

Proposal to Revise the Existing Geography Major

Name of Major: Geography

Degrees: Bachelor of Science and Bachelor of Arts

Target Implementation Date: Autumn 2009

Rationale:

Established almost 100 years ago, the Department of Geography at Ohio State is one of the top-ranked departments in the discipline. Students majoring in Geography choose from among four specializations, two of which lead to a Bachelor of Arts and two to a Bachelor of Science. The BA specializations are “Urban and Regional Studies” and “People, Society and Environment;” the BS specializations are “Analytical Cartography and Geographic Information Systems” and “Climatic and Atmospheric Sciences.”

Between WI07 and SP08 the department’s Undergraduate Studies Committee undertook an extensive review of student curricula across the entire department. As part of this review, we solicited feedback from faculty, advising staff and current geography majors. The goal was to evaluate what we teach and how we teach it, in light of significant changes in our faculty, the discipline, and the job market for undergraduate majors. Our findings can be summarized as follows:

1. Due to a large number of hires, the composition of our faculty has changed dramatically over the past decade. Since 2001 we have hired 15 professors, out of a total faculty of 25. Most of these hires have been at the assistant level. Although this demographic shift allows us to teach material that is more in keeping with new directions in the discipline, the existing curricular structure limits our ability to take advantage of this strength.
2. Interdisciplinarity and the pace of real-world events have made Geography a much more dynamic discipline than it was twenty years ago. Geographers now regularly engage with scholars in a wide-range of fields (as diverse as Political Science, Geology, and Computer Science) and deal with a broad array of constantly changing subject matter, such as global warming and globalization. Our current curricular structure does not reflect the topical or conceptual complexity and dynamism of our discipline.
3. Students in Geography have a variety of career paths. Some go on to graduate school in the social and natural sciences. Many others go directly into the job market, in fields as diverse as regional planning, weather forecasting, international development, and retail location analysis. To remain competitive in both academic and non-academic fields, as well as to be effective citizens, our graduates must be conversant in always-changing technical and content-driven fields. Our current curricular structure requires both more flexibility and more cohesion to meet these challenges.
4. Departmental assessment of learning of outcomes (focus groups, exit surveys) and discussion with faculty indicate a need to address the overall cohesiveness of the

curriculum. Students and faculty agree that we need to update content, reduce redundancy, and align more introductory with more advanced courses. At the same time, we need to streamline progress through the program by creating structure while retaining maximum flexibility and allowing for timely completion of the degree. Faculty also indicate that such changes will bring us in line with best teaching practices at peer institutions.

5. The names of our specializations need to be updated, as do the titles and descriptions of many individual courses. Updating names and descriptions will better reflect and communicate content, and will make them more similar to the terms used at peer institutions. Our proposals for name and description changes result from intensive faculty consultation.

In sum, Geography is currently a very dynamic and diverse discipline, and our department is also in the midst of a personnel shift that parallels the dynamism and diversity of the discipline. Our proposal updates the curriculum to better represent state of the art in each specialization, take advantage of expertise of current faculty, and provide a clear and comprehensive education to students with a range of interests and career plans.

Revised Major:

Based on our evaluation, we are proposing a substantial revision of the curriculum of all four specializations in the Geography major, as well as a suite of changes to individual courses. Together, these changes better represents what we do, and make it clearer to students how different parts of the curriculum fit together.

We are including course change proposals for 24 courses (see Appendix A for summary). The proposed changes include 18 new names, 21 new descriptions, two number changes, and several small changes in things such as distribution of contact time.

We are proposing seven new courses (see Appendix B for summary). Because the new courses are designed to fill explicit gaps in the curriculum for each specialization, justifications for these new courses are included within our descriptions of revisions for each specialization.

We are proposing to increase and/or standardize the number of credit hours for the major (changes for each specialization are detailed below, in the description for each). Currently, each specialization requires a different number of credit hours, ranging from 43 to 60. Our proposal provides consistency across our specializations by requiring 50-55 credit hours. Recent graduates receiving a BA are already taking this number of credit hours within the major, while those receiving a BS are taking somewhat fewer (44-48). The proposed number of required credit hours will provide greater rigor within the major. The proposal is also consistent with the requirements of peer institutions, which vary widely. Of the ten universities from which we gathered information, three require fewer credit hours than we are proposing, four require more, two are the same, and one (Univ. of Colorado) has a wide range that is both slightly less and significantly more than we are proposing. See Appendix N for these data.

What follows below are narrative descriptions of the proposed revisions to each of the specializations. Outlines of old and new curricula are provided in Appendices C-J. Sample four-year course plans for each specialization are provided in Appendix K.

The Curriculum Office of the College of the Arts and Sciences has requested comment from several Departments and Schools. As we receive letters of concurrence they will be included in Appendix M.

Urban and Regional Studies (to become “Urban, Regional, and Global Studies”)

Students in this specialization focus on the spatial differentiation and organization of political, social, cultural and economic activity. The proposed changes respond primarily to student demand for a more integrated and up-to-date curriculum. They also derive from broad support among faculty for course sequences and content which better reflect the state of teaching and research in Human Geography. Students enrolled in the specialization will become familiar with an array of geographical theories and theoretical controversies, develop strong quantitative and qualitative research skills, and engage with a wide range of up-to-date case studies. Upon completion of the degree, students will be able to link urban and regional politics and development to larger, global scale forces and trends. We propose four main revisions.

