

**APTECH 46 Course Outline as of Summer 2022****CATALOG INFORMATION**

Dept and Nbr: APTECH 46 Title: INTRO TO CAD

Full Title: Introduction to Computer-Aided Drafting

Last Reviewed: 8/14/2023

Units	Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled 35.00
Minimum	2.00	Lab Scheduled	0.50	4	Lab Scheduled 8.75
		Contact DHR	0		Contact DHR 0
		Contact Total	2.50		Contact Total 43.75
		Non-contact DHR	0		Non-contact DHR 0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 113.75

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: APTECH 56

**Catalog Description:**

Introduction to Computer-Aided Drafting (CAD) utilizing the AutoCAD software program.

Areas covered include: program organization, program commands and tools, view navigation, drawing set-up, geometric construction/editing, orthographic projection, dimensioning and text annotations, printing/plotting, and an introduction to 3-dimensional drafting/design.

**Prerequisites/Corequisites:**

Course Completion or Current Enrollment in APTECH 45 OR INDE 50 OR HORT 93

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Introduction to Computer-Aided Drafting (CAD) utilizing the AutoCAD software program. Areas covered include: program organization, program commands and tools, view navigation, drawing set-up, geometric construction/editing, orthographic projection, dimensioning and text annotations, printing/plotting, and an introduction to 3-dimensional drafting/design. (Grade Only)

Prerequisites/Corequisites: Course Completion or Current Enrollment in APTECH 45 OR INDE 50 OR HORT 93

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

### **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
---------------	----------------------	------------	-----------

<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1988	Inactive:
----------------------	--------------	------------	-----------	-----------

<b>UC Transfer:</b>	Transferable	Effective:	Fall 1999	Inactive:
---------------------	--------------	------------	-----------	-----------

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

### **COURSE CONTENT**

**Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Produce CAD projects that utilize geometric construction/editing, orthographic projection, dimensioning and text annotations.
2. Produce prints/plots from student prepared CAD files.

**Objectives:**

At the conclusion of this course, the student should be able to:

1. Demonstrate knowledge of AutoCAD program organization.
2. Execute file management operations within the Windows and AutoCAD interface.
3. Execute CAD drafting/design commands.
4. Set up drawing environments with AutoCAD.
5. Utilize geometric positioning tools when executing precise drafting/design work.
6. Generate and edit geometric constructions, dimensions, and text annotations.
7. Generate and edit multi-view and orthographic projection drawings.
8. Demonstrate proficiency using AutoCAD blocks.
9. Effectively control printing/plotting of AutoCAD drawing files.
10. Construct a 3D model.

**Topics and Scope:**

- I. Introduction to the Computer as a Drafting/Design Tool with Emphasis on Hardware and Software
  - A. Windows desktop and Windows File Explorer navigation
  - B. Mouse usage
  - C. Keyboard entry

- D. File management
- II. Accessing AutoCAD Commands via: Ribbon, Toolbars, Palettes and Keyboard
- III. Setting up the Drawing Environment: Sheet Size, Units, Model/Layout Tabs, Layers, Linetypes and Lineweights
- IV. Geometric Construction and Positioning Tools
  - A. Object snap
  - B. Directional distance entry
  - C. Polar tracking
  - D. Dynamic input
  - E. Object tracking
  - F. Grid and snap
  - G. From and point filters
- V. Geometric Constructions
  - A. Tangent arcs
  - B. Polygons
  - C. Ellipses
  - D. Concentric arcs
  - E. Parallel and perpendicular lines
  - F. Polar and rectangular arrays
  - G. Polylines
- VI. Multi-View Drawings
  - A. Xlines for view to view projection layout
  - B. Correct depiction of visible, hidden, and symmetrical features at individual views
  - C. Linear, radial, and angular dimensions
- VII. AutoCAD Blocks: Creating, Inserting and Redefining Blocks
- VIII. Plotting: Sheet Size, Plot Scale, Lineweights and Color
- IX. 3D Surface Modeling: Wire-frame and 3Dfaces

The above Topics and Scope apply to both lecture and lab course components in an integrated format.

**Assignment:**

Lecture-Related Assignments:

1. Assignment reading (2-10 pages per CAD assignment)
2. Quizzes (0-4)
3. Final exam

Lab-Related Assignments:

1. CAD assignments (12-15)

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

CAD assignments

Problem solving  
65 - 80%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Quizzes and final exam

Exams  
20 - 35%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

AutoCAD 2018: A Problem - Solving Approach, Basic and Intermediate. Tickoo, Sham.

CADCIM Technologies. 2017

AutoCAD and Its Applications Basics 2018. 25th ed. Shumaker, Terence and Madsen, David.

Goodheart-Willcox. 2017

Instructor prepared materials