APTECH 57 Course Outline as of Fall 2008

CATALOG INFORMATION

Dept and Nbr: APTECH 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	8	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:	

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

Prerequisites/Corequisites:
Course Completion of APTE 46 (or APTECH 46 or APTECH 56 or ENGR 56 or ENGR 22)

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Computer-aided drafting using the AutoCAD software program. Topics include advanced layout, construction and editing techniques, advanced dimensioning practices, 3-D modeling and rendering, software customization project-oriented architectural, civil, and mechanical engineering applications, and an introduction to computer animation. (Grade Only)
Prerequisites/Corequisites: Course Completion of APTE 46 (or APTECH 46 or APTECH 56 or

ENGR 56 or ENGR 22)
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

Outcomes and Objectives:
Upon completion of this course, the student will 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, 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
9. Create a computer animation of a mechanical assembly

Topics and Scope:

I. AutoCAD software setup for various architecture, engineering, and construction industry situations
- A. Template file
- B. System variables
- C. Units
- D. Layer conventions
- E. Text style
- F. Dimension style
- G. Layouts
- H. Single and multiple file strategies

II. Proper construction and editing techniques necessary for effective industry related layout work
- A. Orthographic Projections
- B. Geometric Constructions

III. Dimensioning parameters for various architecture, engineering, and construction industry situations
- A. Dimension and extension lines
- B. Symbols and arrows
- C. Text
- D. Fit
- E. Primary units
- F. Alternate units
- G. Tolerances

IV. Wire-frame, surface, and solid 3D models within the AutoCAD software program
- A. Lines, splines, polylines
- B. 3Dface
- C. Meshing
- D. Region
- E. Solid primitives
- F. Boolean operations
- G. Extrude
- H. Revolve
- I. Loft
- J. Sweep

V. Computer renderings from 3D CAD files.
- A. Material assignment
- B. Lighting
- C. Environment
- D. Still image generation and printing

VI. Personal AutoCAD profile
- A. Menu organization
- B. Toolbars
- C. Tool palettes
- D. Keystrokes

VII. Architectural drafting/design project
- A. Site plan
- B. Floor plan
- C. 3D model
- D. Exterior elevations

VIII. Mechanical engineering drafting design project
- A. 3D parts files
- B. Assembly drawing

C. Detailed parts drawings

IX. Computer animation of a mechanical assembly
A. Material assignment
B. Lighting
C. Camera animation
D. Rendering

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 2007: A Problem Solving Approach. Tickoo, Sham. AutoDesk Press: 2007.
2. Using AutoCAD 2007. Grabowski, Ralph. AutoDesk Press: 2007.
3. Instructor prepared materials.