GEOMATICS

Course Search
Not all courses are offered every semester. Refer to the schedule of courses for each term’s specific offerings.

More Info

Courses

GIS 3072C Geographic Information Systems 3 Credits
Addresses GIS concepts, data sources, spatial references: GIS data modeling, management, and editing; surface modeling; and vector and raster analysis. Provides practical examples, tutorials, and projects serving the geomatics, natural resource management, and planning fields.

GIS 4121 Geospatial Analysis 3 Credits
Process of identifying and analyzing patterns in geographic data and describing relationships between spatial features. Introduces techniques aimed at the analysis of spatial data. Topics include characterization of spatial data, geographic distributions, pattern identification (point and area objects), field data analysis, spatial modeling and interpolation, regression methods and cluster analysis.

Prereq: GIS 3072C, STA 2023 and 3AG-GEM classification or higher

SUR 3103C Geomatics 3 Credits
Introduces angle, distance and elevation measurement, as applied to engineering, boundary location, topography, forest management and construction. Covers error theory as well as horizontal and vertical curves.

Prereq: MAC 1147 and MAC 2311 placement or equivalent

SUR 3323 Visualization of Spatial Information 3 Credits
Methods of mapping, modeling, communicating and visualizing spatial features. Includes boundary and topographical features, attributes, site modeling, site development and mapping using computer-aided mapping and design features.

SUR 3331C Photogrammetry 3 Credits
Relates to use of aerial photographs to determine spatial information. Covers elementary techniques of photogrammetry to establish the foundation for SUR 4350 Advanced Photogrammetry.

Prereq: SUR 3103C or equivalent

SUR 3520 Measurement Science 3 Credits
Theory of measurement errors, error propagation, variance and covariance, polynomial curve fitting, regression analysis, correlation and least squares adjustment.

Prereq: MAC 2233, STA 2023 and SUR 3641, or the equivalents

SUR 3641 Survey Computations 3 Credits
Principles of geometry applied to surveying computations. Computer methods in surveying.

Coreq: SUR 3103C or equivalent

SUR 4201 Route Geometrics and Design 3 Credits
Geometric design of transportation systems, computer applications and a comprehensive design project. Spiral curves, superelevation theory and earthwork analysis are covered.

Prereq: SUR 3103C or equivalent and major in FY-GEM or EG-CE

SUR 4350C Advanced Photogrammetry 3 Credits
Precise photogrammetric measurements, camera calibration, object space coordinate systems, analytical control extension, stereoplotter mapping, digital mapping and softcopy stereoplotters.

Prereq: SUR 3331 and SUR 3520, or the equivalents

SUR 4376 Geospatial Applications of UAs 3 Credits
Covers contemporary issues and common applications associated with small UAs (Unmanned Aerial Systems).

Prereq: SUR 3501C

SUR 4380 Remote Sensing 3 Credits
Remote sensing systems, ground truthing, image classification systems, mapping applications, applications in plant and animal science, urban planning, engineering, geology and integration into geographic information systems.

Prereq: requires 4FY-GEM classification

SUR 4403 Cadastral Principles 3 Credits
Cadastral systems, land boundaries, corners and areas; writing land descriptions and identification of land parcels; legal principles of boundary survey, office and business practices; professional standing.

Prereq: SUR 3103C or equivalent

SUR 4430 Surveying and Mapping Practice 3 Credits
Studies land survey practice: the lot survey, the sectional survey and the water boundary survey. Also includes office and business practices and professional standing.

Prereq: SUR 3520 and SUR 4403, or the equivalents

SUR 4463 Subdivision Design 3 Credits
Design a medium-sized subdivision, including the master plan development, physical development considerations, legal requirements, comprehensive project, mock presentation and platting.

Prereq: SUR 3323 or equivalent

Coreq: SUR 4201

SUR 4501C Foundations of UAs Mapping 3 Credits
Covers the fundamental components of small unmanned aerial systems (UASs) and how they are used to produce high resolution, spatially accurate, planimetric maps and 3-D models of the terrain.

Prereq: SUR 3103C or equivalent

SUR 4530 Geodesy and Geodetic Positioning 3 Credits
Introduces geometric and physical geodesy, ellipsoids, geodetic lines, computation or position, gravity and coordinate systems.

Prereq: SUR 3103C or equivalent

SUR 4570 Advanced Geospatial Analysis 3 Credits
Firsthand, authentic research in geomatics under the supervision of a faculty member. Projects may involve inquiry, design, investigation, scholarship, discovery or application. (S-U)

SUR 4911 Supervised Research in Geomatics 3 Credits
Special problems or projects in the student's major field of study.

SUR 4912 Senior Project 1 Credit
Laboratory, equipment or literature investigations of surveying and mapping problems and concepts of current interest resulting in a written work.

Prereq: 4FY-GEM classification

SUR 4915 Honors Thesis Research in Geomatics 3 Credits
Independent research in geomatics leading to an honors thesis; mentored by a faculty member. Projects may involve inquiry, design, investigation, scholarship, discovery or application. (S-U)

Prereq: junior standing, upper division GPA of 3.75 or higher and completed honors thesis proposal on file
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SUR 4934</td>
<td>Topics in Geomatics</td>
<td>1-4</td>
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<tr>
<td></td>
<td>Selected topics in geomatics, including special issues and in-depth study of topics not discussed in other courses.</td>
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<tr>
<td>SUR 4940C</td>
<td>Practicum in UAS Mapping</td>
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<td>Provides hands-on experience with flight planning and safe deployment of small UASs (Unmanned Aerial Systems), and the subsequent processing of the imagery acquired on these flights.</td>
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<tr>
<td>SUR 4949</td>
<td>Co-op Work Experience</td>
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<td>Practical field experience of sufficient academic rigor. (S-U)</td>
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<td>Prereq:</td>
<td>FY-GEM classification</td>
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