CARTOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS, BS

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (http://guide.wisc.edu/undergraduate/#requirementsforundergraduatetext) section of the Guide.

General Education

- Breadth—Humanities/Literature/Arts: 6 credits
- Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth—Social Studies: 3 credits
- Communication Part A Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF LETTERS & SCIENCE DEGREE REQUIREMENTS: BACHELOR OF SCIENCE (BS)

Students pursuing a Bachelor of Science degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either the Bachelor of Arts or the Bachelor of Science degree requirements.

BACHELOR OF SCIENCE DEGREE REQUIREMENTS

Mathematics

- Complete two courses of 3+ credits at the Intermediate or Advanced level in MATH, COMP SCI, or STAT subjects. A maximum of one course in each of COMP SCI and STAT subjects counts toward this requirement.

Language

- Complete the third unit of a language other than English.

LS Breadth

- 12 credits of Humanities, which must include at least 6 credits of Literature; and
- 12 credits of Social Science; and
- 12 credits of Natural Science, which must include 6 credits of Biological Science and 6 credits of Physical Science.

Liberal Arts and Science Coursework

- Complete at least 108 credits.

Depth of Intermediate/Advanced Coursework

- Complete at least 60 credits at the Intermediate or Advanced level.

Major

- Declare and complete at least one major.

Total Credits

- Complete at least 120 credits.

UW-Madison Experience

- Complete both:
  - 30 credits in residence, overall, and
  - 30 credits in residence after the 86th credit.

Quality of Work

- 2.000 in all coursework at UW–Madison
- 2.000 in Intermediate/Advanced level coursework at UW–Madison

NON-L&S STUDENTS PURSUING AN L&S MAJOR

Non-L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR

BREADTH

3 courses, 1 each from these areas:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GEOG 101</td>
<td>Introduction to Human Geography</td>
<td>3</td>
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<tr>
<td>GEOG 104</td>
<td>Introduction to Human Geography</td>
<td></td>
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<tr>
<td>GEOG/ART HIST/ENVIR ST/HISTORY/LAND ARC 239</td>
<td>Making the American Landscape</td>
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<td>GEOG 300</td>
<td>Weird Geographies</td>
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<tr>
<td>GEOG 301</td>
<td>Revolutions and Social Change</td>
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<tr>
<td>GEOG 302</td>
<td>Economic Geography: Locational Behavior</td>
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<tr>
<td>GEOG/URB R PL 305</td>
<td>Introduction to the City</td>
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<tr>
<td>GEOG 307</td>
<td>International Migration, Health, and Human Rights</td>
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<tr>
<td>GEOG/CHICLA/GEN&amp;WS 308</td>
<td>Latinx Feminisms: Women's Lives, Work, and Activism</td>
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<tr>
<td>GEOG/INTL ST 311</td>
<td>The Global Game: Soccer, Politics, and Identity</td>
<td></td>
</tr>
<tr>
<td>GEOG/INTL ST 315</td>
<td>Universal Basic Income: The Politics Behind a Global Movement</td>
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</tbody>
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* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.
GEOG 318  Introduction to Geopolitics
GEOG 340  World Regions in Global Context
GEOG 342  Geography of Wisconsin
GEOG 355  Africa, South of the Sahara
GEOG 358  Human Geography of Southeast Asia
GEOG/AMER IND 410  Critical Indigenous Ecological Knowledges
GEOG 501  Space and Place: A Geography of Experience
GEOG/URB R PL 503  Researching the City: Qualitative Strategies
GEOG/GEN&WS 504  Feminist Geography: Theoretical Approaches
GEOG/URB R PL 505  Urban Spatial Patterns and Theories
GEOG 507  Waste Geographies: Politics, People, and Infrastructures
GEOG 510  Economic Geography
GEOG 511  Critical Social Theory
GEOG/GEN&WS 514  Feminist Geography: Methodological Approaches
GEOG 518  Power, Place, Identity
GEOG 566  History of Geographic Thought

People-Environment (1 course)  3
GEOG/ENVIR ST 139  Global Environmental Issues
GEOG/ART HIST/ENVIR ST/HISTORY/LAND ARC 239  Making the American Landscape
GEOG/ENVIR ST 309  People, Land and Food: Comparative Study of Agriculture Systems
GEOG/ATM OCN/ENVIR ST 332  Global Warming: Science and Impacts
GEOG/ENVIR ST 333  Green Urbanism
GEOG/ENVIR ST 337  Nature, Power and Society
GEOG/BOTANY 338  Environmental Biogeography
GEOG/ENVIR ST 339  Environmental Conservation
GEOG 340  World Regions in Global Context
GEOG 344  Changing Landscapes of the American West
GEOG/AMER IND/ENVIR ST 345  Caring for Nature in Native North America
GEOG 359  Australia: Environment and Society
GEOG/AMER IND 410  Critical Indigenous Ecological Knowledges
GEOG/C&E SOC/ENVIR ST 434  People, Wildlife and Landscapes

