FY16 Geography-Geology Budget Proposal

February 2, 2015

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Geography-Geology FY15 Budget Proposal

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FY16 Budget and Planning Document of the Department of Geography-Geology

February 2, 2015

1. FY 15 Annual Report

1.1 Accomplishments and productivity of the Department of Geography-Geology for FY15

a. Goals

In February 2014, the Department of Geography-Geology approved a five-year Strategic Plan (Appendix I). As part of this plan, five goals are advanced. A total of 18 priorities were developed as part of these goals, and 142 actions support these priorities. A copy is appended. This Strategic Plan was developed under the guidance of *Educating Illinois 2013-2018* and the *CAS Strategic Plan 2010-2015.* The relationship of our priorities and actions to those listed in broader University and College contexts are indicated. Our priorities pertain to faculty workload, quality, support, and recruitment; undergraduate and graduate curricular development; student recruitment, research, and quality; and service. In the year since this Strategic Plan was established, we have made significant progress on 74 actions (indicated in green). The areas of significant progress include expansion of our GIS and Spatial Analysis efforts, enhancing faculty quality, improving and expanding our physical infrastructure, and increasing external funding. Modest progress was made on 41 goals, which are indicated in yellow. Significant work remains on 27 goals, e.g. implementing an Environmental Studies sequence, recruiting majors, obtaining faculty lines to support teaching and scholarship, increasing support for new GA lines, and developing new curricula, which are indicated in red.

b. Important Accomplishments

i. Faculty and Staff (E.I. Goal 2, Strategy 3; CAS Goal 1)

- Dr. Catherine O'Reilly was promoted to Associate Professor this past year.
- Dr. Dave Malone was named a University Professor
- Dr. Rex Rowley was awarded the College of Arts and Sciences Shaw Teaching Fellowship.
- Dr. James Day was designated as a College of Arts and Sciences Outstanding Researcher Award.
- Mike Sublett received a Distinguished Mentor Award from the National Council for Geographic Education.
- John Kostelnick completed a sabbatical in the fall 2014 and was appointed Coordinator of the Illinois Geographic Alliance by the National Geographic Society effective January 2015.
- Bill Shields was named the winner of the Stan and Sandy Rives Excellence in Undergraduate Education Award and the College Excellence Award for Outstanding Teaching by an Administrative Professional.

ii. Scholarship (E.I. Goal 2 Strategy 3; CAS Focus and Goal 1.3, 1.4, 3.1, and 3.2)

In CY 2014, the 13 Geography-Geology faculty members in residence published 19 peer-reviewed journal articles, two book chapters, seven maps, and two peer-recognized creative efforts. Twenty four (24) papers were presented at professional conferences in the U.S. and an additional 27 papers were presented at conferences outside the U.S, note this is anomaly because the annual meeting of the Geological Society of America was held in Canada. Students were co-authors on seven journal articles, seven maps, and on 18 conference presentations. All 18 students were the lead authors and

presented their work at professional conferences. Faculty members in our Department were awarded more than $5,000,000 in external grants and contracts. Funds were secured from the National Science Foundation, NASA, the United States Geological Survey, and the National Geographic Society in 2014. The $5,000,000 represents the highest level of external funding for a given year by the Department. It is important to note that while Geography-Geology does have a small, focused MS program, most faculty members in our Department, including all Geography faculty, do not have MS students to help support our research mission.

iii. Teaching (E.I. Goal 1 and Goal 2; CAS Focus and Goal 1.1, 1.2)

The Department generated more than 12,250 student credit hours in 2014, which is below the average of 13,780 for the past seven years. The decrease in credit hour generation is seen primarily in the general education courses. Enrollments in GEO 135-World Geography, GEO 142-Human Geography, GEO 207-Natural Disasters, and GEO 211-Weather, have been decreasing. For the GEO 142, fewer sections have been taught this past year as a result of a sabbatical and the resulting shuffle of course assignments. With GEO 207, one additional section was not taught to allow for an additional section of GEO 303-GIS to be taught, which served GEO majors and graduate students enrolled in GIS graduate certificate programs. The Department is examining ways to increase enrollment in the once popular GEO 135 and GEO 211 courses. The Department is strongly committed to the General Education Program, and our faculty members regularly teach general education courses. At capacity, the General Educational courses provide >4000 seats per year.

On census day, our undergraduate major count was 154 (plus 6 second majors), which is above our target of 150. The number of majors represents a small increase, five students, compared to the fall 2013 census day. Forty-five undergraduate students completed their degrees last year. Twenty-two students completed internships in Geography.

We currently serve 16 graduate students in Hydrogeology. Although we have 13 faculty members, only 2 FTE (one is the interim chair, and will be returning in FY 16) are assigned to our Hydrogeology program. Using the 2 FTE, the resulting student to faculty ratio of 8 is among the highest in the College. Seven graduate students completed degree requirements last year.

iv. Service (E.I. Goal 4, Strategy 3)

Faculty members in our department have continued their solid record of service to the College and University by serving on the following committees in CY 2014, Provost Search Committee, Graduate School Director Search Committee, the Open Access Task Force, RPRC, Honors Council, the Council for General Education, the University Teaching Committee, the Faculty Review Committee, and the University Review Committee. Faculty and staff from the department continue to champion a University GIS agenda through the GIS Council and GEOMAP. Our faculty members contribute regularly to our professions in the form of editorial work and serving as officers on important boards and professional societies. In fall 2014, the Department was selected as the home for the Illinois Geographic Alliance by the National Geographic Society Education Foundation; Dr. John Kostelnick will serve the as Alliance Coordinator. We also serve the citizens of Illinois through outreach activities for the Illinois State Geological Survey, the Illinois Geographic Bee, the Illinois GIS Association, the Illinois Association of Aggregate Producers, the Illinois Petroleum Resources Board, and the Illinois Coal Consortium.

v. Geography Program (E.I. 1, 2, 4, 6, 7, 9; CAS Goal 1)

The Geography Program submitted a Program Review in fall 2014 (Appendix II). Strengths of the program include the internship program, engagement of students and faculty in scholarship, a strong sense of community between faculty and students, career development opportunities, and the presence of GEOMAP. The program has 80 majors. In the summer of 2014, 22 students completed internships. Twenty students graduated in the CY 2014. More than 80% of our recent graduates in geography have taken their first career steps in the discipline.

Field trips are an essential component to Geography and Geology, and have recently been reintroduced into the Geography curriculum. Dr. RJ Rowley led a field trip to New Mexico for GEO 306.19-Regional and Area Studies. Dr. Rowley also took a group of students to St. Louis to examine the urban geography as part of his GEO 336-Urban Geography course. Dr. Matt Himley has incorporated a field trip to an organic farm for GEO 205-Living in the Environment. Funds from the James and Lucy Patterson Family Endowment have been used to offset students' costs associated with course related field trips.

This past year, Nicolas Goodwin, under the mentorship of Dr. Mike Sublett, completed the project "District Boundaries and Pastoral Migration in the Illinois Great Rivers Conference of the United Methodist Church", and published, by the Department, in hard copy and on website (*Geographical Aspects of the Illinois Great Rivers Conference, The United Methodist Church).* Undergraduate Matt Klotzbach and Dr. Jonathan Thayn published a paper in *Geographical Bulletin.*

As part of the Career Year program, alumni were brought back to the department to interact with students and to talk about potential careers and pathways to a given career.

Areas identified for future growth include recruiting of Geography majors, increasing student involvement high impact practices (i.e. colloquium, the Honors Program, and study abroad), encouraging students to explore graduate school opportunities, providing support to Geography Education majors, and increasing diversity among the Geography major student body. Over the past few years, the Department has investigated and designed an Environmental Studies sequence within Geography (Appendix III). While the program is seen as a way to attract and recruit a wide array of students, concerns focusing on capacity in required Geography courses and on the ability to offer courses have stalled the submission of the curriculum. To advance and grow the sequence and strengthen the Geography program as a whole, additional faculty are needed.

Start-up funding was allocated to Drs. Rowley and Orzeck to develop their respective research programs. Dr. Orzeck is using her installment of start-up funding to develop her research agenda in the Middle East. With his installment, Dr. Rowley is developing his research agenda in urban geography and in Asian studies. Specifically, Dr. Rowley has used funds to develop a study abroad course to Japan that complements his research in the area.

vi. Geology Program (E.I. 1, 5, 6, 9, 11; CAS Goals 1 and 3)

Geology continues to offer high quality field and research experiences and professional training opportunities. The Geology BS program continued to enjoy a significant number of majors. Currently, 58 students are pursuing our traditional major, and 16 are in our Earth and Space Science Teacher Education program. Twenty-five majors completed their degree requirements in CY2014. Our alumni tracking data five-year average indicates that more than 80% of our graduates take their first career step as professional geologists. Moreover, more than 40% of our graduates pursue advanced degrees. Of the individuals who choose to work after graduation, most begin entry-level positions in environmental consulting; a growing number are working in the oil and gas industry. Our capstone field geology course is as strong as ever. In 2014, 40 students from 16 different universities participated, e.g. University of Arizona, University of Tennessee, Temple University, and Rice University. More than 100 applications were received. Field Camp is run under the FCR extension course model. Although not optimal, this is the only model available now that permits external enrollment at a reasonable cost.

Alumni continue to donate generously to the John W. Powell Fund, which is at an all-time high balance. The monies have been used to recruit incoming freshmen, to provide funds for student research, for scholarships for upperclassman, and for student travel associated with research. For example, funds from the John W. Powell fund subsidized student travel for 16 students, to the Annual Geological Society of America meeting in Vancouver, BC, Canada. This past year, four alumni were invited back to speak

about their work since graduation, introducing students to potential careers and graduate school opportunities. In addition to the student presentations, collaboration between students and faculty generated four peer-reviewed publications and seven peer-reviewed maps.

vii. Hydrogeology MS Program (E.I. Goal 1; CAS Goals 1 and 3)

When compared to other MS programs at ISU, the Hydrogeology program is small. At census day, 17 students were enrolled in the program. Two faculty lines are involved directly in teaching the graduate courses and advising theses. Thus, most faculty members in Geography-Geology do not have a graduate curriculum that directly applies to their expertise, research, and teaching interests, nor are they expected to participate in the graduate program. We maintain this program through participation by faculty not directly linked to the program and through significant participation of adjunct faculty from other universities or research-oriented state agencies. We are the only program in Illinois that engages in extensive applied hydrogeologic research.

In 2013, seven students completed their degree requirements. Two students are enrolled in PhD programs (Indiana University and University of Alberta); two are employed with environmental consulting firms; one is pursuing an additional graduate degree in Kinesiology, and the other two are actively looking for employment.

In terms of student quality, the average combined GRE score and Admission GPAs are among the highest ever for the program. The student body is nearly 66% female, which is well above the national average of 44% female. National data show enrollment in MS programs nationwide continues to increase. Current applications exceed program capacity.

Theses by two former graduate students, Ryan Doucette and Timothy Sickbert, completed the peer-review process and were published during 2014. Alicia O'Hare was awarded a Student Research Grant from the Illinois Groundwater Association in fall 2014.

c. Productivity Measures - Publications

In 2014, our faculty contributed to 30 peer reviewed books, articles, book chapters, maps and other creative efforts. This was one fewer than last year, which was the highest yearly output for the Department. Many of these are in leading peer-reviewed journals including one in *Limnology and Oceanography Bulletin*, and *Transactions of the Institute of British Geographers*, a leading journal in Geography. Below is a breakdown of the publications:

- Authored Books: 0
- Edited Books: 0
- Textbooks: 0
- Published arts in edited books: 0
- Journal Articles: 19, five undergraduate students were coauthors, and two graduate student coauthored two papers.
- Reviewed Maps: 7 – All seven maps had undergraduate students as lead authors.
- Book Chapters: 2
- Peer-Recognized creative efforts: 2
- Conference papers in the U.S.: 24 total, 2 with student coauthors.
- International conference papers: 27 total, 16 with a total of 9 undergraduate student authors and 7 graduate student authors.
- Editorships held by faculty: *Earthzine* (Kostelnick)
- Invited presentations: Three faculty members delivered 4 invited presentations.
  - Dr. Catherine O'Reilly, Associate Professor, Dickinson College
  - Dr. Eric Peterson, Professor, Illinois State Geological Survey

- Dr. Rex Rowley, Assistant Professor, Illinois State University and University of Las Vegas
- Dr. Reecia Orzeck, Assistant Professor, University of Illinoi, Champaign-Urbana

d. Productivity Measures

In our experience, of many things that departments can list as productivity measures, four are among the most important. These are: major count, credit hour generation, number of publications (addressed above), and amount of external funding. To be fair, these numbers need to be looked at in the context of total FTE allocated to a Department (the sum of TT, NTT, GA and support staff), as all personnel contribute to the overall mission of the Department.

i. Credit Hour Generation

By our calculations, Geography-Geology has a credit hour per total FTE (13.1) of 954, which is down from last year's 1036. However, the value is still above CAS average is about 680. We accomplish this through the judicious use of NTT and AP instructional assignment. As we have no NTT base budget, much of this capacity is in temporary dollars. We will be able to continue to provide the necessary general education courses so long that funding is available.

ii. Major Count

Geography-Geology has a rate of about 12 majors per total FTE, which is an increase of two from last year. The ratio of 12 majors per FTE also returns the department to a level last seen in 2010. Growth in majors has been in the traditional Geography and Geology programs.

iii. External Funding

In CY2014, faculty members were PIs or co-PIs on external grants and contracts that totaled $5,076,267. This is the Department's most productive year, and with 12 FTE, the funds generated per FTE is $432.0222.

iv. Qualitative Measures

Our hope is that Geography-Geology is regarded as a small, vibrant, and collegial Department that does its share to advance the research and instructional missions of the College and University. Our faculty members are willing and able to provide service time to make the University function. Our students are talented and accomplished. We can point to many satisfied graduates. Our faculty and students are highly regarded by our peers in their respective professions.

- Types of co-curricular activities: Geography Club and Geology Club regularly conduct field trips. Students have taken trips to Chicago to visit museums and other areas of interest. The Geology Club has worked with a Boy Scout Troop to earn merit badges and with Bloomington Junior High students.
- # colloquia/visiting speakers: 23
- # students supported for research-related travel: 20 undergraduate and 8 graduate students
- Student participation in student exchanges of study abroad programs: One (2): Kris Walton and Ashley Brehmer, Italy

1.2 <u>Internal Reallocations and Reorganizations in FY15</u>

a. Reallocations and Reorganizations

Dr. Tasha Dunn left residence in December 2013 to accept a faculty position at Colby College. This is a tough loss, as she is a talented colleague who excels at all facets of her job. We have offered her an unpaid leave that will enable her to determine whether or not this was indeed a good career move for her. During CY2014, the variance monies returned on her line enabled the Department to hire Dr. Paul

Giesting as a full-time NTT for spring 2014 and for the entire 2014-2015 academic year. Dr. Giesting duties included teaching the core courses of Mineralogy and Petrology, as well as GEO 202 (General Education), and GEO 390 (GEO Elective). Offering the leave to Dr. Dunn has complicated our hiring strategy over the next set of years. In lieu of Dr. Dunn's forthcoming resignation, the Department searched for a faculty member with expertise in Mineralogy and Petrology, as these are essential components to teaching and research missions of the program. The search is currently ongoing, but the Department is positive as the search nears completion.

Dr. Eric Peterson served as Interim Chair in in 2014, and he will complete his term on June 30, 2015. At that time, he will return to the faculty, and Dr. Dagmar Persaud will begin her term as the Department Chairperson.

With variance money from Dr. Peterson's line, four part-time NTTs were hired to teach a total of five courses. The courses included two sections of GEO 202 (General Education), Geology electives, GEO 364 and GEO 382, and a Hydrogeology elective (GEO 488.01). Additionally, funds were used to hire a part-time office staff position.

During the fall 2014, John Kostelnick was on sabbatical. During his sabbatical, one course, GEO 304 was reassigned to RJ Rowley, and his second course, a section of GEO 142, was not taught.

