



Course Number and Title: EDT 152 Engineering Design II

Campus Location:

Georgetown

Effective Date:

2018-52

Prerequisite:

EDD 141, SSC 100 or concurrent

Co-Requisites:

none

Course Credits and Hours:

4.00 credits

3.00 lecture hours/week

3.00 lab hours/week

Course Description:

This intermediate course provides an overview of the rules, standards, and practices used to design, draw, dimension, and tolerance simple mechanical components and assemblies. The use of computer-aided design (CAD), engineering design standards, and vendor-supplied specifications in the design process are covered. Orthographic and detailed assembly drawings are developed to scale, dimensioned, and drawn to acceptable professional standards.

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:

Notebook, scale, calculator, and flash drive/data storage

Schedule Type:

Classroom Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Produce mechanical component drawings to acceptable American National Standards Institute (ANSI) standards. (CCC 2, 4, 5, 6; PGC 1, 2, 3, 4, 5, 6)
2. Produce mechanical device assembly drawings to acceptable ANSI standards.
3. (CCC 1, 2, 4, 5, 6; PGC 1, 2, 3, 4, 5, 6)
4. Employ various methods of dimensioning and tolerancing mechanical components and assemblies. (CCC 2, 4, 5, 6; PGC 1, 2, 3, 4, 5, 6)
5. Incorporate, specify, draw, and dimension common types of threads and fasteners in mechanical component and assembly designs. (CCC 2, 4, 5, 6; PGC 1, 2, 3, 4, 5, 6)
6. Incorporate, specify, draw, and dimension common types of bolts, studs, and fasteners in mechanical component and assembly designs. (CCC 2, 4, 5, 6; PGC 1, 2, 3, 4, 5, 6)

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. Produce mechanical component drawings to acceptable American National Standards Institute (ANSI) standards.
 1. Layout designs for simple mechanical components drawn to the proper scale and properly centered on the drawing medium.
 2. Prepare and draw a title block and border for engineering drawings.
 3. Draw the necessary orthographic views to show proper details of mechanical components.
 4. Properly apply object, hidden, dimension, and center lines to a mechanical drawing.
 5. Draw and properly label and dimension a sectional view for a mechanical component or assembly.
 6. Create, draw, and properly label and dimension auxiliary views for mechanical components.
 7. Dimension and annotate drawings of mechanical components and assemblies to provide the information needed for fabrication.
 8. Evaluate available stock shapes and materials for use in the design and fabrication of simple mechanical components.
2. Produce mechanical device assembly drawings to acceptable ANSI standards.
 1. Lay out a drawing to proper scale.
 2. Draw and number each part in an isometric view.
 3. Clearly indicate how each component connects to adjoining components.
 4. Evaluate available stock shapes and materials for use in the design and fabrication of simple mechanical assemblies.
 5. Create and draw a detailed bill of materials (BOM), including component name, component number, quantities, and pricing.
3. Employ various methods of dimensioning and tolerancing mechanical components and assemblies.
 1. Read and create limit dimensions for simple mechanical components and assemblies.
 2. Identify and draw appropriate clearance, interference, transition, and line fits for mechanical components.
 3. Draw mated machine components dimensioned with the needed nominal size, limits, and allowances.
 4. Draw and properly dimension basic hole and shaft systems.
 5. Properly draw and apply basic geometric tolerances to a mechanical drawing.
4. Incorporate, specify, draw, and dimension common types of threads and fasteners in mechanical component and assembly designs.
 1. Draw, properly dimension, and label common types of thread forms.
 2. Calculate the pitch of various thread forms.
 3. Use engineering reference materials to accurately define and implement the elements of common thread forms in the design of mechanical components and assemblies.
5. Incorporate, specify, draw, and dimension common types of bolts, studs, and fasteners in mechanical component and assembly designs.
 1. Provide accurate bolt, washer, and nut specifications in a mechanical design.
 2. Prepare a drawing that includes thread and nut specifications using either detailed or schematic threads.
 3. Identify in written documents and incorporate into drawings common types of bolts, cap screws, and set screws.
 4. Properly label common fasteners using standard industry call outs.
 5. Identify in written documents and incorporate into mechanical designs and drawings miscellaneous fasteners such as keys, rivets, and springs.
 6. Properly label miscellaneous fasteners using standard industry call outs.

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
Summative: Drawings-Lab Projects (equally weighted)	80%
Summative: Exam (2) (equally weighted)	10%
Formative: Assignments, Quizzes (4) (equally weighted)	10%
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. Apply the skills, techniques, and modern tools of the discipline to narrowly defined engineering technology activities.
2. Apply mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge.
3. Identify, analyze, and solve narrowly defined engineering technology problems.
4. Demonstrate a commitment to quality, timeliness, professional development, and continuous improvement.
5. Demonstrate technical competency in engineering materials, applied mechanics, and manufacturing methods.
6. Apply in-depth technical competency in applied drafting practice emphasizing mechanical components and systems, as well as fundamentals of descriptive geometry, orthographic projection, sectioning, tolerancing and dimensioning, and computer aided drafting and design.

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.