GEOGRAPHY M.S. - CARTOGRAPHY AND GIS

Master of Science - Geography; Cartography and GIS Concentration

Degree Specific Credits: 34 credits are required for the thesis and professional paper tracks; 40 credits are required for the non-thesis (portfolio) track.

Required Cumulative GPA: 3.0

- The M.S. in Geography with a concentration in Cartography and GIS is appropriate for those whose work is focused on spatial mapping and analysis. Beyond the core requirements specified for the general M.S. (≥10 credits), an additional 16 credits are required for the concentration (19 if the Methods course is not a GIS class), and electives as needed to complete the 34 to 40 credits for the degree.
- Choices in the core and elective credits will be selected in consultation with the graduate committee to support the research program and student's professional goals. Coursework must be approved by the committee no later than the second semester in residence, but earlier if possible. Per Graduate School policy, at least 20 of the total credits must be taken within the major discipline; at least 20 of the total credits must be in coursework and at least half of the coursework credits (minimum 10 credits) must be at the 500-level or above; courses below the 400-level do not count towards the M.S. course requirements; up to 10 of the 34 or 40 credits may be taken as thesis (GPHY 599).

Degree Tracks

For the M.S. in Geography with a concentration in Cartography and GIS, students are required to complete one of the following tracks:

- **Thesis track:** Successfully complete and defend a thesis or one or more papers (i.e., articles) of publishable quality before an examining committee.
- **Professional Paper track:** Successfully complete and defend a professional paper or one or more papers (i.e., articles) of publishable quality before an examining committee. The difference between a thesis and a professional paper is that while the thesis is directed toward advances in the discipline, the professional paper may be directed toward advances in the profession. A professional paper may also consist of one or more papers of publishable quality intended for publication in a peer-reviewed journal.
- **Non-thesis (Portfolio) track:** Requires the successful completion of a portfolio and written and oral comprehensive examinations.
- There is no minimum number of thesis credits that must be taken for any of the tracks.

Courses

Code	Title	Hours
Graduate Research Seminar - Complete all of the following courses:		2
BIOS 594	Seminar	
FORS 594	Graduate Seminar (1 cr. per semester)	
NRSM 594	Seminar	
WILD 594	Graduate Seminar in Wildlife Biology	
Or approved alternative		
Graduate Research Design - Complete one of the following courses:		3-4
GPHY 504 & GPHY 505	Research Design in the Geographical Sciences I and Research Design in Geographical Sciences II	
NRSM 500	Conservation and Social Science Methods	
GEO 508	Fundamentals of Academic Research	
WILD 540 & WILD 541	Research Design and Research Design Lab	
Graduate Research Methods - Complete one of the following courses:		3
Quantitative methods		
ENSC 474	Environmental Analytics	
FORS 538	Ecological Statistics	
SOCI 563	Social Data Analysis	
STAT 451	Statistical Methods I	
or STAT 452	Statistical Methods II	
Qualitative methods		
SOCI 561	Qualitative Methods	
Historical or survey methods		
Advanced GIS or computer methods		
3 Additional Credits of Graduate Seminar		**3**
GPHY 525	Advanced Physical Geography	
GPHY 560	Seminar in Planning	
GPHY 580	Seminar GIS & Cartography	
Concentration Requirements - Complete all of the following courses:		
GPHY 487	Remote Sensing/Raster GIS	3
GPHY 488	Applications of GIS	3
GPHY 489	Cartography/GIS Laboratory	1
Concentration Electives - Complete 9 credits of the following courses:		**9**
FORS 505	Sampling Methods	
GPHY 468	Community & Regional Analysis	
GPHY 469 & GPHY 468	Planning & Analysis Laboratory and Community & Regional Analysis	
GPHY 481	Advanced Cartographic Design	
GPHY 485	Internet GIS	
GPHY 489 & GPHY 485	Cartography/GIS Laboratory and Internet GIS	
GPHY 587	Image Analysis & Modeling	
GPHY 589 & GPHY 587	Cartography/GIS Laboratory and Image Analysis & Modeling	
GPHY 598	Internship	
WILD 562	Wildlife Habitat Modeling	
Electives/Thesis		**7-12**
Total Hours		**34-40**