At this time there are no variance monies available in FY16.

b. Use of Additional Funds to Enhance Accomplishments and Productivity

- Enhancement dollars: No enhancement monies were allocated to Geography-Geology in 2015.
- Strategic budget carryover: $18,720 from FY14 was carried over into FY15. These monies were used for Graduate Assistantships.
- Variance dollars: The Department received variance funds from Tasha Dunn's line during the CY 2014 and from Eric Peterson's line as he serves as interim chair. The monies were used for a non-Tenure-Track visiting professor (Giesting), additional instructional capacity (described above), part-time civil service and student help in the departmental office, graduate research assistantships, research infrastructure, and additional expenditures in FY15.
- Technology tuition dollars: No tech tuition monies were awarded in FY15.
- Instructional capacity dollars: Geography-Geology was awarded $35,700 in instructional capacity monies in FY15. These monies paid for six sections and more than 1100 seats in General Education.
- Summer session funding: $28,838 was allocated to Geography-Geology for the summer FY15, including $20,812 to support our capstone field courses in Hydrogeology and Geology and $8,026 to support the Geography internship. These courses serve as the capstone course for the respective programs. Through the FCR model, four additional courses were approved that will provide on-line General Education courses.
- External funding: These monies went to support research and instruction.
- Foundation funds: Geography-Geology has an Endowment of about $1,350,000. About $144,000 is currently in expendables. Foundation monies are used for scholarships, colloquium speakers, student travel to professional meetings, and other program enhancement and support.
- Contract Courses: Geography-Geology faculty routinely provide summer workshops for teachers. In FY15, GEO 395 brought in $100,000 as a FCR course, serving 40 students from 16 different universities. An Illinois Association of Aggregate Producers sponsored workshop brought in $2,500 and served 40 in-service teachers. A second workshop

sponsored by the Illinois Petroleum Resources Board brought in an additional $2,500 and served 45 in-service teachers.

- Lab Manual Sales: Geography-Geology generates about $35,000 in laboratory manual sales each year. These monies are used for operations, including computer recapitalization, renovations, and student and faculty research support.

2. FY16 Planning Document

2.1 Major Objectives for FY16.

Our long-term objectives are identified in our 2014-2019 Strategic Plan, which is included at the end of this proposal. Looking short term, we wish to focus on the following:

- Expanding our research and instructional capacity in Hydrogeology, Geophysics, and Environmental Geography.
- Continuing to plan new curricula in Environmental Studies/Sciences.

2.2 Personnel Requests: New Tenure Track Faculty Requests-NEW

a. Tenure track position in Hydrogeology/Applied Geophysics –$67,000 (E.I. Goal 2, Strategy 3; CAS Goals 1-2)

The Geology program is in need of additional tenure-line faculty. We currently have five tenure-tenure track faculty members. We are in the process of hiring a replacement for a mineralogist/petrologist, which will bring the FTE to 6. With a total of 91 students, 74 undergraduate students and 17 graduate students, the student to faculty ratio for the program will be 15.1, which would be among the top third of Departments in the College. Even with seven faculty members, the student to faculty ratio would be 10.7, which would be above the College median of 10.65. As a science with a commitment to field experiences, maintaining the current ratio is important. An examination on the Hydrogeology program brings the need into better focus. Currently, two faculty members serve as the primary instructors and advisors for the MS program. While other faculty members do participate in the program, there involvement is less than 1 FTE. Realistically, the program has two faculty members devoted to work with the 17 students.

With the retirement of Dr. Robert Nelson in 2013, the Department lost expertise in both Geophysics and Glacial Geology. Dr. Nelson taught four courses that served as major and graduate level electives, which need to be taught to ensure timely graduation of undergraduate and graduate students. Adjustment of teaching assignments has ensured two courses will be covered, but the other two courses have been assigned to NTTs using temporary monies.

As the number of majors has increased in Geology and the number of Hydrogeology students remains high, the need to grow (at least maintain) our current elective offerings is essential. An additional faculty member will also ensure that research mentoring for graduate and undergraduate students will not be diminished. In order to maintain continuity and have a critical mass of faculty to keep our programs viable, we request to search for Dr. Nelson's replacement in FY15. The proposed position would also play an integral role in the Hydrogeology MS Program. Currently Dr. Catherine O'Reilly and Dr. Peterson are the main research advisors for the 17 students. Dr. Dave Malone is advising three students. Thesis advising capacity is at or above a reasonable limit, placing stress on other aspects of the program. This position would reduce the stress, as the current faculty members would be able to advise fewer students. With expertise in fluid flow and geophysics, the potential hire could potentially provide expertise with water resource exploration, energy resources exploration, hydraulic fracturing, and earthquake and hazard analysis. From the Bureau of Labor Statistics, employment of geophysicists and hydrogeologists is projected to grow 16 percent from 2012 to 2022, faster than the

average for all occupations. The need for energy, environmental protection, and responsible land and resource management is projected to spur employment demand.

The hire will provide advisement for the Hydrogeology students and will teach courses in General Education and both the undergraduate and graduate curriculum. Additionally, the hire can be integrated into the Environmental Studies sequence.

The proposed salary is based upon the average salary of a starting assistant professor in Geophysics/Geology provided by the 2012-2013 Faculty Salary Survey by Oklahoma State University.

b. Tenure track position in Environmental Geography—$67,000 (E.I. Goal 2, Strategy 3; CAS Goals 1-2)

For the last few years, the Department has requested a faculty hire for a climatologist because of the absence of Dr. Persaud's given her appointment as Associate CAS Dean. With the return of Dr. Persaud to the Department as Chairperson, the need for a climate specialist is no longer a top priority. The development of an Environmental Studies Sequence, as detailed in the strategic plan, requires additional faculty that can participate in the program. An environmental geographer is being requested. While the hire will help in the implementation of the sequence, the faculty member will also fill curricular needs in the Geography curriculum. The demand is high for the graduates of environmental studies and related programs, and student interest in these programs is growing. The U.S. Department of Labor (2013) projects a 25% increase in the number of environmental scientists and specialists positions by 2020 and the online job site search engine SimplyHired.com indicates a large number of current postings (>125K) for environmental positions. Separate from any career successes, the interdisciplinary nature of an Environmental Studies Sequence bridges the science-humanities-social science nexus, which by definition is a strong liberal arts degree. Data show that students with environmental degrees continue their education in a variety of graduate school programs in areas such as geography, geology, planning, landscape architecture, environmental policy, environmental sciences and studies, law, writing, cultural anthropology and political science (United States Department of Labor, 2013).

The proposed salary is based upon the average salary of a starting assistant professor in Geography provided by the 2012-2013 Faculty Salary Survey by Oklahoma State University.

2.3 New Tenure Track Faculty Requests—Non-reappointment, tenure-denial, or death.

No requests are being made at this time.

2.4 Strategic Budgeted Carryover

a. Strategic Budgeted Carryover (SBC) – Graduate Assistantships: $28,923

Over the last few years, the enrollment in the Hydrogeology MS Program has hovered between 17-to 21 students. With only two faculty members currently in residence with direct specialization in Hydrogeology, other faculty members who are more peripheral to the program must take a broader role in thesis advisement. This is not sustainable. Two things will need to happen to ensure that Hydrogeology will continue to thrive. First, we need to add at least one faculty member with expertise in Hydrogeology. Second, the scope of thesis research and the graduate curriculum will need to be reevaluated in order to enable direct participation in Thesis research by a greater proportion of our research-oriented junior faculty members.

For the short term, providing faculty with RAs for a year or two will be necessary. Next year, one faculty members that do not normally have a role with the program volunteered to advise a current students. Because they do not normally advise MS students, they does not have a budget for a graduate assistantship. To provide assistance for volunteering to advise a student, the Department would like to

provide a Research Assistantship to each of the students for FY16. Each assistantship provides a stipend of $9,641 over nine months.

In an effort to enhance collaboration among programs and to increase interdisciplinary study among our students, the Hydrogeology Program has been working with the Stevenson Center to explore the possibility of the Hydrogeology Program becoming an affiliated program. A student has been identified for the pilot project. The student requires an assistantship for FY16. The assistantship provides a stipend of $9,641 over nine months.

In total, the Department of Geography-Geology requests funds for three graduate assistantships (GA), at a rate of $9,641 per GA, for a total of $28,923 to be carried over into FY16.

b. Strategic Budgeted Carryover (SBC) supplemented with Provost Enhancement

No requests are being made at this time.

2.5 *Temporary/Permanent Funding Requests*

a. Permanent: Civil Service Promotion for Lead Staff position—$4,953 E.I. Goal 2 Strategy 3; CAS Focus 2.

Following the retirement of Debbie Lescher in 2012, Karen Dunton was promoted to Administrative Clerk. Following the retirement, one less staff member has been employed in the Departmental Office. While a reorganization provided for an additional 0.25 FTE in the office, Karen has picked up the duties for the other 0.75 FTE. Ms. Dunton performs all aspects of accounting, purchasing, budgeting, human resources, and personnel processing for the Department. As the faculty has become more successful in procuring grants and contracts, the workload associated with the external funding has increased.

b. Permanent: Civil Service for a 0.25 to 0.50 Office Staff position—$6,000 to $12,000 permanent increase E.I. Goal 2 Strategy 3;CAS Focus 2.

As mentioned above, the Department lost 1 FTE civil service in 2012. We used the balance of Lescher's monies to develop a new AP position that is dedicated largely to GEOMAP—Crystal Williams fills this position. Ms. Williams' duties reside mostly with GEOMAP, but she does have duties in the main office (0.25 FTE). However, we have effectively lost 0.75 FTE from our office staff. Current staffing is inadequate for sustainability and additional personnel is needed, especially with the budgetary complexities associated with our high level of external funding. For FY15, a part-time civil service worker (variance funds) and student workers (GR) were hired to help with the duties in the main office. While employed, the civil service worker was able to help Karen catch up on a backlog of lower-priority work. The civil service worker left due to family reasons. Student workers are helpful, but they are not able to complete some of the duties because of their status as students. To ensure office work is completed, we request a 0.25 to 0.50 FTE position for the departmental office.

c. Permanent: Tech Tuition—GIS software $6,500 (E.I. Goals 1, 2, and 3; CAS Focus 1, 2)

On annual basis, the Department of Geology-Geography spends $6,500 on geospatial software. Two packages, ArcGIS, at $2,500, and ERDAS, at $4,000, are purchased for the teaching of GIS, remote sensing, and geospatial reasoning and for faculty and student research associated with GIS and geospatial analysis. GIS technology has become critical for mapping, analyzing, and understanding geographic data. GIS is utilized to respond to emergencies and disasters, to inform business decisions, to predict future trends in population demographics, and to understand environmental issues such as pollution, climate change, biodiversity, and energy supply/demand. As a result of it uses, GIS has become an integral component of curricula in numerous disciplines, including, but not limited to, geosciences, biological

sciences, business, political science, sociology, economics, and criminal justice. In 2012, the U.S. Department of Labor cited geospatial technology as one of the five most rapidly growing career industries in the country, with a projected growth rate of 29% from 2012 to 2022.

GIS has grown substantially across the ISU campus in recent years, and has the potential to expand at an even faster rate with investment in critical GIS software and technology. Subsequently, the ISU GIS Council, an ad hoc committee of faculty and staff GIS users from across the ISU campus, was formed in spring 2012 to promote this growth further. A goal of the Council is to acquire a site-license for ESRI products. Until a site-license is obtained, the Department will continue to renew the software annually. At $6,500, this represents over half of our contractual operating budget.

d. Temporary: $25,000 in Tech-Tuition dollars to recap specialized GIS computational lab in FHS 202

Our current computational laboratory in Felmley 202, which was last recapped in 2010, is nearing the end of its useful life. The 25 Dell 980 machines and the monitors need to be replaced soon in order to keep up with the latest GIS and other specialized software. This lab is the principal instructional lab in our Department, and serves scheduled classes for more than 25 hours each week. Our other instructional computer lab in FHA 429 was recapped in 2012. GIS software changes annually, so maintaining at least one laboratory with computers two years old or less is essential.

e. Temporary: Recapitalization of three faculty computers—$3,600 (E.I. Goal 2; CAS Goal 1, 2)

Among our faculty and staff, we have 15 computers. Six of the computers are over five years old. Given the advancement and continual updating of geographic and geologic modeling software, older machines are becoming obsolete. We request three new computers for faculty and staff, which will ensure our faculty can continue to run the new software on their office computers.

f. Temporary Enhancement Requests for FY16 (NEW)

- Faculty Professional Travel – Request $12,000

The Department of Geography-Geology was allocated $7,369 for Professional Travel. Geography-Geology invested $14,600 in direct travel reimbursement, meeting registration, and fleet vehicle use for conference travel. The difference was reimbursed with agency and foundation monies.

- Student Teacher Supervision—Request $10,000

Geography-Geology anticipates having 20 students in the field next year.

- Student Teacher Supervision Travel—Request $2,500.
- Internship Travel—Request $300 for summer.
- Instructional Travel—Request $12,000 divided equally between spring and fall.

Geology and Geography are field-based disciplines that require field experiences. Geology requires field trips for the core classes. FY14 the Department spent $12,000 on instructional travel.

- Instructional Capacity for General Education—see below

2.6 Instructional Capacity

We have no based budgeted monies for NTTs. In 2000, we had sixteen faculty lines; no GEO NTT faculty members were on permanent monies. Over the last 15 years, we have lost 3 TT faculty lines, and we anticipate the loss of another (Dunn). During this time, we have been funded regularly at 2-3 FTE for part-time NTT faculty members with Instructional Capacity funds. This is not an optimal situation, as NTT faculty members in GEO only support our instructional mission, and this is largely at the General

Education level. None have duties to engage in research, and most do not mentor or advise students, or generate external funding. The monies invested in NTT lines in Geography-Geology would be better invested in TT faculty and graduate assistants. This less-than-optimal situation that we have now will have to suffice, I am afraid, until our tenure track ranks are replenished.

Course	Semester Offered	Estimated Enrollment	Probable instructor	Estimated cost	Program(s) Served
207-Natural Disasters	Fall	240	Amy Bloom	$5850	Gen Ed
135 - World Geography	Fall	218	Terry Harshbarger	$6430	Gen Ed
135 - World Geography	Fall	240	Dave Johnson	$6490	Gen Ed
135 - World Geography	Spring	240	Dave Johnson	$6490	Gen Ed
135 - World Geography	Spring	218	Terry Harshbarger	$6430	Gen Ed
207 - Natural Disasters	Spring	240	Amy Bloom	$5850	Gen Ed
Totals		1578		$31,110	

3. Appendix I – 2010-2015 Geography-Geology Strategic Plan

2014-2019 Strategic Plan of the Department of Geography-Geology
Adopted February 21, 2014

PREFACE

The Department of Geography-Geology is among the most diverse in the University in terms of faculty interests and expertise. Teaching and research in Human Geography explores spatial patterns of human behavior and activity, including sub-disciplines of the field such as urban, political, human-environment interactions, and regional geography. Geographic Information Science (GIScience) teaching and research investigates the use of maps, geographic information, and remote sensing for study of the Earth. Physical Geography and Geology involve the scientific investigation of the nature of Earth's interior, lithosphere, hydrosphere, biosphere, and atmosphere in four dimensions as well as forces that influence the development, distribution, and organization of physical features.

At full staff, the Department of Geography-Geology has sixteen tenured or tenure-track faculty (including the chair) and three support staff. The cornerstones of the Department are our traditional B.S./B.A. programs. Our educational philosophy is firmly rooted in the liberal arts tradition. The common goal of each of these programs is to graduate broadly trained students who are equally prepared to pursue an advanced degree or obtain suitable employment as professionals within or outside of the discipline. These cornerstones are strengthened by our involvement in the interdisciplinary minor programs, which allow us to service students who pursue degrees in other programs.

The graduate degree program offered by the Department is an M.S. program in Hydrogeology. This program is highly specialized; it involves assessing and solving societally relevant, scientifically important problems through applied and theoretical research in the broad field of groundwater science.

The Department is an essential contributor to the General Education curriculum. The Department has played an important role in the development of the General Education program and will continue to play a significant role as the program evolves and matures.

4. Goal 1: Strengthen and enhance the quality, capability, and commitment of our faculty

4.1 Priority 1: Maintain a high-quality, broadly trained, and diverse faculty of at least 16 tenure-line positions. (E.I. Goal 2; CAS Strategic Focuses 1 and 3)

Action: Seek return of all vacated tenure-line faculty positions. In 2001, Geography-Geology had 16 tenure-line faculty members. At the time of this writing we have 13. Adequate tenure-line faculty staffing is essential for us to advance our mission. As tenure-line faculty lines are filled, we will not seek variance to pay for the great many part-time non-tenure line individuals who are part of our staff now.

Action: Attempt to fill the vacant positions with broadly trained individuals who are able to contribute to several aspects of our programs.

Action: The hiring priority, in terms of faculty expertise in Geology, include geophysics, hydrogeology, and mineralogy/petrology. In Geography is in climatology or meteorology. These priorities will be evaluated annually in light of new hires and faculty vacancies.

Action: Maintain a faculty where at least three tenure-line individuals have international regional expertise. Add to our faculty expertise in regions such as Africa and South Asia/East Asia.

Action: Actively recruit faculty candidates from underrepresented groups.

Action: Continue to seek competitive salaries for incoming and continuing faculty.

Action: Continue to seek appropriate startup packages for incoming faculty.

Action: Develop and grow endowed faculty positions.

