

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

Engineering 119 – Introduction to Computer Aided Drafting and Design

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

Catalog Description

Concepts, techniques and procedures of Computer-Aided Drafting and Design (CADD). Offers a hands-on activity-based approach to the use of AutoCAD as a drafting tool. Course content focuses on manufacturing drawings, but also includes Architectural and General drawings. Students will develop a comprehensive understanding of computer-aided drafting in 2D geometry as well as in 3D-modeling. *Also listed as CADD 119. Not open to students with credit in CADD 119, CADD 120.*

Prerequisite

“C” grade or higher or “Pass” or concurrent enrollment in CADD 115 or ENGR 100 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 mechanical drawings (using mechanical tools/computer).
- 2) Solve geometric construction with accuracy and detail.
- 3) Create detailed working drawing including sectional views.
- 4) Create pictorial drawings.

Course Content

- 1) AutoCAD commands and input methods
- 2) Working with multiple drawings
- 3) Constructing geometric figures, and modifying them
- 4) Using coordinate systems
- 5) Create drawing's title block for various plot settings.
- 6) Creating and modifying layer system
- 7) Creating and modifying drawing templates
- 8) Using the dimension terminology based on ANSI and ISO standards
- 9) Plotting a drawing with various scales
- 10) Creating blocks, attributes and external references.
- 11) Constructing and modifying 3D modelings

Course Objectives

Students will be able to:

- 1) Apply - drawing commands and concept of AutoCAD software in engineering drafting at the level of proficiency.
- 2) Construct 2D geometry shapes using AutoCAD software as a drawing tool.
- 3) Perform editing commands to modify drawings.

- 4) Create and modify 3D-Modelings using AutoCAD.
- 5) Plot - 2D presentation of any 3D models in various plot-scales and paper format.
- 6) Add dimensions and tolerances based on American National (ANSI) and International (ISO) standards.

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) Student portfolio of drawing exercises and projects in which students demonstrate their 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 describe and apply fundamental drafting concepts, terminology, and techniques used in engineering graphics.
- 3) Final exam that measures the student's capability as a draftsman. For example, the student will be required to use mechanical and/or computer drafting tools construct 3D models and to produce orthographic views as well as auxiliary and section and detailed views for 3D objects.
- 4) 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

Electronic storage media

Minimum Instructional Facilities

CAD computer lab

Method of Instruction

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

Out-of-Class Assignments

- 1) **Reading:** Technical-Reading assignments from Engineering drafting journals.
- 2) **Writing:** Preparing reports on bi-weekly group projects.
- 3) **Other:** None

Texts and References

- 1) Required (representative example): Dix, Mark and Riley, Paul. *Discovering AutoCAD 2024*. Pearson, 2024. ISBN 13:978-0-13-823237-5
- 2) Supplemental: Handouts

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Use of AutoCAD terms, concepts and techniques in engineering drafting and design.
- 2) Application of AutoCAD in 2D geometric shapes and 3D solid modeling.
- 3) Add dimensions and tolerances to drawings.
- 4) Perform AutoCAD editing commands to make necessary changes.
- 5) Plot drawings in different plot-scale and paper format configurations.

Student Learning Outcomes

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

- 1) Construct advanced 2D geometry shapes using drafting software.
- 2) Construct 3D solid models by implementing the appropriate commands.

- 3) Produce orthographic projections including section and auxiliary views.
- 4) Apply dimensions and tolerances in drawings accordance with ANSI/ISO standards.