APTE 57 Course Outline as of Summer 2025

CATALOG INFORMATION

Dept and Nbr: APTE 57   Title: ADVANCED AUTOCAD
Full Title: Advanced AutoCAD
Last Reviewed: 1/25/2021

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00   Total Student Learning Hours: 157.50

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 57

Catalog Description:
Computer-aided drafting using the AutoCAD software program. Areas covered include: advanced layout, construction and editing techniques, advanced dimensioning practices, three-dimensional (3D) modeling and rendering, software customization, project-oriented architectural, civil and mechanical engineering applications, and an introduction to computer animation with 3ds Max.

Prerequisites/Corequisites:
Course Completion of APTECH 46

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Computer-aided drafting using the AutoCAD software program. Areas covered include: advanced layout, construction and editing techniques, advanced dimensioning practices, three-dimensional (3D) modeling and rendering, software customization, project-oriented architectural, civil and mechanical engineering applications, and an introduction to computer

animation with 3ds Max. (Grade Only)
Prerequisites/Corequisites: Course Completion of APTECH 46
Recommended:
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer: Transferable   Effective: Spring 1991   Inactive:

UC Transfer: Effective: 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 architectural and engineering CAD-generated drawings.
2. Utilize AutoCAD to create three-dimensional architectural and engineering models.
3. Produce finished drawings on titled sheets including advanced dimensioning, annotations, bill-of-materials, and drawing legends.

Objectives:
At the conclusion of this course, the student should be able to:
1. Set up and utilize the AutoCAD software program within various architecture, engineering, and construction industry situations.
2. Identify and use proper construction and editing techniques necessary for effective industry related layout work.
3. Demonstrate proficiency setting up dimensioning parameters for various architecture, engineering, and construction industry situations.
4. Construct wire-frame, surface, mesh, and solid 3D models within the AutoCAD software program.
5. Produce computer renderings from 3D CAD files.
6. Create and utilize a personal AutoCAD profile that will result in more efficient use of the software.
7. Produce an architectural drafting/design project that includes:
   a. Site plan
   b. Floor plan
   c. 3D model
   d. Exterior elevations
8. Produce a mechanical engineering drafting design project that

includes:
a. 3D parts files
b. Assembly drawing
c. Detailed parts drawings
d. Stereo lithography files (STL) for 3D-printing use
9. Create a computer animation of a mechanical assembly

Topics and Scope:

I.   AutoCAD Software Setup for Various Industry Disciplines
    A. Template files
    B. System variables
    C. Units
    D. Layer conventions
    E. Text styles
    F. Dimension styles
    G. Layouts
    H. Single and multiple file strategies
II.   Construction and Editing in Layout Techniques
    A. Orthographic projections
    B. Geometric constructions
III. Industry Standard Dimensioning
    A. Dimension and extension lines
    B. Symbols and arrows
    C. Text
    D. Fit
    E. Primary units
    F. Alternate units
    G. Tolerances
IV.   Planar to Three-Dimensional Objects and Creation Techniques
    A. Lines, splines, polylines
    B. 3Dface
    C. Region
    D. Mesh Modeling
    E. Solid primitives
    F. Boolean operations: union, subtract, interfere, and intersect
    G. Extrude
    H. Revolve
    I. Loft
    J. Sweep
V.   Computer Renderings
    A. Material assignment
    B. Lighting
    C. Environment
    D. Still image generation and printing
VI. Interface Configuration
    A. Ribbon organization
    B. Toolbars
    C. Tool palettes
    D. Keystrokes
    E. Workspaces
VII. Architectural Drafting/Design Drawings

    A. Site plan
    B. Floor plan
    C. 3D model
    D. Exterior elevations
VIII. Mechanical Engineering Drafting/Design Drawings
    A. 3D parts files
    B. Assembly drawing
    C. Detailed parts drawings
    D. Stereo lithography files
IX.   Computer Animation of a Mechanical Assembly
    A. Material assignment
    B. Lighting
    C. Camera animation
    D. Rendering

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

Assignment:

1. Reading (5 - 10 pages per week)
2. Weekly CAD exercises
3. Homework: Computer generated CAD drawings (12)
4. Quizzes (2 - 4)
5. Final exam

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 exercises and drawings	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 2021: A Problem Solving Approach. 27th ed. Tickoo, Sham. CADCIM Technologies. 2020
AutoCAD and Its Applications: Comprehensive 2020. 27th ed. Shumaker, Terence, et al. Goodheart-Willcox. 2020
Instructor prepared materials