

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

X Transfer Course X A.A. Degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: DT128/RDT128 3D Design and Presentation

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 96

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills

ENTRANCE REQUIREMENTS

PREREQUISITE: DT125/RDT125

COREQUISITE: None

RECOMMENDED PREPARATION: DT110

SCOPE OF COURSE:

Advanced theory and hands-on operation of three-dimensional software techniques. Emphasis is placed on wire frame, surface, solid and parametric three-dimensional modeling.

SPECIFIC COURSE OBJECTIVES:

The successful student will be able to:

1. Solve technical problems utilizing 3-D modeling
2. Analyze and solve three-dimensional software problems
3. Develop detail part models and detail 2-D drawings from models
4. Create assemblies from bottom-up and top-down methods
5. Develop sheet metal models in formed and flat pattern configurations
6. Develop dynamic/moving assembly models for functional evaluation

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Introduction
 - A. Program overview
 - B. Safety
- II. Review Of Drafting Fundamentals
 - A. Standards and measuring systems
 - B. Lettering applications and fonts
 - C. Geometric construction principles in drawing
 - D. Sectional views
 - E. Dimensioning
 - F. 3-D concepts

- III. Modeling And Presentation
 - A. Basic Modeling Tools
 - 1. Terminology
 - 2. Window features, such as toolbars, menus and views
 - 3. Basic graphic operations
 - 4. The Feature Manager design tree
 - B. Initial Model Creation
 - 1. Creating base feature
 - 2. Adding boss feature
 - 3. Adding cut feature
 - 4. Modifying feature
 - 5. Displaying section view of part
 - 6. Displaying multiple views of a part
 - C. Creating an Assembly
 - 1. Building another part
 - 2. Adding parts to assembly mating relations that make the part fit together
 - 3. Specifying the mating relations that make the part fit together
 - D. Drawing Basics
 - 1. Opening and editing a drawing template
 - 2. Inserting standard views of a part model
 - 3. Adding model and reference annotations
 - 4. Adding another drawing sheet
 - 5. Inserting a named view
 - 6. Inserting, moving, editing and saving bills of materials
 - E. Using a Design Table
 - 1. Renaming features and dimensions
 - 2. Displaying feature dimensions
 - 3. Linking values of model dimensions
 - 4. Creating design table
 - 5. Verifying geometric relations
 - 6. Displaying part configurations
 - F. Resolve and Sweep Features
 - 1. Creating a revolved feature
 - 2. Sketching and dimensioning arcs and an ellipse
 - 3. Creating a sweep feature
 - 4. Using relations
 - 5. Creating an extended cut feature with a draft angle
 - G. Creating a Loft
 - 1. Creating planes
 - 2. Sketching, copying and pasting the profiles
 - 3. Creating a solid by connecting the profiles (lofting)
 - H. Working with Patterns
 - 1. Creating a revolved base feature
 - 2. Using mirroring to create a feature
 - 3. Creating a linear pattern
 - 4. Deleting and restoring an instance of the linear pattern
 - 5. Creating a circular pattern
 - 6. Using an equation to drive the circular pattern
 - I. Creating Fillets and Chamfers
 - 1. Using relations in your sketches
 - 2. Adding draft angles to extruded features

- 3.. Adding face blend, constant radius and variable radius fillets
4. Using mirroring to assure symmetry
- J. Mating Parts in an Assembly
 1. Bringing parts into an assembly
 2. Using assembly mating relationships
 - a. Coincident
 - b. Concentric
 - c. Parallel
 - d. Tangent
 3. Using automatic mating
 4. Testing mating relations
 5. Exploding and collapsing the assembly
- K. Advanced Design Techniques
 1. Analyzing the assembly to determine the best approach
 2. Using layout sketch
 3. Suppressing features to create part configurations
 4. Creating a new part in the context of the assembly
- L. Creating a Sheet Metal Part
 1. Extruding a thin feature
 2. Inserting bends
 3. Rolling back a design
 4. Using the Feature Palette window
 5. Applying a form tool
 6. Creating, positioning and patterning a form feature
- M. Creating a Mold
 1. Linking dimension values
 2. Creating an interim assembly from a design part and a mold base part
 3. Editing in context by inserting a cavity
 4. Deriving component parts
 5. Understanding external references
- N. Creating a Rendering
 1. Rendering effects such as material
 2. Lights
 3. Shadows
 4. Backgrounds

REQUIRED READING:

SolidWorks Corporation. Getting Started with SolidWorks 2001. Concord, MA: SolidWorks Corporation, 2001.

Howell, Steven K. Mechanical DeskTop Parametric Solid and Assembly Model #1. NY: AutoDesk Press, 1998.

SUGGESTED READING:

Murray, David. Inside SolidWorks. Albany, NY: OnWord Press, Thomsons Learning, 1998.

Jankowski, Gregory and David Murray. SolidWorks for AutoCAD Users, Second Edition. Albany, NY: OnWord Press-Thomsons Learning, 2000.

REQUIRED WRITING:

Skills demonstration of competencies identified in Specific Course Objectives.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

Textbook and other resource reading assignments; additional lab time as needed to complete weekly assignments and projects.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

DISTANCE LEARNING:

This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply:

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Completed Assignments	40%	Grading scale:	A = 90% - 100%
Midterm Exam	20%		B = 80% - 89%
Comprehensive Final Exam	20%		C = 70% - 79%
Semester-end Project	20%		D = 60% - 69%

The extent to which a student has met the stated objectives will be determined via:

1. Degree of accuracy on written tests

2. Completeness and accuracy of assigned design/presentation documents
3. Skill and knowledge level demonstrated in the final project

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes X No _____ Number of times course may be taken for credit: 2

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable: 58161 (C) (2) (a)

CONTACT PERSON: Dennis Lutz Ext. 2560

SIGNATURES:

By signing this form, I certify that this course outline of record meets all the minimum requirements for associate degree credit courses as specified in Title 5 Section 55002.

SIGNATURES ON FILE