT250	Calculus II	4	MAT240 or MAT185 <i>(MAT240 required for this program)</i>	Varies		
Third Semester						
	Behavioral and Social Sciences	3		Varies		
PHY211	University Physics I	4	MAT195; co-requisite: MAT240 <i>(MAT240 required for this program)</i>	Varies		
MAT260	Calculus III	4	MAT250	Varies		
ENR201	Statics	3	ENR101, co-requisite: MAT250	Varies		
	Engineering Technology and Manufacturing Elective*	3/4		Varies		
Fourth Semester						
PHY212	University Physics II	4	PHY211	Varies		
MAT270	Differential Equations	3	MAT250	Varies		
	Engineering Technology and Manufacturing Elective*	4		Varies		
	Engineering Technology and Manufacturing Elective*	3/4		Varies		
Total Credits		60/62				

*** Engineering Technology & Advanced Manufacturing Electives.**

Students planning to transfer should meet with a transfer advisor to discuss appropriate elective selection.

ENR103 Introduction to Robotics	ENR110 Engineering and Scientific Computing	MAT245 Linear Algebra	BIO152 General Biology II
ENR104 3D Mechanical Design II	ENR206 Quality Manufacturing	CHM152 General Chemistry II	COL101 College Experience-Success in STEM
ENR105 Circuit Theory and Analysis	CSC120 Computer Programming I: C++	BIO151 General Biology I	

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Overview

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.

Career Outlook

The Engineering Technology 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.

[Click here for O*NET Online Occupation information.](#)

Program Outcomes

Upon completion of the Engineering Technology and Advanced Manufacturing Associate in Science degree, students are able to:

- 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.
- Work as part of a team to plan, design, and fabricate an electro-mechanical device.
- Reverse engineer the design of an existing product or service.
- An ability to test and evaluate an engineering design against a set of requirements, design and conduct experiments, interpret results, and apply results to improve processes.
- Apply mathematical methods for problem-solving and analyze working models of basic engineering systems to solve open-end problems.
- 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.
- 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.