Action: Improve the existing research and plan for new dedicated space for the department to ensure appropriate research laboratory space and office space for faculty members.

Action: Enhance the teaching facilities.

Action: Continue to develop and maintain computer infrastructure for research and teaching.

Action: Obtain permanent support staff necessary to assist lead staff in the Departmental Office.

4.2 Priority 2: Set appropriate and unambiguous scholarly productivity standards for tenure and promotion. Enable faculty to meet these goals. (E.I. Goal 2; CAS Strategic Focus 1)

Action: Encourage all faculty members to maintain scholarly activity of an average of 1 publication per year. Most of these publications should be 1) senior-authored, 2) peer-reviewed, and 3) in leading journals or other appropriate outlets.

Action: Recognize and respect fundamental differences in publication rates and publication venues, and the role of collaborative research for the various specialties represented by our faculty.

Action: Encourage faculty to apply for external and internal grants to support research and other professional activities. Set a departmental goal of >$300,000 in external support annually.

Action: Increase our pursuit of scholarly grants from prestigious sources like NSF, including through collaborations, in order to enhance the reputation of our faculty and generate indirect costs.

Action: Encourage the development of partnerships with other programs and centers that support research.

Action: Faculty members will regularly take leadership positions on editorial boards and in national and international professional societies.

4.3 Priority 3: Ensure that all tenure-line faculty members have equitable and appropriate teaching loads that are in balance with scholarly and service expectations. (E.I. Goals 2 and 3; CAS Strategic Focus 1)

Action: Maintain appropriate balance between teaching and other commitments. Over the past 5 years, the mode has been about 4 courses per year. A one-course release per semester is given to active scholars. Large lectures can be double-counted. Instruction of associated labs, scholarly or service commitments, student research advisement, academic advisement, administrative appointments, or other situations may also warrant a further reduction in teaching load.

Action: Encourage faculty to develop advanced courses in their areas of expertise and interest to help enhance their scholarship. Modify the curriculum to accommodate these new courses.

Action: Tenure-line faculty members, as staffing levels permit, will teach a combination of general education and advanced courses regularly.

Action: Promote teaching excellence through participation in CTLT events.

Action: Nominate tenure-line faculty for teaching awards as appropriate.

4.4 Priority 4: Enhance research support for faculty. (E.I. Goal 2 and 3; CAS Strategic Focuses 1, 2, and 3)

Action: Permit course releases for productive scholars.

Action: The Department will support research sabbaticals for faculty when they are eligible.

Action: Increase travel funds for faculty to attend professional meetings.

Action: Encourage faculty to develop collaborative research relationships with scholars and researchers in other departments, universities, and agencies.

Action: Where appropriate, encourage faculty to sit on graduate committees in other departments and at other universities.

Action: Nominate faculty for research awards.

Action: Reallocate space to develop new laboratories and offices.

Action: Develop a centralized inter-departmental laboratory space for environmental analysis.

Action: Looking long term, begin the process of planning for a new facility. The research and instructional facilities at Felmley Hall are insufficient for modern Geography and Geology programs.

Action: Grow GEOMAP.

4.5 Priority 5: Maintain department climate that values collegiality, diversity, and shared governance. (E.I. Goal 3 and 4, Strategic Focuses 1, 2, and 3)

Action: Reevaluate and revise by-laws regularly.

Action: In the spirit of shared governance, all departmental faculty members will serve at least one term on a University or College Committee in any five-year period.

Action: Maintain a brown bag series for faculty that highlights faculty teaching and research.

Action: Encourage all faculty members to regularly attend and participate in the GGGEO colloquium and endowed lectures.

Action: Encourage all faculty members to participate regularly in department-sponsored events, such as student career development events and commencement.

Action: Encourage all faculty members to participate in all aspects of the program, including mentoring student research, participating in student extracurricular activities, and participating in governance at the department level.

Action: Maintain a "common" time when all faculty can gather for informal discussion.

5. GOAL 2: Strengthen and enhance the undergraduate programs and offerings

5.1 Priority 1: Attract a greater number of capable, motivated students to our major programs. (E.I. Goal 1 and 2; CAS Strategic Focus 1)

Action: Serve 200 undergraduate majors annually. This includes 60 in geology, 65 in geography, 25 in ESSE and 50 in GTE.

Action: Have 50 students complete their degree requirements annually.

Action: Work closely with the Admissions Office and Academic Advisement to ensure that incoming freshmen are aware of the opportunity to major in our programs.

Action: Continue to develop strategies and scholarship programs to be used, in part, for recruitment of majors from high schools and community colleges.

Action: Increase the percentage of students who are enrolled in the Honors Program.

Action: Actively recruit majors from the 100-level General Education GEO courses: 102, 138, & 142.

Action: Maintain recruiting activities – student lunches, open houses, visits to Geography-Geology classes, etc.

Action: Encourage clubs to mentor incoming (freshman) majors (e.g., events, field trips).

Action: Encourage a greater number of students to utilize Illinois Geographic Alliance (IGA) resources and participate in IGA workshops, conferences, and programs.

5.2 *Priority 2: Enhance curricular and co-curricular activities. (E.I. Goal 1 and 2; CAS Strategic Focuses 1, 3, and 4)*

Action: Foster an environment where all faculty members take an active role in mentoring of students.

Action: Maintain the diversity of elective courses.

Action: Continue to support our high quality field course in Geology as the capstone experience in Geology.

Action: Continue to support our high quality internship program as part of the capstone experience in Geography.

Action: Develop internship partnerships with industry and government agencies for Geology students.

Action: Continue to offer field experiences to students in all programs.

Action: Increase the percentage of students engaged in research projects.

Action: Increase student participation in professional society meetings.

Action: Continue to offer outstanding career development opportunities for our students.

Action: Increase the number of students participating in the ISU Undergraduate and Graduate Research Symposia.

Action: Institute a forum for oral presentations of student research.

Action: Increase Undergraduate Teaching Assistant (UTA) opportunities

Action: Encourage students to apply for internal and external scholarships and awards.

Action: Encourage a greater percentage of majors to take advantage of our GGGEO colloquium series.

Action: Invite students to participate in a "common" time for informal discussion.

Action: In Geography, restructure our academic advisement model to include all faculty members mentoring advanced students. Continue to develop and modify the concentrations.

Action: Increase the opportunity for field studies by developing additional regional and area studies courses, and build in field trips to existing courses.

Action: Integrate student research into GEOMAP.

Action: Encourage a greater percentage of our recent Geography graduates to pursue graduate degrees.

Action: Maintain significant percentage (>40%) of our recent Geology graduates to pursue graduate degrees.

Action: Maintain the high percentage (>80%) of all our majors whose first career step is strongly related to their degree.

5.3 *Priority 3: Develop a new undergraduate degree program in Environmental Science and Studies. (E.I. Goals 1, 2, and 3; CAS Strategic Focus 1)*

Action: Finalize the proposal for submission to the University and Illinois Board of Higher Education.

Action: Obtain three new tenure-line faculty positions with primary responsibilities to support instruction, research, and capstone supervision in the Environmental Program.

Action: Develop collaborations with other departments and units to solidify the interdisciplinary nature of the program.

Action: Continue to build library holdings related to the mission of the program.

6. GOAL 3: Strengthen and enhance graduate programs and offerings

6.1 Priority 1: Attract and retain high quality graduate faculty. (E.I. Goals 1 and 2; CAS Strategic Focuses 1 and 3)

Action: Obtain two new tenure-line faculty positions with primary responsibilities to support instruction, research, and thesis supervision in the Hydrogeology Program.

Action: Reduce teaching load by one course per year for faculty who advise three or more graduate theses.

Action: Obtain permanent support staff necessary to maintain department research facilities such as laboratories, specialized scientific instruments, field stations, and computing facilities.

Action: Increase the number of faculty who contribute to graduate research and teaching.

Action: Maintain interactions with other institutions and state agencies.

Action: Grant Adjunct Faculty status to outside scientists that continually interact with the program.

6.2 Priority 2: Attract and retain high quality graduate students in Hydrogeology. (E.I. Goals 1, 2, and 3; CAS Strategic Focuses 1 and 3)

Action: Increase T.A. stipends to $13,000/year in order to attract excellent students and allow them to concentrate on their studies.

Action: Encourage graduate faculty to obtain grants with monies for graduate R.A. positions. Set goal of at least five externally supported graduate students per year.

Action: Continue to seek alternative sources of summer funding for graduate students.

Action: Maintain an enrollment of about 16 students annually in Hydrogeology.

Action: Graduate an average of 6 students annually in Hydrogeology.

Action: Obtain and maintain modern equipment necessary for graduate student education and research.

Action: Modify the admission requirements to attract students who have a B.S. degree in disciplines other than Geology. This includes reducing the number of deficiencies on a case-by-case basis.

Action: Maintain the program webpage to advertise the program and attract students.

Action: Maintain the number of student applications each year at about 20.

Action: Increase the quality of the incoming students including increasing the average GRE scores.

Action: Increase student participation in professional internships whenever appropriate; increase the diversity of internship possibilities.

Action: Increase the percentage of students who engage in peer-reviewed publication.

Action: Recap instructional labs and classrooms regularly to ensure we remain at the leading edge of instruction and research.

Action: Establish an endowment designed to provide graduate students with small stipends to cover research expenses.

6.3 Priority 3: Enhance the reputation of our graduate program on and off campus. (E.I. Goals 1, 2, and 3; CAS Strategic Focuses 3 and 4)

Action: Continue to build research partnerships with business, government, and industry.

Action: Increase the participation of scientists external to ISU.

Action: Increase collaboration with other departments such as Biology, Chemistry, Agriculture, and Health Sciences.

Action: Continue to nominate our graduate students for research and teaching awards.

Action: Increase the number of students applying for external research grants.

Action: Increase the number of students who present the results of their research at professional meetings.

Action: For students completing a thesis, encourage a manuscript be submitted for peer-review before a student graduates.

Action: Continue to prepare students for employment; help seek appropriate professional opportunities after graduation.

Action: Continue to encourage students to apply to PhD programs as appropriate.

Action: Continue to maintain a strong online presence.

6.4 Priority 4: Explore the development of a graduate program in Geography (E.I. Goal 2; CAS Strategic Focus 1)

Action: Investigate the demand for a graduate program in Geography.

Action: Investigate the potential job market for graduates.

Action: Explore potential support for a graduate program in Geography (e.g., teaching assistantships, faculty lines) at the College and University levels.

Action: Develop a proposal for submission to the University and Illinois Board of Higher Education.

7. GOAL 4: continue to build, grow, and support research infrastructure within the department

7.1 Priority 1: Maintain and expand GEOMAP's presence as a leader in applied geospatial analysis and mapping among public universities in the state of Illinois. (E.I. Goals 2, 3 and 4; CAS Strategic Focuses 2, 3, and 4)

Action: Serve as the intellectual home of GIScience on the ISU campus.

Action: Supplement all research and collaborative endeavors with grants and contract monies from commercial, federal, state, and other agencies. As appropriate, develop relationships and partnerships with federal, state, and local agencies to provide mutual benefits.

Action: Continue to develop a high-level research support group in GIScience, Remote Sensing, Cartography, and Global Position System (GPS) technologies for faculty, students, and staff in the Department of Geography-Geology.

Action: Continue to serve as a source of expertise for the university in the areas of GIScience, Remote Sensing, Cartography, and Global Positioning System (GPS) and to develop collaborative research ventures with other Departments and University units.

Action: Continue to collaborate with non-academic and administrative units in the University, as well as area governments, nonprofits, and businesses and collaborate on various initiatives related to geospatial technologies.

Action: Serve in leadership positions in state, county, and local GIS organizations.

Action: Promote the discipline of Geography and Geospatial Sciences on campus and in the community.

Action: Increase fundraising efforts.

Action: Provide advice and leadership to other University units on matters related to GIS implementation and curriculum development.

Action: Continue to lead and promote initiatives of the ISU GIS Council across campus.

7.2 *Priority 2: Modify and expand research infrastructure to elevate the research capabilities and profile of the Department (E.I. Goals 2, and 3; CAS Strategic Focuses 1, 2, and 3)*

Action: Develop lab space for a dedicated sediment core lab.

Action: Consolidate instruments used for environmental sample analyses into a single space to improve efficiency, facilitate management, and increase interactions among students and faculty. These instruments are currently distributed across campus and shared by faculty in geology, biology, and agriculture.

Action: Make efforts to acquire support for a research technician to assist with management and training and facilitate water sample analyses.

Action: Continue to apply for funds to help maintain equipment and infrastructure and to help support access to these instruments for non-funded research projects.

Action: To develop effective analytical price structures and cost-sharing approaches that allow researchers to allocate funds in their budgets towards analyses and allow other researchers to utilize our facility.

Action: Continue to foster collaborative relationships with other departments and institutions that enhance research capabilities of faculty members.

8. Goal 5: Enhance Geography-Geology's role in advancing the ISU mission in the Educating Illinois Plan.

8.1 *Priority 1: Maintain our commitment to the General Education program. (E.I. Goal 1; CAS Strategic Focus 1)*

Action: Schedule a variety of General Education courses that meet student demand.

Action: Routinely offer Honors sections for General Education courses and encourage faculty members to supervise in-course honors projects.

Action: Develop new General Education courses that enhance and promote our undergraduate programs.

8.2 *Priority 2: Expand our efforts in outreach, continuing education, and service learning. (E.I. Goals 2 and 3; CAS Strategic Focus 4)*

Action: Encourage faculty to offer service-learning opportunities in their courses as appropriate.

Action: Continue to offer summer workshops for in-service teachers.

Action: Develop summer courses for in-service teachers.

Action: Expand our continuing education efforts with government agencies and industry.

Action: Increase the usage of our learning resource center.

Action: Continue to serve as the host department for the Illinois Geographic Alliance (IGA) and provide support as needed.

Action: Support faculty members to become engaged in local and regional boards/associations.

8.3 *Priority 3: Expand our commitment to international efforts. (E.I. Goals 1 and 3; CAS Strategic Focuses 1, 3, and 4)*

Action: Encourage faculty to participate and take leadership roles in various regional/global research groups and academic programs.

Action: Develop, or collaborate in existing, international field courses.

Action: Continue to support the Scientific Mobility Program.

Action: Increase our student participation in study abroad programs.

8.4 Priority 4: Expand our interaction with alumni. (E.I. Goals 3 and 4; CAS Strategic Focus 4).

Action: Work to implement a Departmental Development Plan.

Action: Set up alumni and advisory boards for each program.

Action: Publish our newsletters online.

Action: Invite alumni to back to campus to speak about their career pathways and experience with our students.

2. Appendix II – 2010-2015 Geography-Geology Strategic Plan

GEOGRAPHY PROGRAM REVIEW

Self-Study Report

2014

ACADEMIC PROGRAM REVIEW

SECTION I: SELF-STUDY PROCESS

The self-study process was conducted by Geography faculty and staff members over the course of the 2013-2014 academic year. Program Review participants included tenured and tenure-track Geography faculty members, one part-time non-tenure track faculty member, the Geography Program Advisor, and the Department Chairperson. Regular meetings of approximately one hour each were held once a month in the fall semester, and then roughly every two weeks in the spring semester. All participants were not able to attend every meeting due to class meeting times and other conflicts, yet every effort was made to alternate meetings times so each participant was available to attend at least most of the meetings. Each meeting focused on a specific topic related to the Program Review process (e.g., current Program strengths and weaknesses, assessment, comparator and aspirational programs, future Program initiatives). Meeting topics in the fall semester focused on acquisition of internal and external data for the Program over the eight-year evaluation period, whereas spring meetings focused on analysis and discussion of trends in the data that were used to identify strengths and weaknesses of the Program as well as areas of growth for future initiatives and plans. As discussion on a topic was exhausted, new topics were added to the rolling meeting agenda. Participants were given short assignments in preparation for each meeting. These assignments ensured that all Geography Program personnel were vested fully in the Program Review process, and encouraged deeper thinking about topics prior to group discussion during meetings. Meeting notes were collected by the Program Review Coordinator for incorporation into the final report. Students participated in the Program Review process indirectly through exit surveys that were provided by the Department and University Assessment Services upon graduation. Findings from these invited student surveys were summarized and incorporated into the final report.

