GEOGRAPHIC INFORMATION SCIENCE (M.S.)

Code	Title	Hours
Core Curriculum: 18 cr. (non-thesis-16 cr. plus 2 cr. 599) - 22 cr. (thesis) (16 cr. plus 6 cr. 500)		
GEOG 475	Intermediate GIS	3
GEOG 583	Remote Sensing IMAGE ANALYSIS/GIS Integration	3
GEOG 507	Spatial Analysis and Modeling	3
GEOG 525	Graduate GIS Fundamentals	3
GEOG 593	Geovisualization	3
GEOG 596	Geography Department Seminar	1
Thesis or Non-Thesis Track:		*2-6*
Thesis Track (6 credits):		
GEOG 500	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 599	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 524	Hydrologic Applications of GIS and Remote Sensing	3
NRS 578	LIDAR and Optical Remote Sensing Analysis	3
FOR/NRS 472	Remote Sensing of the Environment	4
FOR 535	Remote Sensing of Fire	3
REM 476	Unmanned Aerial Systems (UAS) Operations	1
REM 475	Remote Sensing Application with Unmanned Aerial Systems (UAS)	3
ECE 516	Image Sensors and Systems	3
NRS 552	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 479	GIS Programming	3
STAT 419	Introduction to SAS/R Programming	3
STAT 426	SAS Programming	3
STAT 427	R Programming	3
ENVS 511	Data Wizardry in Environmental Sciences	3
CS 479	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 411	Natural Hazards and Society	3
GEOG 414	Socioeconomic Applications of GIS	3
GEOL 567	Volcanology	3
FIRE 554	Air Quality, Pollution, and Smoke	3
NRS 576	Environmental Project Management and Decision Making	2
NRS 588	NEPA in Policy and Practice	3
CE 535	Fluvial Geomorphology and River Mechanics	3
GEOE 535	Seepage and Slope Stability	3
TM 517	Critical Infrastructure Security and Resilience Fundamentals	3
TM 525	Emergency Management and Planning	3
INDT 470	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 535	Climate Change Mitigation	3
GEOG 414	Socioeconomic Applications of GIS	3
SOIL 536	Principles of Sustainability	3
SOIL 544	Water Quality in the Pacific Northwest	3
SOIL 548	Drinking Water and Human Health	3
ENVS 520	Introduction to Bioregional Planning	3
ENVS 523	Planning Sustainable Places	3
ENVS 530	Planning Theory and Process	3
ENVS 511	Data Wizardry in Environmental Sciences	3
TM 517	Critical Infrastructure Security and Resilience Fundamentals	3
TM 525	Emergency Management and Planning	3

E. Geotechnician

Code	Title	Hours
Select 8 credits for thesis, 12 credits for non-thesis from the following:		
GEOL 471	Ore Deposits and Exploration	3
GEOL 531	Chemical Hydrogeology	3
STAT 419	Introduction to SAS/R Programming	3
STAT 431	Statistical Analysis	3
NRS 578	LIDAR and Optical Remote Sensing Analysis	3
ENVS 579	Introduction to Environmental Regulations	3

SOIL 544	Water Quality in the Pacific Northwest	3
SOIL 548	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 429	Landscape Ecology	3
REM 507	Landscape and Habitat Dynamics	3
REM 520	Advanced Vegetation Measurement and Monitoring	3
NRS 578	LIDAR and Optical Remote Sensing Analysis	3
NRS 588	NEPA in Policy and Practice	3
NRS 552	Current Lit in Remote Sensing	1
FOR 514	Forest Biometrics	3
WLF 511	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 414	Socioeconomic Applications of GIS	3
GEOG 550	Sustainability of Global Development	3-4
GEOG 565	Geopolitics and Conflict	3
ECON 446	International Economics	3
ECON 447	International Development Economics	3
NRS 578	LIDAR and Optical Remote Sensing Analysis	3
INDT 470	Homeland Security	3
CS 575	Machine Learning	3
CS 577	Python for Machine Learning	3
CS 579	Data Science	3
POLS 410	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.