1. *Change the name to “Urban, Regional, and Global Studies.”* This name change builds on long-term strengths of OSU Geography while signaling the growing importance of the global-scale scholarship in Geography more generally. It also better represents the diversity of faculty strengths in this area.
2. *Repackaging and simplifying requirements.* Currently our courses are duplicated across a broad array of “Methods”, “Systematic”, “Regional” and “Elective” courses. This makes requirements for graduation difficult to follow, it allows little flexibility in some areas, and the progression of courses is unclear.
 - a. The existing structure has a) three required Methods courses, b) a choice of four Systematic courses from a given list, c) a choice of one Physical Geography course from a given list, d) one required Regional Geography course from a given list, and e) one elective course from a given list. See Appendix C.
 - b. The new curriculum streamlines this structure and provides more choices for the student. The proposed structure includes: a) a Methods sequence, with one required course and two electives, b) a new required introductory course in Human Geography (see below), c) choice of three more introductory courses (200/400-level), including a new 400-level course in Urban Geography (see below), d) choice of three advanced courses (500/600/700-level), and e) a new required Geographic Inquiry course (see below). See Appendix D.
3. *Addition of three new courses.* See Appendix B
 - a. Geog 205: Human Geography. Coming at the beginning of the curriculum, this course is designed to provide a coherent platform for students’ future studies in

URGS. Our peer institutions across the country have a course similar to this one. This course will be required of all students in the specialization.

- b. Geog 455: Cities in a Globalizing World. This course is designed to fill a 400-level gap in our current course offerings. We already teach a variety of 600-level courses on urban topics. This course would be included in the list of introductory courses from which students will choose three.
 - c. Geog 600: Geographic Inquiry. This course is intended to give students a theoretical retrospective at the end of their undergraduate career. Students have explicitly requested this sort of capstone course. Moreover, as with the proposed Geog 205, our peer institutions have courses similar to this one. This course will be required of all students in the specialization.
4. *Increase the total number of credit hours from 50 to 55.* In the current structure, students take 50 credit hours. We have added two new required courses (205 and 600), yet our revision of the rest of the curriculum means only five more credit hours of coursework.

People-Society-Environment (to become "Environment & Society")

Students in this specialization focus on understanding the relationship between people and nature. Although this is a relatively new specialization in the department (started in 2002), so-called "human-environment interactions" or "nature-society relations" have been at the core of geographical thought since its inception as a discipline. Drawing on this history of geographic thought, the proposed curriculum better emphasizes the reciprocal relationship between social and environmental processes. It introduces relevant theories in human and physical geography, appropriate methods of inquiry, and case studies of environmental challenges. We propose three main revisions.

1. *Change the name to "Environment & Society."* This name change better reflects disciplinary terminology and signals the diversity of faculty strengths in this area.
2. *Alter the main divisions within the curriculum and change which course count in each area..*
 - a. The current structure has a required core, and then provides options in three areas: synthetic and methodological electives, environmental electives, and social electives. See Appendix E.
 - b. The new curriculum replaces this structure with three substantive areas, each of which has a set of required courses and electives. These areas are: Human Geography, Physical Geography, and Methods. The courses formerly in the required core have been integrated into these three areas. See Appendix F.
 - c. In light of new courses that have been added over the past several years due to an influx of new faculty, the new curriculum also changes which courses count in each of these areas. Despite growing faculty expertise and student demand when this specialization was proposed in 2002, at that time the department offered a limited number of courses in these areas. Now, our faculty offers a full-complement of

courses in these areas. These courses offer us the ability to teach disciplinary specific material that introduces key geographical concepts, provides continuity across courses, and allows us to alter the content of courses as disciplinary foci change. The course lists we propose reflect this major change in our ability to provide explicitly geographical course content to our students. Compare Appendix E and F.

3. *Standardize the total number of credit hours at 55.* In the current structure, students take a variable number of credit hours, ranging from 50-60. The new structure requires a consistent number of credit hours, while still maintaining student flexibility.

Analytical Cartography and Geographic Information Systems (to become "Spatial Analysis")

Students in this specialization focus on learning tools and methods for the management and analysis of geographic information while also receiving broad training in geographical principles. The geography department at Ohio State was among the pioneering institutions in the development of geospatial technologies, and has been a leader in the fields of cartography, spatial analysis, and geographic information technology. The proposed curriculum draws on these strengths by providing integrative training in geovisualization, spatial analysis, and geographic information systems, while also providing extensive training in technical skills. Further, the proposed curriculum allows students to develop expertise in non-technical substantive areas of human and/or physical geography. We propose four main revisions.

1. *Split the current specialization into two: a separate major, called Geographic Information Science (GIS; see separate new major proposal), and a remaining specialization within the Geography major, called "Spatial Analysis".*
 - a. The Spatial Analysis specialization has been designed to provide general geography education alongside technical expertise in spatial analysis, whereas the focus of the GIS major is technical expertise in spatial data management, analysis, and visualization.
 - b. The Spatial Analysis specialization is targeted to students wishing to proceed to graduate school in Geography or related fields, and those wishing to enter professional fields in analysis and managerial roles that would require using and planning for spatial information. The GIS major is targeted to students wishing to enter professional fields focused on spatial data acquisition and analysis, in positions such as GIS analyst or spatial database manager.
 - c. The course lists for the two programs have been chosen to maximize individual flexibility while assuring necessary competencies (see below for details).
 - i. The Spatial Analysis specialization and GIS major have a similar set of core courses, to ensure adequate technical proficiency. Reflecting the different focus of the two programs, the required core of the GIS major is more extensive.

