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|-----------|-----------------|------------|------------|
| 6/11/2013 | DATE | Technology | DIVISION |
| X | REQUIRED COURSE | | NEW COURSE |
| | ELECTIVE COURSE | X | REVISION |

LAKE LAND COLLEGE Course Information Form

COURSE NUMBER CAD061 **TITLE** 3D Parametric Design

SEM CR HRS 3.0 **LT HRS** 2.0 **LAB HRS** 2.0 **SOE HRS** _____ **ECH** _____

COURSE PCS# _____ (Assigned by Administration)

Prerequisites: CAD060

Catalog Description (40 Word Limit): This course is study of three dimensional parametric design and prototype creation. The student will learn to create a family of part designs using parametric modeling CAD software. Creating design prototypes will also be covered.

Prerequisites: CAD060

| List the Major Course Segments (Units) | Lt | Hrs | Lab Hrs |
|--|----|-----|---------|
| Introduction to Parametric Design | | 2.0 | 2.0 |
| Basic Design Concepts | | 2.0 | 2.0 |
| Design Problems | | 4.0 | 4.0 |
| Sheet Metal Design | | 2.0 | 2.0 |
| Molded Part Design | | 2.0 | 2.0 |
| Designing Assemblies | | 4.0 | 4.0 |
| Parametric Models | | 2.0 | 2.0 |
| Parametric Dimensioning | | 2.0 | 2.0 |
| Creating Prototypes | | 2.0 | 2.0 |
| Computer Numerical Control Machines | | 2.0 | 2.0 |
| Rapid Prototyping Machines | | 2.0 | 2.0 |
| Design Collaboration | | 2.0 | 2.0 |
| Designs and the Internet | | 2.0 | 2.0 |

EVALUATION: Quizzes X Exams X Oral Pres _____ Papers _____
 Lab Work X Projects X Comp Final _____ Other _____

Textbooks:

Title: Autodesk Inventor 2012 Essentials Plus
Author: Daniel T. Banach, Travis Jones & Alan Kalamea
Publisher: Thomson Delmar
Copyright Date: 2012

Title: Parametric Modeling Using Inventor
Author: James P. LoFaso
Publisher: Goodheart Willcox
Copyright Date: 2010

| Major Course Segment | Hours | Learning Outcomes |
|-----------------------------------|-------|---|
| | | The student will be able to: |
| Introduction to Parametric Design | 4.0 | Gain knowledge on parametric CAD programs. |
| Basic Design Concepts | 4.0 | Learn steps in the industrial design process. |
| Design Problems | 4.0 | Define and evaluate design problems. |
| Parametric Dimensioning | 4.0 | Use dimension driven design concepts. |
| Parametric Equations | 4.0 | Use parametric equations to create a group of similar parts. |
| Linked Parameters | 4.0 | Integrate CAD parameters to be driven by a spreadsheet file. |
| Advanced Part Design | 4.0 | Create 3D models using such techniques as sweep, loft and bend. |
| Parametric Models | 4.0 | Use parametric design to create a group of similar models. |
| Designing Assemblies | 4.0 | Fit solid models together into assemblies. |
| Modifying Assemblies | 4.0 | Modify assemblies to fit redesigned parts. |
| Creating Prototypes | 4.0 | Explore various ways of creating prototypes. |
| Sheet Metal Design | 4.0 | Use CAD program to create sheet metal layouts. |
| Rapid Prototyping Machines | 4.0 | Use rapid prototype machines to make prototypes. |
| Welded Assemblies | 4.0 | Create weldment models by assigning welds to assembly joints. |
| Reverse Engineering | 4.0 | Use 3D digitizer and/or laser scanner to bring an existing part into CAD. |
| Molded Part Design | 4.0 | Learn unique parameters of molded part design |
| Design Collaboration | 4.0 | Collaborate as a team to solve design problems |
| Design and the Internet | 4.0 | Use the Internet to collaborate and send and receive design files |

Course Outcomes: At the successful completion of this course, the students will be able to:

- Design and build a product within design parameters.
- Use dimensional parameters to update a part to different sizes.
- Create CAD models of sheet metal parts and assemblies.
- Create CAD models of welded assemblies.
- Produce a CAD model from an existing part using reverse engineering processes.