

# DRAF 103: ADVANCED ENGINEERING DRAWING

## Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2024
Credits:	3
Total Contact Hours:	108
Lecture Hours :	36
Lab Hours:	72
Hours Arranged:	0
Outside of Class Hours:	72
Total Student Learning Hours:	180
Prerequisite:	DRAF 101 or one year high school mechanical drafting.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter

## Catalog Course Description

Covers the application of the latest industrial design standards of orthographic projection and dimensioning specifications in the production of mechanical items and assemblies. Advanced problems in instrumental drawing, lettering, geometric construction, multi-view projections, sections, auxiliary views and descriptive geometry. 36 lecture hours, 72 lab hours.

## Course Objectives

- Design detail working drawings, isometric sketches and scaled drawings of objects containing normal, inclined, oblique and cylindrical surfaces according to standard drafting practices for layout and projection.
- Design detail working drawings of parts requiring sections, auxiliary views and descriptive geometry.
- Create prints of the above drawings with line weights and lettering styles comparable to industrial standards.
- Use methods of geometric constructions for drawing regular polygons, ellipses, parabolas and tangent arcs.
- Organize mechanical and pictorial drawings showing advanced comprehension of technical drawing skills.
- Assess advanced concepts of Computer Aided Design (CAD) and mechanical drawing practices.
- Demonstrate ability to evaluate advanced Computer Aided Design (CAD) or mechanical drawing principles.
- Compose working drawings and pictorial (Isometric and Oblique) drawings which show the comprehension of advanced technical drawing skills.

## Major Course Content

1. Review of Use of Instruments, Line Weights, and Lettering
2. Technical Sketching
3. Geometric Constructions
4. Orthographic Projections - Normal Surfaces

5. Orthographic Projections - Inclined and Oblique Surfaces
6. Cylindrical Surfaces and Combinations
7. Intersections
8. Sections
9. Auxiliary Views
10. Descriptive geometry
11. Review

## Lab Content

Students apply the concepts in the lab that is discussed in the lecture.

1. Review of Use of Instruments, Line Weights, and Lettering
2. Technical Sketching
3. Geometric Constructions
4. Orthographic Projections - Normal Surfaces
5. Orthographic Projections - Inclined and Oblique Surfaces
6. Cylindrical Surfaces and Combinations
7. Intersections
8. Sections
9. Auxiliary Views
10. Descriptive geometry
11. Review

## Suggested Reading Other Than Required Textbook

Leonardo Da Vinci's works.

## Examples of Required Writing Assignments

Lab reports and class assignments.

Example: Write a report for project research for presentation boards.

## Examples of Outside Assignments

Practice advanced skills from the text book and handouts. Read required materials - Text book and hand outs. Computer Aided Design (CAD) and mechanical drawing problems. These include descriptive geometry, line types, text, hand lettering, Orthographic projection, dimensioning, sections, geometric constructs, and CAD model and paper space. Solve problems: Descriptive geometry, Orthographic projection, dimensioning, sections, geometric constructs and pictorials. Research for final project. Students will also observe activities related to course content, participate in activities related to course content. Students will be required to complete the following types of assignments outside of the regular class time: draw, study, answer questions, practice skills, read required materials, solve problems, write essays, research papers, lab reports, and journals.

## Instruction Type(s)

Lab, Lecture