- ii. There is still substantial overlap in the list of electives; this is to provide individuals with maximum flexibility to design a course plan that meets specific needs. The main difference between the programs is that the Spatial Analysis specialization includes a broader array of applications courses from which students will be able to select. Given this list of electives, it would be possible for a student majoring in Geography to design a course sequence that differs from the GIS major by only one course. However, because the intent of the Spatial Analysis specialization is to gain training in substantive areas of human or physical geography, there would be little advantage in choosing this option. All students choosing the Spatial Analysis specialization will be encouraged to take full advantage of the range of Geography courses available to them, while allowing them to tailor the program to their interests and career plans.
 - d. The proposal for this specialization is contingent on approval of the separate GIS major. If that proposal is not approved by the Board of Regents, this specialization will need to be revisited.
- 2. *Alter the main divisions within the curriculum, and which courses count in each area.*
 - a. The specialization currently consists of two fairly rigid paths, in Analytical Cartography and Geographic Information Systems (see Appendix G).
 - b. The new curriculum eliminates these paths, and also eliminates a separate human and/or physical geography elective. It maintains a required core and proposes a larger set of combined electives that a) include a greater set of methods courses from which students can choose, thus offering greater flexibility, and b) allow students to choose a greater number of electives in human and/or physical geography. The proposed structure allows students with a variety of backgrounds and career aspirations to tailor the specialization to their specific needs, while assuring core competency in geographical methods. See Appendix H.
 - c. CS&E 201 (Elementary Computer Programming) is moved from the pre-major required courses into the Electives, where students may choose this course, or other CS&E programming courses (214 or 240).
 - d. The number of credit hours in the required core is increased by 10 by adding Intermediate GIS (685) and Undergraduate Research and Professionalization Seminar (695).
 - e. Students choose four elective courses: one methods, one human or physical geography, and two of the students' choosing (i.e. these may include methods and human and physical geography courses).
- 3. *Addition of two new courses.* Both courses are included in the list of electives for the specialization. See Appendix B.
 - a. Geog 684: Geographic Applications in Remote Sensing. This course is intended to cover a core knowledge area that is recommended by the University Consortium for

GIS Body of Knowledge (UCGIS 2006). A course in this area has been requested by students, and also draws on the expertise of new faculty in the department.

- b. Geog 688: Emerging Topics in GIS. Given the rapidly changing nature of GIS, this course is designed to keep students abreast of innovations and new technologies in the field. The course has been requested by students to provide additional training for undergraduates planning to work in GIS-related fields.
4. *Increase the total credit hours from 44/45 to 50.* Increasing the required credit hours is necessary to provide students with sufficient technical training while also providing them a broad-based geographical education. It also aligns the requirements of this specialization with the rest of the major.

Atmospheric and Climatic Studies (to become “Climatology and Physical Geography”)

Students in this area focus on the interactions between the Earth’s surface, at local and global scales, and the atmosphere. Geography at Ohio State has well-established expertise in climatology, which is one aspect of physical geography more broadly. Recent hires strengthen this emphasis and add expertise in other aspects of physical geography, such as biogeography and hydrology. The revised curriculum takes advantage of these strengths by allowing students to emphasize either climatology or physical geography. At the same time, the proposed curriculum provides an overarching framework for understanding connections between land and atmosphere. We propose four main revisions.

1. *Split the current specialization into two: a separate major, called Atmospheric Sciences (AS; see separate new major proposal), and a remaining specialization within the Geography major.*
 - a. The following proposal for this specialization is contingent on approval of the separate AS major. If that proposal is not approved by the Board of Regents, this specialization will need to be revisited.
 - b. This specialization within the Geography major has been designed to complement the proposed Atmospheric Sciences, and is intended for students wishing to gain knowledge substantive areas of Geography. The specialization is designed to provide *general geographic education* alongside *technical expertise in climate and physical geography*. Students in this specialization will be introduced to a broader array of methods and applications courses from which they will be able to select. Further, a specialization with emphasis on broad physical geography education is more common in the discipline than our current specialization, which focuses almost exclusively on atmospheric sciences.
2. *Change the name to “Climatology and Physical Geography (CPG).”* This name reflects now-mainstream recognition of the interconnection between the Earth’s surface and the atmosphere. It also reflects the expertise of new faculty in physical geography.

3. *Alter the main divisions within the curriculum.*
 - a. The current structure includes two paths, in Atmospheric Sciences and in Climatic Studies. The prerequisite courses are the same, except that the Atmospheric Sciences path include an additional 15 credit hours of Math. The core 28 credit hours are the same for both paths. Each path has a different set of electives, though both are 15 credit hours. See Appendix I.
 - b. The new curriculum includes two different paths, in Climatic Studies (CS) and in Physical Geography (PG). These paths reflect both student demand and current faculty expertise. Each path has a distinct set of prerequisite courses (30 hours for CS, 20 for PG), core requirements (28-30 for both paths), and electives (25 hours for both paths). The PG path includes the option of taking one Human Geography course. See Appendix J.
4. *Increase the total credit hours from 43 to 53-55.* The additional credit hours represent an increase in the number of electives. This adds both rigor and flexibility to the specialization, while also aligning the credit hour requirement of this specialization with the rest of the major.

Relationship to other programs:

We expect our relationship to other programs to be only modestly altered.

We expect no disturbance in terms of the ways in which our existing courses are used by other departments and programs (e.g. some of our courses are required for students enrolled in the International Studies major). Likewise, none of the changes proposed in this document will affect courses currently categorized as GECs. In general, the proposed curricular changes seek only to formalize or extend existing course content, and do not represent any substantive shifts in terms of material covered.

In terms of changes in enrollment in other programs and departments at OSU, we predict a minimal impact. The proposed changes to the *Urban, Regional, and Global Studies* specialization do not alter the distribution of required credit hours between geography and other departments. Likewise, the proposed changes to the *Spatial Analysis* specialization are internal changes, with little impact on outside credit hours. We continue to include Computer Science and Engineering as well as Statistics courses as an important component of the curriculum.

The proposed changes to the *Climatology and Physical Geography* specialization may increase the number of our students taking courses other departments. Not only do we continue to include courses from the School of Earth Sciences in the curriculum, but we are now including one such course in the required core. Earth Sciences 550 (Geomorphology) is part of the *required core* for the physical geography path, and Earth Sci 410 (Water in the Basin Hydrologic Cycle) and 650 (Glaciers and Landscapes) are electives for this path.

