

Lecture Contact Hours: 32-36; Outside-of-Class Hours: 64-72;
Laboratory Contact Hours: 48-54; Outside-of-Class Hours: 0;
Total Student Learning Hours: 144-162

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

Surveying 127 – Survey Drafting Technology

2 hours lecture, 2 units
3 hours laboratory, 1 unit
Total units: 3 units

Catalog Description

Professional Civil Engineering/Surveyor's office method drafting course that applies the basic skills and techniques acquired in CIVIL 3D. Land surveying, land development procedures, legal descriptions, topographical analysis, earthworks, geographic control and subdivision processes will be covered. *Also listed as CADD 127. Not open to students with credit in CADD 127.*

Prerequisite

"C" grade or higher or "Pass" in CADD 119 or ENGR 119 or equivalent

Entrance Skills

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Describe and use basic AutoCAD terms, concepts and techniques.
- 2) Apply basic drawing commands.
- 3) Construct basic 2D drawings with text and dimensions.
- 4) Perform basic editing commands.
- 5) Verify the integrity of drawing data using various inquiry commands.
- 6) Plot and print drawings in different scale configurations.

Course Content

- 1) Layout drawings and varied non-process plans
- 2) Survey relationships
- 3) Sections, details, standards and conventions
- 4) Mapping
- 5) Topographical maps and aerial surveys
- 6) Horizontal control plans
- 7) Grading plans and earthwork calculation
- 8) Utility plans
- 9) Subdivision mapping and approval processes
- 10) Plan/profile, grading plans, plats
- 11) Inking of plans, drawings and maps

Course Objectives

Students will be able to:

- 1) Describe the processes, plans, purposes, and method of preparation involved in land development as applied in the civil engineering field.
- 2) Demonstrate civil engineering drawing skills through the preparation of varied working drawings for legal and construction permit purposes.
- 3) Utilize state and local government standards and practices in project applications and drawing preparation.
- 4) Complete pre-planning drawings prior to field work according to the established deadlines.

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Observation and comparison of individual drawings which measure students' ability to apply mechanical and CAD (Computer-Aided Drafting) tools for survey applications.
- 2) Performance tests that measure students' ability to describe and apply fundamental drafting concepts, terminology, and techniques used in surveying.
- 3) Final review of student portfolio which measures students' ability to apply CAD concepts and techniques in surveying.

Special Materials Required of Student

Electronic storage media (USB flash drive, 2GB)

Minimum Instructional Facilities

CAD computer lab

Method of Instruction

- 1) Lecture and lab demonstration
- 2) Lab assignments
- 3) Hand-out materials, projects

Out-of-Class Assignments

- 1) Weekly mini drawing project (at least five projects)
- 2) Monthly group drawing project (two projects)
- 3) Final project

Texts and References

- 1) Required(representative examples):
 - a. Barry K. Kavanagh. Surveying: Principles and Applications. Published by: Prentice Hall, 2024,.
 - b. MAP processing manual, prepared by Department of Public Works, County of San Diego, 2004.
- 2) Supplemental: None

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Understand basic legal descriptions.
- 2) Layout topographical maps.
- 3) Create horizontal control plans.
- 4) Create grading plans.
- 5) Draw on CAD utility plans.
- 6) Create utility plans/profiles.
- 7) Analyze earthworks and geographic controls.
- 8) Create subdivision CAD.
- 9) Create profiles on CAD.
- 10) Create a working topographical map on CAD.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Using CAD technology, produce working drawings of topographical maps, utility profiles and grading plans, for analysis of earthworks and geographical control, and for creating subdivisions.
- 2) Prepare documents including legal description and boundary of the land with regard to Civil Engineering and government (local/state) standards.