**APTECH 46 Course Outline as of Fall 2008**

# 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

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|---|---|
| Title 5 Category: | AA Degree Applicable |
| Grading: | Grade Only |
| Repeatability: | 39 - Total 2 Times |
| 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 APTE 45 ( or APTECH 45 or APTECH 55 or IED 55)

**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 APTE 45 ( or APTECH 45 or APTECH 55 or IED 55)
Recommended:
Limits on Enrollment:
Transfer Credit: CSU;UC.
Repeatability: Total 2 Times

## ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

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|---|---|---|---|---|---|
| **AS Degree:** | **Area** | | | Effective: | Inactive: |
| **CSU GE:** | **Transfer Area** | | | Effective: | Inactive: |
| **IGETC:** | **Transfer Area** | | | Effective: | Inactive: |
| **CSU Transfer:** | Transferable | Effective: | Fall 1988 | Inactive: | |
| **UC Transfer:** | 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
11. Repeating students will:
   a. Utilize new software releases to accomplish CAD projects
   b. Interface with new options in the software

**Topics and Scope:**

I. Introduction to the computer as a drafting/design tool with emphasis on hardware and software
   A. Windows desktop navigation
   B. Mouse usage
   C. Keyboard entry
   D. File management

II. Accessing AutoCAD commands via:
   A. Toolbars
   B. Pulldown menus
   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.
6. Repeating students will accomplish assignments utilizing new release(s) of CAD software to enhance their skills.

**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.

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| 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<br>0 - 0% |

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

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| CAD exercises | Problem solving<br>10 - 20% |

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

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| Performance exams, CAD drawings | Skill Demonstrations<br>45 - 60% |

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

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| Multiple choice, True/false, Matching items, Completion, Computer generated drawings | Exams<br>20 - 35% |

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

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|---|---|
| None | Other Category<br>0 - 0% |

**Representative Textbooks and Materials:**
1. AutoCAD 2007: A Problem Solving Approach. Tickoo, Sham. AutoDesk Press: 2007.
2. Using AutoCAD 2007. Grabowski, Ralph. AutoDesk Press: 2007.
3. Instructor prepared materials.