SECTION II: SECTION II: DESCRIPTION AND ANALYSIS OF THE ACADEMIC PROGRAM

A. Overview of Geography

1. Goals and Outstanding Characteristics

Geography has been part of the curriculum at Illinois State since the University opened its doors. Ours was the first stand-alone Geography department in Illinois, and we continue to play a significant role in the preparation of professional practitioners of the spatial arts and sciences as well as ISU's General Education program. We take pride in turning Geography majors into quality geographers. Our record of helping place alumni in competitive, discipline-related jobs and well-respected graduate programs is outstanding, and has been for many years. The faculty, though small, is diverse in background and expertise, and is fully committed to the Program, Department, College, and University. Fittingly, the Geography Program strives for and achieves a crucial balance among the environmental, human, mapping, and physical pathways of the discipline. We are one of the few Geography programs in the

country to require an off-campus capstone experience of every undergraduate major—either a meaningful summer internship or student teaching. Some students choose to do both. Geography Education majors move through their program alongside non-teaching (or "traditional") majors, taking many of the same classes. The manageable number of Geography majors, as well as our Department's commitment to small class sizes, ensures that Geography faculty members know the students well, which in turn makes our majors' undergraduate experiences particularly enriching. Field experiences, either as part of classroom-focused courses or stand-alone, field-focused courses, are an important component of the Geography major with the Senior Field Problem serving as a key weapon in the Program's assessment arsenal. Student labs for Cartography, Geographic Information Systems (GIS), and other segments of the discipline are available, up-to-date, and well-managed. New Geography faculty routinely receive adequate start-up funding to help underwrite their research initiatives and assist with departmental needs, such as equipping specialized research and teaching labs. The Department's Institute for Geospatial Analysis and Mapping (GEOMAP) has attracted over $850,000 in external and internal project funding since its dedication in 2007, and has provided practical research and applied training experience to over 30 students, many as paid research assistants, including some from outside of our major. Geographers benefit from the presence on campus of the Illinois Geographic Alliance, which assists K-12 teachers with instructional strategies and tactics. The Illinois Geographical Society (IGS) was housed within the Geography-Geology Department for many years until 2007, and faculty members remain active participants in key leadership roles in the organization. In 2015, the Department will host the IGS annual conference in Bloomington-Normal. Finally, as a part of a joint Department, Geography draws regularly and productively upon its synergistic relationship with colleagues in fellow Earth-focused disciplines, Geology and Hydrogeology, and the numerous other Departments and Programs on campus whose faculty members' interests overlap with those of geographers.

Geography Program goals align squarely with many of the overarching University goals outlined in *Educating Illinois*. For example, many Geography majors engage in research with a faculty member during their undergraduate experience through an independent study, as a GEOMAP project assistant, or as a research assistant for a faculty member, thus fulfilling the goal of providing students with a "supportive and student-centered educational experience for high-achieving, diverse, and motivated students that promotes their success." Throughout the Geography curriculum, students are exposed to diverse cultures and places around the world, thereby "prepare[ing] students to excel in a globally competitive, culturally diverse, and changing environment." Geography students have ample opportunities to become engaged with our local communities, such as service-learning projects with the Town of Normal and Connect Transit in the Doing Geography (GEO 204) course or community mapping projects for not-for-profit organizations through GEOMAP. These projects and many other opportunities "foster an engaged community and enhance the University's outreach and partnerships both internally and externally" as set forth in *Educating Illinois.*

Centrality to Mission of University

One indicator of the centrality for Geography at ISU is an enduring commitment to General Education. Faculty of the Geography Program played an important role in the development of the current General Education program, and faculty members will strive to play significant roles as this program evolves and matures. World Geography (GEO 135), Quantitative Reasoning in the Geosciences (GEO 138), Human Geography (GEO 142, formerly GEO 140), Natural Disasters (GEO 207), Earth's Dynamic Weather (GEO 211), Geography of Emerging Areas: Africa (GEO 235.01), Geography of Emerging Areas: Latin America (GEO 235.02), and Geography of Emerging Areas: Middle East (GEO 235.04) all serve various General Education requirements. Since the last review of the Geography Program, virtually all tenured/tenure-track program faculty have had a significant hand in teaching General Education courses, as have non-tenure track geographers. GEO 135 and 235 carry the "Global Studies" designator and are often the choice of students as they fulfill this graduation requirement, something the University considers critical for the new millennium. Geography faculty members are very active in the University's

current efforts to revise and assess General Education by promoting a continued, and perhaps enhanced, role for Geography courses in the new requirements. Very important in the General Education story for Geography faculty members is the fact that the Departmental Faculty Status Committee (DFSC) values and rewards individuals who perform well in this arena. General Education in Geography-Geology is not a role just for beginners or for those teaching part-time.

Besides General Education, which generates the bulk of credit hours taught in Geography, we offer many other courses that colleagues around campus consider valuable for students in their programs. Geography courses are vital in two interdisciplinary minors: Environmental Studies and Urban Studies. Among the other ISU programs counting Geography courses toward graduation requirements are those in Anthropology; Biological Sciences; Business; Business Administration; Geology; History Education; Latin American, Caribbean, and Latino/a Studies; Middle Eastern and South Asian Studies; Middle Level Teacher Education; Social Sciences Education; Sociology; and Women and Gender Studies. Graduate programs in Biological Sciences, Hydrogeology, and Information Technology all count multiple Geography courses towards degree requirements for their respective GIS Certificates. Geography faculty members often serve on graduate thesis committees in Archaeology, Biological Sciences, Hydrogeology, and Information Technology. The Introduction to GIS course (GEO 303) and Living in the Environment (GEO 205) course attract students from a range of majors and degree programs from across campus. Finally, anecdotal and solicited justification for enrollment in Geography classes leads the faculty to believe that students often take classes like GEO 220 (Illinois) or GEO 265 (Our National Parks) because titles and descriptions seem interesting, or on the recommendation of other students.

2. Advancement of one or more goals of The Illinois Public Agenda

In addition to *Educating Illinois*, goals of the ISU Geography Program also align with those outlined in *The Illinois Public Agenda*. For example, Goal 4 states that public education in Illinois should "better integrate Illinois' educational, research, and innovation assets to meet economic needs of the state and its regions." By many measures, ISU Geography actively contributes towards this goal, and recognizes the value of applied research and service-learning for the betterment of the state. For example, each summer a number of ISU Geography interns take positions across the state with government agencies, private firms, and not-for-profit organizations. Work done by these interns may include preservation of natural lands in Illinois, geographic analysis to support urban expansion or infrastructure development in the state's cities, or protection of Illinois croplands from invasive species. Many of these interns will remain in Illinois upon their graduation, seeking similar full-time jobs. Likewise, students and faculty affiliated with GEOMAP commonly conduct applied research with state agencies, such as a partnership with the Illinois Emergency Management Agency to develop a web-mapping system for emergency response in Illinois, and a collaboration with the Illinois Department of Agriculture to map and analyze the spread of Emerald Ash Borer in the state. By all measures, these and many similar educational and research activities generated by ISU Geography contribute directly and indirectly to the betterment of the Illinois economy.

3. Enrollment Trends and Student Demand

During the late 1990s and early 2000s, Geography major numbers averaged between 50 and 60, a range with which geographers are comfortable and extremely effective in delivering personalized, field-focused and lab-enriched instruction. In the past seven years or so, the number of majors has grown to a yearly average of between 70 and 80. Beginning in 2009 and running through 2014, the number of majors (teaching and traditional together) for the fall census days were as follows: 86, 105, 96, 75, 72, and 80. Typically, the ratio of traditional majors to teacher education majors is close to 1:1. The overall increase in Geography majors over the years since the previous Program Review in 2006 can be explained by several likely factors. Significant job growth in some areas of the discipline, particularly environmental and geospatial technology jobs, likely has attracted students to Geography as a major.

Geography in the public K-12 schools across the United States is undergoing a renaissance largely because of the introduction of Advanced Placement Human Geography courses, which creates new opportunities for teaching majors. Internal factors are influential as well; the sharp increase in Geography majors between 2010 (86) and 2011 (105) is partially explained (we think) by degree requirement changes in the ISU History Program, and is thus an outlier. By 2013, the number of majors had leveled out to more typical numbers (72) following this migration from History. Although a slight downward trend in the number of majors may be noticed over the past three years, current numbers (mid-70s) are ideal for a focused program such as Geography that values individualized opportunities such as student-faculty research experiences and small group field trips. Geography majors typically come to the Illinois State program after having majored in one or more other disciplines, so that the Geography major count would be larger if students made their ultimate major decision earlier. Graduation numbers varied during the five-year period 2009-2013, from a low of 18 in FY 2010 to a high of 31 in FY 2013.

4. Student Recruitment and Scholarships

Like many Geography Programs around the country, geographers at ISU are active recruiters in the high school and undergraduate ranks. Currently, about 50% of Geography majors are internal transfer students. Retention of students in the major (and therefore at ISU) from year to year is high for Geography, and a high percentage of students complete their undergraduate degrees. From a broader perspective, Geography as an academic discipline is prone to many misperceptions by college students and the general public at large, which explains why relatively few incoming freshmen declare Geography as a major. These misperceptions often characterize Geography as a discipline primarily concerned with rote memorization of state capitals, country locations, and other geographic facts. In reality, Geography is an academic discipline that is actively involved in addressing some of the world's most pressing challenges today, such as global climate change, geopolitical issues in Eastern Europe and the Middle East, or the spread of contagious diseases like Ebola virus. The job market for Geographers today is good, especially in environmental careers and in the area of Geographic Information Science (GIScience). The primary challenge for Geography faculty is to convey the true nature of Geography to students, and then to encourage them to consider Geography as a career.

In fall 2013, ISU Geography faculty members developed a comprehensive recruiting plan to ensure that the number of majors holds steady in the short and long-term future (Appendix 1). The recruiting plan reinforced many commonly used strategies by the Department over the years, and added new ideas to the mix. Faculty recruiting of undeclared students in General Education Geography courses, such as Human Geography (GEO 142), has long served as an important source of majors. The Department hosts occasional lunches with university advisors to provide key highlights of the Program that might be passed along to undeclared students. Recently the Department has begun sending letters to ISU incoming freshmen who presented Advanced Placement Human Geography for credit at ISU, inviting them to expand their geographic talents further through the Geography major. Speakers for departmental events such as Geography Awareness Week and GIS Day are used to expose Geography as a viable career path to students. Outside the University, Dr. Bloom and Dr. Kostelnick have visited local high schools as guest presenters, and recruited at the annual Illinois Geography Bee. Recruiting activities such as these will remain vitally important to the Geography Program in the foreseeable future.

The Department is fortunate to have significant endowments that support several scholarships for Geography majors, including the George R. Means Geography Scholarship, Margaret Means Endowment Stipend, Louis E. Miglio Geography-Geology Scholarship, Eunice Blackburn Geography Capstone Scholarship, and the Lathrop-Watterson Award. Scholarships and awards have different funding levels and selection criteria; some are targeted to help defray costs associated with student teaching or internship experiences while others are more general. A prerequisite of all scholarships is that an applicant be a current Geography major, and as such scholarships are not used directly to recruit new Geography majors.

5. Alumni

Geographers are a tight-knit group at ISU. Students create strong friendships and bonds with each other and faculty members get to know students as they progress through the Program over the years. As a result, occasional correspondence between faculty members and students after graduation is not uncommon. Dr. Sublett and Ms. Thomas maintain the most frequent e-mail correspondence with ISU Geography alumni. These open lines of communication provide mutual benefits—alumni often check in with faculty members with job updates or to seek continued career guidance while faculty members contact alumni for internship or career leads for current students. The Department also maintains an ISU Geography Alumni Facebook group page for graduates to reconnect with each other and the Department. Each academic year, a number of ISU Geography alumni are invited to campus to visit with students in classes or to present in the Department's colloquium series.

Beyond the informal communication with alumni as described above, Geography currently has no formal mechanism for tracking alumni career trends of recent graduates. However, a few generalizations are evident. First, ISU Geography graduates seem to be competitive in the job market upon graduation, as evident by notable Geography-related career placements by alumni in different levels of government (e.g., DuPage County, Illinois State Geological Survey), not-for-profits (e.g., Woodstock Institute), and the private sector (e.g., Archer Daniels Midland, GIS Solutions). Second, although specific employment statistics are not available, data collected by the Program's internship coordinator point to favorable employment trends immediately following a student's internship. Over the eight year period covered by the current Program Review, 113 Geography students completed internships, nearly one-quarter (30) of whom were offered continued employment by their internship employer upon completion of their internship. Third, although data are not collected for the number of students entering graduate school upon graduation, we estimate that approximately 5% - 10% of ISU traditional Geography graduates elect to pursue a Master's degree at some point. These numbers are modest, of course, but the quality of the graduate schools that recent students have been admitted to is solid, including programs at Johns Hopkins University, University of Nebraska, University of Minnesota, University of Illinois, University of Iowa, University of New Mexico, and Texas A & M University. Trent Ford, a 2011 graduate of the Geography Program and current Ph.D. student at Texas A & M University, is an example of a recent success story. Fourth, Geography teacher education graduates have achieved noteworthy successes both in and out of their classrooms. Since 2009, 42 Geography teacher education students have completed student teaching in Illinois, 78% of whom are currently teaching Geography/Social Sciences in either high school or middle school. Of those graduates, 20% are teaching Advanced Placement Human Geography at the high school level, and roughly 60% are currently taking graduate level credit courses to complete additional endorsements, or completing a Master's degree in some form of education or curriculum/instruction. Two alumni are currently working on their National Boards to become national board certified teachers. Based on the structure of the ISU Geography Program, Geography education majors are highly encouraged to either complete a minor (in another social science or science), or complete an additional endorsement (94% have completed the middle school endorsement) or two for teaching marketability. The Program also encourages alumni to become active members in both the Illinois Geographic Alliance (IGA) and the Illinois Geographical Society (IGS). Three alumni are currently on the IGS Board of Directors. Recently, ISU Geography teacher education alumna Tallia del Bianco presented a paper at the annual meeting of the National Council on Geographic Education in Memphis, TN, and has been asked to co-publish her paper in their reviewed journal, *The Geography Teacher*.

6. Diversity and Underrepresented Populations

White males under 25 years of age make up the majority of our Geography majors. In the fall of 2013, 65 of the 72 majors (90%) self-identified as being White/Non-Hispanic, compared to 80% for the total undergraduate population at Illinois State. Three of four Geography majors that fall semester were male (54 of 72), which has been the case here for many years. For the University, on the other hand, only

about 45% of undergraduates are men. A skew towards male students is not uncommon when compared to trends at other Geography programs. For example, a 2010 poll of 61 Geography Departments around the country by the Association of American Geographers (AAG) found that over 62% of geography undergraduate majors were male. Geography students tend to be older than other undergraduates on average, with 18% (13 of 72) over age 25 in fall 2013 compared to 6% for the University as a whole.

Continuing to expand the diversity and number of underrepresented populations in the Geography degree is an important priority of faculty members. In 2010, the Department was selected by the Association of American Geographers (AAG) to participate in the ALIGNED Project, an initiative aimed at assisting colleges and universities to increase diversity and participation of underrepresented groups in the geosciences. A key result of ISU's participation in the ALIGNED project was development of a diversity plan, composed of six short and long term action items, ranging from recruiting strategies to curriculum introspection by faculty, to increase diversity in the Geography major (Appendix 2). Faculty members have begun to implement several strategies from the ALIGNED Project and will continue to do so in the future. In addition to the ALIGNED Project, a female part-time NTT faculty member has long been a board member and an active participant in the Expanding Your Horizons (EYH) conference for girls who have an interest in science and mathematics. The Department hopes that continued involvement in EYH might yield more female majors in the long term.

7. Student and Faculty Participation in Honors Program

The Department has for many years welcomed honors students both as in-course enrollees from any program and as an adjunct aspect of the Geography and Geology majors. The Geography Program typically offers two to three Honors courses per year, most commonly as variants of the World Geography (GEO 135), Human Geography (GEO 142), and Natural Disasters (GEO 207) courses. In-course honors enrollment in lower-level Geography classes has been fairly consistent, with a few coming through every year. Geography majors, however, have been only occasional takers of the options of joining the University Honors Program or striving for Departmental Honors. Participation in the Honors Program by Geography majors is low, ranging from one to five students per year over the past eight years, although far more students have the grades to qualify for participation in the Program. The relatively high number of Geography majors who are transfer students partially explains this lower participation, as transfer students have limited time at ISU to become involved fully in the Honors Program. Professor Jonathan Thayn began serving as the Geography Program's Honors advisor in recent years, and has explored opportunities to encourage students to participate in the Honors Program. He continues in that role but will need help from other faculty to convince qualified students to take one or both Honors options. To receive Departmental Honors a student must 1) be a declared major in Geography; 2) complete requirements for the major; 3) maintain at least a 3.3 overall GPA and a 3.5 in the major; 4) complete at least 12 hours of Honors work in the major, including 3 hours of Honors Independent Study (GEO 299), with the other 9 hours distributed among in-course honors in Geography courses.

