The Department of Geography offers a thesis-based master of science in cartography and geographic information systems. In addition, it offers an online, non-thesis, professional named option titled GIS Development in the cartography and geographic information systems M.S.

The department also offers a master of science in geography, a Ph.D. in geography, and a capstone certificate in geographic information systems. Information about facilities, supporting faculty and staff, and program requirements for all graduate programs in the department can be found in the Geography (http://guide.wisc.edu/graduate/geography) listing in this catalog.

The M.S. in cartography and geographic information systems provides a broad foundation in the theory and application of mapping and geographic information sciences. Students who earn the M.S. degree are prepared to continue on for the Ph.D. in geography, or for positions as GIS analysts in government agencies, planning organizations, environmental agencies, nongovernmental organizations, and private industry.

**REQUIREMENTS**

**MINIMUM DEGREE REQUIREMENTS AND SATISFACTORY PROGRESS**

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (http://guide.wisc.edu/graduate/#policiesandrequirementstext) in addition to the requirements of the program.

**MASTER’S DEGREES**

M.S., with available named option in GIS Development

**MINIMUM GRADUATE DEGREE CREDIT REQUIREMENT**

M.S.: 30 credits
M.S. named option in GIS Development: 32 credits

**MINIMUM GRADUATE RESIDENCE CREDIT REQUIREMENT**

M.S.: 16 credits
M.S. named option in GIS Development: 24 credits

**MINIMUM GRADUATE COURSEWORK (50%) REQUIREMENT**

M.S.: Half of degree coursework (15 credits out of 30 total credits) must be completed in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

M.S. named option in GIS Development: 24 credits must be completed in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

**PRIOR COURSEWORK REQUIREMENTS: GRADUATE WORK FROM OTHER INSTITUTIONS**

M.S.: With program approval, students are allowed to count no more than 6 credits of graduate coursework from other institutions. Coursework earned five or more years prior to admission to a master’s degree or earned ten years or more prior to admission to a doctoral degree is not allowed to satisfy requirements.

M.S. named option in GIS Development: No graduate work from other institutions may be used to satisfy requirements.

**PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNDERGRADUATE**

No credits from a UW–Madison undergraduate degree are allowed to count toward the degree.

**PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNIVERSITY SPECIAL**

M.S.: With program approval, students are allowed to count no more than 6 credits of graduate coursework as defined above taken as a UW–Madison Special student. Coursework earned five or more years prior to admission to a master’s degree is not allowed to satisfy requirements.

M.S. named option in GIS Development: With program approval, students may count 8 credits taken as a UW–Madison University Special student. Coursework earned five or more years prior to admission to the option may not be used to satisfy requirements.

**CREDITS PER TERM ALLOWED**

M.S.: 15 credits
M.S. named option in GIS Development: 12 credits

**PROGRAM-SPECIFIC COURSES REQUIRED**

**M.S.:**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>GEOG 765 &amp; GEOG 766</td>
<td>Geographical Inquiry and Analysis: An Introduction and Geographical Inquiry and Analysis: Techniques</td>
<td>4</td>
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<td>GEOG 370</td>
<td>Introduction to Cartography</td>
<td>4</td>
</tr>
<tr>
<td>GEOG/CIV ENGR/ENVIR ST 377</td>
<td>An Introduction to Geographic Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 378</td>
<td>Introduction to Geocomputing</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 970</td>
<td>Seminar in Geographic Information Science</td>
<td>1-3</td>
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<td>GEOG 572</td>
<td>Graphic Design in Cartography</td>
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<tr>
<td>GEOG 575</td>
<td>Interactive Cartography &amp; Geovisualization</td>
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<tr>
<td>GEOG 577</td>
<td>Environmental Modeling with GIS</td>
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<tr>
<td>GEOG 578</td>
<td>GIS Applications</td>
<td></td>
</tr>
<tr>
<td>GEOG 579</td>
<td>GIS and Spatial Analysis</td>
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M.S. named option in GIS Development:
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<td>4</td>
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<td>GIS and Spatial Analysis</td>
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<td>Graphic Design in Cartography</td>
<td>3-4</td>
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<td>GEOG 574</td>
<td>Geospatial Database Design and Development</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 576</td>
<td>Geospatial Web and Mobile Programming</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 575</td>
<td>Interactive Cartography &amp; Geovisualization</td>
<td>4</td>
</tr>
</tbody>
</table>

**OVERALL GRADUATE GPA REQUIREMENT**

3.0 GPA required

**PROBATION POLICY**

The Department of Geography expects graduate students to progress through a sequence of benchmarks within prescribed time periods. These benchmarks constitute a reasonable rate of accomplishment for full-time students holding teaching or research appointments. The department recognizes that individual circumstances vary, and not all students progressing toward their academic goals will hit the benchmarks exactly. Thus a student's progress is considered unsatisfactory only after a period of time elapses following an unmet benchmark. A student not making satisfactory progress is placed on probation. For detailed information about these benchmarks and triggers for probationary status, please see the department's Criteria for Satisfactory Progress (http://www.geography.wisc.edu/graduate/Criteria%20for%20Satisfactory%20Progress.pdf).

**ADVISOR / COMMITTEE**

M.S.: Committee must have a minimum of three members, two of whom must be grad faculty (or former grad faculty up to one year after resignation/retirement) and two of whom must be affiliated with the geography department.

M.S. named option in GIS Development: All students are required to conduct a yearly progress report with the program director, scheduled by December 17 and completed by April 30. Failure to do so will result in a hold being place on the student's registration.

**ASSESSMENTS AND EXAMINATIONS**

M.S.: A formal thesis is required.

M.S. named option in GIS Development: No formal examination is required.

**TIME CONSTRAINTS**

For program-specific time constraints, please see Probation Policy above.

**LANGUAGE REQUIREMENTS**

No language requirement.

**ADMISSIONS**

The Graduate School sets minimum requirements for admissions (https://grad.wisc.edu/admissions/requirements). Academic program admission requirements are often more rigorous than those set by the Graduate School. Please check the program's website (http://www.geography.wisc.edu/graduate/application.php) for details.

### LEARNING OUTCOMES

#### KNOWLEDGE AND SKILLS

- Articulates, critiques, or elaborates the theories, research methods, and approaches to inquiry or schools of practice in cartography and GIScience.
- Identifies sources and assembles evidence pertaining to questions or challenges in cartography/GIScience.
- Demonstrates understanding of cartography/GIScience in a historical, social, or global context.
- Selects and/or utilizes the most appropriate methodologies and practices.
- Evaluates or synthesizes information pertaining to questions or challenges in cartography/GIScience.
- Communicates clearly in ways appropriate to cartography/GIScience.

#### PROFESSIONAL CONDUCT

- Recognizes and applies principles of ethical and professional conduct.

### PEOPLE

**Faculty:** Professors Naughton (chair), Cadwallader, Cronon, Kaiser, Mason, Naughton, Olds, Turner, Williams, Zhu; Associate Professors Marin-Spiotta Robertson, Woodward; Assistant Professors Baird, Gibbs, Huang, Moore, Roth, Young