GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: CSIS 185 DIVISION: 50 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2020 CURRICULUM APPROVAL DATE: 11/13/2019

SHORT TITLE: COMPUTER DESIGN - SOLID WORKS

LONG TITLE: Computer Aided Design using SOLIDWORKS

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours
3	18	Lecture:	3	54
		Lab:	0	0
		Other:	0	0
		Total:	3	54

COURSE DESCRIPTION:

This course introduces the computer aided aspects of design, modeling and applications utilizing the SOLIDWORKS software.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES
- L - Standard Letter Grade
- P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:
- 02 - Lecture and/or discussion
- 05 - Hybrid
- 72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:
By the end of this course, a student should:
1. Generate precise models utilizing SOLIDWORKS software.

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Curriculum Approval Date: 11/13/2019

6 Hours

Content: Overview of SOLIDWORKS and the User Interface (UI)

- Introduction to the SOLIDWORKS User Interface (UI) and CommandManager.
- How to start a SOLIDWORKS session.
- How to open a new or existing part.
- How to start a model in SOLIDWORKS.
- Design intent.

Student Performance Objectives: Utilize the SOLIDWORKS Welcome dialog box. Establish a SOLIDWORKS session. Comprehend the SOLIDWORKS User Interface. Recognize the default Reference Planes in the FeatureManager. Open a new and existing SOLIDWORKS part. Utilize SOLIDWORKS Help and SOLIDWORKS Tutorials. Demonstrate how to zoom, rotate and maneuver a three button mouse in the SOLIDWORKS Graphics window.

9 Hours

Content: 2D Sketching, Features and Parts

- Establishing a SOLIDWORKS session.
- Creating a new part called Wheel with user defined document properties.

Student Performance Objectives: Apply the following sketch and feature tools: Circle, Line Centerline, Centerpoint Straight Slot, Mirror Entities, Extruded Boss, Extruded Cut, Revolved Boss, Circular Pattern, Hole Wizard and Fillet. Incorporate design change into a part using proper design intent, along with applying multiple geometric relations: Coincident, Vertical, Horizontal, Tangent and Midpoint and feature and sketch modifications. Utilize the Material, Mass Properties and Appearance tool on the Wheel.

9 Hours

Content: Assembly Modeling - Bottom-up method

- Creating assemblies with user defined document property Fly Wheel.
- Creating assemblies with user defined document property Stirling Engine.

Student Performance Objectives: Insert the following Standard and Quick mate types: Coincident, Concentric, Distance and Tangent. Utilize the following assembly tools: Insert Component, Suppress, Un-suppress, Mate, Move Component, Rotate Component, Interference Detection, Hide, Show, Flexible, Ridge, and Multiple mate mode. Create an Exploded View with animation. Apply the Measure and Mass Properties tool to modify a component in the Stirling Engine assembly.

9 Hours

Content: Design Modifications

Student Performance Objectives: Address clearance, interference, static and dynamic behavior of the Stirling Engine Modified assembly. Verify the behavior between the following components: Power Piston, Power Clevis, Connecting Rod and Handle in the assembly. Apply the following assembly tools: Move, Rotate, Collision Detection, Interference Detection, Selected Components, Edit Feature and Center of Mass. Utilize the Assembly Visualization tool on the Stirling Engine assembly and sort by component mass. Create a new Coordinate System on the Stirling Engine assembly relative to the default origin. Run a Motion Study and save the Motion Study AVI file.

9 Hours

Content: Drawing and Dimensioning Fundamentals

- Creating drawings with user defined document property Fly Wheel Assembly.
- Creating drawings with user defined document property Bushing.

Student Performance Objectives: Create the Fly Wheel Assembly drawing with an Exploded Isometric view. Utilize a Bill of Materials, Magnetic lines and Balloons. Learn about Custom Properties and the Title Block. Create the Bushing Part drawing utilizing Third Angle Projection with two standard Orthographic views: Front, Top and an Isometric view. Address imported dimensions from the Model Items tool. Insert additional dimensions using the Smart Dimension tool along with all needed annotations.

6 Hours

Content: Additive Manufacturing - 3D Printing

- Differences between Additive vs. Subtractive Manufacturing.
- 3D printer terminology.
- Preparing, saving, and printing a 3D CAD model on a low cost printer.

Student Performance Objectives: Discuss Additive vs. Subtractive Manufacturing. Comprehend 3D printer terminology. Determine the differences between a Cartesian printer and a Delta printer. Create a STereoLithography (STL) file in SOLIDWORKS. 3D print directly from SOLIDWORKS using an Add-In. Discuss printer hardware. Select the correct filament type.

4 Hours

Content: Introduction to the Certified Associate - Mechanical Design (CSWA) Exam

- Introduction into the curriculum and categories of the exam.
- Awareness of the exam procedure, process, and required model knowledge.

Student Performance Objectives: State the five exam categories. Complete a CSWA practice exam.

2 Hours

Final Exam

METHODS OF INSTRUCTION:

Lecture, Discussion, Guided Practice

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 54

Assignment Description: Homework: Read textbook and complete end of chapter exercises.

Required Outside Hours: 54

Assignment Description: Projects: Complete assigned projects.

METHODS OF EVALUATION:

Problem-solving assignments

Percent of total grade: 60.00 %

50% - 70% Projects

Skill demonstrations

Percent of total grade: 30.00 %

20% - 40% Computer skill demonstrations

Objective examinations

Percent of total grade: 10.00 %

REPRESENTATIVE TEXTBOOKS:

David C. Planchard. SOLIDWORKS 2018 Quick Start . Mission, KS: SDC Publications,2018.

ISBN: 978-1-63057-143-6

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Transferable CSU, effective 202070

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education: N
Program Status: 1 Program Applicable
Special Class Status: N
CAN:
CAN Sequence:
CSU Crosswalk Course Department:
CSU Crosswalk Course Number:
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: D
Maximum Hours:
Minimum Hours:
Course Control Number:
Sports/Physical Education Course: N
Taxonomy of Program: 070210