The curricular changes made to the proposed *Environment & Society* specialization might be expected to have the most impact on enrollment numbers outside the department. This is because under the existing curriculum, students majoring in the specialization have the option of taking courses from a wide-variety of other departments and colleges. With this revision, we have removed this option for this specialization. However, we expect the impact of this change to be negligible for two reasons (see Appendix L). First, we have had an annual average of only 16 majors in this specialization since SP02, when it began. As a result, there are a very limited number of credit hours to be shared with other departments and colleges in the first place. Second, our data suggest that very few of our students have taken advantage of courses outside the department. The course with the highest enrollment of E&S students is Ecology (EEOB 413). Since 2002, the lecture portion of this course has enrolled an annual average of approximately three students; the lab portion has enrolled an annual average of two students. Similarly, an annual average of just over one E&S student has enrolled in Soil Science (taking both lecture and lab) (ENR 300) since 2002. Even more strikingly, since 2002 only ten E&S students have enrolled in the History courses in our curriculum (366.01 Environmental Issues in Historical Perspective and 366.02 (formerly 567) American Environmental History). Four have enrolled in the social science courses in ENR (367 Making and Meaning of the American Landscape and 400 Natural Resources Policy), while only one student has enrolled in Geomorphology (Earth Sci 550), and that was in 2005.

We also expect positive synergies between the existing Geography major and the proposed majors in Atmospheric Sciences and in Geographic Information Sciences. In particular, we anticipate that some students will elect to double major in Geography and either Atmospheric Sciences or GIS, or major in Geography and minor in the latter. This is an especially exciting aspect of our proposed curriculum overhaul. Students who take advantage of this opportunity will receive a particularly well-rounded education that combines substantive knowledge in geographic concepts with an extensive quantitative and qualitative job-ready skills set.

Student enrollment:

As of Autumn 2008, the Geography undergraduate program consists of approximately 200 majors. Geography majors tend to declare the major very late in their undergraduate career; we estimate that at least half of our students declare Geography as a major sometime during their third year. We expect that updating the major to reflect current disciplinary trends, with more recognizable and relevant titles and course descriptions, will increase visibility and attraction to the Geography major. Revising the major for greater strength and relevance should have several effects on enrollment of majors. First, it will help students find their way to Geography sooner in their time at OSU. Second, we expect that retention of students in Geography will be improved. Third, we expect some growth in the number of majors by attracting students to OSU who might otherwise enroll elsewhere. In addition to effects on majors, we expect to enroll more students in Geography courses from across the college and the university. For example, the revision of the GIS specialization will better represent the suite of tools, applications and techniques that are of broad utility to many students across the

university, while the revision of the Environment and Society specialization will better represent the contribution of geography to anyone interested in environmental topics.

Administration:

The Geography major will continue to be housed in the Department of Geography, within the College of Social and Behavioral Sciences (SBS).

Advising:

We do not expect our reorganization of the Geography undergraduate curriculum to result in any major changes to advising. Our primary advising contact for students will continue to be Rick McClish, our Undergraduate Advisor, who reports to our departmental chair, Professor Morton O’Kelly. Honors students will continue to be advised by our designated Undergraduate Studies Committee chair, currently Professor Becky Mansfield.

Assessment Plan:

Current Assessment Plan The Department of Geography has an assessment plan that includes a suite of outcome monitoring methods that allows us to gauge whether or not we are meeting pedagogical goals, and then to make necessary corrections. The plan is reviewed annually by the College of Social and Behavioral Sciences, and is overseen by our undergraduate advisor. The current plan consists of two indirect assessment methods and one direct method. The feedback we received from these forms of assessment was important in our development of the current proposal, including both new courses and the overall curricular structure. Our current assessment methods include:

- Embedded questions in one regularly offered and popular upper division course
- Informal focus groups with students in the major. In the 2007-2008 school year we conducted four such groups, one for each specialization.
- An exit survey of graduating seniors, which includes questions about the major regarding their overall educational experience, classroom experience, research and internship participation, and placement in jobs and graduate school.

Future Assessment Plan Our assessment will be multidimensional and ongoing. We will refine our methods of assessment as we gain more experience with them and as the needs of the department change. We expect our assessment strategy to result in geography majors who are better prepared for graduate studies, the job market, and as citizens. Our future assessment plan consists of:

- Continued use of focus groups with students and exit surveys with graduating seniors.
- Expanded use of embedded testing.
 1. There is no one class that all majors in geography are required to take. However, with this revision the Undergraduate Research and Professionalization Seminar (Geog 695) will be required of all majors in the Urban, Regional, and Global Studies; Environment and Society; and Spatial Analysis specializations. It also will be an elective for majors in the Climate and Physical Geography specialization. We expect that 80% or more of our majors will be taking this class, largely in their junior and senior years. This class is ideal for embedded testing because it not only teaches

- methods and skills, but requires students to express their general knowledge about geographic concepts and methods. The Undergraduate Studies Committee, which represents all four specializations, is currently developing a set of embedded questions for this class that will assess the department's success in teaching students core concepts, methods, and professional skills.
2. To assess knowledge of those students in the CPG specialization who do not take Geog 695, we are developing embedded questions in Climatology (Geog 520), which is required of all students in the specialization, regardless of their path (either Climatology or Physical Geography). The Undergraduate Studies Committee is overseeing this process.
- The data gathered through this variety of assessment methods will be reviewed and discussed by the faculty and changes to the major will be considered as appropriate.

Appendix A Course Change Proposals

Summary of proposed changes to courses. Formal course change request forms, with syllabi, are being submitted separately.

