

Surveying

SU 1500 - Data Collection Systems

Familiarization to modern data collectors used in conjunction with total stations, GPS receivers, and digital levels. Transferring and displaying survey data within various systems. To include job creation, file types, feature codes, data entry, and COGO routines.

Credits: 1.0

Lec-Rec-Lab: (0-0-2)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Major(s): Surveying Engineering

SU 2000 - Intro to Surveying

Surveying topics will include distance measurements, leveling, angles, directions, traversing, horizontal and vertical curves, percent grade, and coordinate geometry. GIS topics will include sources of GIS data, spatial data models, GIS data structures, GIS topology, as well as query and feature selection in GIS.

Credits: 2.0

Lec-Rec-Lab: (0-1-2)

Semesters Offered: Fall, Spring

SU 2150 - Fundamentals of Surveying

Introduction to surveying principles as applied to the measurement of distances, directions, and elevations. Topics include taping, leveling, traversing, topographic surveys, construction surveys, U.S. public land surveys, the use of modern instrumentation, and computer applications.

Credits: 4.0

Lec-Rec-Lab: (0-2-6)

Semesters Offered: Fall

SU 2220 - Route and Construction Surveying

Study of the geometry and field stake-out techniques of circular curves, spiral curves, compound curves, reverse curves, equal-tangent vertical curves, and unequal-tangent vertical curves. Other topics include horizontal and vertical alignment design, earthwork quantities and mass diagrams.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Pre-Requisite(s): SU 2150

SU 2260 - Survey Computations

Introduction to the PLSS system and cadastral management software. Utilizing Mathcad software to perform survey related computations for coordinate forms, intersections, resections, conformal transformations and Least Squares adjustment.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Spring

Pre-Requisite(s): SU 2150

SU 3110 - Surveying Field Practice

Survey projects from field to finish using current surveying equipment and software. Basic statutes and ethics governing the practice of surveying. Projects cover level networks, horizontal control, design surveys, construction layout, section subdivision, map and report preparation.

Credits: 4.0

Lec-Rec-Lab: (0-2-6)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 2260 and SU 2220

SU 3180 - Boundary Surveying Principles

Interpretation of property descriptions used to establish land boundaries. Resolving conflicts in boundary descriptions as well as conflicts in evidence. Review doctrines pertaining to transferring title, the role of the surveyor in issuing opinions on boundary location in boundary disputes.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 2260

SU 3250 - Geodetic Adjustments Theory

Presents errors in surveying measurements and their effect on computed values. Discusses analysis of measurements and errors based on statistical principles and presents adjustment techniques based on least squares principle.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): (MA 2320 or MA 2321 or MA 2330) and (MA 2720 or MA 2710 or MA 3710) and MA 3160 and SU 2260

SU 3540 - Geospatial Information Technology with Elements of Field Cartography

Application of GIS technology methods for processing surveying data obtained in the field. Concepts of interoperability and metadata organization are considered. Includes map projection review and 2D and 3D cartographic data visualization.

Credits: 4.0

Lec-Rec-Lab: (0-3-3)

Semesters Offered: Spring

Pre-Requisite(s): MA 3710

SU 3560 - Geospatial Imaging Interpretation

Remote sensing methods applied to interpretation of topographic features from aerial and satellite imagery. Accuracy and applicability of remote sensing tools, imagery domains, operational work flows of remotely sensed imagery in field reconnaissance, map renovation, change detection and various essential applications.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Spring

Restrictions: Permission of department required

Pre-Requisite(s): PH 2200

SU 4003 - GIS Technology Fundamentals

Course provides review of Geographic Information Systems applications and analysis. Includes core concepts such as data acquisition and management, topology, accuracy, metadata, output, quality control, analysis methods, new and traditional software options, web mapping, and GIS implementation/management for research and production.

Credits: 1.0

Lec-Rec-Lab: (1-0-0)

Semesters Offered: On Demand

SU 4010 - Geospatial Concepts, Technologies, and Data

High level review of geospatial data acquisition systems, sensors, and associated processing technologies. Course considers geospatial metadata generation principles, interoperability, and major tools for manipulation with geospatial data. Course may help in transition of non-geospatial majors to geospatial field.

Credits: 3.0

Lec-Rec-Lab: (3-0-0)

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering

SU 4060 - Geodesy

Concepts of astronomy and geodesy that are relevant to the practice of surveying. Covers theory, field techniques, and computations involved in the determination of true north, an introduction to the figure of the earth and its geometric and physical characteristics, geodetic datums, and coordinate systems.

Credits: 3.0

Lec-Rec-Lab: (0-3-0)

Semesters Offered: Fall, Spring

Restrictions: Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

Pre-Requisite(s): SU 3250

SU 4100 - Geodetic Positioning

Introduces the instruments and procedures used in surveying projects that require a high order of accuracy. Discusses some conventional instruments and techniques but the greater emphasis is on GPS techniques.

Credits: 3.0

Lec-Rec-Lab: (0-2-3)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 4060(C)

SU 4140 - Photogrammetry

Basic principles of photogrammetry and its role as a technology for spatial data collection. Use of photogrammetry in the fields of surveying, engineering, and geographic information management will be discussed.

Credits: 3.0

Lec-Rec-Lab: (0-2-3)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 2260

SU 4180 - Land Subdivision Design

Introduces the physical, economic, and social aspects of optimum land use within the framework of state and local regulations of land divisions, condominiums, mobile home parks, and residential subdivisions.

Credits: 3.0

Lec-Rec-Lab: (0-2-1)

Semesters Offered: Spring

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior

Pre-Requisite(s): SU 3180 and CMG 3200

SU 4900 - Capstone Design Project

An engineering design project which integrates multiple aspects of previous surveying coursework while working with an industry partner. Includes project description, project planning, field work, office analysis, computer-aided design, final project completion and oral presentation skills.

Credits: 3.0

Lec-Rec-Lab: (0-2-2)

Semesters Offered: Fall, Spring

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4996 - Special Topics in Geospatial Technologies

Selected additional topics of interest in Geospatial Technologies based on student and faculty demand and interest. May be a tutorial, seminar, workshop, project, or class study.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4997 - Independent Study in Geospatial Technologies

Independent study of an approved topic under the guidance of a Surveying Engineering faculty member. May be either an academic, design, or research problem/project.

Credits: variable to 3.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4998 - Undergraduate Research in Geospatial Technologies

An undergraduate research experience in Geospatial Technologies. Under the guidance of a Surveying Engineering faculty member, students work on a selected/approved research problem or work directly with faculty on active research projects/grants. May require more than one semester to complete.

Credits: variable to 6.0; Repeatable to a Max of 6

Semesters Offered: On Demand

Restrictions: Permission of instructor required; Must be enrolled in one of the following Major(s): Surveying Engineering; Must be enrolled in one of the following Class(es): Senior

SU 4999 - Professional Practice Seminar

A review of all elements of the NCEES Fundamentals of Land Surveying examination, which leads to licensure as a professional land surveyor.

Credits: 1.0; Graded Pass/Fail Only

Lec-Rec-Lab: (0-1-0)

Semesters Offered: Fall

Restrictions: Must be enrolled in one of the following Class(es): Junior, Senior