8. Accreditation

Geography, as a discipline, does not have an accreditation or certification process. The teacher education component, however, does periodically undergo review along with the University and all campus programs that prepare teachers for the public schools. Since 2009, the Geography Teacher Education program has been highly accredited through the State of Illinois Higher Board of Education. We have received high marks each year, and in fact, in 2011, we were considered a "model" program based on our review report. We, like the rest of ISU's education programs, no longer are accredited through NCATE, but will be moving into the new accreditation process beginning in 2016 for mid-term evaluations. CAEP (Council for the Accreditation of Educator Preparation) will replace NCATE accreditation in the State of Illinois. Therefore, we are beginning to collect data for this process in fall 2014.

B. Curriculum

1. Design, admission requirements, and graduation requirements

Geography offers both teacher education and non-teaching (traditional) degrees. Degree requirements are somewhat different for teaching and traditional majors. For the non-teaching students, the Geography major currently requires a minimum of 50 credits for courses in the discipline, composed of core classes and electives from several groups of courses. Degree requirements for teaching students include a total of 56 credit hours, spanning core and elective courses in Geography as well as supporting courses in other departments. Core classes for all Geography majors move from introductory courses in human (GEO 142), physical (GEO 100), and environmental (GEO 205) subfields of the discipline. All majors take a required gateway course (GEO 204) that introduces students to several geographic methods and to faculty research interests. The required GEO 238 course introduces students to quantitative methods including traditional and spatial statistics for geographic analysis. Two courses are required to fulfill the regional requirement at the 200/300 level. These courses expose students to regional geography, for diverse places such as Africa, Illinois, Latin America, the Middle East, the American Southwest, or Chicago. At the 300 level, all students are required to take the Cartography (GEO 300) course, while traditional majors are also required to take the introductory GIS course (GEO 303). At least fifteen additional credits of elective courses at the 300 level are required for traditional students (nine for teaching majors) where students have the option to choose among courses in specific subfields in Geography. Students are also encouraged to take courses in physical geography and related offerings by Department faculty members in the Geology Program. For three years, a Geology faculty member taught the required GIS course (GEO 303) that is primarily taken by Geography students. Many students elect to complete an independent study project under the supervision of a faculty member to serve as an elective course. Teaching majors also are required to complete the teaching methods courses offered in the Department (GEO 261 and GEO 307). Seminar in Geography (GEO 315) is a capstone course required of all students, and is taken during the senior year immediately before graduation. Traditional majors capstone their program with a discipline-appropriate internship of at least four semester hours (but sometimes as many as thirteen) while future teachers complete twelve semester hours of student teaching. Students typically are able to fulfill course requirements as described above although substitution waivers are used to substitute similar classes in rare occasions due to scheduling or course availability issues.

The Geography curriculum, which last underwent a significant revision in 2006 following the previous Program Review, takes a liberal arts approach to major requirements by exposing students to the breadth of the discipline through a variety of core courses. Geography faculty members firmly believe in the importance of highlighting the range of possible careers available to Geography majors through the curriculum. Given the breadth of the discipline, this often poses challenges to ensure that students receive coverage of all major subfields of the discipline in an efficient manner. This approach is somewhat different from previous strategies that required non-teaching students to select from the more-or-less confining sequences in the major that were on the books from 1980 until 2002. Sequences seemed confining because the Department sometimes could not staff certain courses on a regular basis, courses that students needed to graduate, and they required specialization that was not ideal if a student decided to seek employment in a different subfield of the discipline upon graduation. A limitation of not requiring sequences, of course, is that it may result in a generalized curriculum that does not provide students with the depth of knowledge needed to pursue a more specialized career in the discipline or to begin more advanced studies in graduate school. To address this issue, Geography faculty developed an optional set of four "Concentrations in Geography" in 2010. The Concentrations in Geography include 1) Nature and Society; 2) Geographic Information Science; 3) Environmental Science; and 4) People, Places, and Regions. The Concentrations in Geography (Appendix 3) each list recommend elective courses, including courses in Geography and related disciplines, for those students who wish to focus their studies in a subfield of the discipline. The Concentrations in Geography are updated periodically, most recently

in spring 2014 as a result of the Program Review process, as new courses are added/removed from the curriculum, or in response to career trends in a specific subfield. Students are provided printed copies of the Concentrations during advisement, and faculty have also started to present a special informational session on the Concentrations for students during course enrollment season. The removal of required sequences and addition of optional concentrations offers a good balance: students have flexibility to explore the breadth of the discipline fully with the option to specialize their programs if they wish.

The Geography Program also has two established certificates as part of the curriculum that recognize students who successfully complete more specific sequences of coursework (Appendix 4). The Certificate in Spatial Analysis, offered through the Department since 1986, focuses students on spatial analysis methods used in Geography. The GIS Certificate, available since 2010, is a rigorous sequence of courses for those students who wish to pursue careers in cartography, GIS, or remote sensing. Both certificates are recognized by the Department and the College, but not officially by the University.

Another key characteristic of the Geography Program is the availability of field-based courses, which upholds a long-standing tradition in the Department that encourages students to learn in the outdoors. Geography faculty members have developed and deployed two new field-based courses within the last two years. One course, Geography of Chicago (GEO 306.22), allows students to explore urban geography through the traditional classroom setting as well as a week-long (Spring Break) field excursion to experience the city firsthand. A second course, Cultural Landscapes of New Mexico and West Texas (GEO 306.15), revolves around another Spring Break fieldtrip to the American Southwest to observe, interpret, and understand cultural, historical, and ethnic landscapes of the borderlands, National Parks, and Native American reservations.

A paragraph is appropriate here regarding the required internship, which is the capstone experience for traditional, non-teaching Geography majors. Student teaching has been a part of the Geography Education program since long before any of the current faculty arrived. When the Geology Program began in 1969, faculty quickly mobilized themselves and resources to set up a required summer field camp as that program's capstone experience. As late as the mid-1980s the only undergraduates in the Department not having a mandatory capstone, away-from-campus experience were those in Geography but not planning to teach. Thus, the Department boldly decided to do something that few Geography programs were doing then—require *all* non-teaching Geography majors to complete a summer internship, which would allow them to get away from campus and immerse themselves in the experience. By 1995, a decade later, only 10 percent of the Geography programs in the country were requiring an internship, when an article by Dr. Sublett and former Professor Paul F. Mattingly appeared in the *Journal of Geography in Higher Education* entitled "Undergraduate Geography Internships in the United States: National Survey and Case Study." Today, because of the large time commitment necessary to place and monitor dozens of interns each summer, nothing much has changed nationally with respect to making Geography internships mandatory for undergraduates. Doing so is still--despite the numerous benefits for students, employers, and programs (to include faculty)--the exception rather than the rule. The total number of Geography interns from this program, since the experience became a graduation requirement, now equals 538. Most have interned in Illinois, particularly in the Chicago suburbs and central Illinois, but many have gone beyond Illinois to intern in other states. Among the internships have been very competitive placements at National Geographic Society and ESRI, the world-renowned GIS software firm in Redlands, California.

Geography faculty members take pride in a curriculum that is rigorous, diverse, and provides good coverage of the discipline despite the relatively small size of the faculty. Additionally, the curriculum and course scheduling is designed so students can enter and complete the program in a timely manner. For students entering as freshmen or changing majors by their sophomore year, graduation at the end of the fourth year of college is possible and typical. Between 2009 and 2013, the percentage of students completing their degree in four years was 51.3, while an additional 34.1% completed the degree after the fifth year. In total 85.5% of students completed their degree within five years as compared the

six year graduation rate of 71% for all students as reported in the 2013 Fact Book. As new elective courses have been created in recent years, there has been a lag with modifying the program curriculum to ensure that these electives count towards a student's degree plan. As such, sub-waivers have been used as needed to ensure programmatic credit for the electives. Geography is a discipline that many students do not discover until later on in their academic studies, so transfer students into the major from within or outside the University are common, both at ISU and at most programs around country. Many transfer students, assuming that they have completed most non-degree requirements already, are able to complete the ISU Geography degree requirements in four semesters or two academic years. Between 2009 and 2013, students that begin their academic career at ISU completed, on average, 139.3 credit hours. Transfer students completed fewer total hours on average, 134.7, while completing an average of 74.1 hours at ISU.

2. *Identify broad information fluency skills needed for success in this academic program and describe how the program collaborates with Milner Library to introduce and teach these skills.*

Geography faculty members commonly work with librarians and specialists in Milner Library, currently Julie Murphy, to meet a range of needs. Geographers by nature need maps, of course, so the map collection in Milner Library is an important source of information for many class projects. Online journal databases such as Web of Science, GEOBASE, and GeoRef are important sources of information retrieval for student and faculty research projects. Data librarians, among them Amanda Rinehart and David Stern, have collaborated with Geography faculty members on projects that explore and visualize geographic datasets through software and hardware available at Milner. Geography subject librarians over the years have assisted Dr. Kostelnick in developing a course website with links to state and federal statistics and other data sources that are utilized for final projects in his Cartography (GEO 300) course. Many Geography professors schedule visits to Milner Library during the semester so students can work directly with librarians to learn about the library's holdings and ways to access materials. Within the curriculum, students are introduced to MLA style and information fluency in GEO 204 – Doing Geography. The concepts that student learn in GEO 204 are reinforced throughout the remaining courses in the Geography core.

3. *Identify co-curricular opportunities available to students in the program, including experiential learning and describe how they enhance learning objectives of the program.*

A benefit of a small program like Geography is the rapport between faculty and students, which encourages students to become involved in professional and extracurricular activities related to the discipline to foster professional development further. Faculty members encourage students to become involved in numerous activities, ranging from the Department's Geography Club and honorary society (Gamma Theta Upsilon) to participation in professional conferences. The current Geography SLOAP tallies participation in these professional and extracurricular activities given the importance faculty members place on these experiences for student development. Fieldwork (through courses or research experiences) provides a great opportunity for students to experience professional life as a geographer, and faculty members try to provide numerous field opportunities for students each semester. Faculty often take students to professional meetings or, if they travel separately, work at the meeting to make sure the students interact with those from other universities or the nonacademic world. Faculty commonly help students prepare their abstracts and presentations for such meetings, and often present jointly with students. The Department's Geography Club is active and open to any major or other interested student. The Club meets regularly during the academic year, and has had two sponsors over the past several years, Dr. Kostelnick and more recently Dr. Thayn. Club meetings involve planning for social events and community service projects, including activities associated with Geography Awareness Week and GIS Day. The Alpha Chapter of the international Geography honor society, Gamma Theta Upsilon, is another

professional opportunity for student involvement. Students with sufficient coursework and grade achievement in Geography are eligible to join the honor society, and some do so each year. Several of the current Geography faculty members have previously served as sponsors of Geography Club or Gamma Theta Upsilon. Additionally, the Department schedules a series of career-oriented presentations and discussions each semester known as "Geography Career Year." Many Career Year speakers are graduates of the ISU Geography Program who are very willing to share job experiences and career advice with current students. The Geography faculty members also organize an annual session on graduate school for those students interested in pursuing advanced study in the discipline upon graduation. The graduate school session focuses on a range of topics, such as preparing a successful graduate school application to daily activities and life as a graduate student.

C. Faculty

Tenured and tenure-track Geography faculty currently on staff include two professors, one associate professor, and five assistant professors (one tenured and four tenure-track). One Geography professor is currently on administrative appointment in the College of Arts and Sciences office, for a total of seven tenured or tenure-track faculty members in residence in the Department in Fall 2014. The Geography Program also benefits from the presence of an A/P advisor/instructor; a GIS Technician; three part-time, non-tenure track instructors; and tenured or tenure-track Geology faculty members in the Department who teach courses that draw Geography majors (Appendix 5).

Indicators of Faculty Quality Inherent in the Discipline

Geographers think in spatial terms, and in multiple dimensions (east-west, north-south, vertical, and temporal). Whether as social scientists, humanists, or physical scientists, geographers strive to understand and explain observed spatial patterns. They concern themselves not only with where they find things; but, more importantly, their focus lies on the processes, social and physical, that help explain geographic distributions. Geographers rely on a diverse range of datasets, both qualitative and quantitative, for objective analysis. Unlike many of the social and physical sciences, Geography emphasizes multidisciplinary training. Geographers specialize in synthesizing and applying information from a broad spectrum of disciplines, making such professionals especially relevant in today's complex world. Many geographers take pride in the relevance of their work for addressing some of the world's most important challenges, such as monitoring environmental change, combatting poverty and inequalities in human development, and mitigating and responding to natural hazards. Geography is sometimes referred to as the "great integrator"—if a truly interdisciplinary field of academic inquiry exists in the liberal arts, it is Geography.

Holding a Ph.D. from a quality Geography graduate program is a good indicator that a professor will be on the right track toward such a geographical mindset. The ability to publish in recognized outlets for the discipline is essential for success in the academic milieu that geographers inhabit. An ability to secure external funding through contracts and grants is increasingly important for research in the discipline. Being a reviewer of books, manuscripts for publishers, or of proposals for funding agencies is a positive attribute. Informed travel is a trait that geographers cultivate and from which they derive important research and teaching directions. Throughout the discipline, because of the common need to work in the General Education environment, a Geography faculty member must have a strong and obvious interest in being a good classroom teacher. Because of the importance of data collected on site, many Geographers spend time traveling for fieldwork, either to support their own research or to enhance the learning experience with students in Geography courses. For example, Professor Matt Himley regularly takes students in his Living in the Environment (GEO 205) course on a field trip to a local organic farm so students may better grasp environmental issues related to farming that are discussed in class. Within the major subfields of the discipline, there are more specific indicators of quality. Human geographers need to be extremely well-read, articulate, and prolific writers in their quest to document and

understand the human experience. Physical geographers must be able to collect and analyze data to comprehend complex processes in the physical world. Environmental geographers have the difficult task of balancing between the human and physical realms, interpreting the cause-and-effect relationships between both realms. Geographers that specialize in Geographic Information Science (cartography, GIS, remote sensing) must be able to process, explore, and visualize complex datasets using sophisticated computational techniques. Most important of all, geographers who succeed think spatially, asking the "where" question, then the "why-there" or "why-not-there" question, and then the "so-what" question.

National Reputation of Geography Faculty

Faculty in the Geography Program have established national and international visibility to which members can point with pride and with the knowledge that programmatic reputation will be growing, especially as recent hires come into the prime of their academic careers. The Program's current faculty members routinely publish articles and reviews in a variety of comprehensive geographical journals, subfield journals, and other academic journals in related fields, including the following:

- *Annals of the Association of American Geographers*
- *Antipode*
- *Arctic, Antarctic, and Alpine Research*
- *Biodiversity and Conservation*
- *Bulletin of the International Geographical Union*
- *The Canadian Geographer*
- *Cartographica*
- *The Cartographic Journal*
- *Cartographic Perspectives*
- *Climate Research*
- *College Teaching*
- *Dialogues in Human Geography*
- *Earthzine*
- *Economic Geography*
- *EOS Transactions*
- *Environment and Planning A*
- *Environment and Planning D: Society and Space*
- *Focus on Geography*
- *Geocarto International*
- *Geoforum*
- *Global and Planetary Change*
- *The Geographical Bulletin*
- *Geographical Review*
- *Great Plains Quarterly*
- *Illinois Geographer*
- *Illinois History Teacher*
- *International Journal of Remote Sensing*
- *Journal of Geography*
- *Journal of Geography in Higher Education*
- *Journal of Geophysical Research*
- *Journal of Paleolimnology*
- *Palaeogeography, Palaeoclimatology, Palaeoecology*
- *Photogrammetric Engineering and Remote Sensing*
- *Physical Geography*
- *Pioneer America Society Transactions*
- *Remote Sensing of the Environment*

- *Remote Sensing Letters*
- *The Professional Geographer*
- *Quaternary Research*
- *Sustainability*
- *Teacher Development*
- *Transactions of the Institute of British Geographers*
- *The Virginia Geographer*
- *Water Resources Research*

Other publications, serving to enhance the current faculty's national and international reputation, have included one book, numerous book chapters, encyclopedia or gazetteer entrees, conference proceedings papers, and maps that enhance books and articles of others. Presentations by the core faculty have mainly occurred at the annual and regional meetings of the Association of American Geographers and the National Council for Geographic Education, but faculty have also presented their work at venues like The Assessment Institute, the Illinois Geographical Society, the Canadian Association of Geographers, the Congress of the Latin American Studies Association, the North American Cartographic Information Society, AutoCarto, the International Cartographic Association, the Middle East Studies Association, and the Congress of the International Geographical Union.

External funding in the form of grants and contracts for research has been procured by faculty members from the following agencies: Environmental Defense Fund, Illinois State Board of Education, National Science Foundation (NSF), U.S. Department of Agriculture (via Illinois Department of Agriculture), U.S. Department of Education, and the U.S. Department of Homeland Security (via Illinois Emergency Management Agency). Two Geography faculty members, Dr. John Kostelnick and Dr. Jonathan Thayn, were recipients of the ISU Research Initiative Award since the last Program Review.

