

**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:** DT 100 Basic Mechanical Drafting

**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:**

Fundamentals of mechanical drawing including theory, lettering, sketching, geometric constructions, orthographic projection, sectioning, developments, dimensioning, and pictorial and working drawings

**SPECIFIC COURSE OBJECTIVES:**

Successful students will:

1. Produce lettering, symbols, and media for mechanical drawings.
2. Use basic orthographic projection methods to produce simple mechanical drawings.
3. Identify variety of applications of mechanical drawing to the manufacturing industry by reviewing appropriate readings.

**CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

- I. Introduction
  - A. Importance
  - B. Materials
  - C. Methods
  - D. Estimating Proportions
- II. Lettering
  - A. ANSI Standards
  - B. Uniformity and Technique
  - C. Lettering Devices
- III. Use of Drafting Instruments
  - A. Drafting Machine
  - B. Pencil Grades and Types
  - C. Scales

1. Architects
  2. Engineers
  3. Mechanical Draftsman
  - D. Compass and Dividers
  - E. French Curves
- IV. Geometry
- A. Geometric Shapes
    1. Circles and their parts
    2. Triangles
    3. Parallelograms
    4. Regular polygons
  - B. Geometric Constructions
    1. Division of a line
    2. Enlarging/reducing
    3. Bisect of A:
      - a. Line
      - b. Angle
    4. Triangle Geometry
      - a. Right triangle
      - b. Isosceles triangle
      - c. Equilateral triangle
      - d. Copy a triangle to a new location
      - e. Triangle from given sides
    5. Construction of regular polygons
      - a. Square
      - b. Pentagon
      - c. Hexagon
      - d. Octagon
  - C. Location of the Center of a Circle
  - D. Tangency Construction, Arc Tangent
    1. To two straight lines, inside and outside
    2. To one circle and one straight line
    3. To two circles, inside and outside
  - E. Ellipse Construction
    1. Trammel method
    2. Concentric-circle method
    3. String and pin method
    4. Approximate ellipse method
- V. Orthographic Projection (Views of objects)
- A. Glass Box Theory
  - B. Primary Dimensions
    1. Height
    2. Width
    3. Depth
  - C. Lines in Orthographic Projection
  - D. Planes in Orthographic Projection
  - E. Curved Surfaces in Orthographic Projection
- VI. Technique Development with Application
- A. Alphabet of Lines
  - B. Lines that Coincide
  - C. Hidden Line Technique
- VII. Drawing Reproduction Processes
- VIII. Basic Dimensioning
- A. Object Description
  - B. Size and Location Dimensions
  - C. Techniques of Dimensioning
  - D. Mating Dimensions
  - E. Notes in Dimensioning
  - F. Tolerance Dimensions
- IX. Sectional View Dimensioning
- A. Full Sections
  - B. Half Sections

- C. Broken Out Sections
- D. Revolved and Removed Sections
- E. Offset Sections
- F. Special Conditions Of:
  - 1. Ribs
  - 2. Spokes
  - 3. Webs
- G. Conventional Breaks
- X. Auxiliary View Drawings
  - A. True Length of an Inclined Line
  - B. True Size and Shape of an Inclined Plane
  - C. True Angle Between Two Inclined Planes
- XI. Pictorial Drawings
  - A. Isometric
  - B. Oblique
    - 1. Cavalier
    - 2. Cabinet

**REQUIRED READING:**

Spencer, Henry C., and John Thomas Dygdon. Basic Technical Drawing. New York: MacMillan Publishing Company, 1986.

**SUGGESTED READING:**

ANSI Drafting Manual Y14. Irvine, CA: Globe, 1990.

**REQUIRED WRITING:**

Journal log of text readings of not less than five pages. Demonstration of sketching, drawing, and dimensioning skill exercises as assigned by the instructor.

**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.**

Textbook and other resource reading assignments; additional lab time as needed to complete weekly assignments and projects.

**INSTRUCTIONAL METHODOLOGY:**

**Check all that apply:**

- lecture
- 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

**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 assignments are finished, submitted and evaluated according to previously presented information and criteria.
- 25% Two examinations on approximately the sixth and twelfth weeks to test for general knowledge of material studied in that interim.
- 15% A comprehensive final examination including written and performance skills.

**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: 58161 (C) (2) (a)

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**SIGNATURES ON FILE**