

**APTECH 46 Course Outline as of Fall 2014****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 utilizing the AutoCAD software program. Course will teach the student how to use this industry standard software to execute professional quality drafting/design work. Particular attention will be given to the components of a CAD system, the software interface, drawing set-up, geometric construction & editing, orthographic projection, dimensioning, plotting, and an introduction to 3-dimensional drafting/design.

**Prerequisites/Corequisites:**

Course Completion or Current Enrollment in APTECH 45

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

Description: Intro to computer-aided drafting utilizing the AutoCAD software program. Areas covered include: drawing set-up, geometric construction & editing, orthographic projection, dimensioning, plotting, and an introduction to 3-dimensional drafting/design. Course will teach students how to use this industry standard software to execute professional quality work. (Grade

Only)

Prerequisites/Corequisites: Course Completion or Current Enrollment in APTECH 45

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**

### **Outcomes and Objectives:**

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

1. Utilize computer hardware peripherals to execute drafting/design work
2. Execute file management commands within the Windows and AutoCAD interface
3. Execute drafting/design work by interfacing with AutoCAD Software options
4. Set up drawing environments with AutoCAD
5. Utilize geometric positioning tools when executing precise drafting/design work
6. Generate and modify geometric constructions
7. Generate and modify multi-view drawings
8. Demonstrate proficiency using AutoCAD "Blocks"
9. Effectively control plotting of AutoCAD drawing files
10. Construct a 3D surface 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 Explorer navigation
  - B. Mouse usage
  - C. Keyboard entry
  - D. File management
- II. Accessing AutoCAD commands via:
  - A. Ribbon
  - B. Toolbars
  - C. Tool palettes
  - D. Keyboard

- III. Setting up the drawing environment
  - A. Sheet size
  - B. Units
  - C. Model space and Layouts
  - D. Layers, linetypes, and lineweights
- IV. Geometric construction and positioning tools
  - A. Osnap
  - 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
  - A. Creating blocks
  - B. Inserting blocks
  - C. Redefining blocks
- VIII. Plotting
  - A. Sheet size
  - B. Plot scale
  - C. Lineweights
  - D. Color
- IX. 3D surface modeling
  - A. Wire-frame
  - B. 3Dfaces
- X. New releases of CAD software
  - A. User interface
  - B. Software options
  - C. New topics
  - D. Applications

**Assignment:**

1. Reading, approximately 10 - 25 pages per week.
2. Weekly CAD exercises in lab.
3. Homework: Twelve (12) computer generated CAD drawings (1 or more drawings per assignment to illustrate mastery of topics and techniques covered in class).
4. Objective and performance-based quizzes (3-4).

5. Final exam: objective and performance based.

### 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 and skill demonstrations 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 exercises

Problem solving  
10 - 20%

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

Performance exams, CAD drawings

Skill Demonstrations  
45 - 60%

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

Multiple choice, True/false, Matching items, Completion, Computer generated drawings

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:

1. AutoCAD: A Problem Solving Approach: 2013 and Beyond. Tickoo, Sham. AutoDesk
2. AutoCAD and Its Applications: 2014. Shumaker, Terence, et al. Goodheart-Willcox