Here is a partial list of the current Geography Program's faculty accomplishments on the national and international stages.

- West Lakes Region Councilor, Association of American Geographers
- Director, AAG Paleoenvironmental Change Specialty Group
- Officer, AAG Socialist and Critical Geography Specialty Group
- Curriculum Advisor, Advanced Placement Human Geography
- Senior Reviewer and Curriculum Advisor, Advanced Placement Human Geography
- Reader (3 faculty members) and Lead Table Leader (1 faculty member), Advanced Placement Human Geography essay reading
- Chair of the Employment Opportunities and Career Development Committee, Association of American Geographers
- Executive Board Member, National Council for Geographic Education
- Executive Board Member, Illinois GIS Association

- U.S.A. Representative, Cartographic Education and Training Commission, International Cartographic Association
- Member, Scientific Review Committee, International Cartographic Conference
- GIS Editor, *Earthzine*

Geography faculty are commonly asked to serve as reviewers for manuscripts submitted to top journals in their respective specialty areas such as *Antipode; Annals of the Association of American Geographers*; *Cartographica; Cartographic Perspectives; Environment and Planning D: Society and Space; Gender, Place and Culture; International Journal of Geo-Information; Journal of Applied Geography; Journal of Cultural Geography*; *Journal of Latin American Geography; Material Culture; Political Geography; The Professional Geographer; and Urban Geography.* In addition to reviewing manuscripts, faculty members have also reviewed research proposals for prestigious external funding sources such as the NSF.

Brief Overview of Scholarly Activities of Geography Faculty: 2006 - 2014

Geography faculty members have maintained a productive pace of scholarly accomplishment since the previous Program Review, and productivity has increased in many key categories. The list below tallies scholarly productivity for all faculty members currently affiliated with the Program over the past eight years. Numbers are incomplete as all scholarly activities for two faculty members no longer on staff are not readily available during their years of service and therefore not included in final counts. Professional conference presentations, including several presented in other countries, dominate the list below. Peer-reviewed journal articles occupy the second slot. Grants and contracts, many through the Department's Institute for Geospatial Analysis and Mapping (GEOMAP), are becoming more common as junior faculty get their research agendas rolling and provide an excellent return on start-up funding investment. Book reviews, though present, are typically a mid-career or late-career hallmark. Book chapters, encyclopedia entries, reports, and a book are also present. The most noticeable change in the numbers below compared to those for the 2006 Program Review are the increase in peer-reviewed journal articles (32 in 2006, 48 in 2014) and the increase in total grants and contracts (30 in 2006, 52 in 2014).

- Professional conference presentations: 106
- Peer-reviewed journal articles: 48
- Grants and contracts (internal): 24
- Grants and contracts (external): 28
- Reports: 3
- Book Chapters/Encyclopedia Entries: 13
- Book Reviews: 9
- Books: 1

Success in teaching by current faculty members can be gauged by teaching awards and honors awarded by the College, University, and professional organizations. Here, Geography faculty members have achieved considerable success in recent years. For example, in the 2013-2014 academic year alone,

Geography faculty members were recipients of three College/University teaching awards (College of Arts and Sciences Outstanding Teaching Award-Dr. Kostelnick, University Teaching Initiative Award -Dr. Himley, and Shaw Fellowship-Dr. Rowley), and one national teaching award (National Council for Geographic Education Distinguished Mentor Award-Dr. Sublett). Perhaps even more impressive is the fact that these awards were earned by four different faculty members, or half of the current tenured or tenure-track professors in the Geography Program.

In addition to being award winning faculty, Geography professors provide leadership in the discipline. Dr. Sublett has chaired committees for the Association of American Geographers (Employment Opportunities and Career Development) and the National Council for Geographic Education (Seventy-fifth Anniversary), served on the Executive Board of the NCGE, and for the last dozen years played various leadership roles in the interest of Advanced Placement Human Geography (Table Leader, Lead Table Leader, Exam Leader, Syllabus Audit Senior Reviewer [one of two nationwide], and Syllabus Audit Curriculum Advisor [only one nationwide]). Dagmar Budikova has served as the West Lakes Region Councilor, Association of American Geographers. John Kostelnick has served in leadership positions at the state, national, and international level, including appointments as the sole U.S.A. Representative to the Commission on Education and Training for the International Cartographic Association (ICA), member of the Scientific Review Committee for the International Cartographic Conference, the Associate Editor for GIS for Earthzine.org (webzine for the international Earth-observing community), and as a member of the Executive Board for the Illinois GIS Association (ILGISA). Henry Zintambila has conducted book reviews. Matt Himley regularly organizes paper and panel sessions at the Association of American Geographers Annual Meeting and at the International Congress of the Latin American Studies Association. He has served as a reviewer for 23 academic journals, two academic presses, and the National Science Foundation. Reecia Orzeck has organized both paper and panel sessions for the Association of American Geographers' (AAG) Annual Meetings as well as for other conferences. She has been an invited conference panelist multiple times, as well as the discussant for a paper session at the 2012 AAG Annual Meeting. Dr. Orzeck has been an officer in an AAG specialty group (the Socialist and Critical Geography Specialty Group) since 2010 and is on the organizing committee for the 2015 AAG Annual Meeting (to be held in Chicago). Lisa Tranel has served as an alternate delegate to the Board of Directors for the Association for Women Geoscientists North Central Region for 3 years. Eric Peterson was appointed a Fellow at the Geological Society of America where he is currently the Secretary-Treasurer of the Hydrogeology Division. He has served as an executive committee member for the Illinois Groundwater Association. All faculty regularly receive invitations to review manuscripts for leading national and international journals in their sub-discipline.

D. Non-Traditional Program Delivery

1. Distance Learning

Like many programs at ISU, Geography has increased the number of online summer course offerings in recent years, much of it in response to the University's quest to increase summer enrollment in General Education courses. Currently, four Geography courses are offered regularly, each of them in a 100% online environment: GEO 135 (World Geography), GEO 142 (Human Geography), GEO 207 (Natural Disasters), and GEO 211 (Earth's Dynamic Weather). All four courses are taught in the summer session, and each is also taught in a traditional classroom environment during the spring and/or fall semesters as well. The online sections overwhelmingly draw non-majors since the courses fulfill various General Education requirements, but it is not uncommon for a few Geography majors to enroll in each section. Geography faculty who teach online courses commonly participate in online teaching workshops offered by CTLT to ensure a quality experience for students. Despite the upswing in online course offerings for General Education Geography courses, no efforts have been devoted towards more advanced course offerings (300 and 400-level).

Geography faculty members greatly value the traditional course format for its conduciveness to equip students with the various skills needed for a professional career in Geography. Debates and discussions in human geography courses; laboratory experiments in physical geography courses; hands on computer mapping, GIS analyses, and aerial image interpretation in GIScience courses; and fieldwork in the capstone senior seminar course are not easily translated into the online teaching world. Field trips, ranging from a few hours to several days, are an important component of many Geography courses. For these reasons, Geography has not developed a formal distance education program beyond the handful of online General Education courses, and has no intention to do so in the future.

2. Study Abroad

Study abroad experiences are excellent opportunities for Geography students to enhance their understanding of peoples, cultures, and places around the world, a basic objective of many Geography courses. Through study abroad opportunities, students may gain knowledge and appreciation for a new part of the world through firsthand experiences.

Over the past eight years, approximately two Geography majors per year have completed a study abroad or student exchange experience of some kind (coursework, internship, etc.). Considering the approximately 70-100 Geography majors per year and the relevance to the field of Geography, this number is considerably low. Faculty members recognize this low participation in study abroad experiences and have begun to implement initiatives to boost participation. Some Geography faculty members have invited the ISU Study Abroad Program to make presentations to classes so students may learn about possible opportunities overseas. Faculty members more actively recruit students for study abroad experiences and opportunities as well. Field-based courses for specific regions of the world taught by faculty with expertise in these regions may also be developed in the future. For example, Professor R.J. Rowley is in the planning stages of developing a 3-week Geography course in Japan that is scheduled for Summer 2015. Geography faculty members hope that these collective efforts will develop an upward trajectory of students who study abroad during their undergraduate studies.

3. Off-Campus Program Delivery

Geography currently does not offer an off-campus program delivery, nor has plans to do so in the future. However, online Geography course offerings in the summer have increased in recent years, expanding the Program's reach to students not in residence.

E. Student Learning Outcomes Assessment

Attached to this report (Appendix 6) is the current version of Geography's Student Learning Outcome Assessment Plan (SLOAP). The Geography SLOAP was significantly revised last in Fall 2007 following the last Geography Program Review, with minor revisions and simplifications occurring in subsequent years as needed.

Geography faculty believe that substantial assessment tools and metrics are in place to measure many of the existing goals, and if anything, perhaps the current SLOAP is too detailed and should be streamlined further in the future. Each semester, the Program Advisor and current SLOAP coordinator gather SLOAP metrics collected by the faculty. Once compiled, these metrics are reviewed periodically during Geography faculty meetings to understand which goals are currently being met and which are not. If performance for any particular goal is especially poor, discussion ensues and appropriate action is taken in an attempt to improve student learning for that goal.

Four primary metrics are used to assess student outcomes for the eight Program goals identified in the SLOAP: grades for assignments in courses, the Senior Field Problem, professional practice experiences, and participation in professional and extracurricular activities.

Course grades matter, and are a clear indication as to whether students are getting the message or not. For instance, Dr. Kostelnick can discriminate fairly in Cartography (GEO 300) between students who "integrate, assess, and/or synthesize information of a geographic nature" (see Goal #6 in Appendix 6) for course mapping projects and those who do not. By the end of Seminar in Geography (GEO 315), with its numerous essays (all carefully marked for content and grammar), Dr. Sublett can tell with a fair amount of certainty which students can "demonstrate appropriate written communication skills for career or advanced study" (Goal #2). Grades do matter and will continue to be part of the SLOAP in Geography at Illinois State. Course grades provide early warning if a student is apt to have problems with later assessment issues, such as the Senior Field Problem or the required capstone experience.

The Senior Field Problem (SFP), an intensive research project that incorporates several geographic methods, is an important assessment metric in the Senior Seminar (GEO 315) course. Topics for the SFP have varied over the years, with recent topics including the sequent occupance of blocks in Bloomington-Normal and the sense of place by rural residents in McLean County. The final deliverable for the SFP is a carefully prepared essay, documented with interviews and other sources and supplemented by maps, photographs, graphs, and tables. The SFP requires students to integrate several tools of the geographer's craft that they have learned throughout their undergraduate studies.

A professional practice experience is required for all Geography majors, and is a key metric in the Geography SLOAP. Geography teacher education majors must complete 12 credits of student teaching for their capstone experience, which typically involves a semester of student teaching in Geography and/or related social sciences courses. Student teachers must teach a full six to eight weeks of five class periods without the cooperating teacher in the classroom. Student teachers must also complete the edTPA assessment to become a certified teacher in Illinois. Since the late 1980s, traditional majors in Geography have also had an off-campus capstone: the required internship. Few Geography programs in the country take this step of making the internship a requirement—mainly because of the time it requires for faculty to monitor and make the internship special for the graduating senior. Geography students typically complete the internship in the summer, taking geography-related positions in government (local, state, federal), the private sector, or with non-profit organizations. Most interns elect to stay in Illinois for their internships, but several have found positions across the United States and even one in Africa. As of summer 2014, over 500 geography majors have successfully completed the required internship.

Goal	**Actual % Pass by Majors (2007 – 2014)**
1) Demonstrate appropriate oral presentation skills for career or advanced study	84.5%
2) Demonstrate appropriate written communication skills for career or advanced study	95.2%
3) Demonstrate appropriate analytical skills for career or advanced study	91.1%
4) Construct & interpret maps and other spatial models using appropriate cartographic design, visualization techniques, & quantitative data manipulation	88.6%
5) Conceptualize and articulate the underlying principles and practices of Geography	82.9%
6) Integrate, assess, and/or synthesize information of a geographic nature	89.5%
7) Participate in learning experiences outside the traditional classroom (e.g., field trips, activities hosted by Geography Club, field camps, outdoor activities in traditional courses)	Incomplete Data*
8) Successfully complete a professional practice experience	97.8%

*A recently discovered limitation of the current Geography SLOAP is that data about student participation in the many learning experiences outside of the classroom are not easily collected through one centralized source, so data are incomplete. Future revisions of the SLOAP will ensure that these figures are captured more completely.

As mentioned previously, SLOAP metrics are tallied each semester and then reviewed by the Geography faculty as a collective group to analyze how students are performing according to each goal. Results for the 8 major program goals for semesters from Fall 2007 through Spring 2014, summarized as averages of the percentage of all students who successfully achieved a given goal as measured by SLOAP metrics, are summarized below.

The SLOAP metrics presented above exceed target results for most of the program goals over the seven year period. Goals with lower percentages have prompted additional action. For example, many of the SLOAP metrics measured for a single course are used by course instructors to fine-tune the presentation of these topics or details for specific assignments following times when student performance in the course was lacking. In other cases, SLOAP metric results have influenced decisions made in staffing or long-term Program planning. For example, poor student performance for several SLOAP metrics related to the Introduction to GIS (GEO 303) course prompted a change in the course instructor. As another example, a trend in lower percentages for the physical geography portion of the assessment for Goal 5 has recently provoked discussion about the possibility of investing a future faculty member hire on someone who can help to expand course offerings in this area.

Alumni Surveys

Although not formally a part of the Geography SLOAP, alumni surveys completed by Geography majors upon their graduation also provide insights into the quality of the Program. Exit interviews were an outcome of the 2006 Program Review and began in the summer of 2006. These first interviews were a paper product that we mailed to each anticipated graduate by the Department. Respondents could choose to be anonymous, and results were tallied by a Geography faculty member. Due to a low response rate, the alumni survey was discontinued after the Spring 2009 semester. In the summer of 2013, the alumni survey was resurrected with assistance from University Assessment which developed a similar survey in an anonymous online format.

Self-selected returns are by nature biased; and, of course, we wish the return total would have been higher—but the results are instructive and complimentary to the Geography Program. Not every graduate answered every question, so we have converted all responses to percentages. Here are some highlights from recent alumni survey results for summer 2013, fall 2013, and summer 2014 graduates who submitted a survey (23 total):

- 100 percent of responding graduates were, when surveyed, satisfied or very satisfied with the ISU Geography Program
- 86 percent felt the Geography Program prepared them very well or extremely well for their professional career.

SECTION III: IBHE COMPARATOR AND ASPIRATIONAL PROGRAMS

A. IBHE Comparator Programs

Geography currently is offered as an undergraduate degree major in nine of the state's public institutions: Chicago State University, Eastern Illinois University, Illinois State University, Northern Illinois University, Northeastern Illinois University, Southern Illinois University at Carbondale, Southern Illinois University at Edwardsville, University of Illinois at Urbana-Champaign, and Western Illinois University. The ISU Geography Program ranks favorably on several criteria when compared to these

other institutions. For the period covering 2006-2011, ISU ranks third among these programs in the average number of degrees awarded each year, with an average of 20.5 degrees per year. Similarly, ISU ranked third in the average number of majors in the program over this same time period. The ISU Geography Program consistently leads the state in the number of Geography teacher education majors and graduates. Recent numbers indicate that ISU is on an upward swing, with more declared Geography majors in 2010 and 2011, the most recent number available, than any other program in the state. At the same time, ISU has remained consistently in the upper one-third of state universities that offer the lowest cost per credit hour. In 2010 and 2011, again the most recent data available, ISU Geography personnel generated more credit hours per faculty/staff member than any other Geography program in Illinois. Although the ISU program is among the highest in terms of number of geography majors, it operates with considerably fewer faculty members than other institutions. Currently, only 7 tenured/tenure-track faculty members in residence and 1 AP instructor serve majors at ISU, whereas these numbers are much higher at other institutions (for example, 15 tenured/tenure track faculty for Northern Illinois University, 14 for Western Illinois University, 12 for Southern Illinois University-Edwardsville, respectively). Subsequently, the average student-to-tenured/tenure track faculty from 2008 to 2011 is the highest for ISU (11.2:1), with the next highest ratio at Southern Illinois University-Edwardsville (8.2:1). In terms of graduates, ISU produces 3 graduates for every faculty member; Southern Illinois University-Edwardsville generates 2.3 graduates per faculty member. Beyond the numbers, a qualitative comparison of the ISU Geography Program to others in the state yields other noteworthy trends. For example, the long-established internship experience remains a requirement of the ISU Geography Program, which is unique among other programs in Illinois.

