PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

X Transfer Course X A.A. Degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: ENGR 125 – Engineering Graphics

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 80

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: None

COREQUISITE: None

RECOMMENDED PREPARATION: None

SCOPE OF COURSE:
Fundamental principles of orthogonal projection and their application to the solution of three-dimensional problems arising in the various branches of engineering, free-hand and instrumental working drawings, and graphic computations.

SPECIFIC COURSE OBJECTIVES:
The successful student will be able to:
1. Utilize the appropriate symbols, formats, media and geometric applications in engineering drawings, and demonstrate the use of these in producing such drawings with an 80% correctness and accuracy.

2. Demonstrate basic skills in the use of drafting equipment, instruments and computer applications by producing engineering drawings that meet minimum ANSE, DOD, SI and other graphic standards.

3. Compare and analyze multi-view orthographic projection, auxiliary view projection, sectional views, axonometric projection, and oblique projection, and produce these with a variety of applications to an 80% correctness and accuracy.

4. Apply principles of measurement and methods of basic dimensioning, basic geometric tolerancing, mating part and fit dimensioning and score an 80% correct or above on an objective evaluative examination.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:
I. Introduction - Drawing Standards
   A. History of Engineering Drawing
      1. Prehistoric Drawing
      2. Prehistoric to 18th Century Developments
      3. 18th Century Developments
      4. Future Trends

II. Drawing Instruments and Materials
    A. Traditional work space components
        1. Instrument Techniques
    B. CAD Work Stations
        1. CAD Techniques
    C. Drawing Media/Formats
    D. Blueprinting and Drawing Reproduction
III. Drawing annotation
    A. Lettering Styles, Fonts
    B. Lettering Standards
    C. Lettering on Drawings
    D. Lettering Methods
IV. Construction Geometry
    A. Plane Geometry Figure Construction
    B. Tangent Constructions
    C. Conic Construction
V. Multiview Projection Theory
    A. First Angle Projection
    B. Third Angle Projection
    C. Detail Drawing Applications
VI. Auxiliary View Projection
    A. Primary Auxiliary Views
    B. Secondary Auxiliary Views
VII. Descriptive Geometry
    A. Point, Line, Plane Definitions
    B. True Lengths of Lines
    C. True Size and Shape of Planes
    D. Revolutions
VIII. Sectional Views
    A. Sectioning Symbols
    B. Types of Sectional Views
IX. Dimensioning and Tolerancing
    A. Standard Dimensioning Practices
        1. Traditional Format
        2. Datum Dimensioning
        3. Arrowless Dimensioning
    B. Tolerancing
        1. Dimensioning Precision
        2. Mating Part Dimensioning
        3. Fit Dimensioning
    C. Geometric Tolerancing
    D. True Position Dimensioning
X. Pictorial Drawing
    A. Axonometric Drawing
    B. Oblique Projection
    C. Perspective
XI. Computer Aided Design
    A. Hardware
    B. Software
    C. Techniques and Applications
XII. Engineering Drawings
    A. The Design Process
    B. Drawing Problem Analysis
    C. Drawing Problem Solving
    D. Engineering Area Applications
        1. Mechanical
        2. Structural
        3. Civil
        4. Aeronautical
        5. Environmental
        6. Others

REQUIRED READING:
College-level materials from various sources, duplicated and provided by the instructor.

SUGGESTED READING:
Giesecke, Frederick E., et al. Engineering Graphics. 7th edition. Upper Saddle River: Prentice Hall, 2000.

REQUIRED WRITING:
1. A procedural outline of developing working drawings.
2. An analysis of an engineering design problem.

OUTSIDE ASSIGNMENTS:
Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

Outside assignments include library and industrial research on a variety of engineering assignments, studying lecture notes and reading instructor provided materials.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:
_X_ lecture
_X_ laboratory
_____ lecture-laboratory combination
_____ directed study

DISTANCE LEARNING:
This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.
Yes ____ No_X_

If yes, check all that apply:

_____ Television Course (Video one-way, e.g. ITV, video cassette, etc.)
_____ Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
_____ Two-Way Video Conferencing (Two-way interactive video and audio)
_____ One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
_____ Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

60% Weekly or biweekly assigned work and projects will be evaluated based on previously presented material and criteria.

20% Two midterm examinations administered during the 6th and 12th weeks reviewing reading assignments.

20% A written and practical comprehensive final exam.

The total grade will be determined from the sum of the above percentages and letter grades will be established according to the following breaks:

A = 90% - 100% B = 80% - 89% C = 70% - 79% D = 65% - 69% F = 64% and below

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes ____ No X Number of times course may be taken for credit: 1

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

CONTACT PERSON: Dennis Lutz

SIGNATURE ON FILE