Course number	Current Name	Name change	Description change	Number change	Other
200	World Regional Geography		✓		
240	Economic and Social Geography		✓		
280	Map Reading and Interpretation		✓	✓	
400	Geography of the United States and Canada	✓	✓		
430	Geographical Perspectives on Environment and Society	✓	✓		✓
445	The Geography of Transportation Security	✓			
460	Political Geography	✓	✓		
490	Introduction to Biogeography	✓			
505	South America	✓	✓		✓
510	Geography of Western Europe	✓	✓		✓
605	Special Problems in the Geography of Latin America	✓	✓		✓
630	Conservation of Natural Resources	✓	✓		
640	Economies, Space, and Society		✓		
642	Geography of Development		✓		
650	Urban Geography	✓	✓		
652	Cities, Cultures, and the Political Geography of Difference	✓	✓		
655	Theories and Methods of Regional Geography	✓	✓		✓
670	Population Geography	✓	✓	✓	✓
680	Numerical Cartography	✓	✓		
683	Introduction to Geographic Analysis	✓	✓		
686	GIS in Social Science and Business Research	✓	✓		
687	Design and Implementation in Geographic Information	✓	✓		
695	Undergraduate Seminar in Applied Geography	✓	✓		
ASP 637	Dynamic Meteorology I				✓
TOTAL		18	21	2	7

Appendix B
New course proposals

Summary of new course proposals. Individual course proposal forms with syllabi are being submitted separately.

Course number	Name
Geog 205	Human Geography
Geog 455	Cities in a Globalizing World
Geog 600	Geographic Inquiry
Geog 684	Geographic Applications in Remote Sensing
Geog 688	Emerging Topics In GIS
ASP 689	Internship in Atmospheric Sciences
ASP 699	Undergraduate Research in Atmospheric Sciences
ASP H783	Honors Research

Appendix C
Current Urban and Regional Studies Curriculum

Part A. Required Prerequisites or Supplements to the Major

- NA

Part B. Core Requirements

1. Three required methods courses:
 - Elements of Cartography 580
 - Fundamentals in Geographic Information Systems 607
 - Introduction to Geographic Analysis 683

2. Choice of four required systematic courses:
 - Making the Modern World 450
 - Political Geography 460
 - Conservation of Natural Resources 630 or Globalization and the Environment 635
 - Economic Geography 640 or Geography and Development 642
 - Geography of Transportation 645
 - Urban Geography 650 or Urban Political Geography 660
 - Locational Analysis 647 or Theory and Methods of Regional Analysis 655
 - Population Geography 670

3. Choice of one required physical geography course:
 - Physical Geography and Environmental Issues 210
 - Climatology 520
 - Integrated Earth Systems: Confronting Global Change 597.02

4. Choice of one required regional geography course:
 - Geography of the US and Canada 400
 - Geography of Western Europe 510
 - Geography of Eastern Europe 511
 - Geography of the Soviet Union 512
 - South Asia: Ecology, Economy and Polity 513
 - Special Problems in the Geography of Latin America 605
 - South Africa: Society and Space 608
 - Special Problems in the Geography of the Former USSR 612
 - Globalization and the Environment 635

Part C. Electives within the Major

1. Any Geography course 400-799 not already used in the major (excludes 520 and 597.02)

Appendix D
Proposed Urban, Regional and Global Studies Curriculum

Part A. Required Prerequisites or Supplements to the Major

- NA

Part B. Core Requirements

1. Human Geography 205
2. Undergraduate Research and Professionalization Seminar 695
3. Choice of two of the following methods courses:
 - Map Reading and Interpretation 480
 - Elements of Cartography 580
 - Fundamentals of Geographic Information Systems 607
 - Computer Cartography and Geographical Visualization 680
 - Quantitative Geographical Methods 683
 - Intermediate Geographic Information Systems 685
4. Choice of three more introductory courses:
 - Economic and Social 240
 - Geography of North America 400
 - Geography of Ohio 401
 - Transportation Security 445
 - Making the Modern World 450
 - Cities in a Globalizing World 455
 - Space, Power, and Political Geography 460
 - Modern Geopolitical Imagination 465
 - Life and Death Geographies: Global Population Dynamics 470
5. Choice of three advanced courses:
 - Geography of Latin America 505
 - Geography of the European Union 510
 - Geography of Eastern Europe 511
 - Geography of the Former Soviet Union 512
 - South Asia: Ecology, Economy, Polity 513
 - World Urbanization 597.01
 - New Worlds of Latin America 605
 - South Africa: Society and Space 608
 - Economies, Space and Society 640
 - Geographies of Governmentalities 643
 - Geography of Transportation 645
 - Urban Spaces in the Global Economy 650
 - Social Cities 652

- Land Use Geography 655
- Conflict, Power, and Politics in the City 660

6. Geographic Inquiry 600

Part C. Electives within the Major

- NA

Part D. Internship

1. After students have completed 20 hours of coursework in Geography, they are eligible for an internship and receive credit for it through the department.

Appendix E
Current People, Society and Environment Curriculum

Part A. Required Prerequisites or Supplements to the Major

- NA

Part B. Core Requirements (Five Courses)

1. Physical Geography and Environmental Issues 210
2. Geographic Perspectives on the Environment and Society 430
3. Fundamentals of Geographic Information Systems 607
4. Undergraduate Seminar in Applied Geography 695
5. Introduction to Geographic Analysis 683

Part C. Electives within the Major

1. Synthetic and Methodological Electives (Choose one course)
 - Map Reading and Interpretation Geog 280
 - Elements of Cartography Geog 580
 - Numerical Cartography Geog 680
 - Intermediate Geographic Information Systems Geog 685
 - Demographic Analysis Soc 754
 - Remote Sensing CEE 603
 - Terrain Analysis CEE 604
 - Natural Resources Photo Interpretation ENR 324
 - Magazine Writing J 602
2. Environmental Electives (Choose one *group*)
 - Synoptic Meteorology Laboratory Geog 620 AND Integrated Earth Systems: Confronting Global Change Geog 597.02
 - Ecology EEOB 413.01 (lecture) AND 413.02 (lab)
 - Field Botany EEOB 510 AND Plants and People EEOB 502
 - Soil Science ENR 300.01 (lecture) AND 300.02 (lab)
 - Geomorphology Earth Sci 550 OR Hydrogeology Earth Sci 651
 - Applied Hydrology CE 613
3. Social Electives (Choose three courses, at least one must be in Geography)
 - South Asia: Ecology, Economy, and Polity Geog 513
 - Latin America Geog 605
 - Conservation of Natural Resources Geog 630
 - Globalization and Environment Geog 635
 - Geography of Development Geog 642
 - Population Geography Geog 670
 - Energy, Mineral Resources, and Society Earth Sci 210
 - Environmental Archaeology Anth 602.03
 - Ethnobotany Anth 610
 - Cultural Ecology Anth 620.05