B. Aspirational Programs

Given the broad spectrum that Geography spans as an academic discipline, it can be challenging to identify a single program at another institution that serves as an aspirational model. However, many examples may be found with various characteristics worthy of emulation by the ISU Geography Program.

The University of Missouri in Columbia houses a well-respected Geography Program with both Bachelor's and Master's degrees offered in the discipline. The Department has well-respected faculty members, and despite its relatively small size, offers a dynamic undergraduate degree that feeds well into an established Master's degree. Additionally, the University is the flagship research institution in the state of Missouri, and as such serves as a good example for how the university can serve as a center of knowledge and leadership for the state as a whole for applied topics that pertain to Geography. In particular, the University of Missouri provides important leadership to the state in the area of Geographic Information Science, a role that GEOMAP in the ISU Department of Geography-Geology strives to fill for Illinois.

Ohio University is listed as an ISU "Peer Group Institution" by the Carnegie Classification, and offers both Bachelor's and Master's degrees in Geography. Ohio University maintains a healthy number of students, with approximately 160 undergraduate majors and 20 graduate students every academic year. Perhaps the most impressive aspect of the Geography Department at Ohio University is the depth and breadth of the discipline that are covered by faculty members. Geography is an academic discipline that spans the natural sciences, social sciences, and humanities, and having a well-balanced degree program requires adequate coverage of the many subfields of the discipline. Although it is unlikely that the ISU Program will attain the current 15 faculty positions in Geography at Ohio University in the near future, additional faculty positions in Geography will better ensure that ISU students are exposed to the breadth of the discipline. In addition to this breadth, Ohio University supports many applied research laboratories which not only aid the research of faculty members, but also provide practical research experiences for students.

Similar to the ISU Undergraduate Geography Program, Minnesota State University in Mankato, Minnesota, serves primarily in-state students with both Geography and Geography Education degrees.

The Minnesota State Program is strong in its coverage of the various thematic subfields of Geography (human geography, physical geography, cartography/GIS/remote sensing, etc.). Minnesota State also offers a general graduate M.S. degree that can be focused in a variety of different subfields of Geography. Minnesota State also operates a strong major and small Master's program staffed by a relatively small number of faculty members.

DePaul University is a private institution in Chicago, Illinois, that offers an undergraduate degree in Geography in which students can specialize in one of four concentrations. Although the DePaul Program is relatively small, faculty members are accomplished scholars with diverse interests that prepare students for graduate studies in both Geography and interdisciplinary fields of study, such as a focused M.A. degree in Sustainable Urban Development offered through the Department.

Central Michigan University and Western Michigan University both house Geography Departments with excellent credentials in geographic education. Like ISU, both programs offer sequences to prepare students for careers in geography teaching. Central Michigan and Western Michigan also share hosting duties for the Michigan Geographic Alliance, a state-level initiative sponsored by National Geographic to promote geographic awareness and education in the state.

The Programs described above share some general similarities: dynamic undergraduate experiences where students have ample opportunities to work with well-versed faculty members that are known in their fields both in and out of the classroom. Additionally, each of the Programs described above has an established Master's degree that may support the undergraduate degree, and provides an avenue for students who wish to further their studies.

SECTION IV: RESPONSES TO RECOMMENDATIONS RESULTING FROM THE PREVIOUS PROGRAM REVIEW

The previous Program Review, completed in fall 2006, outlined a number of priorities to improve the overall quality of the Geography Program. Here we outline each major priority and address current progress towards each.

The first major priority dealt with strengthening the quality of the Geography faculty. At the previous Program Review, Geography was in a time of transition as retirements and non-reappointments due to insufficient scholarly production left vacancies in faculty positions. Over the past seven years, Geography has hired five new assistant professors to fill these vacancies. One of these faculty hires has received tenure and promotion to associate professor. Another Geography faculty member has been promoted from associate professor to full professor since the previous Program Review. Publications, grants, and other scholarly productivity for the Department as a whole have increased substantially with these new faculty members, while the quality of teaching has remained strong. The recent awards faculty members have received attest to the strength of the faculty for scholarly achievement and outstanding teaching.

Strengthening and enhancing our students' experience by attracting a greater number of capable students and improving curricular and co-curricular activities was identified as a second priority from the previous Program Review. Although this objective is difficult to measure, we feel that we continue to recruit, mentor, and turn-out high-quality students. Student internship placements with prestigious organizations (e.g., ESRI, Catholic Relief Services, Sequoia National Park, Los Alamos National Lab, Federal Emergency Management Agency), gainful employment by many students immediately upon graduation, and acceptance into prestigious graduate programs (e.g., Texas A & M University, Johns Hopkins University, University of Minnesota) are all indirect indicators Geography faculty members use to assess the overall quality of students. Attracting high-quality students to fill the ranks will remain an important challenge, and faculty members are always on the lookout for potential talent. Historically, our principal limitation to recruiting majors was not having a Geography course in General Education that is open to large numbers of freshmen. In addition, many General Education courses were taught by part-

time faculty who are only on campus for a few hours per week. The revisions to General Education have finally permitted us an opportunity to offer classes in the lower tiers of the program. For example, GEO 140 has evolved to GEO 142 and is now part of the U.S. Traditions category in General Education, which will provide greater exposure to potential recruits. We have revised Quantitative Reasoning in the Geosciences (GEO 138) as another course that will be used to recruit freshmen and sophomores. Both courses (GEO 142 and GEO 138) are staffed by full-time tenured/tenure-track faculty members, which will be beneficial for recruiting purposes.

The third major recommendation concerned plans to enhance our overall role in advancing the University mission of teaching, research, and service by continuing to develop our GIS and Cartographic Services Laboratory, maintaining our commitment to General Education, expanding our outreach and continuing education efforts, reinforcing our commitment to international studies programs on campus, and working more closely with alumni. Geography continues to play an integral role in General Education, and has consistently offered key courses and sections that serve hundreds of students across campus each semester. GIS and Cartographic Services has grown into GEOMAP, now an established research institute on campus with a dedicated space, equipment, and affiliated faculty/staff. GEOMAP has served clients from across campus (including the Office of the President), as well as others in the community and the state with projects and applied research. GEOMAP affiliated faculty and staff have also led the development of a campus GIS Council composed of GIS users from around campus, and have led the development of GIS initiatives that promote the teaching, research, and service missions of many ISU departments and units. Since the previous Program Review, we have hired two new faculty members who provide key contributions to international programs at ISU. Dr. Matt Himley is affiliated with the Latin America and Latino/a Studies Program and offers the Geography of Emerging Areas: Latin America (GEO 235.02) course which counts towards that Program's minor. Dr. Reecia Orzeck is affiliated with Middle Eastern and South Asia Studies and offers the Geography of Emerging Areas: Middle East (GEO 235.04) course which counts towards that minor.

SECTION V: CHANGES IN THE ACADEMIC DISCIPLINE, FIELD, SOCIETAL NEED, AND PROGRAM DEMAND

Evidence of the need for geographers in today's globalized world of over 7 billion people is readily evident through a perusal of current events that dominate the news media. At the time of the writing of this report, events such as territorial disputes in the Crimean Peninsula, political conflict in the Middle East, ethnic tension in Central Africa, international and domestic terrorism around the globe, poverty and income inequalities in developed and underdeveloped countries, natural disasters of various types (e.g., earthquakes in Chile, landslides in Washington state), the spread of diseases such as the Ebola virus, and environmental issues including global climate change all call attention to the important role of Geography and the work of geographers. The relevance of Geography in today's society was recently (31 March 2014) recognized by *Time* with a front-page cover and feature article that cited the relevance of Geography in geopolitical events and territorial disputes around the world today. GPS-enabled mobile devices and interactive web maps, now commonplace in the daily lives of many, are possible through the work of Geographic Information Scientists, many of whom claim Geography as their intellectual field of study.

It is clear to those in the profession that Geography matters, and it can make a difference in the world around us. Yet, public intellectuals, academics from other disciplines, policymakers, and the general public at large may have many misunderstandings about the true nature of the discipline. Arguably, many of these misperceptions about Geography can be traced to the "Old Geography" of yesteryear, where rote memorization of state capitals, countries, and other geographic facts was commonplace in K-12 and college curricula. In fact, it is not uncommon for students to comment on course evaluations about how their perceptions of Geography as a discipline changed upon completion of a college course at ISU. A primary challenge for college/university geography programs is to convey the

relevance of the "New Geography" to incoming college students and their parents as a field of study that may serve as a pathway to a diverse range of careers that address today's global issues.

Employment outlooks and career trends are very favorable for geographers today. In its "Occupational Outlook Handbook," the U.S. Department of Labor projects a 29% growth in jobs for geographers from 2012 to 2022, a growth rate that is much faster than average for other careers. The same report cited an average annual salary of $73,000 for geographers in 2013. Much of this growth is expected to come in the area of geospatial technologies and Geographic Information Systems (GIS), which claim Geography as their academic disciplinary homes. In an earlier report published in 2004, the U.S. Department of Labor cited geospatial technology as one of the five most rapidly growing industries in the United States. Similarly, in 2010, *Money Magazine* listed "geographic information system analyst" as one of the "Top 100 Best Jobs in America." A recent (2010) poll in the United Kingdom found unemployment rates were the lowest for geography graduates compared to all other disciplines, in part due to the many employable skills that are taught as part of a Geography college curriculum.

The relevance of geography continually poses new opportunities for how the subject is taught through the ISU undergraduate degree. Like many academic disciplines, Geography continues to evolve at a rapid pace, and each semester Geography faculty and staff adapt the curriculum and other Program activities to reflect these changes. Updates and revisions include relatively minor modifications to existing courses, such as incorporation of current events to illustrate key concepts covered in an introductory world or human geography course, or a mock debate class activity based on a current environmental issue such as hydraulic fracturing, the proposed Keystone XL pipeline, or local food sourcing in a nature-society geography course. At times, more drastic action is required, such as the development of entirely new courses to reflect changes in the discipline. For example, since the previous Program Review was completed, a course in remote sensing was revamped and brought back into the regular rotation of courses, and an undergraduate Certificate in GIS was developed in part to reflect the growing career trends in geospatial technology. Likewise, a course in economic geography has been revamped and added back to the curriculum to keep pace with trends in the discipline. Also since the previous Program Review, four new suggested "Concentrations in Geography" were developed with recommended courses for students to select from in the major subfields of Geography based on current career demands. Courses to recruit students into the major and to expose students to new trends in Geography have also been a focus, such as the revamped Quantitative Reasoning in the Geosciences (GEO 138) course which exposes early career students to applications of modern mapping and geospatial technology in the geosciences.

SECTION VI: MAJOR FINDINGS OF THIS PROGRAM REVIEW SELF-STUDY

A key activity in the Program Review process was discussion among Geography faculty about current Program strengths and weaknesses. Each faculty member was tasked to create an independent list of the top 5 current strengths of the Geography Program, and the top 5 areas for future growth. Once each faculty member developed their "Top 5" lists, they presented them to their colleagues, which stimulated group discussion about current strengths and weaknesses of the Program. It is worthwhile to note that there was a high degree of agreement among faculty members on several strengths and weaknesses, a positive sign for charting a path towards future growth. Key trends in the group's "Top 5" lists are summarized below, in no particular order.

A. Strengths of Geography Program

- *Scholarly productivity of faculty and students.*

Most geographers in the Department are very active in their scholarship, frequently attending regional, national, or international conferences, symposia, and workshops and publishing their research in

top-tier journals or other scholarly outlets. This scholarly activity is not only good for the national and international reputation of the Department and University, but it also fosters linkages between students and the broader discipline of Geography. Active scholarship shapes our course design and the Department's curriculum as a whole, especially areas of the discipline that are changing rapidly. Faculty research also aids our capacity to provide research opportunities to undergraduate students, such as research project assistants, and provides opportunities for students to collaborate with faculty members on conference presentations or journal publications. For example, Geography major Joe Simanis was a co-author on a journal article published in the *Annals of the Association of American Geographers*, the most prestigious journal in the discipline, based on his work with Dr. Jonathan Thayn as an undergraduate research assistant.

- *A strong sense of community between faculty members and students.*

In addition to being friendly and collegial with one another, Geography faculty members interact with students in a positive and friendly manner outside of the classroom. Ours is a Department where students get to know their professors, and professors their students. Along with the relatively small size of the Department, this creates a strong sense of community between faculty members and students, and a highly productive learning environment. Responses from the Department's exit interview overwhelmingly indicate that students feel a part of the community, and greatly appreciate the fact that they are known by name to their professors. In the words of one recent Geography graduate, "I really liked the one-on-one personal relationships with the professors. Because the major is relatively small, this allowed for easy communication and made the whole atmosphere feel like a family." The resulting sense of community is arguably a major factor in students' positive experiences in the Department, and a significant reason why retention of majors from year to year is very high in Geography. As well, faculty collegiality in the Department has been beneficial for scholarly synergy and collaboration on grants, journal manuscripts, and other projects.

- *Individualized opportunities for students to work one-on-one with faculty members, including research experiences and field trips.*

- Related to a strong sense of community, students also are highly complimentary about the individualized opportunities available to them in the Department. These activities include the opportunity for students to engage in a faculty member's research, or to travel on a field trip with a small group of fellow students as part of a field trip for a Geography course. These experiences provide individualized experiences for students and prepare them for graduate school or research/project-based careers. Opportunities like these are afforded by the relatively small size of the Program, of course, but also by faculty members that value mentoring of undergraduate students. In the words of one recent Geography graduate, "the professors were some of the best mentors I have had in my life. I have learned not only a great deal about the discipline of Geography, but also many other life lessons."

- *Professional development opportunities for students, especially the internship program, that prepare students for careers in Geography.*

The internship program is a special component of the Geography Program, and especially valuable for preparing students for careers in today's tighter job markets. In addition to providing real-world experiences, internships often lead to continued employment offers after graduation. Of the 133 interns from Fall 2006 through Fall 2013, nearly one-quarter (30) went to work after graduation with their internship employer or turned down an offer from said employer. The internship, a requirement for traditional majors since the 1980s, has yielded numerous benefits for students, ISU, and dozens of agencies/firms around state and nation.

In addition to the internship program, Geography faculty provide numerous other professional development opportunities for students, including a Geography Career Fair that was in existence for many years and replaced by the current Career Year speaker series which brings to campus professionals in the discipline to interact with current students. Career Year speakers, oftentimes ISU Geography alumni, are good sources for internship or job leads for current students. Students receive significant career guidance in the Seminar in Geography (GEO 315) course from Dr. Sublett, who requires a mock interview and resume as course assignments.

- *Breadth of the Program, including diverse offerings in the Geography curriculum and faculty research specialties.*

- Geography is a broad discipline, spanning many topics across the social sciences, natural sciences, and humanities. The breadth of the discipline can pose challenges to academic departments, and can result in pressure to focus on some subfields of the discipline while marginalizing others. This is not the case with ISU Geography, which provides good coverage of the breadth of the discipline despite a relatively small number of faculty members. Faculty research and teaching specialties span diverse areas of the discipline, across many regions of the world. Faculty breadth of expertise provides several benefits to students. Students are exposed to a variety of research methods and techniques that may benefit their careers or graduate studies. Each semester a wide variety of Geography courses are offered in many thematic areas (human-environment, cultural, geographic methods, geostatistics, cartography, GIS, etc.) and regions (Africa, Latin America, Middle East). The breadth of the Program means that we can mentor and graduate well-balanced geographers that are equipped to address challenges in today's world.

- *Development of GEOMAP into an applied research center for student assistants.*

The Department of Geography-Geology houses the Institute for Geospatial Analysis & Mapping (GEOMAP), an applied Geographic Information Science research unit on campus. Five Geography Program faculty members are affiliated with GEOMAP, including the Director.

GEOMAP's mission is to support applied research that utilizes state-of-the-art geospatial and mapping technologies such as Geographic Information Systems (GIS), the Global Positioning System (GPS), geovisualization, and remote sensing to enhance understanding of the environmental and social challenges facing Illinois. GEOMAP's vision is to become the leader in applied geospatial analysis and mapping among public universities in Illinois. In addition to supporting research efforts by affiliated Geography faculty members, GEOMAP provides a range of services to internal and external clients, including research support, training and outreach, and project consultation. GEOMAP coordinates several initiatives across campus, including the ISU GIS Council and the annual campus GIS Day event.

Since its dedication in 2007, affiliated faculty and staff have secured over $850,000 in internal and external grants and contracts for GIScience research and applied projects. External funding sources include federal (e.g., National Science Foundation), state (e.g., Illinois Emergency Management Agency, Illinois Department of Agriculture), and local government (City of Bloomington) agencies along with non-profit organizations (e.g., The Nature Conservancy).

