GEOSPATIAL SCIENCE (M.S.)

Description

The Professional Master of Science Degree in Geospatial Science at the University of New Hampshire is ideal for recent bachelor's degree graduates or professionals looking to build knowledge, skills and credentials within the Geospatial Sciences. Within this program, students will be provided with the opportunity to build applied skills in Geographic Information Systems (GIS), web and mobile mapping, geospatial programming, drone, aerial, and satellite remote sensing, spatial statistics and advanced analysis, and geospatial field methods through a series of core requirements and elective classes. Students can complete their requirements over a one-year (10-month), one and one-half year (17-month), or two-year (21-month) schedule.

Requirements

Degree Requirements

The Master of Science in Geospatial Science (GSS) degree is a 10-course professional master's degree program consisting of a minimum of eight core courses and two electives that total at least 30 credits.

Code	Title	Credits
Required Core Courses		
GSS 805	Applied Geographic Information Systems	4
or NR 860	Geographic Information Systems in Natural Resources	
GSS 815	Online GIS and Web Mapping [1]	2
GSS 825	Applied Geospatial Programming [2]	3
GSS 827	Applied Drone Remote Sensing	3
NR 857	Remote Sensing of the Environment	4
or NR 859	Digital Image Processing for Natural Resources	
or ESCI 878	Remote Sensing Earth & Environmental Sciences	
GSS 867	Surveying and Geospatial Field Methods [2]	4
or ESCI 871	Positioning for Ocean Mapping	
MATH 842	Geospatial Statistics [3]	3
Electives		
Select two courses from the electives list below.		5-6
Capstone		
GSS 900	Professional Preparations in Geospatial Science [1]	2
Total Credits		**30-31**

[1] This course is offered online only.

[2] This course has a prerequisite, click the course link for more information.

[3] Or students may select an alternative course from the *Statistics and Analysis* category in the electives list below.

Code	Title	Credits
Elective Courses		
GIS, Remote Sensing, and Positioning		
GSS 996	Geospatial Science Independent Study	1-4
ESCI 870	Geodesy for Ocean Mapping	3
ESCI 871	Positioning for Ocean Mapping	4
ESCI 872	Applied Tools for Ocean Mapping	2
ESCI 877	GIS for Earth & Environmental Sciences	4
ESCI 896	Topics (Bathymetric Spatial Analysis)	1
Programming, Database and Data Visualization		
BIOL 806	Data Science with R for the Life Sciences	4
COMP 820	Database Systems and Technologies	3
COMP 860	Data Visualization & Communication	3
DATA 820	Programming for Data Science	3
ESCI 801	Quantitative Methods in Earth Sciences	4
MATH 832	Introduction to the R Software	1
Statistics and Analysis		
BIOL 811	Experimental Design & Analysis	4
DATA 800	Introduction to Applied Analytic Statistics	3
ESCI 801	Quantitative Methods in Earth Sciences	4
MATH 834	Statistical Computing	3
MATH 835	Statistical Methods for Research	3
MATH 838	Data Mining and Predictive Analytics	3
MATH 839	Applied Regression Analysis	3
MATH 840	Design of Experiments I	3
MATH 842	Geospatial Statistics	3
MATH 843	Time Series Analysis	3
NR 909	Analysis of Ecological Communities and Complex Data	4
NR 914	Data Analysis for Natural Resources and Ecology	4
PPOL 908	Quantitative Methods for Policy Research	3
SOC 901	Sociological Methods I: Intermediate Social Statistics	4

Degree Plan

Sample Degree Plan 21-Months

First Year		
Fall		**Credits**
GSS 805 or NR 860	Applied Geographic Information Systems or Geographic Information Systems in Natural Resources	4
Elective Course		2-4
	Credits	**6-8**
January Term		
GSS 815	Online GIS and Web Mapping	2
	Credits	**2**
Spring		
GSS 825	Applied Geospatial Programming	3
GSS 867 or ESCI 871	Surveying and Geospatial Field Methods or Positioning for Ocean Mapping	4
	Credits	**7**
Summer		
GSS 827	Applied Drone Remote Sensing	3
	Credits	**3**
Second Year		
Fall		
NR 857 or NR 859 or ESCI 878	Remote Sensing of the Environment or Digital Image Processing for Natural Resources or Remote Sensing Earth & Environmental Sciences	4
Elective Course		2-4
	Credits	**6-8**
January Term		
GSS 900	Professional Preparations in Geospatial Science	2
	Credits	**2**

Spring		Credits
MATH 842	Geospatial Statistics	3
	Credits	**3**
	Total Credits	**29-33**

Sample Degree Plan 17-Months

First Year

Fall		Credits
GSS 805 or NR 860	Applied Geographic Information Systems or Geographic Information Systems in Natural Resources	4
Elective Course		2-4
	Credits	**6-8**
January Term		
GSS 815	Online GIS and Web Mapping	2
	Credits	**2**
Spring		
GSS 825	Applied Geospatial Programming	3
GSS 867 or ESCI 871	Surveying and Geospatial Field Methods or Positioning for Ocean Mapping	4
Elective Course		2-4
	Credits	**9-11**
Summer		
GSS 827	Applied Drone Remote Sensing	3
	Credits	**3**

Second Year

Fall		
NR 857 or NR 859 or ESCI 878	Remote Sensing of the Environment or Digital Image Processing for Natural Resources or Remote Sensing Earth & Environmental Sciences	4
Elective Course		2-4
	Credits	**6-8**
January Term		
GSS 900	Professional Preparations in Geospatial Science	2
	Credits	**2**
Spring		
MATH 842	Geospatial Statistics	3
	Credits	**3**
	Total Credits	**31-37**

