

# General Engineering Technology - CPS (GET)

## Courses

### GET 1100. Introduction to Engineering and Technology. (3 Hours)

Analyzes the diversity, need, and applicability of engineering as the profession that solves technical problems and drives technological innovation. Discusses essential requirements to succeed academically in engineering and introduces useful tools to optimize academic performance, such as the use of computers to perform calculations and mathematics to communicate engineering ideas. Reviews simple concepts of science and mathematics in historical and quantitative context, and uses small projects and in-class demonstrations to acquaint students with engineering concepts behind common technologic innovations. Discusses basic ideas for management of projects; techniques to formulate solutions to technical problems; and general structure for engineering design, manufacturing, and testing of products.

**Attribute(s):** NUpath Natural/Designed World

### GET 1150. Foundations of Engineering Graphics and Design. (3 Hours)

Offers students an opportunity to obtain basic engineering drafting and introductory design skills needed to function in a computer-aided drafting (CAD) environment. Covers the history of engineering hand drafting and the differences/similarities with respect to CAD tools used today. Discusses the basic steps of the engineering design process and how to apply these steps in small design projects where pictorial sketching and descriptive geometry (isometric and oblique drawings and projections) are used to communicate graphical solutions to proposed problems. Covers basic understanding of mechanical, electrical, and architectural layouts, and introduces basic dimensioning and tolerancing terms. Introduces the general features, capabilities, similarities, and differences among common engineering CAD software—such as SolidWorks, Autodesk AutoCAD, and PTC Creo—through introductory lab sessions.

**Attribute(s):** NUpath Creative Express/Innov, NUpath Natural/Designed World

### GET 1990. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

### GET 2100. Computer Engineering Programming and Analysis. (3 Hours)

Introduces the C++ programming language. Covers basic programming constructs and manipulation of data types including arrays, strings, and pointers. Offers students an opportunity to learn to isolate and fix common errors in C++ programs, to properly allocate/de-allocate procedures, and to apply object-oriented approaches to software problems in C++. Students use data structures of arrays, stacks, lists, trees, and graphs implemented using conventional programming techniques and class libraries. Students are asked to develop and write small-scale C++ programs using the skills covered during the lectures and practices in the laboratory.

**Prerequisite(s):** MTH 2100 with a minimum grade of D- or MTH 2105 with a minimum grade of D- or MTH 2110 with a minimum grade of D- or MTH 2400 with a minimum grade of D-

**Attribute(s):** NUpath Analyzing/Using Data

### GET 2990. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

### GET 3100. Computer Control of Manufacturing Processes. (3 Hours)

Presents and discusses computer control of manufacturing processes. Offers students an opportunity to learn the fundamentals of manufacturing processes and automation and control technologies. Reviews hardware components such as sensors, actuators, analog-to-digital converters, and I/O devices. Demonstrates computer numeric control, industrial robotics, discrete and programmable logic controllers, and analyzes their functions, applications, advantages, and limitations. Also analyzes a variety of manufacturing systems, including automation production lines, assembly systems, and cellular and flexible manufacturing. Topics include quality control system integration and lean production.

**Prerequisite(s):** EET 3100 with a minimum grade of D-

### GET 3990. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**GET 4840. Engineering Technology Capstone Project Preparation and Proposal. (2 Hours)**

Offers students an opportunity to apply the steps of the engineering design process and develop a comprehensive written engineering project proposal. Includes a review of the engineering design process from problem statement to prototype fabrication and testing. Working closely with the instructor, students are asked to identify a technological need of actual interest for local companies, communities, or students' workplace and to follow the engineering design process. Students document the marketing, patent, and literature search for prior art, customer/engineering specifications, brainstorming process to generate feasible solutions, most viable solution selection process, and detailed labor and materials budget for actual execution of the solution to be completed in GET 4850.

**Prerequisite(s):** ENG 3105 with a minimum grade of C ; ENG 3106 with a minimum grade of S ; (AVM 4100 with a minimum grade of D- or AVM 4150 with a minimum grade of D- or MET 4100 with a minimum grade of D- )

**Attribute(s):** NUpath Writing Intensive

**GET 4850. Engineering Technology Capstone Project Execution. (4 Hours)**

Continues the design process initiated in GET 4840. Students implement the solution to the identified need/problem that they previously identified. This course is the culmination of the engineering technology academic curriculum, where students are expected to apply the knowledge and practice needed from a variety of domains in order to execute their plan of action and timeline of activities. The results of their work should culminate in the creation of an actual engineering system prototype along with a comprehensive final written report and oral presentation by team members.

**Prerequisite(s):** GET 4840 with a minimum grade of D-

**Attribute(s):** NUpath Capstone Experience, NUpath Writing Intensive

**GET 4950. Seminar. (1-4 Hours)**

Offers an in-depth study of selected topics.

**GET 4955. Project. (1-4 Hours)**

Focuses on in-depth project in which a student conducts research or produces a product related to the student's major field. May be repeated without limit.

**GET 4983. Topics. (1-4 Hours)**

Covers special topics in general engineering technology. May be repeated without limit.

**GET 4990. Elective. (1-4 Hours)**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**GET 4991. Research. (1-4 Hours)**

Offers students an opportunity to conduct research under faculty supervision.

**Attribute(s):** NUpath Integration Experience

**GET 4992. Directed Study. (1-4 Hours)**

Offers independent work under the direction of members of the department on a chosen topic.

**GET 4994. Internship. (1-4 Hours)**

Provides students with an opportunity for internship work.

**Attribute(s):** NUpath Integration Experience

**GET 4995. Practicum. (1-4 Hours)**

Provides eligible students with an opportunity for practical experience.

**GET 4996. Experiential Education Directed Study. (1-4 Hours)**

Draws upon the student's approved experiential activity and integrates it with study in the academic major.

**Attribute(s):** NUpath Integration Experience