

Lassen Community College Course Outline

WT-25 SolidWorks Fundamentals

3.0 Units

I. Catalog Description

This course is the first in a two-part series using computer-aided-design (CAD) software. Part of our advanced manufacturing program, this course teaches students how to use SolidWorks and mechanical design automation software to build parametric models of parts and assemblies, and how to make drawings of those parts and assemblies.

Diversity Statement

Our commitment to diversity requires that we strive to eliminate barriers to equity and that we act deliberately to create a safe and inclusive environment where individual and group differences are valued and leveraged for the growth and understanding as an educational community.

Recommended Preparation: Prepared to enter Introduction to College Reading, Writing, and Critical Thinking or equivalent through multiple measures.

Additional Course Information

Transfer Status:

- CSU only

Total Number of Hours by Instructional Method:

- 34 Hours Lecture, 51 Hours Laboratory, 68 Out of Class Hours, 153 Total Hours of Instruction

Scheduled:

- Fall

II. Coding Information

Repeatability: Not Repeatable

Grading Option: Graded or Pass/No Pass

Credit Type: Credit - Degree Applicable

TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Modeling: Students will be able to create 3D parametric models of mechanical components in SolidWorks.
2. Assemblies: Students will be able to create 3D parametric assemblies of mechanical systems in SolidWorks.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Describe the role of technical graphics in the engineering design process.
2. Set up a solid modeling application to develop parts, assemblies and output drawings.
3. Create orthographic and pictorials 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 to document attributes of parts, assemblies and associated drawings.

IV. Course Content

A. Outline of Topics

1. Unit Titles

a) Lecture

i. Topics

- 1) Technical Graphics Applications – 2.00 lecture hours
- 2) Engineering Design – 3.00 lecture hours
- 3) Basic Solids Modeling Operations – 8.00 lecture hours
- 4) Freehand Sketching and Lettering – 4.00 lecture hours
- 5) Engineering Geometry and Modeling – 8.00 lecture hours
- 6) Parts with extrudes, sweeps, and lofts – 6.00 lecture hours
- 7) Assemblies with Mates and Limits – 6.00 lecture hours
- 8) Drawings with orthographic and pictorial views – 2.00 lecture hours
- 9) Dimensioning, annotation, and tolerancing – 4.00 lecture hours
- 10) Graphic Standards – 3.00 lecture hours

b) Lab

i. Topics

- 1) Technical graphics applications – 2.00 lab hours
- 2) Engineering design – 2.00 lab hours
- 3) Basic Solids Modeling Operations – 8.00 lab hours
- 4) Freehand Sketching and Lettering – 4.00 lab hours
- 5) Engineering Geometry and Modeling – 8.00 lab hours
- 6) Parts with extrudes, sweeps, and lofts – 8.00 lab hours
- 7) Assemblies with Mates and Limits – 6.00 lab hours
- 8) Drawings with orthographic and pictorial views – 6.00 lab hours
- 9) Dimensioning, annotation, and tolerancing – 4.00 lab hours
- 10) Graphic Standards – 3.00 lab hours

V. Assignments

A. Appropriate Readings

1. Textbook and outside reading - Students will be expected to complete all assigned reading assignments.

B. Online Lab Assignments

1. Watch specifically assigned YouTube channels on SolidWorks and answer instructor prepared questions.

C. Writing Assignments

1. The student will summarize in their own words the scope and application of the engineering graphics standard ANSI Y14.5.

D. Out of Class Assignments

1. Homework – complete end of chapter questions/exercises

VI. Methods of Evaluation

Traditional Evaluation

Exams/Tests, quizzes, projects, homework, class participation

VII. Methods of Delivery

Check those delivery methods for which this course has been separately approved by the Curriculum/Academic Standards Committee.

- Traditional Classroom Delivery
- Correspondence Delivery
- Hybrid Delivery
- Online Delivery

Traditional Classroom Delivery

Traditional classroom delivery will be used for all required lecture/lab hours.

VIII. Representative Texts and Supplies

- A. Planchard, David; Engineering Graphics with SolidWorks 2024, SDC Publications, 2024, ISBN: 978-1-63057-627-1

IX. Course Status

1. Current Status: Active
2. Original Approval Date: 04/02/2019
3. Course Originator: Kory Konkol
4. Board Approval Date: 12/10/2024
5. Chancellor's Office Approval Date:
6. Revised By: Kory Konkol
7. Curriculum/Academic Standards Committee Revision Date: 12/3/2024