COURSE INFORMATION FORM

DISCIPLINE Engineering Technology
COURSE TITLE Engineering Graphics & CADD I

CR.HR 5 LECT HR 3 LAB HR 4 CLIN/INTERN HR _______ CLOCK HR _______

CATALOG DESCRIPTION
Introduction to engineering communications and basic computer aided drafting/design (CADD). Emphasis on technical sketching, orthographic projection, drawing layout, drafting and CADD standards and conventions, dimensioning, sectioning, annotation and basic design principles. Foundation for computer aided drafting/design including file management, basic drawing commands, basic editing commands, layering, blocks and wblocks, dimensioning, polylines, hatching and plotting.

PREREQUISITES
Math 40/40L
**Expected Student Outcomes in the Course:**

Upon completion of this course, the student will be able to:

1. Identify careers in engineering technology and computer aided design.
2. Demonstrate attributes of a successful engineering technician or designer.
3. Calculate basic information from blueprints.
4. Identify and employ manual drawing instruments.
5. Solve geometric problems using manual drawing instruments.
6. Apply U.S. mechanical and architectural scales.
8. Translate three-dimensional drawings into orthographic drawings.
9. Translate orthographic drawings into three-dimension drawings.
10. Solve spatial and geometric problems related to orthographic projection.
11. Construct various sectional views and hatch patterns.
12. Construct various auxiliary views.
13. Classify dimension types and methods.
14. Describe basic dimensioning rules.
15. Apply dimensions to orthographic drawings.
16. Identify symbols used on engineering drawings.
17. Apply proper annotation and symbols to engineering drawings.
18. Manage multiple CADD files.
19. Construct and edit basic geometry using CADD software.
20. Construct and edit complex geometry using CADD software.
21. Create orthographic drawings using CADD software.
22. Create section views and hatch patterns with CADD software.
23. Create auxiliary views using CADD software.
24. Apply dimensions and annotations using CADD software.
25. Produce standardized files using CADD software.
26. Produce saved symbols using CADD software.
27. Solve geometric problems using CADD.
28. Employ an established set of CADD standards.
29. Employ standard processes to draw and plot a CADD drawing to a standard scale.
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 and assignments (3, 5,6, 8-12, 15, 18-29)
Daily quizzes (1-32)
Written exams (1,2,7,14,16)
Drawing/performance exams (3, 5,6, 8-12, 15, 18-29)
Portfolio (3, 5,6, 8-12, 15, 18-29)

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. Introduction to Engineering Graphics
   A. Definitions
   B. Organizations
   C. Careers and Job Descriptions
   D. Relationships to Other Fields
   E. Job Outlook

II. Introduction to Computer Aided Drafting and Design
   A. Coordinate Systems
   B. User Interface
   C. Basic Drawing Aids
   D. Basic Zooming and Panning Commands
   E. Basic Drawing Commands

III. Instrument Drawing Tools and Technical Sketching
   A. Instrument Identification and Use
   B. Hand Drawing Techniques

IV. Basic CADD Drawing Tools and Drawing Aids
   A. Editing Objects
   B. Creating Circles and Curves
   C. Object Snaps
   D. Direct Distance Entry and Tracking

V. Orthographic Projection
   A. Alphabet of Lines
   B. Six Orthographic Views
   C. Primary Orthographic Views
   D. Line Precedence

VI. Geometric Constructions and Scale Use
   A. Bisecting and Dividing Objects
   B. Transferring Measurements
   C. U.S. Architectural/Mechanical Scale
VII. Intermediate CADD Tools
   A. Three Step Commands
   B. Query Commands
   C. Complex Lines
   D. CADD Standards

VIII. Line and Plane Identification
   A. Normal Planes and Lines
   B. Incline Planes and Lines
   C. Oblique Planes and Lines

IX. Section Views
   A. Section View Identification
   B. Section View Creation
   C. Hatch Patterns (Section Lines)
   D. Sectioning with CADD

X. Auxiliary Views
   A. Auxiliary View Requirements
   B. Auxiliary View Standards
   C. Auxiliary View Construction
   D. Managing the User Coordinate System
   E. Creating Auxiliary Views with CADD

XI. Dimensioning
   A. Dimension Parts and Definitions
   B. Dimensioning Basic Geometry
   C. Dimensioning Standards and Rules
   D. Dimensioning Processes
   E. Dimensioning with CADD
   F. Dimension Styles with CADD

XII. CADD Symbols
    A. Blocks
    B. Wblocks

XIII. Drawing and Plotting to a Standard Scale
     A. 17 Step Process
     B. Employing CADD Standards

XIV. View Conventions
     A. Broken Views
     B. Removed Views
     C. Selective Lines
     D. Revolution Conventions
XV. CADD Unit Types
   A. Mechanical Units
   B. Architectural Units
   C. Angular Units

XVI. Isometric Drawing and Projections
   A. Definitions and Axes
   B. Producing Isometrics with CADD