COURSE INFORMATION FORM

DISCIPLINE  Engineering Technology
COURSE TITLE  Introduction to Machine Design

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

CATALOG DESCRIPTION
An introduction to machine design with an emphasis on current materials and standard machine parts. Topics include advanced dimensioning, basic tolerancing, gearing, threads and thread notes, welding and weld symbols, bearings, adjustment and the drawing set. Course includes a comprehensive design project with drawing set.

PREREQUISITES
ETEC 152

EXPECTED STUDENT OUTCOMES IN THE COURSE
Upon completion of this course, the student will be able to:
1. Describe dimensioning rules for mating parts.
2. Apply dimensions to mating mechanical objects.
3. Define basic tolerancing terminology.
4. Identify tolerancing symbols.
5. Calculate tolerance values.
6. Create tolerancing dimension styles.
7. Create dual dimension styles.
8. Identify common fastening methods.
9. Describe criteria for selecting a fastening method.
10. Describe common thread types.
11. Identify parts of a thread.
12. Calculate grip and fastener length.
13. Design a bolted connection.
14. Translate a thread note.
15. Create drawings using common fastener blocks.
16. Describe multiple gear uses.
17. Identify gear features.
18. Identify common gear types.
20. Calculate velocity and direction of gear trains.
22. Translate weld symbols.
24. Identify drawing types in a mechanical drawing set.
CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes will be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

Daily projects/assignments (5-7, 12-15, 19, 20, 22)
Daily quizzes (1-23)
Written Exams (1-4, 8-11, 16-18, 21, 23)
Drawing/performance exams (5-7, 12-15, 19, 20, 22)
Research paper (23)
Final Project (1-24)

PROGRAM-LEVEL OUTCOMES ADDRESSED

General Education Outcomes
Specify which general education outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes and assessment measures.

Occupational Program Outcomes
Specify which occupational program outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes to assessment measures.
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. Dimensioning Review
   A. Dimensioning terminology
   B. Dimensioning rules
   C. Dimensioning non-mating parts

II. Advanced Dimensioning
   A. Dimensioning mating parts
   B. Scaled up details
   C. Dual dimensioning

III. Tolerancing
    A. Tolerancing terminology
    B. Tolerancing types
    C. Tolerancing calculations
    D. Tolerance dimension styles

IV. Fastening and Threads
    A. Fastening methods
    B. Determining fastening methods
    C. Thread uses
    D. Thread types
    E. Thread notes
    F. Thread length calculations

V. Gearing
   A. Gear uses
   B. Gear types
   C. Gear calculations
   D. Gear representation
   E. Gear train calculations

VI. Welding
A. Welding processes
B. Weld symbols

VII. Manufacturing Processes
A. Grinding
B. Holes
C. Milling
D. Forging
E. Casting
F. CNC