



Course Number and Title: EDD 141 Engineering Drafting and Design I

Campus Location:
Georgetown, Stanton

Effective Date:
2019-51

Prerequisite:
MAT 010, ENG 090 or ENG 091, SSC 100 or concurrent

Co-Requisites:
none

Course Credits and Hours:
4.00 credits
2.00 lecture hours/week
5.00 lab hours/week

Course Description:

In this course, students are introduced to engineering drafting. Topics include a study of geometric construction, proper use of drafting equipment, freehand sketching, lettering, orthographic projection, forming and machining processes, dimensioning methods, and sectioning and pictorial drawings. The standards and practices recommended by American National Standards Institute (ANSI) and American Society of Mechanical Engineers (ASME) are followed.

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:
None

Schedule Type:
Classroom Course

Disclaimer:
None

Core Course Performance Objectives (CCPOs):

1. Define and interpret graphic language and the proper tools and equipment used to construct mechanical drawings. (CCC 1, 2, 5; PGC CAD 1, 3, 4; DEM 1, 2, 3, 4, 6)
2. Assemble technical sketches to communicate ideas and planning. (CCC 1, 2, 5, 6; PGC CAD 1, 3, 4, 5; DEM 1, 3, 4, 6)
3. Properly letter the uppercase single stroke gothic style alphabet and numerals. (CCC 1, 2, 5, 6; PGC CAD 1, 3, 4, 5; DEM 1, 6)
4. Define and construct basic geometric shapes using manual instruments. (CCC 1, 2, 5, 6; PGC CAD 1, 2, 3, 5; DEM 1, 2, 3, 4, 6)
5. Draw the shape and size of objects through the use of orthographic and pictorial views in accordance with ANSI. (CCC 1, 2, 5, 6; PGC CAD 1, 2, 3, 4, 5; DEM 1, 2, 3, 4, 6)
6. Describe and apply basic dimensioning techniques on multi-view and pictorial drawings. (CCC 1, 2, 5, 6; PGC CAD 1, 3, 5; DEM 1, 2, 3, 4, 6)
7. Describe the most commonly used shop terms and methods of fabrication. (CCC 1, 2, 5; PGC CAD 3, 4, 5; DEM 1, 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. Define and interpret graphic language and the proper tools and equipment used to construct mechanical drawings.
 1. List and define the different types and fields of drafting.
 2. Identify engineering drawing tools and supplies.
 3. Identify and use the engineer's, architect's, and mechanical drafter's scale to layout and measure distances in feet and inches, decimal inches, and metric inches.
 4. Operate different types of reproduction equipment.
2. Assemble technical sketches to communicate ideas and planning.
 1. Discuss the importance of using freehand sketches to communicate ideas to others.
 2. Sketch basic geometric shapes.
 3. Develop skills and techniques required to sketch engineering designs efficiently.
 4. Identify the different types of lines and their uses in the Alphabet of Lines.
3. Properly letter the uppercase single stroke gothic style alphabet and numerals.
 1. Recognize the importance of freehand, mechanical, and machine lettering.
 2. Differentiate between common lettering styles.
 3. Use guidelines and lettering guides to determine lettering heights.
 4. Produce standard single stroke gothic uppercase characters with uniform size and spacing.
4. Define and construct basic geometric shapes using manual instruments.
 1. Draw parallel and perpendicular lines.
 2. Construct bisectors, and divide lines into equal parts.
 3. Draw polygons.
 4. Draw tangencies.
 5. Draw ellipses.
 6. Interpret and accurately draw the solutions to various geometric problems.
 7. Employ geometric construction methods to facilitate feature locations.
5. Draw the shape and size of objects through the use of orthographic and pictorial views and in accordance with ANSI.
 1. Recognize the importance of orthographic projection for describing part features graphically.
 2. Explain the difference between first and third angle projection.
 3. Prepare singleview and multiview drawings.
 4. Describe methods for representing holes, fillets, rounds, tangent surfaces, runouts, and threads.
 5. Recognize pictorial drawings as single-plane projections representing three-dimensional (3D) planes.
 6. Differentiate between 3D representations and 3D modeling.
 7. Define and produce axonometric, oblique, and perspective drawings.
6. Describe and apply basic dimensioning techniques on multiview and pictorial drawings.
 1. Identify and use common dimensioning systems.
 2. Explain and apply basic dimensioning standards based on ANSI.
 3. Apply proper notes for specific manufacturing processes.
 4. Prepare dimensioned multiview drawings from engineering sketches and industrial drawings.
 5. Dimension an isometric drawing.
7. Describe the most commonly used shop terms and methods of fabrication.
 1. Identify specific stages in the manufacturing process.
 2. Describe the materials used in the manufacturing process.
 3. Discuss casting processes and terminology.
 4. Discuss forging processes and terminology.
 5. Identify the basic types of machine tool operations.
 6. Define and draw the representation of various machined features.

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
Drawing Exercises (Formative)	40%
Exams (Summative) (Equally Weighted)	50%
Chapter Questions (Summative)	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):**CADAASCAD**

1. Prepare detailed mechanical, machine, architectural, structural, HVAC, industrial piping, and electrical/electronics drawings for light commercial, manufacturing, and industrial companies.
2. Perform routine structural design calculations required to size steel beams, columns, and decking materials in accordance to AISC standards and reinforced concrete slabs and foundation footings in accordance to ACI standards.
3. Support manufacturing office administration activities with the ability to read and interpret drawings and specifications, prepare technically accurate drawings using both manual and CAD techniques, perform quantity surveys and organize cost data for cost estimating functions, prepare or check shop drawings, assist in the planning or coordinating of manufacturing activities, assist designers, and coordinate the preparation and review of bid packages.
4. Provide meaningful and innovative assistance to supervising engineers or designers by developing layout design solutions to manufacturing problems, recommending alternate material substitutions or methods of production, and applying reference resources to collect, organize, and analyze required research data.
5. Collect, organize, and analyze data for manufacturing machine parts, and prepare plans for department and/or client approval.

DETAASDEM

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.

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.