



## Course Number and Title: CEN 100 Intro to Electronics and Computer Engineering Technology

**Campus Location:**

Georgetown, Dover, Stanton

**Effective Date:**

2018-51

**Prerequisite:**

MAT 020 or concurrent, ENG 090 or concurrent or ENG 091 or concurrent, SSC 100 or concurrent

**Co-Requisites:**

None

**Course Credits and Hours:**

3.00 credits

2.00 lecture hours/week

2.00 lab hours/week

**Course Description:**

This course introduces the practice of electronic engineering technology concepts. Career opportunities, professional ethics, working in teams, introduction to engineering problem solving, and use of calculators and computers as tools for problem solving are covered.

**Required Text(s):**

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

**Additional Materials:**

TI-84+ or TI-89 Calculator, Digital Multimeter, Notebook

**Schedule Type:**

Classroom Course

**Disclaimer:**

None

**Core Course Performance Objectives (CCPOs):**

1. Differentiate among the roles of engineers, engineering technicians, and other members of an industrial team. (CCC 1, 3, 4; PGC 1, 5)
2. Apply the basic cognitive principles of engineering. (CCC 1, 3, 4, 5; PGC 1, 5, 6)
3. Use a scientific calculator as an aid to solve technical problems. (CCC 2, 6; PGC 1, 2)
4. Use a computer as an aid to analyze and solve technical problems. (CCC 2, 6; PGC 1, 2)
5. Review a complex problem in an orderly, logical, and systematic method. (CCC 2, 6; PGC 1, 2, 4)
6. Operate laboratory test equipment, including digital multimeters, power supplies, frequency generators, and oscilloscopes. (CCC 3, 4; PGC 1, 2)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

**Measurable Performance Objectives (MPOs):**

Upon completion of this course, the student will:

1. Differentiate among the roles of engineers, engineering technicians, and other members of an industrial team.
  1. Identify and explain the major branches of engineering.
  2. Identify and explain the major branches of engineering technology.
  3. Identify and explain the job functions of an electronic engineer, technician, technologist, and designer.
  4. Participate as a team member to describe a branch of engineering technology.
2. Apply the basic cognitive principles of engineering.
  1. Locate and use engineering reference material in the library.
  2. Apply engineering codes of ethics to resolve hypothetical scenarios.
  3. Describe and apply professionalism in classroom activities.
  4. Apply logical problem solving techniques to solve simple engineering problems.
3. Use a scientific calculator as an aid to solve technical problems.
  1. Express data in power of ten format.
  2. Convert to different amounts of significant digits.
  3. Convert from scientific notation to engineering notation.
  4. Use parenthesis to form a complex equation.
  5. Use the calculator to enter and generate complex equation solutions that will include trigonometry, matrix, and exponential functions.
4. Use a computer as an aid to analyze and solve technical problems.
  1. Use electronics engineering technology specific software programs and the Internet.
  2. Use the Internet to locate jobs, educational opportunities, and technical data.
  3. Communicate through email.
  4. Prepare a laboratory report to include title page, purpose, procedure, data, and conclusion.
  5. Participate as a member of a team to describe a technical procedure.
  6. Use Multisim to construct and analyze a simple circuit.
  7. Use a spreadsheet program to document tabular data and generate graphs and charts to display the data in an understandable and logical manner.
5. Review a complex problem in an orderly, logical, and systematic method.
  1. Identify the problem or procedure, and determine a list of possible solutions or steps to complete the process.
  2. Define, develop, and plan avenues of research and testing to verify the proposed solutions or steps.
  3. Categorize the research and test results into a logical, precise written procedure using word processing software and an oral presentation for review and comment.
6. Operate laboratory test equipment, including digital multimeters, power supplies, frequency generators, and oscilloscopes.
  1. Operate simple laboratory power sources.
  2. Explain the difference between analog and digital instruments and the limitations of each.
  3. Use a digital meter to make voltage, current, resistance, and measurements.
  4. Operate a frequency signal generator and use automatic and remote triggering, set frequency scales, set duty cycle, alternating current (AC), and direct current (DC) signal bias.
  5. Use an oscilloscope to observe frequency generator signal amplitudes and time periods.
  6. Identify basic electronic components and respective pins.
  7. Use proper etiquette and conduct when working in a laboratory environment.

**Evaluation Criteria/Policies:**

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

**Final Course Grade:**

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
10-15 Laboratory Experiments	60%
Homework/Pop Quizzes	20%
Presentation	20%
TOTAL	100%

**Core Curriculum Competencies (CCCs are the competencies every graduate will develop):**

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

**Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**

1. Perform the duties of an entry-level technician using the skills, modern tools, theory, and techniques of the electronics engineering technology.
2. Apply a knowledge of mathematics, science, engineering, and technology to electronics engineering technology problems that require limited application of principles but extensive practical knowledge.
3. Conduct, analyze, and interpret experiments using analysis tools and troubleshooting methods.
4. Identify, analyze and solve narrowly defined electronics engineering technology problems.
5. Explain the importance of engaging in self-directed continuing professional development.
6. Demonstrate basic management, organizational, and leadership skills which commit to quality, timeliness and continuous improvement.

**Disabilities Support Statement:**

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.