- Women in Rural Society Rur Soc 678
- Environment and Natural Resources Ag Econ 531
- Economics of Growth/Sprawl in America's Countryside Ag Econ 680
- The Making and Meaning of the American Landscape ENR 367
- Natural Resources Policy ENR 400
- Environmental Issues in Historical Perspective Hist 366
- American Environmental History Hist 567
- Science and Society Comp St. 272
- Gender and Science Comp St. 535

Appendix F
Proposed Environment & Society Curriculum

Part A. Required Prerequisites or Supplements to the Major

- NA

Part B. Core Requirements (Students have to fulfill requirements of all three areas: human, physical, methods)

1. Human Geography (Four courses)
 - Environment and Society 430
 - Choose three of the following courses:
 - Life and Death Geographies: Global Population Dynamics 470
 - Geography of Latin America 505
 - New Worlds of Latin America 605
 - Environmental Conservation 630
 - Globalization and Environment 635
 - Geography of Development 642
 - Land Use Geography 655
2. Physical Geography (Three courses):
 - Physical Geography and Environmental Issues 210 OR Introduction to Physical Geography 220
 - Biogeography: An Introduction to Life on Earth 490
 - Global Climate and Environmental Change H410 OR Global Climate Change: Causes and Consequences 420 OR Climatology 520 OR Integrated Earth Systems: Confronting Global Change 597.02
3. Methods (Three courses)
 - Undergraduate Research and Professionalization Seminar 695
 - Choose two of the following courses:
 - Map Reading and Interpretation 480
 - Elements of Cartography 580
 - Fundamentals of Geographic Information Systems 607
 - Computer Cartography and Geographical Visualization 680
 - Quantitative Geographical Methods 683
 - Intermediate Geographic Information Systems 685

Part C. Electives within the Major

- NA

Part D. Internship

- After students have completed 20 hours of coursework in Geography, they are eligible for an internship and receive credit for it through the department.

Appendix G
Current Analytical Cartography (AC)/Geographic Information Sciences (GIS) Curriculum

Part A. Required Prerequisites or Supplements to the Major

1. CS&E 201
2. Statistics 245

Part B. Core Requirements

1. Required core for both paths:
 - Elements of Cartography 580
 - Fundamentals in Geographic Information Systems 607
 - Numerical Cartography 680
 - Introduction to Geographic Analysis 683
2. Analytical Cartography required core:
 - Undergraduate Seminar in Applied Geography 695
 - Analytical Cartography 780
 - Seminar in Geography 795
3. Geographic Information Sciences required core:
 - Intermediate Geographic Information Systems 685
 - GIS in Social Science and Business Research 686 OR Design and Implementation of Geographic Information 687
 - CS&E 214 OR CS&E 240

Part C. Electives within the Major

1. Any human geography course at the 600 level
2. Physical Geography and Environmental Issues 210 OR Climatology 520 OR Integrated Earth Systems: Confronting Global Change 597.02

Appendix H
Proposed Spatial Analysis Curriculum

Part A. Required Prerequisites or Supplements to the Major

1. Statistics 245

Part B. Core Requirements

1. Elements of Cartography 580
2. Fundamentals in Geographic Information Systems 607
3. Computer Cartography and Geographic Visualization 680
4. Quantitative Geographical Methods 683
5. Intermediate Geographic Information Systems 685
6. Undergraduate Research and Professionalization Seminar 695

Part C. Electives within the Major. Choose four of the following courses. At least one must be a methods course, one must be a physical OR human geography course, and the other two are of the students choosing.

1. Any 400, 500 or 600 –level human geography course
2. Any 400, 500 or 600 –level physical geography course
3. Map Reading and Interpretation 480
4. Geographic Applications in Remote Sensing 684
5. GIS Applications in Social Science and Business 686
6. GIS Design and Implementation 687
7. Emerging Topics in GIS 688
8. Advanced Applications in Geographic Information Systems 787
9. Geography of Transportation 645
10. Locational Analysis 647
11. Land Use Geography 655
12. CS&E 201 OR CS&E 214 OR CS&E 240

Part D. Internship

1. After students have completed 20 hours of coursework in Geography, they are eligible for an internship and receive credit for it through the department.

Appendix I
Current Atmospheric and Climatic Studies Curriculum

Part A. Required Prerequisites or Supplements to the Major

1. Atmospheric Sciences path
 - Math 151, 152, 153, 254, 415
 - Physics 131, 132
 - Statistics 245
2. Climatic Studies path
 - Math 151, 152
 - Physics 131, 132
 - Statistics 245

Part B. Core Requirements

1. For both Atmospheric Science and Climatic Studies paths
 - Basic Meteorology AS 230 OR Climatology Geog 520
 - Synoptic Meteorology Laboratory AS/Geog 620
 - Boundary Layer Climatology Geog 622.01
 - Microclimatological Measurements Geog 622.02
 - Synoptic Analysis and Forecasting Geog 623.01
 - Severe Storm Forecasting 623.02
2. Additional for the Atmospheric Science path
 - Atmospheric Thermodynamics AS 631
 - Dynamic Meteorology I AS 637
 - Dynamic Meteorology II AS 638
3. Additional for the Climatic Studies path
 - Introduction to Cartography Geog 580
 - Undergraduate Seminar in Applied Geography Geog 695 OR Seminar in Geography Geog 795
 - Any Human Geography course 600-level or higher

