GEOMATICS | SURVEYING AND MAPPING

The geomatics profession collects, manages, and analyzes geospatial data through ground surveying, photogrammetry, remote sensing, satellite positioning, inertial measurements, echo-sounding, and laser scanning. Geomatics students study geometry, statistics, boundary law, and surveying and mapping instrument usage.

About this Program

- **College:** Agricultural and Life Sciences (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL)
- **Degree:** Bachelor of Science in Geomatics
- **Specializations:** Geospatial Analysis (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/GEM_BSGE/GEM_BSGEO1) | Surveying and Mapping (p. 1)
- **Credits for Degree:** 120
- **Additional Information**
- **Related Geomatics Programs**

To graduate with this major, students must complete all university, college, and major requirements.

Geomatics students learn how land, infrastructure, and natural resources are measured, analyzed, and integrated into useable forms and systems. Students gain hands-on experience working with field equipment and in high-tech classrooms. Present land values, rates of urban development, and environmental concerns require a broad set of expertise to develop, manage, and apply geospatial information. Students majoring in Geomatics complete either the Surveying and Mapping specialization or the Geospatial Analysis specialization.

Both specializations within the Geomatics major are offered at the Fort Lauderdale Research and Education Center in Ft. Lauderdale, FL, the Gulf Coast Research and Education Center in Plant City, FL (near Tampa) and at the Mid-Florida Research and Education Center in Apopka, FL (near Orlando).

Related Geomatics Programs

- Geomatics certificate (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/AGL_UCT06)
- Mapping with Small Unmanned Aerial Systems certificate (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/AGL_UCT11)

Surveying and Mapping

The Surveying and Mapping specialization is accredited by ABET (http://www.abet.org) and prepares students for entry into the Surveying and Mapping profession.

### Critical Tracking

Critical Tracking records each student’s progress in courses that are required for entry to each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (http://www.flvc.org/cpp/displayRecord.jsp?cip=151102&track=01) may be used for transfer students.

#### Semester 1

- Complete at least 1 of 7 critical-tracking courses (excluding labs): AEB 2014 or ECO 2023 or ECO 2013, AEC 3030C or SPC 2608, COP 2800 or advisor-approved course in computer programming, MAC 2311, PHY 2053/PHY 2053L, PHY 2054/PHY 2054L and STA 2023
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

#### Semester 2

- Complete at least 2 additional critical-tracking courses, excluding labs
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

#### Semester 3

- Complete at least 2 additional critical-tracking courses, excluding labs
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

#### Semester 4

- Complete at least 2 additional critical-tracking courses, excluding labs
- 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

#### Model Semester Plan

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student’s academic record and scheduling availability of courses. Prerequisites still apply.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AEB 2014</td>
<td>Economic Issues, Food and You (Critical Tracking: Gen Ed Social and Behavioral Sciences)</td>
<td>3-4</td>
</tr>
<tr>
<td>ECO 2013</td>
<td>Principles of Macroeconomics (Critical Tracking: Gen Ed Social and Behavioral Sciences)</td>
<td></td>
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<tr>
<td>ECO 2023</td>
<td>Principles of Microeconomics (Critical Tracking: Gen Ed Social and Behavioral Sciences)</td>
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<tr>
<td>IDS 1161</td>
<td>What is the Good Life (Gen Ed Humanities)</td>
<td>3</td>
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</tbody>
</table>
Gen Ed Biological or Physical Sciences 1 3-4
State Core Gen Ed Composition (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext); Writing Requirement
Elective 2 3-4

Semester Two
Select one:
COP 2800 3 Computer Programming Using JAVA (Critical Tracking)
COP 2271 & 2271L 3 Computer Programming for Engineers and Computer Programming for Engineers Laboratory (Critical Tracking)
COP 3275 3 Computer Programming Using C (Critical Tracking)
COP 3229 3 Computer Programming Using C++ (Critical Tracking)
Approved computer programming course (Critical Tracking)
MAC 2311 4 Analytic Geometry and Calculus 1 (Critical Tracking; State Core Gen Ed Mathematics)
State Core Gen Ed Humanities (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)
State Core Gen Ed Social and Behavioral Sciences (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)
Elective 2

Semester Three
PHY 2053 5 Physics 1 and Laboratory for Physics 1 (Critical Tracking; State Core Gen Ed Biological Sciences and Physical Sciences)
STA 2023 3 Introduction to Statistics 1 (Critical Tracking; Gen Ed Mathematics)
Gen Ed Composition; Writing Requirement 3
Elective 4 3-4

