

Engineering Graphics

4 unites (3 units of lecture and 1 unit of lab)

Prerequisite: Trigonometry

Course Description:

This course covers the principles of engineering drawings in visually communicating engineering designs and an introduction to computer-aided design (CAD). Topics include the development of visualization skills; orthographic projections; mechanical dimensioning and tolerancing practices; and the engineering design process. Assignments develop sketching and 2-D and 3-D CAD skills. The use of CAD software is an integral part of the course.

Course Content:

- Engineering Design
- Basic engineering drawing concepts
- Visualization skills
- Use of engineering/architect scales
- Multiview drawings
- Auxiliary Views
- Pictorial projections
- Section Views
- Dimensioning
- Tolerancing
- Threaded fastener terminology
- CAD:
 - 2D Construction and Editing Tools
 - 3D solid modeling
- Detail and Assembly Drawings
- Descriptive Geometry (optional)

Student Learning Outcomes: *At the conclusion of this course, the student should be able to:*

1. Apply rules of orthographic projection to create multiview drawings.
2. Create pictorials from orthographic views.
3. Use CAD software to create:
 - 2D engineering drawings, including working drawings and assembly drawings.
 - 3D models and assemblies
4. Create auxiliary and section views of an object following correct conventions.
5. Apply standards of dimensioning and tolerancing to engineering drawings.
6. Apply the engineering design process to a design project.

Engineering Graphics Resources

Topic	Lecture Videos	Lecture Notes	Lab Handouts	Tutorials	Homework
Introduction to Graphics Sketching Basic 2D Construction	Lecture 1	Lecture 1	Lab 1	Lab1-1 Lab1-2	HW 1
Engineering Geometry Construction and Editing Tools Design Visualization	Lecture 2 Lecture 3	Lecture 2	Lab 2 Lab 3	Lab2-1 Lab2-2 Lab2-3 Lab3-a Lab3-b	HW 2 HW 3
Orthographic Views	Lecture 4	Lecture 3	Lab 4 Lab 5	Lab4-a Lab4-b Lab5	HW 4 HW 5
Pictorial Projections: Isometric, Oblique, and Perspective Sketches	Lecture 5	Lecture 4	Lab 6 Lab7	Lab6-1 Lab6-2 Lab6-3 Lab7	HW 6 HW 7
Sectional Views	Lecture 6	Lecture 5	Lab 8 Lab9	Lab8-a Lab8-b Lab9	HW 8 HW 9
Templates; Basic Dimensioning and Notes	Lecture 7	Lecture 6	Lab 10	Lab10	HW 10
Auxiliary Views	Lecture 8	Lecture 7	Lab 11 Lab 12	Lab11 Lab12	HW 11 HW 12
3-D Basics: Wireframe Modeling Descriptive Geometry	Lecture 9 Lecture 10 Lecture 11	Lecture 8a Lecture 8b Lecture 8c	Lab 13 Lab 14	Lab13 Lab14	HW 13 HW 14
Solid Modeling Descriptive Geometry	Lecture 12 Lecture 13 Lecture 14	Lecture 9 Lecture 9b Lecture 10	Lab 15 Lab 16	Lab15 Lab16	HW 15 HW 16
Advanced Solid Features Working Drawings and Assemblies	Lecture 15 Lecture 16	Lecture 11	Lab 17 Lab 18	Lab17 Lab18	HW 17
Geometric Dimensioning and Tolerancing Engineering Design Process	Lecture 17 Lecture 18	Lecture 12 Lecture 13	Lab 19	Lab19	HW 18
SolidWorks Parts SolidWorks Assemblies	Lecture 19 Lecture 20	Lecture 14 Lecture 15	Lab 20 Lab 21	Lab20	HW19
SolidWorks Drawings More SolidWorks Techniques Animation with SolidWorks	Lecture 21 Lecture 22	Lecture 16 Lecture 17	Lab 22 Lab 23 Lab 24 Lab 25		

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