

Surveying and Mapping, B.S.

Surveying and Mapping is the study of geospatial measurement and representation including such disciplines as land surveying, photogrammetry, remote sensing (satellite imaging and laser scanning), geographic information systems (GIS), cartography, global positioning systems (GPS), and some parts of geography and civil engineering. Surveying and Mapping is a discipline which integrates acquisition, modeling, analysis, and management of geo-spatial reference data. Based on the scientific framework of geodesy, it uses terrestrial, marine, airborne, satellite-based sensors, and measurement systems and technologies to acquire spatial and other data. The Land Surveying component of Surveying and Mapping includes investigation, analysis, and application of boundary/property laws and legal principles pertaining to specific public and private properties and is a regulated profession wherein a license to practice land surveying is issued by each state in an effort to protect the public and private interests in property boundaries. Students in the Surveying and Mapping program may earn an Associate in Science in Surveying and Mapping which will help them be immediately employable as an entry level surveyor GIS technician. Students may also earn a Bachelor of Science in Surveying and Mapping which will prepare them to successfully pass the national Fundamentals of Surveying (FS) exam which is a significant step towards surveying licensure. The bachelor degree program has been developed around four core disciplines which build on an in-depth foundation of knowledge needed for the professional practice of surveying and GIS. Surveying and Mapping program goals are to secure ABET/ASAC accreditation by Fall Semester 2017 and to continue to encourage student interest in obtaining graduate degrees in the field of Surveying and Mapping from other nationally ranked institutions. The program is operating under an annual cohort system starting in the fall semester of each year, so matriculation is required to ensure that each perspective student completes all required course prerequisites prior to entrance into a cohort.

Matriculation Requirements

Application Submission

Full and part-time students must complete and submit the Matriculation Application to the Surveying and Mapping Program Coordinator in-person for approval before March 1st prior to the Fall semester to which the student wishes to begin taking courses in the BS- Surveying and Mapping degree.

80% Computer Proficiency

Complete My Educator with an exam score of 80% or higher OR complete IM 2010 Business Computer Proficiency (3.0 credit hours) with B- or higher.

Laptop Access

Must have access to their own laptop computer which can be made available during classes and which meets the minimum hardware specifications as defined by current AutoCAD® hardware specifications prior to starting courses.

Associate of Science (AS) Degree

Complete the AS degree in Surveying and Mapping or an AS degree in a related field **and** complete the following courses with at least a B grade:

- SURV 1020 Introduction to Surveying and Mapping
- SURV 1040 Fundamentals of Technical Engineering Drawing
- EGDT 1400 Surveying Applications and Field Techniques I
- MKTG 220G Written Business Communication GI WE
- MATH 1060 Trigonometry or
 - EGDT 1600 and 1610 Technical Math I and II

Receive approval from Surveying and Mapping Program Coordinator

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		123
General Education Requirements		35 Credits
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC Literacies and Composition Across Contexts CC	3
ENGL 2010	Intermediate Academic Writing CC	3
Complete one of the following: (Recommend STAT 1040)		3
MAT 1030	Quantitative Reasoning QL (3)	
MAT 1035	Quantitative Reasoning with Integrated Algebra QL (6)	
STAT 1040	Introduction to Statistics QL (3)	
STAT 1045	Introduction to Statistics with Algebra QL (5)	

MATH 1050	College Algebra QL (4)	
MATH 1055	College Algebra with Preliminaries QL (5)	
Complete one of the following: (Recommend HIST 1740)		3
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3)	
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
PHIL 2050	Ethics and Values IH	3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE Fitness for Life TE	2
Distribution Courses:		
Biology (Recommend BIOL 1010)		3
Physical Science (Recommend ASTR 1040)		3
Additional Biology or Physical Science (Recommend PHYS 1010)		3
Humanities (Recommend COMM 1010)		3
Fine Arts (Recommend EGDT 1720)		3
Social/Behavioral Science (Recommend GEOG 130G)		3
Course Requirements		79
		Credits
My Educator Exam ¹		
SURV 1020	Introduction to Surveying and Mapping WE	1
SURV 1030	Fundamentals of Geodesy and Control Surveys	3
EGDT 1040	Fundamentals of Technical Engineering Drawing	3
EGDT 1400	Surveying Applications and Field Techniques I	3
MKTG 220G	Written Business Communication GI WE	3
Complete one of the following Mathematics courses (recommend EGDT 1600):		3
MATH 1060	Trigonometry QL (undefined)	
EGDT 1600 & EGDT 1610	Technical Math Algebra and Technical Math Geometry Trig (6)	
SURV 1220	Remote Sensing and Photogrammetry	3
SURV 2100	Mapping From Field to Finish	3
SURV 2010	Land History of America WE	3
SURV 2240	Fundamentals of Adjustments and Computations	2
SURV 2310	Surveying US Public Lands	3
SURV 2320	Property Descriptions and Public Land Records	3
GIS 2800	Geographic Information Systems	3
LEGL 3000	Business Law	3
SURV 3010	Measurement Analysis and Adjustments	4
SURV 3030	Land Development Planning-Platting-Mapping	3
SURV 3210	Advanced Photogrammetry	3
SURV 3220	Control Surveys	3
SURV 3230	Construction and Route Surveys	3
SURV 3250	Geodesy	3
SURV 3340	Boundary Law	3
SURV 3400	Emerging Surveying and Mapping Technologies	3
GIS 3620	Advanced Geographic Information Systems	3
SURV 451R	Surveying and Mapping Lecture Series	2
SURV 455G	Global Professional Ethics and Liabilities GI	3
SURV 4700	Fundamentals of Surveying Exam Prep	3
SURV 4930	Senior Surveying and Mapping Capstone WE	4