Semester Four
Select one:
AEC 3030C 3 Effective Oral Communication (Critical Tracking)
SPC 2608 3 Introduction to Public Speaking (Critical Tracking)
PHY 2054 & 2054L 5 Physics 2 and Laboratory for Physics 2 (Critical Tracking; Gen Ed Physical Sciences)
Select 6 credits:
Gen Ed Diversity and International
Gen Ed Diversity or International and/or Social and Behavioral Sciences
Elective 2 6

Semester Five
Select one:
AEC 3033C 3 Research and Business Writing in Agricultural and Life Sciences (Writing Requirement)
ENC 2210 3 Technical Writing (Writing Requirement)
ENC 3254 3 Professional Writing in the Discipline (Writing Requirement)
SUR 3103C 3 Geomatics 5
SUR 3323 3 Visualization of Spatial Information 5
GIS 3072C 3 Geographic Information Systems 5

Semester Six
AEB 3133 or MAN 3025 3 Principles of Agribusiness Management or Principles of Management
AEB 4123 or BUL 4310 3 Agricultural and Natural Resource Law or The Legal Environment of Business
SUR 3331C 3 Photogrammetry 5
SUR 4501C 3 Foundations of UAS Mapping 5
SUR 3520 3 Measurement Science 5

Semester Seven
Select one:
FNR 3131C 2-3 Dendrology/Forest Plants
FOR 4934 3 Topics in Natural Resources (Florida Forest Communities)
SUR 4201 3 Route Geometrics and Design 5
SUR 4350C 3 Advanced Photogrammetry 5
SUR 4403 3 Cadastral Principles 5
SUR 4530 3 Geodesy and Geodetic Positioning 5
SUR 4911 1 Supervised Research in Geomatics

Semester Eight
SUR 4380 3 Remote Sensing 5
SUR 4430 3 Surveying and Mapping Practice 5
SUR 4463 3 Subdivision Design 5
SUR 4912 1 Senior Project 5
Natural resources elective 3

Total Credits 120-127

1 FOR 3004 or SWS 3022 and SWS 3022L recommended.
2 GEO 2200 or GLY 2010C recommended.
3 May be used as substitutes:
   • MAC 1114 and MAC 2233 for MAC 2311
   • PHY 2004 and PHY 2004L for PHY 2053 and PHY 2053L
   • PHY 2053 and PHY 2053L for PHY 2054 and PHY 2054L
4 GEO 2200 or GLY 2010C recommended, if not already taken.
5 Minimum grade of C required.
6 Must take two sections of SUR 4949 concurrently.

Placement tests and/or prerequisites may be required to access certain courses.
Non-specified general education (GE) courses may be selected from any approved course in the subject area. Selection of courses must consider satisfaction of the writing requirement and international studies and diversity requirements.

Approved Electives

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<tr>
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<tr>
<td>SUR 3641</td>
<td>Survey Computations 5</td>
<td>3</td>
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AEB 4123 or BUL 4310 3 Agricultural and Natural Resource Law or The Legal Environment of Business
SUR 3331C 3 Photogrammetry 5
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Students in the Major Will Learn to
Student Learning Outcomes (SLOs)

Content
1. Knowledge and competency in geometry, statistics, boundary law, surveying and mapping instrument usage and statutes and ordinances pertaining to professional practice.

Critical Thinking
2. Define problems, formulate solutions, assess legal evidence, interpret statistical results, design a system or process, and understand professional and ethical issues.

Communication
3. Create, interpret and analyze written text, oral messages and multimedia presentations.

Curriculum Map
\( I = \text{Introduced}; \ R = \text{Reinforced}; \ A = \text{Assessed} \)

<table>
<thead>
<tr>
<th>Courses</th>
<th>SLO 1</th>
<th>SLO 2</th>
<th>SLO 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUR 3103C</td>
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<td>I, R, A</td>
<td>I, R, A</td>
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<td>SUR 3520</td>
<td>I, R, A</td>
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<td>R, A</td>
<td>R, A</td>
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</tbody>
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Assessment Types
- Labs
- Projects
- Papers
- Exams
- Presentations

Academic Learning Compact
Geomatics addresses land information development and management through field survey, photogrammetry, remote sensing, satellite positions and other techniques. The program is nationally accredited and graduates often obtain licensure as professional surveyors and mappers.

A nationally accredited ABET (http://www.abet.org) program.

Before Graduating Students Must
- Pass the geomatics competency exam, given in five parts. One part will be given in each of these required courses:

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</tr>
<tr>
<td>SUR 4912</td>
<td>Senior Project</td>
<td>1</td>
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</table>

Total Credits 13

- Complete requirements for the baccalaureate degree, as determined by faculty.