



MASTER COURSE OUTLINE

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COURSE TITLE

Engineering Graphics II

GENERAL COURSE INFORMATION

Dept.: ENGR&

Course Num: 112

(Formerly: ENGR 265)

CIP Code: 14.1901

Intent Code:

Program Code:

Credits: 5

Total Contact Hrs Per Qtr.: 77

Lecture Hrs: 33

Lab Hrs: 44

Other Hrs: 0

Distribution Designation: Specified Elective SE

COURSE DESCRIPTION (as it will appear in the catalog)

This course uses computer software to draft parametric models in three dimensions using Solidworks software. This course covers file management methods, rapid prototyping, and 2D drawing development techniques.

PREREQUISITES

None

TEXTBOOK GUIDELINES

A college-level textbook such as Engineering Design with SolidWorks 2014 and Video Instruction, David C. Planchard & Marie P. Planchard, Schroff Development Corporation (SDC), 2014, ISBN 978-1-58503-848-0 and the *Ultimate GD&T Pocket Guide*, Krulikowski, ISBN 9780924520235. An online platform such as *SolidProfessor* is also acceptable.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:

1. Demonstrate the parametric part modeling process. (EAC Criterion 3b & k; ETAC 3a)
2. Apply constructive solid geometry methods. (EAC Criterion 3b & k; ETAC 3a)
3. Describe the use of common boolean operations in parametric modeling. (EAC Criterion 3b & k; ETAC 3b)
4. Perform history-based part modifications. (EAC Criterion 3b & k; ETAC 3a)
5. Evaluate and use parametric constraints. (EAC Criterion 3b, c, e & k; ETAC 3a)
6. Apply assembly modeling techniques. (EAC Criterion 3k; ETAC 3a)
7. Create mates between parts in an assembly. (EAC Criterion 3k; ETAC 3a)
8. Create accurately dimensioned multiview drawings from a 3D model. (EAC Criterion 3g & k; ETAC 3a, 3g)
9. Perform a simple Finite Element Analysis (FEA) using modeling software. (EAC Criterion 3k; ETAC 3a, 3b)

INSTITUTIONAL OUTCOMES

IO2 Quantitative Reasoning: Students will be able to reason mathematically.

COURSE CONTENT OUTLINE

- I. Introduction to Parametric Modeling
 - A. What is Parametric Modeling
 - B. Boolean logic in Parametric Modeling
 - C. Getting started with SolidWorks 2014
 - D. Document Properties and System Properties
- II. Fundamentals of Part Modeling
 - A. Creating 2-D sketches
 - B. Using sketch relations
 - C. Creating 3-D features
 - D. Using the part feature tree
 - E. Design Toolbox
- III. Fundamentals of Assembly Modeling
 - A. File management of parts and assemblies
 - B. Basic Mates
 - C. Advanced Mates
 - D. Motion and Collision Detection
- IV. Fundamentals of Drawings
 - A. Creating a drawing template
 - B. 1st and 3rd angle projections
 - C. Rules of Dimensioning review
 - D. Manipulating views and dimensions
 - E. Geometric Dimensioning and Tolerancing (GM&D)
- V. Intermediate Part Modeling
 - A. Design principles for plastic parts
 - B. Adding Drafts to extrusions
 - C. Revolved features
 - D. Swept and Lofted features
- VI. Introduction to Advanced Modeling
 - A. Basic Simulation
 - B. Feature tables
 - C. Top-down and Bottom-up Design
 - D. Best Practices

DEPARTMENTAL GUIDELINES *(optional)*

PO5 should be assessed: Students will be able to solve problems by gathering, interpreting, combining and/or applying information from multiple sources.

DIVISION CHAIR APPROVAL

DATE