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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOS 594</td>
<td>Seminar</td>
<td>2</td>
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<tr>
<td>FORS 594</td>
<td>Graduate Seminar (1 cr. per semester)</td>
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</tr>
<tr>
<td>NRSM 594</td>
<td>Seminar</td>
<td></td>
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<tr>
<td>WILD 594</td>
<td>Graduate Seminar in Wildlife Biology</td>
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Or approved alternative

**Graduate Research Design** - Complete one of the following courses:

- 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 Research Design & WILD 541 Research Design Lab

**Graduate Research Methods** - Complete one of the following courses:

- 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**

- 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
- GPHY 488 Applications of GIS
- GPHY 489 Cartography/GIS Laboratory

**Concentration Electives** - Complete 9 credits of the following courses:

- FORS 505 Sampling Methods
- GPHY 468 Community & Regional Analysis & GPHY 468 and Community & Regional Analysis
- GPHY 481 Advanced Cartographic Design
- GPHY 485 Internet GIS
- GPHY 489 Cartography/GIS Laboratory & GPHY 485 and Internet GIS
- GPHY 587 Image Analysis & Modeling
- GPHY 589 Cartography/GIS Laboratory & GPHY 587 and Image Analysis & Modeling
- GPHY 598 Internship
- WILD 562 Wildlife Habitat Modeling

**Electives/Thesis**

- **Total Hours**
  - **34-40**