Sample Degree Plan 10-Months

First Year

Fall		Credits
GSS 805 or NR 860	Applied Geographic Information Systems or Geographic Information Systems in Natural Resources	4
NR 857 or NR 859 or ESCI 878	Remote Sensing of the Environment or Digital Image Processing for Natural Resources or Remote Sensing Earth & Environmental Sciences	4

Elective Course		2-4
Elective Course		2-4
Geospatial Statistics		
	Credits	**12-16**
January Term		
GSS 815	Online GIS and Web Mapping	2
GSS 900	Professional Preparations in Geospatial Science	2
	Credits	**4**
Spring		
GSS 825	Applied Geospatial Programming	3
GSS 867 or ESCI 871	Surveying and Geospatial Field Methods or Positioning for Ocean Mapping	4
MATH 842	Geospatial Statistics	3
	Credits	**10**
Summer		
GSS 827	Applied Drone Remote Sensing	3
	Credits	**3**
	Total Credits	**29-33**

Accelerated Master's

Accelerated Master's Overview

Accelerated Master's programs offer qualified University of New Hampshire undergraduate students the opportunity to begin graduate coursework in select graduate programs while completing a bachelor's degree. Accelerated master's programs are designed to provide students with an efficient and cost-effective pathway to earn both a bachelor's and master's degree or graduate certificate, enhancing career opportunities and long-term earning potential.

Accelerated Master's Highlights

- Begin studying advanced topics while an undergraduate student with the opportunity to complete a master's degree or graduate certificate early.
- Master's degree program students: Earn up to 12* graduate (800-level) course credits while completing a bachelor's degree. This coursework will count as dual-credit toward both the bachelor's and master's degrees.
- Graduate certificate program students: Earn up to 8* graduate (800-level) course credits while completing a bachelor's degree. This coursework will count as dual-credit toward both the bachelor's degree and the graduate certificate.
- Students complete the bachelor's degree, and then officially matriculate into the master's or graduate certificate program to complete the remaining required graduate-level coursework.

Some exceptions apply.

Accelerated Master's Admission Requirements

- A minimum 3.2 cumulative GPA is required.*
- A minimum of 90 undergraduate credits must be completed prior to enrolling in graduate (800-level) courses.

- Streamlined Graduate School Application (two letters of recommendation; most standardized tests and application fee are waived).*

*Some exceptions apply.

Accelerated Master's Requirements

- Students must attend a mandatory orientation session.
- Students must submit a special registration form each semester for dual-credit courses and note any DegreeWorks exceptions.
- Students may defer graduate matriculation for up to one year after earning their bachelor's degree in most programs.
- See the Accelerated Master's Catalog Policy and Accelerated Master's Website for additional information and a list of programs. Note that some programs have additional requirements (e.g. higher-grade expectations) compared to the general policy.

Geospatial Science (M.S.) Accelerated Option

This graduate degree program is approved to be taken on an accelerated basis in articulation with the following undergraduate program(s):

Code	Title	Credits
Community and Environmental Planning (B.S.)		
Environmental Conservation and Sustainability (B.S.)		
Environmental Sciences: Ecosystems (B.S.)		
Environmental Sciences: Soil and Watersheds (B.S.)		
Forestry (B.S.F.)		
Geospatial Analysis (Minor)		
Wildlife and Conservation Biology (B.S.)		
Students select from the following approved 800-level courses that can be completed in the undergraduate senior year for dual credit:		
NR 857	Remote Sensing of the Environment	4
NR 859	Digital Image Processing for Natural Resources	4
NR 860	Geographic Information Systems in Natural Resources	4
ESCI 801	Quantitative Methods in Earth Sciences	4
ESCI 877	GIS for Earth & Environmental Sciences	4
ESCI 878	Remote Sensing Earth & Environmental Sciences	4
BIOL 806	Data Science with R for the Life Sciences	4
GSS 805	Applied Geographic Information Systems	4
GSS 815	Online GIS and Web Mapping	2
GSS 825	Applied Geospatial Programming	3
GSS 827	Applied Drone Remote Sensing	2
GSS 867	Surveying and Geospatial Field Methods	4

Additional Information

Undergraduates enrolled in the AM program will be able to apply up to twelve credits of 800-level MS in GSS Program Requirements taken within their senior year to help fulfill the requirements of their current undergraduate degree and a future MS in GSS degree.

Student Learning Outcomes

Program Learning Outcomes

- Students will be able to understand the major components of the Geospatial Science field, including its organizations, resources, data, and tools.
- Students will be able to apply the key theories, definitions, and terminology of Geospatial Science.
- Students will be able to implement and manage Geospatial Science projects from inception to final deliverables.
- Students will be able to apply concepts of Field Data Collection, GIS, Remote Sensing, Image Processing, Cartography, Data Visualization, Geospatial Analysis, Spatial Analytics, Database Design and Query, and Data Dissemination to real-world scenarios for better decision-making.
- Students will be able to apply Geospatial Science hardware and software technologies.
- Students will be able to apply good use practices and ethics within the Geospatial Sciences.
- Students will be able to communicate professionally and adeptly with individuals and groups at all levels, including technicians, scientists, managers, executives, policymakers, students, educators, and the public.
- Students will be able to interpret and discuss journal articles and professional reports that incorporate concepts of geospatial science.
- Students will be able to develop professional networks and skills to advance their careers and/or future educational endeavors.