

CAD Course Description

Savannah Christian Prep School

TEXT : Designing for Change and Manufacturing with V5 R13 Methods and Applications
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Design Applications Solutions 2005

COURSE DESCRIPTION: The purpose of this course is to introduce the student to software specifically designed for development and manufacturing of mechanical parts, assemblage into products, proof of the concept and design of manufacturing floor space. The student will learn to use the tools for all of these processes.

METHOD OF EVALUATION: Students will be evaluated through quizzes on toolbar capabilities, part and product development processes, and product assembly. The student will prepare several 2D and 3D drawings to scale to demonstrate their capability to make changes throughout the product design. As a final exam, the student will prepare a individually selected project to demonstrate their total understanding of all phases of design and manufacturing.

COURSE OBJECTIVES:

1. Understand how to initiate a part sketch
2. Understand how to save/recall a part sketch
3. Understand and utilize software icons to create 2D sketches
4. Understand REFERENCE ELEMENT and the procedures and benefits of creating points, lines and reference planes for 2D sketches and location of parts within the workspace.
5. Understand how to measure and change units for a part sketch
6. Understand how to magnify and rotate using the toolbars and mouse
7. Understand how to evaluate a part sketch for accuracy. Understand how to make changes
8. Understand and utilize the shaft and pad icons to develop 3D drawings
9. Become familiar with the tools to modify a 3D drawing to include draft angle, fillets, chamfers, shafts, and holes
10. Understand how to apply material to a part
11. Understand the procedures to create a product from multiple parts
12. Understand the procedures to create a manipulations process (construct and deconstruct) from a completed product

COURSE OUTLINE:

- Week 1 – Intro to software structure and icons, two and three dimensional
- Week 2 – Construct 2D glass design from the sketcher workbench
- Week 3 – Create multiple parts from a Eifel Tower picture utilizing all tools. Construct to size using scaling procedures.
- Week 4 – Design rotor from the workbook and complete exercise 1 in text
- Week 5 – Introduction to pockets, shafts, fillets and holes to modify existing 3D parts
- Week 6 – Return to rotor design. Make modifications to initial draft per handout
- Week 7 – Complete wheel assembly and rotor arm sketches
- Week 8/9 – Complete assembly of all parts
- Week 10 – Identify Final project to include details of selection. Handout of requirement from instructor
- Week 11 – Discuss robotics workbench
- Week 12-15 – Work on final exam project
- Week 16-18 – Project presentations to class
- Week 19 – Final Exam Drawings