Part C. Electives within the Major

- NA

Appendix J
Proposed Climatology and Physical Geography Curriculum

Part A. Required Prerequisites or Supplements to the Major

1. For Climatic Studies path
 - Math 151, 152, 153
 - Physics 131, 132
 - Statistics 245
2. For the Physical Geography path
 - Math 151, 152
 - Physics 131
 - Statistics 245

Part B. Core Requirements

1. For Climatic Studies path
 - Basic Meteorology AS 230 OR Climatology Geog 520
 - Synoptic Meteorology Laboratory AS/Geog 620
 - Boundary Layer Climatology Geog 622.01
 - Microclimatological Measurements Geog 622.02
 - Synoptic Analysis and Forecasting Geog 623.01
 - Severe Storm Forecasting 623.02
2. For Physical Geography path
 - Introduction to Physical Geography Geog 220
 - Global Climate Change: Causes and Consequences Geog 420
 - Biogeography: An Introduction to Life on Earth Geog 490
 - Basic Meteorology AS 230 OR Climatology Geog 520
 - Integrated Earth Systems: Confronting Global Change Geog 597.02
 - Geomorphology Earth Sci 550

Part C. Electives within the Major

1. For Climatic Studies path. Choose five of the following courses:
 - Climate System Modeling: Basics and Applications AS 629
 - Atmospheric Thermodynamics AS 631
 - Dynamic Meteorology I AS 637
 - Dynamic Meteorology II AS 638
 - Physical Geography and Environmental Issues Geog 210
 - Global Climate Change: Causes and Consequences Geog 420
 - Biogeography: An Introduction to Life on Earth Geog 490
 - Introduction to Cartography Geog 580
 - Integrated Earth Systems: Confronting Global Change Geog 597.02
 - Fundamentals of Geographic Information Systems Geog 607

- Undergraduate Research and Professionalization Seminar Geog 695 OR Seminar in Geography Geog 795
2. For Physical Geography path. Choose five of the following courses (at most one may be from Earth Sciences):
- Physical Geography and Environmental Issues Geog 210
 - Introduction to Cartography Geog 580
 - Computer Cartography and Geographic Visualization 680
 - Fundamentals of Geographic Information Systems Geog 607
 - Intermediate Geographic Information Systems Geog 685
 - Undergraduate Research and Professionalization Seminar Geog 695 OR Seminar in Geography Geog 795
 - One Human Geography course 600-level or higher
 - Synoptic Meteorology Laboratory AS/Geog 620
 - Boundary Layer Climatology Geog 622.01 (note: has prerequisite of Physics 132, which has a prerequisite of Math 153)
 - Microclimatological Measurements Geog 622.02 (note: has prerequisite of Physics 132, which has a prerequisite of Math 153)
 - Synoptic Analysis and Forecasting Geog 623.01 (note: has prerequisite of Physics 132, which has a prerequisite of Math 153)
 - Severe Storm Forecasting 623.02 (note: has prerequisite of Physics 132, which has a prerequisite of Math 153)
 - Climate System Modeling: Basics and Applications AS 629
 - Atmospheric Thermodynamics AS 631 (note: has a prerequisite of Math 153)
 - Dynamic Meteorology I AS 637 (note: has prerequisite of Math 255)
 - Dynamic Meteorology II AS 638
 - Principles of Oceanography Earth Sci 206
 - Water in the Basin Hydrologic Cycle Earth Sci 410
 - Glaciers and Landscapes Earth Sci 650

Part D. Internship

1. After students have completed 20 hours of coursework in Geography, they are eligible for an internship and receive credit for it through the department.

Appendix K
Four-year course plans for each specialization
(charts starting on the following page)

Sample four year plan B.A. Geography - Urban, Regional, and Global Studies specialization

Year 1			
Autumn	Winter	Spring	Summer
English 110	Math (Dependent on placement)	First Natural Science	
First Foreign Language	Second Foreign Language	Third Foreign Language	
Geography 200 (GEC)	Geography 205 (Major)	First Arts and Humanities	
Year 2			
Autumn	Winter	Spring	Summer
Fourth Foreign Language	Geography 450	Stats 145	
Geography 580	Second Writing	Second Natural Science	
First Historical Study	Second Historical Study	Geography 460	
Year 3			
Autumn	Winter	Spring	Summer
Geography 470	Geography 645	Geography 695	
Second Arts and Humanities	Geography 655	Second Social Science	
General Elective or Minor	Third Natural Science	General Elective or Minor	
Year 4			
Autumn	Winter	Spring	Summer
General Elective or Minor	Geography 660	Geography 607	
Issues of the Contemporary World	Internship Credit	General Elective or Minor	
General Elective or Minor	General Elective or Minor	Internship Credit	

Sample four year plan B.A. Geography - Environment and Society specialization

Year 1			
Autumn	Winter	Spring	Summer
English 110	Math (Dependent on placement)	First Natural Science	
First Foreign Language	Second Foreign Language	Third Foreign Language	
Geography 200 or 240 (GEC)	Geography 210 (Major)	First Arts and Humanities	
Year 2			
Autumn	Winter	Spring	Summer
Fourth Foreign Language	Geography 580	Stats 145	
Geography 430	Second Writing	Second Natural Science	
First Historical Study	Second Historical Study	Geography 420	
Year 3			
Autumn	Winter	Spring	Summer
Geography 490	Geography 605	Geography 695	
Second Arts and Humanities	Geography 635	Second Social Science	
General Elective or Minor	Third Natural Science	General Elective or Minor	
Year 4			
Autumn	Winter	Spring	Summer
General Elective or Minor	Geography 642	Geography 607	
Issues of the Contemporary World	Internship Credit	General Elective or Minor	
General Elective or Minor	General Elective or Minor	Internship Credit	

