SUR-SURVEYING (SUR)

SUR 143. Civil Drafting Fundamentals
3 Credits (2+2P)
Introduction to drafting in the field of Civil Engineering. Drawings, projects, and terminologies related to topographic, contour drawings, plan and profiles, and street/highway layout. Restricted to Community Colleges only. Taught with E T 143 and DRFT 143.
Prerequisite: DRFT 109.
Learning Outcomes
1. Use appropriate drafting/technical terminology.
2. Identify of the different types of Civil Engineering work drawing plan sets.
3. Understanding and the use of the terminologies used in the industry.
4. Use AutoCAD Civil 3D.
5. Enter appropriate data into AutoCAD software in order to retrieve necessary outcomes.
6. Plot/Print different types of civil engineering working plans.
7. Read, interpret and understand engineering drawings.
8. Define and understand the different types of engineering drawings.

SUR 222. Introduction to Geomatics
3 Credits (2+3P)
Theory and practice of geomatics as applied to plane surveying in the areas of linear measurements, angle measurements, area determination, differential and trigonometric leveling, and topographic mapping.
Prerequisite: A grade of C- or better in MATH 1250G or higher.
Learning Outcomes
1. Perform basic distance and angular measurements.
2. Evaluate the quality of collected measurements.
3. Utilize a measuring tape.
4. Determine a plumb line.
5. Set up a level line.
6. Set up a tripod and total station.
7. Utilize a plumb rod.
8. Understand the role of surveying in civil engineering and construction-related fields.
9. Understand new technologies is surveying.

SUR 285. Precise Digital Mapping
3 Credits (3)
Photogrammetric Mapping Principles, digital sensor including optical cameras, terrestrial, surveying control, IMU & GPS integration, stereo photography, analytical triangulation, orthorectification, precision and accuracy of measurement systems, sUAS (Small Unmanned Aerial Vehicles) applications to geospatial data collection and practical applications project fight/pre planning, sensor platform, FAA regulations and restrictions, introduction to laser scanning systems. Restricted to Las Cruces campus only.
Learning Outcomes
1. Understand the basic principles of photogrammetry.
2. Perform photo measurements and computation.
3. Be able to design aerial surveying projects.
4. Define the basic principles of analytical photogrammetry.
5. Explain the different steps in aerial triangulation.

SUR 292. Legal Principles and Boundary Law I
3 Credits (3)
Fundamentals of real property law; principles of land description; survey evidence and procedure in boundary determination, order of importance of conflicting elements; liability, ethical and professional principles in boundary surveying; NM professional practice act; NM Minimum Standards, contemporary issues in boundary determination.
Prerequisite: C- or better in SUR 222.
Learning Outcomes
1. Demonstrate an understanding of surveying boundary laws.
2. Describe procedures for locating real property boundaries.
3. Read, interpret, and write legal descriptions of real property.
4. Perform legal research of case and statutory law.
5. Communicate research findings through written and oral presentations.