

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 111 Technical Drafting II with AutoCAD

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 96

BASIC SKILLS REQUIREMENTS:

Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: DT 110, DT 125/RDT 125

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

The study of Advanced Drafting practices using AutoCAD software. Basic studies will lead into pictorial drafting, advanced dimensioning, and tolerancing, descriptive geometry, revolutions, and an introduction to geometric dimensioning tolerancing. Working/shop drawings in topography, developments, cabinet/millwork, structural steel, and welding will be performed.

SPECIFIC COURSE OBJECTIVES:

The successful student will:

1. evaluate and apply multi-view projection, sectional and auxiliary views and apply them to isometric projection and three dimensional solid modeling.
2. analyze and apply descriptive geometry and revolutions to technical drawing applications.
3. identify methods of manufacture.
4. analyze and employ symbols and techniques of geometric dimensioning and tolerancing.
5. compare and contrast manufacture/design in working/shop drawings in topography, developments, cabinet millwork, structural steel, and welding drafting.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Isometric Projection and Drawing
 - A. Isometric Projections
 - 1. By auxiliary view
 - 2. By revolution
 - 3. Isometric projection scale from full side projection.
 - B. Isometric Drawing
 - 1. Isometric axis angles
 - 2. Isometric axis linear measurements
 - 3. Axis orientation
 - 4. Procedure in making an isometric drawing
 - 5. Inclined surfaces in isometric
 - 6. Handling angles in isometric
 - 7. Oblique surfaces in isometric
 - 8. Hidden lines in isometric
 - 9. Center lines in isometric
 - 10. Non-isometric lines
 - 11. Skeletal and box layouts in isometric
 - 12. Curves in isometric
 - 13. Circles in isometric (ellipses)
 - 14. Arcs and radii in isometric
 - 15. The isometric sphere
 - 16. Isometric sectioning
 - 17. Isometric dimensioning
 - 18. Isometric diagrams
 - 19. Exploded isometric assemblies
- II. Oblique Projection and Drawing
 - A. Oblique Projection Theory and Development
 - B. Oblique Drawing
 - 1. Frontal plane reference (true size and shape)
 - 2. Receding line angles
 - 3. Receding line scales
 - a. Half size-cabinet
 - b. Full size-cavalier
 - 4. Choice of view position – orientation
 - 5. Steps in making an oblique drawing
 - C. Plan Oblique Drawings
 - D. Circles not in Frontal Planes (ellipses)
 - E. Angles in Oblique Drawings
 - F. Oblique Sections
- III. Introductory Descriptive Geometry
 - A. Points in Multi-View Projection
 - B. Lines in Multi-View Projection
 - C. Planes in Multi-View Projection
 - D. Points and Lines in Planes
 - E. True Lengths of Lines
 - 1. By analysis within multi-view projection
 - 2. By true length diagram
 - 3. By auxiliary views
 - 4. By revolution

- IV. Topics in Descriptive Geometry
 - A. Quick Review of Basic Descriptive Geometry
 - B. Parallelism of Lines
 - 1. Viewed in the true length
 - 2. Determine true distance apart
 - C. Parallel Planes
 - 1. Determined by parallel edge views
 - 2. Determined by parallel lines
 - D. Lines Parallel to Planes
 - E. Planes Parallel to Lines
 - F. Perpendicular Conditions
 - 1. Two perpendicular lines
 - a. Intersecting
 - b. Non-intersecting
 - 2. Plan Perpendicular to Line
 - a. Given view method
 - b. Auxiliary view method
 - 3. Line perpendicular to – method
 - 4. Perpendicular planes
 - 5. Line perpendicular to two lines
 - a. Shortest connector
 - b. Shortest horizontal connector
 - c. Shortest grade and slope connector
 - G. The True Size and Shape of Planes
 - 1. Auxiliary view methods
 - a. Inclined plane – primary projection
 - b. Oblique plane – secondary projection
 - 2. Revolution method
 - a. Inclined plane – in principle view
 - b. Oblique plane – in primary auxiliary views
 - c. Counter revolution
- V. Slope, Grade, and Bearings
 - A. Slope Definitions
 - 1. Slope of a line – horizontal reference
 - a. Within existing principal views – includes line
 - b. Via auxiliary view – oblique line
 - c. Via revolution – oblique line
 - d. Positive slope
 - e. Negative slope
 - 2. Slope of a plane
 - B. Grade Definition
 - 1. Grade of a line – horizontal reference
 - 2. Grade expressed in percent
 - 3. Determining grade
 - a. Within existing principle views
 - b. Via auxiliary view – oblique view
 - c. Via revolution – oblique line
 - C. Bearing – Definition
 - 1. Magnetic north bearing system
 - 2. Grid Azimuth bearing
- VI. Geometric Tolerancing and Position Dimensioning

- A. Symbols
 - 1. Basic dimensioning
 - 2. Datum symbols
 - 3. Geometric characteristic symbols
 - 4. Feature control frames
 - B. Positional Tolerances and Applications
 - C. Form Tolerances and Applications
 - D. Orientation Tolerances and Applications
 - E. Location Tolerances and Applications
 - F. Runout Tolerances and Applications
- VII. Revolutions
- A. Determine purpose of revolution
 - B. Determine axis of revolution
 - C. Determine angle of revolution
 - D. Revolving to find true length
 - E. Revolving to find point view of line
 - F. Revolving to find grade or slope
- VIII. Practical Experience in Producing Shop Drawings in the Following Area
- A. Developments
 - B. Topography
 - C. Structural Steel/Welding
 - D. Cabinet/Millwork

REQUIRED READING:

Giesecke, F. E. Engineering Graphics. 6th edition. New Jersey: Prentice Hall, 1998.

SUGGESTED READING:

ANSI Drafting Manual Y14. 1994.

Pare, E. G. Descriptive Geometry. New York: MacMillan Publishing Company, 1980.

REQUIRED WRITING:

Procedural analysis of drawing layouts, descriptive geometry procedure analysis, five manufacturing methods outlines. Notebook to consist of not less than 5 pages.

Demonstration of technical drafting skills is more appropriate.

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.

Text readings and review of class notes.

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 or biweekly assignments are submitted and evaluated based on previously provided information and criteria.
- 20% One examination on approximately the 8th week to test for general knowledge of material studied in the interim.
- 20% A comprehensive final examination

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

Yes No Number of times course may be taken for credit: _____

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, ext: 2560

SIGNATURES ON FILE: