

Lecture Contact Hours: 32-36; Outside-of-Class Hours: 64-72;
Laboratory Contact Hours: 48-54; Outside-of-Class Hours: 0;
Total Student Learning Hours: 144-162

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

CADD Technology 130 – Advanced Computer-Aided Drafting and Design in 3D Modeling

2 hours lecture, 2 units
3 hours laboratory, 1 unit
Total units: 3 units

Catalog Description

Advanced Computer-Aided Drafting and Design (CADD) topics such as aspects of designing with solid and surface modeling, design for manufacturing concepts, and 3D modeling at the advanced level. Exploring and experiencing Additive Manufacturing (aka Rapid Prototyping or FDM Technology). 3D Solid Modeling software such as “SolidWorks or Fusion” will be used as an instructional tool. Formerly CADD 132. Not open to students with credit in CADD 132.

Prerequisite

“C” grade or higher or “Pass” in CADD 125 or ENGR 125 or equivalent

Recommended Preparation

Working knowledge of basic computer operations and file administration

Entrance Skills

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Complete orthographic drawings (using mechanical tools/computer).
- 2) Solve geometric construction with accuracy and detail.
- 3) Create sectional and auxiliary views.
- 4) Create pictorial drawings.

Course Content

- 1) Advanced Solid Modeling using Sweep and Loft
- 2) Advanced Surface Modeling
- 3) Sheet Metal Forming
- 4) Weldment
- 5) Top-Down Assembly

Course Objectives

Students will be able to:

- 1) Create complex and advanced solid/surface modeling.
- 2) Create Modeling – Sweep vs.
- 3) Create advanced 3D models using various modeling strategies and features, such as extrusion, revolve, rectangular and circular patterns, shell.
- 4) Create drawings from parts or assemblies and associative functionality.
- 5) Create auxiliary, sectional, and detailed views.
- 6) Add annotation to drawings, such as dimensions, reference dimensions, center marks and center lines, Bill of Material from parts list or assembly model, to complete the drawing sheet.
- 7) Produce data for most of the Additive Manufacturing (AM) machines.
- 8) Operate and troubleshoot 3D printers.

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Final project that measures the student's skill and competency in using and applying mechanical and computer-aided drafting tools for engineering applications.
- 2) Midterm exam that measures the student's ability to create advanced 3D models and produce detail drawings of parts and components used in manufacturing. Final exam that measures the student's capability as a draftsman at an advanced level, such as producing data for the Additive Manufacturing machines, operating and troubleshooting 3D printers, as well as creating a complete engineering drawing of assembly and its components.
- 3) In-class activities (written/oral) that measure the student's ability to articulate fundamental drafting design and production skills required in the field of engineering graphics.

Special Materials Required of Student

USB flash drive (2GB or larger)

Minimum Instructional Facilities

CADD computer lab

Method of Instruction

- 1) Lecture and demonstration
- 2) Lab assignments and projects

Out-of-Class Assignments

- 1) **Reading:** N/A
- 2) **Writing:** Preparing reports on biweekly group-projects
- 3) **Other:** Preparing reports on bi-weekly group-projects

Texts and References

- 1) Paul Tran, SolidWorks 2025 Part II – Advanced Techniques, 2025, SDC Publications.
- 2) Supplemental: None

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Implement various types of advanced modeling.
- 2) Create advanced surface modeling using various strategies and features.
- 3) Create drawings from parts or assemblies and associative functionality.
- 4) Create auxiliary, sectional, and detailed views.
- 5) Add annotation to drawings - such as dimensions and tolerances, reference dimensions, center marks and center lines, Bill of Material from parts list or assembly model, to complete the drawing sheet.