



Course Outline

2026-2027 Catalog

DFT 2 - Engineering Graphics I

Catalog Description

Transfer Status: CSU/UC

Unit(s): 3.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

Lab: 51.00 Contact hours/0.00 Out of class hours/51.00 Total hours/1.00 Unit(s)

Total: 85.00 Contact hours/68.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: This is a computer-based graphics course that introduces students to graphical design and problem-solving using freehand sketching and the solid modeling application, SolidWorks. Topics include sketching and modeling using extrudes, sweeps, revolves, and lofts. Additional topics include assemblies' development and detail drawing output as relevant to fields such as: Manufacturing, Engineering, Production Assembly, etc. Graphics standards including American National Standards Institute (ANSI) Y14.5 and international standards application will be introduced and practiced.

Objectives

Upon successful completion of this course, the student should be able to:

1. Set up a solid modeling application to develop parts, assemblies and output drawings.
2. Describe the role of technical graphics in the engineering design process.
3. Create orthographic and pictorial sketches of mechanical parts and objects using freehand sketching techniques.
4. Create parts with extrudes, sweeps and loft attributes using a solid modeling application.
5. Manipulate and combine parts to produce assemblies from modeled parts using a solid modeling application.
6. Create drawings from parts and assemblies including three view orthographic projection, isometric and exploded pictorial projection using a solids modeling application.
7. Apply relevant areas of graphics standards to document attributes of parts, assemblies and associated drawings.

Course Content

Topic Titles / Suggested Time Topic

Lecture

<u>Topics</u>	<u>Lec Hrs</u>
Technical Graphics Applications	2.00
Engineering Design	3.00
Basic Solids Modeling Operations	3.00
Freehand Sketching and Lettering	2.00
Engineering Geometry and Modeling	3.00
Parts with Extrudes, Sweeps and Lofts	6.00
Assemblies with Mates and Limits	6.00
Drawings with Orthographic and Pictorial Views	2.00
Dimensioning, Annotation and Tolerancing	4.00
Graphic Standards	3.00
Total Hours: 34.00	

Lab

<u>Topics</u>	<u>Lab Hrs</u>
Technical Graphics Applications	2.00
Engineering Design	2.00
Basic Solids Modeling Operations	8.00
Freehand Sketching and Lettering	4.00
Engineering Geometry and Modeling	8.00
Parts with Extrudes, Sweeps and Lofts	8.00
Assemblies with Mates and Limits	6.00
Drawings with Orthographic and Pictorial Views	6.00
Dimensioning, Annotation and Tolerancing	4.00
Graphic Standards	3.00
Total Hours: 51.00	

Methods of Instruction

- A. Class Activities
- B. Collaborative Group Work
- C. Demonstrations
- D. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- E. Lecture
- F. Multimedia Presentations

Methods of Evaluation

- A. Exams/Tests
- B. Quizzes
- C. Projects
- D. Homework
- E. Class participation
- F. Lab Projects

Examples of Assignments

Reading Assignments

1. Read the chapter on the History of Engineering Graphics. Be prepared to discuss at our next scheduled class.
2. Read the preface and introduction to the ANSI Y14.5 standard provided by the instructor. Be ready to discuss at our next scheduled class.

Writing Assignments

1. After reading the chapter on the History of Engineering Graphics, complete the questions in the study guide and submit to the instructor.
2. After reading the preface and introduction to the ANSI Y14.5 standard, summarize in your own words (minimum 500 words) the scope of application of the standard to engineering graphics and submit to instructor.

Out-of-Class Assignments

1. Complete the study guide exercises and be prepared to review your results in groups in the next class session.
2. Use various online sources to research technical graphics in the fields of manufacturing, drafting, engineering, etc. View the online video entitled "Create an exploded view with SolidWorks 2011". Answer the following question: "How does an exploded view apply to the assembly development process?" Submit written answers (minimum 500 words) to the instructor in the next class session.

Recommended Materials of Instruction

Planchard, D. (2025). Engineering Graphics with SolidWorks 2025. *SDC Publications, 2025*. 9781630576943.
SolidWorks. *Dassault Systems, Current Academic Year*.

Zero Cost Textbook

Everything needed for the course will be provided in the form of PDF's, demonstration-driven lectures, and technical documentation.

Minimum Qualifications

Drafting
Engineering (Masters Required)

Created/Revised by: Manning, Phillip

Date: 04/06/2026