GEOG/ENVIR ST 439  US Environmental Policy and Regulation
GEOG/ENVIR ST/HISTORY 460  American Environmental History
GEOG/SOIL SCI 526  Human Transformations of Earth Surface Processes
GEOG/ENVIR ST 534  Environmental Governance: Markets, States and Nature
GEOG/ENVIR ST 537  Culture and Environment
GEOG/ENVIR ST 557  Development and Environment in Southeast Asia

Physical Geography (1 course)  3
GEOG/ENVIR ST 120  Introduction to the Earth System
GEOG/ENVIR ST 127  Physical Systems of the Environment
GEOG/GEOSCI 320  Geomorphology
GEOG/ATM OCN/ENVIR ST/GEOSCI 335  Polar Regions and Their Importance in the Global Environment
GEOG 329  Landforms and Landscapes of North America
GEOG/ATM OCN/ENVIR ST 332  Global Warming: Science and Impacts
GEOG/ATM OCN/ENVIR ST/GEOSCI 335  Climatic Environments of the Past
GEOG/BOTANY 338  Environmental Biogeography
GEOG 342  Geography of Wisconsin
GEOG 344  Changing Landscapes of the American West
GEOG/GEOSCI 420  Glacial and Pleistocene Geology
GEOG 523  Advanced Paleocology: Species Responses to Past Environmental Change
GEOG/SOIL SCI 525  Soil Geomorphology
GEOG/SOIL SCI 526  Human Transformations of Earth Surface Processes

Total Credits  9

SKILLS, TECHNIQUES & METHODOLOGY

Core Cartography/GIS

GEOG 370  Introduction to Cartography  4
GEOG/ENVIR ST/F&W ECOL/G LE/GEOSCI/LAND ARC 371  Introduction to Environmental Remote Sensing  3
Cartography and Geographic Information Systems, BS

or GEOG 379 Geospatial Technologies: Drones, Sensors, and Applications

GEOG/CIV ENGR/ENVR ST 377 An Introduction to Geographic Information Systems

GEOG 378 Introduction to Geocomputing

Quantitative Methods (1 course) 3–4

GEOG 560 Advanced Quantitative Methods

STAT 301 Introduction to Statistical Methods

STAT 324 Introductory Applied Statistics for Engineers

STAT 371 Introductory Applied Statistics for the Life Sciences

Mathematics Proficiency 6

Complete one of the following by Placement or by completing the course

MATH 112 Algebra
&MATH 113 and Trigonometry

MATH 114 Algebra and Trigonometry

Total Credits 24–25

DEPTH

Code Title Credits

Two courses 7–8

GEOG/ENVIR ST/LAND ARC/URB R PL 532 Applications of Geographic Information Systems in Planning

GEOG 572 Graphic Design in Cartography

GEOG 573 Advanced Geocomputing and Geospatial Big Data Analytics

GEOG 574 Geospatial Database Design and Development

GEOG 575 Interactive Cartography & Geovisualization

GEOG 576 Geospatial Web and Mobile Programming

GEOG 578 GIS Applications

GEOG 579 GIS and Spatial Analysis

Total Credits 7–8

CAPSTONE

Code Title Credits

Complete one of: 3–6

GEOG 565 Colloquium for Undergraduate Majors

GEOG 681 Senior Honors Thesis & GEOG 682 and Senior Honors Thesis

GEOG 691 Senior Thesis & GEOG 692 and Senior Thesis

Total Credits 3–6

RESIDENCE AND QUALITY OF WORK

- 2.000 GPA in GEOG and major courses
- 2.000 GPA on 15 upper-level credits, taken in residence
- 15 credits in GEOG, taken on the UW–Madison campus

GEOG courses designated Intermediate/Advanced are upper level in this major.

HONORS IN THE MAJOR

Students may declare Honors in the Cartography and GIS Major in consultation with the Geography undergraduate advisor.

HONORS IN THE CARTOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS MAJOR REQUIREMENTS

To earn Honors in the Major in Cartography and Geographic Information Systems, students must satisfy both the requirements for the major (above) and the following additional requirements:

- Earn a 3.300 overall university GPA
- Earn a 3.300 GPA for all GEOG courses, and all courses accepted in the major
- Complete GEOG 578: GIS Applications with a grade of B or better
- Complete at least one advanced-level course OR 6 credits of honors credits in the major at the 300 level or above
- Complete a two-semester Senior Honors Thesis in GEOG 681 Senior Honors Thesis and GEOG 682 Senior Honors Thesis, a piece of original research composition, for a total of 6 credits.

UNIVERSITY DEGREE REQUIREMENTS

Total Degree To receive a bachelor’s degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. "In residence" means on the UW–Madison campus with an undergraduate degree classification. "In residence" credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.

Quality of Work Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.