GEOGRAPHIC INFORMATION SCIENCE (M.S.)

Code	Title	Hours
Core Curriculum: 18 cr. (non-thesis-16 cr. plus 2 cr. 5990) - 22 cr. (thesis) (16 cr. plus 6 cr. 5000)		
GEOG 4750	Intermediate GIS	3
GEOG 5830	Remote Sensing/GIS Image Analysis	3
GEOG 5070	Spatial Analysis and Modeling	3
GEOG 5250	Graduate GIS Fundamentals	3
GEOG 5930	Geovisualization	3
GEOG 5960	Geography Department Seminar	1
Thesis or Non-Thesis Track:		**2-6**
Thesis Track (6 credits):		
GEOG 5000	Master's Research and Thesis (Thesis students will take 6 thesis credits.)	
or GEOL 500	Master's Research and Thesis	
Non-Thesis Track (2 credits)		
GEOG 5990	Research (Research students will take 2 research credits.)	
or GEOL 599	Research	
Application Areas		
Select one of the Following Application Areas:		8-12
Remote Sensing (p. 1)		
GIS Programming (p. 1)		
Natural Hazards and Emergency Planning (p. 1)		
Geospatial Aspects of Sustainable Planning (p. 1)		
Geotechnician (p. 1)		
Geospatial Habitat Assessment (p. 2)		
Geospatial Intelligence (p. 2)		
Total Hours		**26-34**

Courses to total 30 credits for this degree

A. Remote Sensing

Code	Title	Hours
Select 8 credits for thesis students, 12 credits for non-thesis from the following:		
GEOG 5240	Hydrologic Applications of GIS and Remote Sensing	3
NRS 5780	LIDAR and Optical Remote Sensing Analysis	3
FIRE 5435	Remote Sensing of Fire	3
FOR/NRS 4720	Remote Sensing of the Environment	4
REM 4760	Unmanned Aerial Systems (UAS) Operations	1
REM 4750	Remote Sensing Application with Unmanned Aerial Systems (UAS)	3
ECE 5160	Image Sensors and Systems	3
NRS 5520	Current Lit in Remote Sensing	1

B. GIS Programming

Code	Title	Hours
Select 8 credits for thesis, 12 credits for non-thesis from the following:		
GEOG 4790	GIS Programming	3
STAT 4190	Introduction to SAS/R Programming	3
STAT 4260	SAS Programming	3
STAT 4270	R Programming	3
ENVS 5110	Data Wizardry in Environmental Sciences	3
CS 4621	Data Science	3

C. Natural Hazards and Emergency Planning

Code	Title	Hours
Select 8 credits for thesis, 12 credits for non-thesis from the following:		
GEOG 4110	Natural Hazards	3
GEOG 4140	Socioeconomic Applications of GIS	3
GEOL 5670	Volcanology	3
FIRE 5410	Air Quality, Pollution, and Smoke	3
NRS 5760	Environmental Project Management and Decision Making	2
NRS 5880	NEPA in Policy and Practice	3
CE 5280	Fluvial Geomorphology and River Mechanics	3
GEOE 5350	Seepage and Slope Stability	3
TM 5170	Critical Infrastructure Security and Resilience Fundamentals	3
TM 5250	Emergency Management and Planning	3
INDT 4700	Homeland Security	3

D. Geospatial Aspects of Sustainable Planning

Code	Title	Hours
Select 8 credits for thesis, 12 credits for non-thesis from the following:		
GEOG 4140	Socioeconomic Applications of GIS	3
GEOG 5350	Climate Change Mitigation	3
SOIL 5360	Principles of Sustainability	3
SOIL 5440	Water Quality in the Pacific Northwest	3
SOIL 5480	Drinking Water and Human Health	3
ENVS 5200	Introduction to Bioregional Planning	3
ENVS 5230	Planning Sustainable Places	3
ENVS 5300	Planning Theory and Process	3
ENVS 5110	Data Wizardry in Environmental Sciences	3
TM 5170	Critical Infrastructure Security and Resilience Fundamentals	3
TM 5250	Emergency Management and Planning	3

E. Geotechnician

Code	Title	Hours
Select 8 credits for thesis, 12 credits for non-thesis from the following:		

GEOL 4710	Ore Deposits and Exploration	3
GEOL 5310	Chemical Hydrogeology	3
STAT 4190	Introduction to SAS/R Programming	3
STAT 4310	Statistical Analysis	3
NRS 5780	LIDAR and Optical Remote Sensing Analysis	3
ENVS 5790	Introduction to Environmental Regulations	3
SOIL 5440	Water Quality in the Pacific Northwest	3
SOIL 5480	Drinking Water and Human Health	3

F. Geospatial Habitat Assessment

Code	Title	Hours
Select 8 credits for thesis, 12 credits for non-thesis from the following:		
REM 4290	Landscape Ecology	3
REM 5070	Landscape and Habitat Dynamics	3
REM 5200	Advanced Vegetation Measurement and Monitoring	3
NRS 5780	LIDAR and Optical Remote Sensing Analysis	3
NRS 5880	NEPA in Policy and Practice	3
NRS 5520	Current Lit in Remote Sensing	1
WLF 5110	Wildland Habitat Ecology and Assessment	2

G. Geospatial Intelligence

Code	Title	Hours
Select 8 credits for thesis, 12 credits for non-thesis from the following:		
GEOG 4140	Socioeconomic Applications of GIS	3
GEOG 5500	Sustainability of Global Development	3-4
GEOG 5650	Geopolitics and Conflict	3
ECON 4460	International Economics	3
ECON 4470	International Development Economics	3
NRS 5780	LIDAR and Optical Remote Sensing Analysis	3
INDT 4700	Homeland Security	3
CS 5712	Machine Learning	3
CS 5771	Python for Machine Learning	3
CS 5621	Data Science	3
POLS 4100	Game Theory	3

1. Demonstrate a depth of knowledge of spatial analysis and mapping techniques.
2. Demonstrate the ability to gather and analyze appropriate data and write results in context of existing literature and significance of the analysis.
3. Demonstrate advanced skills to conduct either disciplinary or interdisciplinary analyses using geographical information systems methods and datasets for Earth system science problems.
4. Apply mastery of key principals and core concepts in geographical information systems with a depth of knowledge in one of seven application areas cover critical land resource management and industrial workforce needs.
5. Demonstrate the ability to synthesize ideas and information to identify, analyze and problem-solve Earth system science and land resource management issues; demonstrate an application of this synthesis.
6. Collaborate with a faculty advisor and graduate committee to conduct independent research.
7. Communicate effectively, professionally, and within group settings.