COURSE INFORMATION FORM

DISCIPLINE
ETEC

COURSE TITLE
Advanced Parametric Modeling and Prototyping, Inventor

CR.HR 3  LECT HR. 2  LAB HR. 2  CLIN/INTERN HR.  ________  CLOCK HR.  ________

CATALOG DESCRIPTION
Advanced parametric modeling using Inventor. Topics include advanced part modeling, sheet metal models and flat patterns, weldments, plastic parts, drawing standards, adaptive parts and assemblies, iParts, iMates and iFeatures.

PREREQUISITES
ETEC 270

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:

1. Identify geometry that would utilize advanced modeling tools.
2. Model complex geometries using three-dimensional sketches, lofts, sweeps and coils.
3. Describe the properties of a sheet metal style.
4. Produce sheet metal models and corresponding flat patterns.
5. Create weldment assemblies using standard welds and welding processes.
6. Identify and describe properties of a project that require standardization in an industry setting.
7. Set up and modify drawing standards including borders, title blocks, bills of materials, and text and dimension styles.
8. Describe part and assembly adaptivity.
9. Create adaptive parts within an existing assembly.
10. Modify and update adaptive parts.
11. Identify parts and manufactured goods that would utilize the iPart, iFeature and iMate.
12. Create and use flexible iParts for use in an assembly.
13. Add iMates to existing parts for use in an assembly.
14. Create standard and sheet metal iFeatures.
15. Identify features unique to plastic part that will utilize specialized plastics tools.
16. Create plastic features using specialized plastics tools.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

<table>
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<tr>
<th>Outcomes</th>
<th>ESO</th>
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PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Demonstrate knowledge of drafting and CADD standards and procedures.
2. Demonstrate appropriate interpersonal skills and written communication related to obtaining and retaining employment in a technical field.
3. Demonstrate appropriate oral, written, and technical/electronic communication skills.
4. Demonstrate skill using mathematical equations to solve problems in the field of engineering technology.
5. Demonstrate an understanding of different types of CADD systems.
6. Demonstrate ability to utilize various CADD systems.
7. Demonstrate ability to troubleshoot various CADD and design files.
8. Demonstrate ability to design mechanical components.
9. Demonstrate a basic understanding of machine systems.
10. Demonstrate a basic understanding of materials and material selection.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Written quizzes (1, 3, 6, 8, 11, 15)
2. Daily projects and assignments (1 - 16)
3. Final project (1 - 16)
4. Final written exam (1, 3, 6, 8, 11, 15)
5. Final modeling exam (1 – 16)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Three-dimensional Sketching
   A. Sketching tools
   B. Combining two-dimensional sketches

II. Advanced Part Modeling
   A. Lofts
   B. Sweeps
   C. Coils

III. Sheet Metal Parts
   A. Sheet metal styles
   B. Sheet metal tools
   C. Flat patterns and sheet metal drawings

IV. Weldments
   A. Weld types
   B. Adding welds to assemblies
   C. Weld symbols and the weldment drawing

V. Drawing Standards
   A. Borders and title blocks
   B. Text styles and dimension styles
   C. Misc. standard symbols and tools

VI. Adaptive parts
   A. Creating parts in an assembly
   B. Changing parts and updating project
   C. Breaking links

VII. iParts
   A. Parameter spreadsheets
   B. Creating iParts
   C. Inserting iParts
   D. Modifying iParts

VIII. iFeatures
   A. Creating (extracting) iFeatures
   B. Placing iFeatures
C. Sheet metal iFeatures (punch tools)

*IX. iMates
A. Creating iMates
B. Placing parts in an assembly using iMates

*X. Plastic Parts
A. Vents
B. Snaps
C. Bosses and ribs