Sample four year plan B.S. Geography - Spatial Analysis specialization

Year 1			
Autumn	Winter	Spring	Summer
English 110	Math 151	Math 152	
Math 150	First GEC Natural Science course	Second Foreign Language course	
Geography 200 or 240 (GEC Social Science course)	First Foreign Language course	First GEC Arts and Humanities	
University Survey course (1hour)			
Year 2			
Autumn	Winter	Spring	Summer
Geography 605	Geography 580	Geography 607	
Geography 460	GEC Second Writing course (367's)	Statistics 245	
Third GEC Foreign Language	Fourth GEC Foreign Language	First GEC Historical Study course	
Year 3			
Autumn	Winter	Spring	Summer
Geography 683	Geography 680	Geography 695	
Second GEC Historical Study	Geography 685	Third GEC Natural Science course	
Second GEC Natural Science	Second GEC Arts and Humanities	General Elective or Minor course	
Year 4			
Autumn	Winter	Spring	Summer
Geography 640	Geography 520	Fourth GEC Natural Science	
General Elective or Minor course	General Elective or Minor course	General Elective or Minor course	
Second GEC Social Science	General Elective or Minor course	General Elective or Minor course	

**Sample four year plan B.S. Geography - Climatology & Physical Geography specialization
Climatic Studies path**

Year 1			
Autumn	Winter	Spring	Summer
English 110	First Arts and Humanities	Physics 131(GEC and m. prereq)	
Math 150	Math 151	Math 152	
Geography 200 (First Social Sci)	First Natural Science	Second Arts and Humanities	
Year 2			
Autumn	Winter	Spring	Summer
Physics 132 (GEC and m. prereq)	Second Writing Course	Atmospheric Sciences 230 (m.core)	
Math 153 (major prereq)	Statistics 245 (major prereq)	Geography 210 (major elective)	
Second Social Science	First Foreign Language	Second Foreign Language	
Year 3			
Autumn	Winter	Spring	Summer
Geography 620 (major core)	Geography 622.01 (major core)	Geography 695 (major elective)	
Geography 420 (major elective)	Geography 623.01 (major core)	Geography 623.02 (major core)	
Third Foreign Language	Fourth Foreign Language	Internship credit	
Year 4			
Autumn	Winter	Spring	Summer
Geography 622.02 (major core)	Fourth Natural Science	Geography 607 (major elective)	
Geography 490 (major elective)	First Historical Study	Second Historical Study	
Internship Credit	General Elective or Minor	General Elective or Minor	

Sample four year plan B.S. Geography - Climatology & Physical Geography specialization
Physical Geography path

Year 1			
Autumn	Winter	Spring	Summer
English 110	First Arts and Humanities	Physics 131(GEC and m. prereq)	
Math 150	Math 151	Math 152	
Geography 200 (First Social Sci)	First Natural Science	Second Arts and Humanities	
Year 2			
Autumn	Winter	Spring	Summer
Third Natural Science	Second Writing Course	Second Foreign Language	
Geography 220 (major core)	Statistics 245 (major prereq)	Geography 210 (major elective)	
Second Social Science	First Foreign Language	General Elective or Minor	
Year 3			
Autumn	Winter	Spring	Summer
Geography 580 (major elective)	Geography 520 (major core)	Geography 695 (major elective)	
Geography 420 (major core)	Earth Sciences 550 (major core)	Earth Sciences 650 (major elective)	
Third Foreign Language	Fourth Foreign Language	First Historical Study	
Year 4			
Autumn	Winter	Spring	Summer
Second Historical Studay	Fourth Natural Science	Geography 607 (major elective)	
Geography 490 (major core)	General Elective or Minor	Individual Study	
Internship Credit	General Elective or Minor	General Elective or Minor	

Appendix L
People, Society, and Environment (PSE) majors
and Enrollment of PSE Majors in Courses Outside Geography

		2002	2003	2004	2005	2006	2007	(Wi-Sp) 2008	Total	Average
Geography majors with PSE specialization (spring term count)		0	1	13	14	26	20	22	NA	16
PSE enrollments in outside courses										
EARTHSCI 550	Geomorphology				1				1	0.1
EEOB 413.01	Ecology			4		8	6	3	21	3.0
EEOB 413.02	Ecology Lab			4		5	4	2	15	2.1
ENR 300.01	Soil Science	1		2		3	1	1	8	1.1
ENR 300.02	Soil Science Lab	1		2		3	2	1	9	1.3
ENR 367	Making and Meaning of the American Landscape						2	1	3	0.4
ENR 400	Natural Resources Policy						1		1	0.1
HIST 366.01	Global Environmental History		1		2		1	2	6	0.9
HIST 366.02 (formerly 567)	American Environmental History			1		3			4	0.6

Appendix M Concurrences

We are sending the proposal (with the course requests and appropriate new major proposals) to the following schools/departments, and will add concurrence letters as they arrive:

City and Regional Planning
Civil & Environmental Engineering & Geodetic Sciences
Computer Science and Engineering
Evolution, Ecology, and Organismal Biology
School of Earth Sciences
School of Environment and Natural Resources

Appendix N
Credit hours in Geography at OSU and at peer institutions

Actual credit hours in the major taken by OSU Geography graduates in 2006-2008 (based on a random sample, n= 46)		
Specialization	Average number of hours taken	Notes
Atmospheric Science (BS)	44	Varies depending on choices of course options within specialization.
Geographic Information Systems (BS)	48	
People, Society and Environment (BA)	53	Varies depending on choices of course options within specialization.
Urban and Regional Studies (BA)	50	

Sample of peer institution Geography departments detailing major and overall degree credit hour requirements			
University	Degree	Credit Hours—Quarter Equivalent	
		Major	Total
Michigan State - semesters	BA and BS	47	180
Penn State - semesters	BA	72	180
	BS	90	180
University of Arizona - semesters	BA	53	180
UC Berkeley - semesters	BA	66	180
UCLA - quarters	BA	48	180
University of Colorado - semesters	BA	48-68	180
University of Florida - semesters	BA	51-53	180
University of Illinois - semesters	BA	60-63	180
Wisconsin - semesters	BA and BS	45	180