Modesto Junior College
Course Outline of Record

INTEC 376

I. OVERVIEW
The following information will appear in the 2011 - 2012 catalog

INTEC 376  Mechanical Blueprint Reading  2 Units
Also offered as: ENGTC - 376: Mechanical Blueprint Reading, MFGA - 376: Mechanical Blueprint Reading
Recommended for Success: Before enrolling in this course, students are strongly advised to have a basic working knowledge of personal computers.

Reading and interpreting basic two-dimensional mechanical drawings and sketches. Terminology, symbols, notes, and practices for manufacturing and fabrication trades.

Field trips might be required. (A-F or P/NP - Student choice) Lecture /Lab

II. LEARNING CONTEXT
Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. COURSE CONTENT

1. Required Content:

A. Standard Symbols
   1. Line types
   2. Center marks
   3. Dimensioning
   4. Sectioning
B. Mechanical Drawings
   1. Purpose
   2. Construction methods
   3. Samples
C. Orthographic Projection
   1. Definition of 1st and 3rd angle projections
   2. Advantages
   3. Construction
D. Dimensioning
   1. Purpose
   2. Parts requiring dimensioning
   3. Linear dimensions
   4. Dimensions for curved surfaces
E. Tolerancing
   1. Definitions
   2. Types
   3. Purpose
   4. Fits
F. Geometric Dimensioning and Tolerancing
   1. Purpose
   2. Parts requiring GDT dimensioning
   3. Symbols and interpretation
G. Assembly Drawings
   1. Purpose/definition of assembly drawings
   2. Notation needed
H. Manufacturing Processes Specifications
   1. Processes
   2. Specifications
2. **Required Lab Content:**

   The lab portion of the course will require that the student review the details of various styles of technical mechanical drawings and determine typical manufacturing requirements such as:

   a. Part size and rough material requirements.
   b. Material specifications.
   c. Dimensional tolerances of single elements as well as stacked tolerance variations and allowances.
   d. Dimensional limits of size.
   e. Class of fit with mating parts.
   f. Geometric Dimensional Tolerancing (GDT) requirements per International ASME Y14.5M-2004 standards.
   g. Surface finish specification.

B. **ENROLLMENT RESTRICTIONS**

   1. **Advisories**

      Before enrolling in this course, students are strongly advised to have a basic working knowledge of personal computers.

C. **HOURS AND UNITS**

   ![Hours and Units Table]

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<tr>
<th>INST METHOD</th>
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<tr>
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D. **METHODS OF INSTRUCTION (TYPICAL)**

   Instructors of the course might conduct the course using the following method:

   1. Lecture
   2. Video Tapes
   3. Lab Demonstration
   4. Online exercises

E. **ASSIGNMENTS (TYPICAL)**

   1. **EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS**

      *Time spent on coursework in addition to hours of instruction (lecture hours)*

      Typical Weekly Assignments:

      1. Do the exercises in the assigned chapters and analyze the blueprints at the end of the unit.
      2. Complete the accompanying self-test for the week using Blackboard.
2. **EVIDENCE OF CRITICAL THINKING**  
*Assignments require the appropriate level of critical thinking*

Using necessary reference materials, the student will determine the dimensional limits that are appropriate for a specified class of fit on a print.

The student will determine the limits of extreme error when a "stacked tolerance" method of dimensioning is utilized.

The student will calculate material stock requirements for any given drawing.

F. **TEXTS AND OTHER READINGS (TYPICAL)**


3. Other: Handouts as supplied

III. **DESIRRED LEARNING**

A. **COURSE GOAL**  
*As a result of satisfactory completion of this course, the student should be prepared to:*

read and interpret basic two-dimensional mechanical drawings and sketches. The terminology, symbols, notes, and other practices commonly found on technical mechanical drawings used in manufacturing trades will be addressed.

B. **STUDENT LEARNING GOALS**  
*Mastery of the following learning goals will enable the student to achieve the overall course goal.*

1. **Required Learning Goals**  
*Upon satisfactory completion of this course, the student will be able to:*

   a. Describe the procedures and guidelines of graphical representations
   
   b. Express the concepts via interpretations of two-dimensional projections of mechanical drawings: points, lines, planes, and surfaces
   
   c. Illustrate solutions by evaluation of interrelated two-dimensional projections with orthogonal reference planes
   
   d. Calculate solutions using stated dimensions/references
   
   e. Reconstruct the solution using alternative sequences
   
   f. Justify the procedural selection and sequence of interpretations to ensure validity of the solution
   
   g. Identify the relationship and importance of well-defined technical drawings in the design and manufacture of a complex product.

2. **Lab Learning Goals**  
*Upon satisfactory completion of the lab portion of this course, the student will be able to:*

   a. read and interpret basic two-dimensional mechanical drawings and sketches.
   
   b. determine the size and accompanying tolerance of all features on a standard third angle orthographic projection drawing.
c. state the meaning of all terms, symbols, notes, and other commonly found details found on technical mechanical drawings used in manufacturing trades.

IV. METHODS OF ASSESSMENT (TYPICAL)

A. FORMATIVE ASSESSMENT

1. Evaluation of assigned homework problems requiring interpretation of drawings and analysis
2. Instructor general observation of student's level of class participation and progress
3. Periodic quizzes
4. Mid-term exam requiring analysis of problems and selection of appropriate techniques

B. SUMMATIVE ASSESSMENT

1. Mid-term exam requiring analysis of problems
2. Comprehensive evaluative final examination