Required Electives
**9
Credits**

Approved Surveying and Mapping elective courses must be taken with the following prefixes: SURV, GIS, EGDT, ARC, ENGR, CIVE, PHYS, GEOG, CMGT, CS, ENST, MATH, or LEGL or be approved by the Surveying and Mapping Program Coordinator. (Recommended electives when seeking a license: GIS 3630, SURV 4340, SURV 4500)

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Students will be required to complete the My Educator with a score of 80 percent or higher or complete the IM 2010 Business Computer Proficiency course with a score of 80 percent or higher.

Graduation Requirements

1. Completion of a minimum of 123 semester credits required for a BS degree; at least 40 credit hours must be upper-division courses.
2. Overall grade point average 2.5 or above with a minimum of 3.0 GPA in all Surveying and Mapping courses including Surveying and Mapping Core and Professional Focus Areas.
3. Residency hours: Minimum of 30 credit hours of Surveying and Mapping courses through course attendance at UVU, with at least 10 hours earned in the last 45 hours.
4. Completion of GE and specified departmental requirements. Students are responsible for completing all prerequisite courses.
5. Successful completion of at least one Global/Intercultural course.
6. Successful completion of at least two Writing Enriched (WE) courses.
7. Complete the Fundamentals of Surveying (FS) exam offered by the National Council of Examiners for Engineering and Surveying (NCEES)

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (<http://www.uvu.edu/wolverinetrack/>).

First Year

Semester 1		Credit Hours
STAT 1040	Introduction to Statistics QL	3
ENGL 1010	Introduction to Academic Writing CC	3
EXSC 1097	Fitness for Life TE	2
SURV 1020	Introduction to Surveying and Mapping WE	1
EGDT 1040	Fundamentals of Technical Engineering Drawing	3
EGDT 1400	Surveying Applications and Field Techniques I	3
Credit Hours		15
Semester 2		
ENGL 2010	Intermediate Academic Writing CC	3
BIOL 1010	General Biology BB	3
GEOG 130G	Survey of World Geography GI SS	3
Complete one of the following Mathematics courses:		3
MATH 1060	Trigonometry QL	
EGDT 1600 & EGDT 1610	Technical Math Algebra and Technical Math Geometry Trig	
SURV 1030	Fundamentals of Geodesy and Control Surveys	3
Credit Hours		15

Second Year

Semester 3		
ASTR 1040	Elementary Astronomy PP	3
EGDT 1720	Architectural Rendering FF	3
PHIL 2050 or PHIL 205G	Ethics and Values IH or Ethics and Values IH GI	3
MKTG 220G	Written Business Communication GI WE	3
SURV 2010	Land History of America WE	3
SURV 2240	Fundamentals of Adjustments and Computations	2
Credit Hours		17
Semester 4		
HIST 1740	US Economic History AS	3
COMM 1020	Public Speaking HH	3
PHYS 1010	Elementary Physics PP	3
SURV 2100	Mapping From Field to Finish	3

SURV 1220	Remote Sensing and Photogrammetry	3
Credit Hours		15
Third Year		
Semester 5		
SURV 2310	Surveying US Public Lands	3
SURV 2320	Property Descriptions and Public Land Records	3
LEGL 3000	Business Law	3
SURV 3210	Advanced Photogrammetry	3
GIS 2800	Geographic Information Systems	3
SURV 451R	Surveying and Mapping Lecture Series	0.5
Credit Hours		15.5
Semester 6		
SURV 3010	Measurement Analysis and Adjustments	4
SURV 3030	Land Development Planning-Platting-Mapping	3
SURV 3230	Construction and Route Surveys	3
SURV 3340	Boundary Law	3
GIS 3620	Advanced Geographic Information Systems	3
SURV 451R	Surveying and Mapping Lecture Series	0.5
Credit Hours		16.5
Fourth Year		
Semester 7		
SURV 3220	Control Surveys	3
SURV 3250	Geodesy	3
SURV 3400	Emerging Surveying and Mapping Technologies	3
SURV 455G	Global Professional Ethics and Liabilities GI	3
SURV 451R	Surveying and Mapping Lecture Series	0.5
Credit Hours		12.5
Semester 8		
GIS 3630	Geographic Information Systems Application Development	3
SURV 4340	Surveying Legal Principles	3
SURV 4500	Professional Services Practicum	3
SURV 4700	Fundamentals of Surveying Exam Prep	3
SURV 4930	Senior Surveying and Mapping Capstone WE	4
SURV 451R	Surveying and Mapping Lecture Series	0.5
Credit Hours		16.5
Total Credit Hours		123

Program Learning Outcomes

1. Demonstrated critical thinking ability in performing surveying, mapping, or civil design duties and responsibilities at a professionally competent level and to communicate technical information effectively in a professional team environment.
2. Exercised prudent ethical judgement in professional decisions while protecting the land rights, title, and interest of the public.
3. Advanced professionally by being given more responsibilities; or have successfully completed a graduate level degree.
4. Demonstrated professional development through continuing education or earning certifications or professional licensure.
5. Served in their professional organizations and/or local communities.