



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CAD 2201 Computer Aided Design II

Date: Spring 2023

Credit Hours: 3

Complete all that apply or mark "None" where appropriate:

Prerequisite(s): CAD 2200

Enrollment by assessment or other measure? Yes No

If yes, please describe:

Corequisite(s): None

Pre- or Corequisite(s): None

Consent of Instructor: Yes No

Delivery Method:	<input checked="" type="checkbox"/> Lecture	2 Contact Hours (1 contact = 1 credit hour)
	<input type="checkbox"/> Seminar	0 Contact Hours (1 contact = 1 credit hour)
	<input checked="" type="checkbox"/> Lab	2 Contact Hours (2-3 contact = 1 credit hour)
	<input type="checkbox"/> Clinical	0 Contact Hours (3 contact = 1 credit hour)

Offered: **Fall** **Spring** **Summer**

CATALOG DESCRIPTION and IAI NUMBER (if applicable):

In this advanced competency-based course students will be prepared for careers in engineering technology. This course is a continuation of Computer Aided Design I and includes computer graphic principles as they relate to the concepts of CAD Solid Modeling. Students will gain advanced skills in drafting layout, CAD editing techniques, dimensioning and visual presentation. Students will learn how to create virtual 3-D models and how to render them with color, light and shadows. These principles will be applied to the latest educational version of SolidWorks. Principles will include advanced modeling parts and assemblies and creation of working drawings. Students will use the design process to develop models to prototyping a product. Students will prepare models to be printed on a 3D and prepare production drawing for this product. Students will be able to

take the SolidWorks Certified Associates exam at the end of this course. Students passing the exam will be issued a certificate of passing. Students will be able to utilize and reinforce their intermediate workplace skills, including teamwork, communication and math skills.

ACCREDITATION STATEMENTS AND COURSE NOTES:

None

COURSE TOPICS AND CONTENT REQUIREMENTS:

Advanced Modeling Topics

1. Introduction to 3D Sketch
2. Plane Creation
3. Sweep with Composite Curves
4. Advanced Modeling with Sweep & Loft
5. Loft with Guide Curves and advanced Sweep
6. Using Surfaces – Advanced Modeling and Lofted Surface Advanced
7. Using the Deform Feature
8. Sweep with Solid Body
9. Surfaces vs. Solid Modeling
10. Using PhotoView 360
11. SimulationXpress

Sheet Metal Topics

1. Sheet Metal Parts
2. Sheet Metal Forming Tools – Button with Slots
3. Sheet Metal Conversions and flat patterns
4. Working with Sheet Metal STEP Files
5. Weldments

Top-Down Assembly Topics

1. Top-Down Assembly
2. Bottom-Up Assembly
3. External References & Repair Errors

Production Drawings

1. Section Views
2. Auxiliary Views
3. Alternate Position Views
4. Broken-out Section
5. BOM Table creation and modification

3D Printing

1. Create .STL files for use in 3D printing software

INSTRUCTIONAL METHODS:

Lecture

Lab

Group Projects

EVALUATION OF STUDENT ACHIEVEMENT:

Completion of assigned problems, required reading of text.

Periodic tests

Group Projects

Problem Based Learning

Oral Presentation

A= 90-100

B= 80-89

C= 70-79

D= 60-69

F= 0-59

INSTRUCTIONAL MATERIALS:

Textbooks:

None

Resources

SolidWorks Online Curriculum

Solid Professor

LEARNING OUTCOMES AND GOALS:

Institutional Learning Outcomes

- 1) Communication – to communicate effectively;
- 2) Inquiry – to apply critical, logical, creative, aesthetic, or quantitative analytical reasoning to formulate a judgement or conclusion;
- 3) Social Consciousness – to understand what it means to be a socially conscious person, locally and globally;
- 4) Responsibility – to recognize how personal choices affect self and society.

Course Outcomes and Competencies

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

1. Apply CAD Solid Modeling concepts to engineering design
2. Prepare 3D models
 - a. Model advanced solid parts and assemblies
 - b. Produce advanced working drawings from parts and assemblies.
 - c. Prepare advanced modeling types such as sheet metal parts, weldment
3. Qualify to take SolidWorks Certified Associates exam
 - a. Read and understand an engineering document
 - b. Build a part from a detailed dimensioned illustration
 - c. Assign materials to parts
 - d. Calculate the volume using IPS unit system
 - e. Locate the center of mass
4. Reinforce knowledge of the design process
 - a. Prototype design using 3D printing
 - b. Create production ready drawing according to industry standards