

# COMPUTER ENGINEERING TECHNOLOGY MAJOR (B.S.)

<https://manchester.unh.edu/program/bs/computer-engineering-technology-major>

## Description

Computer Engineering Technology (CET) is the fusion of hardware and software engineering, focusing on the design, development and testing of computer firmware. Unlike traditional electrical engineering, CET emphasizes both programming and digital hardware, preparing graduates to work with microcontrollers, networking and system architecture. This discipline is essential in industries like telecommunications, automation and cybersecurity, where professionals bridge the gap between electronics and computing solutions.

## Requirements

### Degree Requirements

**Minimum Credit Requirement:** 128 credits

**Minimum Residency Requirement:** 32 credits must be taken at UNH

**Minimum GPA:** 2.0 required for conferral\*

**Core Curriculum Required:** Discovery & Writing Program Requirements

**Foreign Language Requirement:** No

All Major, Option and Elective Requirements as indicated.

\*Major GPA requirements as indicated.

### Major Requirements

Courses required in the major must be completed with a minimum grade of C- and students must attain a minimum GPA in the major of 2.0.

| Code                            | Title                                           | Credits |
|---------------------------------|-------------------------------------------------|---------|
| <b>Required Courses</b>         |                                                 |         |
| COMP 424                        | Applied Computing 1: Foundations of Programming | 4       |
| COMP 525                        | Data Structures Fundamentals                    | 4       |
| COMP 530                        | Machine and Network Architecture                | 4       |
| COMP 550                        | Networking Concepts                             | 4       |
| COMP 560                        | Ethics and the Law in the Digital Age           | 4       |
| COMP 625                        | Data Structures and Algorithms                  | 4       |
| COMP 720                        | Database Systems and Technologies               | 4       |
| ECN 411/411W<br>or ECN 412/412W | Introduction to Macroeconomic Principles        | 4       |
| ET 421                          | Digital Electronics I                           | 4       |
| ET 660                          | FPGA Design with HDL                            | 4       |
| ET 431                          | Circuit Analysis I                              | 4       |
| ET 432                          | Circuit Analysis II                             | 4       |
| ET 522                          | Digital Electronics II                          | 4       |
| ET 541                          | Electronic Devices                              | 4       |
| ET 590                          | Embedded Microcontrollers                       | 4       |
| ET 625                          | Technical Communications                        | 4       |
| ET 671                          | Digital Systems                                 | 4       |
| ET 680                          | Communications and Fields                       | 4       |
| ET 788                          | Introduction to Digital Signal Processing       | 4       |
| ET 791                          | Electrical Engineering Technology Project       | 8       |
| MATH 425                        | Calculus I                                      | 4       |

|                                                                                   |                   |            |
|-----------------------------------------------------------------------------------|-------------------|------------|
| MATH 426                                                                          | Calculus II       | 4          |
| PHYS 407                                                                          | General Physics I | 4          |
| <b>Elective</b>                                                                   |                   |            |
| COMP Elective: Select any COMP course 500-level (or higher) not already required. |                   | 4          |
| <b>Total Credits</b>                                                              |                   | <b>100</b> |

## Degree Plan

### Sample Degree Plan

*This sample degree plan serves as a general guide; students collaborate with their academic advisor to develop a personalized degree plan to meet their academic goals and program requirements.*

#### First Year

| <b>Fall</b>    |                                                 | <b>Credits</b> |
|----------------|-------------------------------------------------|----------------|
| MATH 418       | Analysis and Applications of Functions          | 4              |
| ENGL 401       | First-Year Writing                              | 4              |
| ET 431         | Circuit Analysis I                              | 4              |
| COMP 424       | Applied Computing 1: Foundations of Programming | 4              |
| <b>Credits</b> |                                                 | <b>16</b>      |

#### Spring

|                |                       |           |
|----------------|-----------------------|-----------|
| MATH 425       | Calculus I            | 4         |
| ET 421         | Digital Electronics I | 4         |
| ET 432         | Circuit Analysis II   | 4         |
| COMP 550       | Networking Concepts   | 4         |
| <b>Credits</b> |                       | <b>16</b> |

#### Second Year

##### Fall

|                |                              |           |
|----------------|------------------------------|-----------|
| MATH 426       | Calculus II                  | 4         |
| ET 522         | Digital Electronics II       | 4         |
| ET 541         | Electronic Devices           | 4         |
| COMP 525       | Data Structures Fundamentals | 4         |
| <b>Credits</b> |                              | <b>16</b> |

##### Spring

|                  |                                  |           |
|------------------|----------------------------------|-----------|
| ET 590           | Embedded Microcontrollers        | 4         |
| PHYS 407         | General Physics I                | 4         |
| COMP 530         | Machine and Network Architecture | 4         |
| Discovery Course |                                  | 4         |
| <b>Credits</b>   |                                  | <b>16</b> |

#### Third Year

##### Fall

|                  |                           |           |
|------------------|---------------------------|-----------|
| ET 680           | Communications and Fields | 4         |
| ET 671           | Digital Systems           | 4         |
| COMP Elective    |                           | 4         |
| Discovery Course |                           | 4         |
| <b>Credits</b>   |                           | <b>16</b> |

##### Spring

|                  |                                |           |
|------------------|--------------------------------|-----------|
| ET 625           | Technical Communications       | 4         |
| ET 660           | FPGA Design with HDL           | 4         |
| COMP 625         | Data Structures and Algorithms | 4         |
| Discovery Course |                                | 4         |
| <b>Credits</b>   |                                | <b>16</b> |

**Fourth Year****Fall**

|                  |                                           |           |
|------------------|-------------------------------------------|-----------|
| COMP 560         | Ethics and the Law in the Digital Age     | 4         |
| COMP 720         | Database Systems and Technologies         | 4         |
| ET 791           | Electrical Engineering Technology Project | 4         |
| Discovery Course |                                           | 4         |
| <b>Credits</b>   |                                           | <b>16</b> |

**Spring**

|                      |                                           |            |
|----------------------|-------------------------------------------|------------|
| ECON 401             | Principles of Economics (Macro)           | 4          |
| ET 791               | Electrical Engineering Technology Project | 4          |
| ET 788               | Introduction to Digital Signal Processing | 4          |
| Discovery Course     |                                           | 4          |
| <b>Credits</b>       |                                           | <b>16</b>  |
| <b>Total Credits</b> |                                           | <b>128</b> |

## Student Learning Outcomes

### Program Learning Outcomes General Engineering Technology

- Problem Solving: an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline.
- System Design: an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.
- Communication Skills: an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
- Testing, Measurements, and Interpretation: an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.
- Teamwork: an ability to function effectively as a member as well as a leader on technical teams.

### Computer Engineering Technology

- Application of electric circuits, computer programming, associated software applications, analog and digital electronics, microcontrollers, operating systems, local area networks, and engineering standards to the building, testing, operation, and maintenance of computer systems and associated software systems.
- Application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of computer systems and associated software systems.
- Analysis, design, and implementation of computer system hardware and software.
- Application of project management techniques to computer systems.
- Utilization of statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of computer systems and networks.