Number: DRAF G170  
TITLE: Advanced 3D Mechanical Design

ORIGINATOR: Larry Baird  
EFF TERM: Summer 2010

FORMERLY KNOWN AS:  
DATE OF OUTLINE/REVIEW: 05-04-2005

CROSS LISTED COURSE:  
TOP NO: 0953.00

COURSE OUTLINE OF RECORD

SEMESTER UNITS: 3.0  
HRS LEC: 36.0  
HRS LAB: 36.0  
HRS OTHER: 0.0

CONTACT HRS TOTAL: 72.0  
STUDY NON-CONTACT HRS RECOMMENDED: 72.0

CATALOG DESCRIPTION:
This is an advanced solid modeling design course for mechanical drafters, designers, and engineers. Students will use the most current Computer Aided Drafting (CAD) software and computer lab projects to develop solid models, assemblies and drawings and to solve mechanical design problems. ADVISORY: Drafting G110

JUSTIFICATION FOR COURSE:

PREREQUISITES:

COREQUISITES:

ADVISORIES:
- DRAF G110: Basic Engineering Drafting II, Computer Aided Drafting

ASSIGNED DISCIPLINES:
Drafting CADD (computer-aided drafting/design), CAD (computer-aided design), CAD (computer-aided drafting)

MATERIAL FEE: Yes [ ] No [X] Amount: $0.00

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]

OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]

TRANSFER STATUS: CSU Transferable[X] UC/CSU Transferable[ ] Not Transferable[ ]

BASIC SKILLS STATUS: Yes [ ] No [X] LEVELS BELOW TRANSFER: Not Applicable

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: B

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:

REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]
Computer Aided Design and Drafting (two-year)(Certificate of Achievement) Drafting Technology: Computer Aided Design and Drafting (CADD)(Associate in Arts)

GE AND TRANSFER REQUIREMENTS MET:

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:
1. use the concepts of drafting as a graphic language.

2. demonstrate the technical knowledge, attitudes, and habits necessary for advancement to the field of drafting and the attainment of successful employment.

3. demonstrate advanced industry drawing and assembly standards.

4. demonstrate advanced 3D geometric construction as related to industry drafting.

5. demonstrate the ability to think and design in three dimensions.

**COURSE OBJECTIVES:**

1. Utilize the concepts of drafting as a graphic language.

2. Practice the ability to think and design in three dimensions.

3. Acquire and expand technical knowledge, attitudes and habits necessary for advancement in the field of design drafting and the attainment of successful employment.

4. Demonstrate advanced industry drawing and assembly standards.

5. Demonstrate advanced 3D geometric construction as related to industry drafting.

**COURSE CONTENT:**

**LECTURE CONTENT:**

1. Create Parametric Models using:
   a. 2D Sketching tools
   b. Advanced feature tools

2. Use of Work Features:
   a. Using Work Planes
   b. Using a Work Axis

3. User Interface
   a. Visibility of Status Bar, Panel Bar, and Browser
   b. Using a Toolbar
   c. Setting up a Project
   d. Customizing Toolbars

4. Creating Weldments

5. Sheet Metal Tools
   a. Contour Flange
   b. Cut
   c. Flange
   d. Hem
   e. Fold

6. Drawing Management
   a. Views
   b. Symbols
   c. Attribute

7. Drawing Annotations
   a. Dimensions
   b. Center Lines
   c. Balloons
   d. Tags and Tables

8. Drafting Standards
LABORATORY CONTENT:

1. Create Parametric Models using:
   a. 2D Sketching tools
   b. Advanced feature tools

2. Use of Work Features:
   a. Using Work Planes
   b. Using a Work Axis

3. User Interface
   a. Visibility of Status Bar, Panel Bar, and Browser
   b. Using a Toolbar
   c. Setting up a Project
   d. Customizing Toolbars

4. Creating Weldments

5. Sheet Metal Tools
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   b. Center Lines
   c. Balloons
   d. Tags and Tables

8. Drafting Standards

METHODS OF INSTRUCTION:

A. Lecture:
B. Lab:
C. Tutoring – noncredit:
D. Independent Study:

INSTRUCTIONAL TECHNIQUES:

COURSE ASSIGNMENTS:
Reading Assignments

1. Research and compile data from various discipline catalogs and reference books on mechanical and commercial catalogs.

2. Textbook

3. Workbook

Out-of-class Assignments

Writing Assignments
2. Demonstrate skills in creating solid models.
3. Demonstrate skills creating assemblies and understanding constraints.
4. Demonstrate skills in creating I-Parts (linking parts).

METHODS OF STUDENT EVALUATION:
Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Objective Examinations
Report
Projects (ind/group)
Problem Solving Exercises
Oral Presentations
Skills Demonstration

Demonstration of Critical Thinking:
1. Ability to use critical thinking to solve part problems.
2. Ability to use critical thinking in developing project path and folders.
3. Ability to use critical thinking to edit library and catalog parts.

Required Writing, Problem Solving, Skills Demonstration:
2. Demonstrate skills in creating solid models.
3. Demonstrate skills creating assemblies and understanding constraints.
4. Demonstrate skills in creating I-Parts (linking parts).

TEXTS, READINGS, AND RESOURCES:
TextBooks:
1. Myers, Ron. Autodesk Inventor 9, ed. CrWare.com, 2004
2. Giesecke, Frederick E. et al.. Technical Drawing, ed. Prentice Hall PTR, 2002

LIBRARY:
Adequate library resources include:

Comments:

Attachments:
Attached Files