GEOMAP provides several direct benefits to students interested in pursuing a career in cartography, GIS, or remote sensing. A portion of external funding for GEOMAP projects directly supports paid student research assistants. Since 2006, over 30 students, most from the Geography Program, have served as research assistants for GEOMAP-sponsored projects. GEOMAP projects serve as a valuable "on the job" learning experience for Geography students before entry into graduate school or the job market.

- *Vibrant and active colloquium series.*

- Each semester, the Department invests time, effort, and expense to schedule an active slate of colloquium presenters representing the many subfields of Geography and Geology and related fields. The colloquium series offers students and faculty the opportunity to learn about cutting edge research within both disciplines, and to interact with the scholars who are pursuing this research. Geography is fortunate to have two endowed lectureships, the Douglas Clay Ridgley Lecture and the Distinguished Geographer Lecture, which allows us to invite well-known scholars to participate in the colloquium series each year. Speakers are announced in Geography courses, and students are highly encouraged to attend. Sometimes students are invited to have lunch or dinner with a speaker for more one-on-one interaction. Students benefit in many ways from the colloquium series. Insofar as speakers include scholars from outside our disciplines, it provides students and faculty with the opportunity to learn about research taking place in other parts of the academy, and to develop an understanding of the differences between different disciplines (methodological, for example), and the connections between them as well. Insofar as speakers include members of industry and government, the colloquium series offers students and faculty the opportunity to understand industry and government's current projects and projected needs.

- *Student and faculty collaboration with the Illinois Geographic Alliance.*

- The Illinois Geographic Alliance (IGA), administered through the National Geographic Society, has been headquartered on the ISU campus for over twenty-five years. The IGA provides many opportunities for ISU Geography teaching majors to interface with the professional community of geography educators and teachers in Illinois (many of them ISU Geography alumni), and to participate in workshops and other professional development opportunities.

B. Areas of Future Growth for Geography Program

- *Continue to recruit majors actively, and increase the number of high-quality students majoring in Geography earlier in their academic studies.*

- The number of Geography majors has increased noticeably since the previous Program Review, and we hope to maintain these numbers at the least, and preferably continue steady growth over the next eight years. Important to this growth will not only be numbers, but also high-quality students who are eager to learn and participate in many of the out-of-classroom experiences offered by the Program. It is common for many students to discover Geography later in their academic careers, and it is logical to assume that many potential recruits never discover it at all. It is incumbent upon the faculty to let more students know—earlier in their university careers—what our discipline is all about, and to encourage them to major in Geography. Quantitative Thinking in the Geosciences (GEO 138) is an example of a course that was redesigned recently for this very purpose: to expose freshmen and sophomore students to careers in GIScience so that they might consider Geography as a major earlier on. Students who major in Geography as a freshman or sophomore will graduate from the Program with a richer experience than those who enter later. Of course, efforts to increase the number of Geography majors will need to consider issues such as the number of Program faculty/staff, accessibility of classroom and computer lab facilities, and the availability of other necessary resources to ensure that the quality of the undergraduate experience for all Geography students is not diminished due to an increase in the number of majors.

- *Increase the number of students involved in "high impact practices."*

- Although faculty members work hard to ensure that ample opportunities exist for students to develop professionally outside of the classroom (e.g., colloquium speakers, field trips, field-based courses, Honors Program, study abroad experiences), there are no guarantees that students will participate in said activities. Additional strategies for encouraging and motivating students to participate in these "high

impact practices" will be needed in the future. Recent geography graduate Brandon Novick is an example of a student who benefited from participation in a "high impact practice." Brandon completed a Research Experience for Undergraduates (REU) in Ghana as part of an NSF grant, and then went on to graduate school at the University of New Mexico.

- *Continue to educate students on graduate school opportunities, and to increase the number of students who attend graduate school.*

ISU Geography undergraduate students rarely consider applying to graduate school, a trend that currently faculty members would like to change. Arguably, this is because a) they are unaware that most Geography Master's programs in the United States offer students tuition waivers and stipends; b) they are not sure what takes place in a graduate program; c) they are unsure of their ability to succeed in graduate school; d) they have little experience working on original research projects independently; e) internships lead directly to employment; and/or f) they have no idea how to begin looking and applying for graduate programs.

- We have already begun to educate students about graduate schools, in particular through graduate school information sessions. We can continue this effort by doing the following: 1) talk to our classes about graduate school (that way our audience is not limited to those who have already decided they are interested in graduate school); 2) suggest graduate school to bright and capable students; 3) shepherd students through the search and application process, in particular by talking to them about their research interests and by suggesting Geography Departments or faculty persons that might be appropriate for them; and 4) possibly develop a research-based undergraduate thesis option for credit under the guidance of an advisor to prepare students who wish to pursue graduate school.

- *Increase the advisement and mentoring opportunities available to students.*

- Given the breadth of the Geography discipline, students may become overwhelmed with identifying a specific niche in the field to focus on for a career. Although Geography faculty members take pride in turning out broadly trained geographers, we also realize that a certain degree of specialization within the field is needed for students as they seek jobs or pursue graduate studies, which calls attention to the importance of faculty advising and mentoring. Currently, advising primarily is undertaken by a single AP staff member, but additional advising and mentoring opportunities may be beneficial to ensure that students tap the expertise of other faculty members in an area of interest. Additionally, we hope to expand these advising and mentoring opportunities to students earlier in their academic programs (ideally as sophomores) as they develop plans of study for elective courses in Geography. Faculty have recently initiated a series of advising/mentoring sessions in fall semesters prior to course enrollment to discuss with students current trends in the discipline, offer suggestions about programs of study, and to answer any questions about specific courses. Additional sessions such as these will be beneficial in the future.

- *Continue to screen and support Geography teacher education majors.*

- Standardized content tests for Geography teachers in Illinois commonly have focused on disciplines other than Geography (e.g., History, Economics, Sociology), which makes it even more difficult to pass by mediocre students in order to attain teacher certification. Passing the content test has proven to be a challenge for some Geography teaching majors in recent years, and is a topic that will need to be addressed further in the future. Gateway requirements into the Geography teacher education degree may need to be revisited to ensure that only exceptional students are admitted, or additional teacher support resources (workshops, courses, etc.) may be need to be developed to ensure student success on the content test. In 2011-2012, the Department modified requirements for acceptance into Geography teacher education by admitting new students as traditional geography majors until their cumulative GPA meets the 2.65 threshold, at which point they may switch to the teacher education track. Also, the ISBE recently

removed the maximum number of times a student can take the content test (5) to unlimited attempts. In 2014, ISBE redesigned the content test so that at least 50% of the content questions are geographically based with the remaining questions coming from other social science disciplines. We hope to see a better track record on the number of students passing the content test in the future given these changes.

- *Ensure coherence about the undergraduate curriculum among all faculty members.*

- An ongoing challenge of Geography courses taught by different faculty members is to ensure coherence across the undergraduate curriculum. It is not uncommon for faculty members to have a vague idea of what goes on in another faculty member's course, especially considering that course designs morph over time and new faculty members may join the Program. The result is that, at times, it may be challenging to know what students know, and what they do not. Developing additional ways to discuss and share information about our courses – and in this way foster each other's understandings of the undergraduate curriculum as a whole – would help us to better face the challenges associated with being a diverse faculty in a diverse discipline.

- *Continue efforts to increase the diversity of the Geography major student body.*

- The Department's participation in the AAG ALIGNED Project was very revealing as to the low levels of gender and ethnic/racial diversity in the Geography major. Toolkits available through the project as well as the diversity plan developed by participating faculty members will be useful for ongoing efforts to increase diversity of the Geography student body.

- *Continue to lead the development of GIS research and education across campus.*

- GIS has become a powerful method of analyzing and visualizing geographic datasets in many academic disciplines. With the rise of GIS across many academic units in colleges and universities in recent years, including ISU, comes the necessity for Geography, the intellectual home of GIS, to serve as the leader in the implementation of GIS research and education across campus. The Geography Program at ISU will continue to see increased requests for instructional seats in GIS courses from other departments on campus in the future, and will need to procure resources to keep up with this demand.

- *Develop a graduate program in Geography.*

- While noting the many positive attributes of the current Geography Undergraduate Program, it is easy to "look ahead" to the next logical area of growth for Geography at ISU: a graduate program that offers a Master's degree in the field. Many faculty members (and current students) have expressed an interest in such a program, and further investigation into its feasibility will be a next step in future years.

SECTION VII: INITIATIVES AND PLANS FOR THE NEXT PROGRAM REVIEW CYCLE

- The Program Review Self-Study process identified several key initiatives and plans for improving the ISU Geography Undergraduate Degree in the years to come, many of them in response to the aforementioned areas of growth identified in the previous section.

- *Expand the number of "high impact practices" for students, and to increase the number of students who participate in these opportunities*

First, a key finding of the Program Review process is that many Geography students do not take advantage fully of the many opportunities and experiences outside of the traditional classroom that may enrich their undergraduate studies. Many professional development opportunities exist currently in the Department and across campus, and the challenge is to engage students in these learning opportunities, especially when they are not measured as part of a course grade. One such example is the Department's

Career Year series and colloquium series that bring guest speakers representing a range of careers in Geography to campus for students to interact with. Increased participation in "out of the classroom" activities has the potential to prepare students further for their future careers or graduate school upon graduation from ISU. To rectify this shortcoming, we plan to make a concerted effort to encourage additional participation of Geography students in "high impact practices," including the following: research experiences with faculty members (independent studies, paid/unpaid assistantships); informational sessions on graduate school; professional conferences; Career Year events; colloquia presentations; professional societies such as Gamma Theta Upsilon (GTU); study abroad experiences; the University Honors Program; service learning opportunities; field trips; and teaching workshops for pre-service teachers.

- *Further develop diverse recruiting strategies to increase the number of Geography majors*

Second, student recruitment to the Geography major remains another key initiative for the foreseeable future to ensure healthy numbers in the annual major counts. In addition to maintaining an adequate quantity of student majors, we also hope to increase the quality and diversity of these student cohorts. Specifically, we hope to recruit students to the Geography major earlier in their university careers while they are freshmen or sophomores so we may work with these students longer in their academic careers. Efforts will also focus on increasing diversity in the Geography major student body. The Department's recent participation in the AAG ALIGNED Project will help us to continue to develop strategies for increasing student diversity. As part of our student recruitment efforts, we will continue to implement a comprehensive action plan for recruitment activities across campus and beyond. A Geography faculty member developed a recruiting plan last fall that will need to be implemented in the immediate and long-term future to ensure that Geography major numbers stay healthy. Recruiting strategies on campus will include a wide range of activities each academic year, including recruiting sessions in 100-level courses, appearances at university recruitment events, informational sessions for prospective majors, and targeted letters sent to current ISU students who took Advanced Placement Human Geography (APHG) while in high school and qualify for advanced college credit in GEO 142 (Human Geography). We intend to highlight success stories of current students and alumni as part of the recruitment plan. Beyond campus, we plan to seek out opportunities to recruit high school students to attract more underclassmen into Geography. Recruitment strategies off campus will include work with APHG and social sciences teachers in area high schools to draw more students to ISU Geography. As well, we plan to better tap the character of our discipline to increase the number of majors, and to articulate to students that Geography is a viable field of study for those interested in issues related to social justice, equality, environmental protection, or cultural diversity. Future recruiting efforts will also carefully consider a "target" number of Geography majors that is ideal for the Program so as not to diminish the quality undergraduate experience that current students receive through close interactions with Program faculty and staff members.

- *Enhance the scholarly reputation of the ISU Geography Program faculty members*

Third, an important component of a quality undergraduate program is strategic planning for initiatives that continually enhance the scholarly reputation of the Department and University. ISU Geography is currently staffed by a solid cohort of faculty members, many early-career professionals, who have the potential to carry on and expand the intellectual and scholarly reputation of the Program for many years to come. To support this goal, we will pursue all available opportunities to support faculty career development so these faculty members may make sufficient progress towards future promotion. These include professional activities such as encouraging faculty participation in international conferences, election to leadership positions in professional organizations, and selection to editorial boards for professional journals. One particular area of scholarly growth discussed throughout the Program Review process was the possibility of developing a Master's degree program in Geography at ISU. Development of a Master's program would be a natural step to enhance the scholarly reputation of

Geography at ISU. In addition to increasing the number of graduate students in the Department, a graduate program would create a valuable outlet for faculty members to develop their research and scholarly agendas. Currently, Geography faculty members at ISU may only collaborate with graduate students in related academic disciplines. While some Geography faculty members routinely serve on outside graduate committees as thesis readers, these experiences are of limited value for developing research avenues within a faculty member's area of expertise in Geography. These activities, such as pursuance of a graduate program in Geography, have the potential to support faculty growth, and thereby enhance the overall quality of the undergraduate experience for ISU students.

- *Improve various aspects of Geography advising, mentoring, and curriculum development*

Fourth, the Program Review process revealed a number of more focused initiatives in areas such as advising, mentoring, and curriculum development that we will pursue in the near future to improve the Geography degree. These initiatives include:

- *Advising and Mentoring*

- Increase the number of Career Year events arranged by Geography faculty and staff to at least 15 per year
- Continue to hold general advising/mentoring sessions based on the current Concentrations in Geography prior to spring course enrollment.
- Continue to hold information sessions on graduate school at least once a year, and encourage students to consider graduate school upon graduation
- Increase the number of Geography students who complete the gateway courses (GEO 100, 142, 205, 138) earlier in their plans of study
- Increase the number of students who complete Cartography (GEO 300) and Introduction to GIS (GEO 303) by the conclusion of their Sophomore or Junior years to ensure adequate time for students to pursue the Department's GIS Certificate

Curriculum

- Revise and simplify the Geography Student Learning Outcome Assessment Plan through consultation with staff in Assessment Services to ensure that the Geography curriculum is accomplishing the intended outcomes
- Explore the option of creating a Senior Thesis option. All Geography students currently are required to complete a substantial capstone writing project known as the Senior Field Problem (SFP) in the Seminar in Geography (GEO 315) course, yet an additional research intensive writing project may be beneficial to students who wish to explore other in-depth topics as preparation for graduate school
- Increase course offerings within our Nature and Society and Environmental Science degree concentrations
- Offer the Urban and Regional Planning (GEO 370) course
- Offer the Quantitative Reasoning in the Geosciences (GEO 138) course regularly and encourage Geography students to enroll in the course
- Offer additional sections of the Living in the Environment (GEO 205) course to keep up with student demand in Geography and related disciplines
- Offer additional sections or increase annual enrollment for Introduction to GIS (GEO 303) to keep up with student demand in Geography and related disciplines

- Explore the possibility of modifying the Our National Parks (GEO 265) course to a more human-environment focused perspective
- Explore the possibility of removing World Geography (GEO 135) as a regional requirement in the Geography Program to encourage students to take other regional geography courses taught by permanent faculty members
- Explore the possibility of having a permanent faculty/staff member teach a section of World Geography (GEO 135) to help with student recruitment
  -

SECTION VIII: EXECUTIVE SUMMARY

A. A. Self-study process

The self-study process was conducted by Geography faculty and staff members over the course of the 2013-2014 academic year. Program Review participants included tenured and tenure-track Geography faculty members, one part-time non-tenure track faculty member, the Geography Program Advisor, and the Department Chairperson. Regular meetings of approximately one hour each were held once a month in the fall semester, and then roughly every two weeks in the spring semester. Each meeting focused on a specific topic related to the Program Review process (e.g., current Program strengths and weaknesses, assessment, comparator and aspirational programs, future Program initiatives). Students participated in the Program Review process indirectly through exit surveys that were provided by the Department and University Assessment Services upon graduation.

B. Program Curriculum

The current curriculum for the Geography major, last revised significantly in 2006 following the previous Program Review, takes a liberal arts approach to graduation requirements. Both teaching and non-teaching ("traditional") degrees are offered currently. Traditional majors can elect to follow suggested courses in one of four "concentrations" in Geography. Seminar in Geography (GEO 315) is a required course of all Geography majors that serves as a capstone course and requires successful completion of the Senior Field Problem, an intensive research project that incorporates several tools of the geographer's craft into a carefully prepared essay. Teacher education majors, of course, must complete student teaching for their capstone experience. Traditional majors in Geography have, since the late 1980s, also had an off-campus capstone: the required internship. Few Geography programs in the country take this step of making the internship a requirement—mainly because of the time it requires for faculty to monitor and make the internship special for the graduating senior. Both teaching and traditional majors are required to complete a set of core courses that cover the breadth of the discipline and introduce various methodological approaches commonly used by geographers today. Advanced elective courses are required to round out the curriculum. Fulfilling a long-standing tradition in the Department, field experiences are encouraged for all majors, and new classes with field components continue to be developed.

C. Program Unit Faculty

Illinois State's geographers, like their counterparts in Geography elsewhere, think spatially, asking where things are, why they are there, why they are not there, and how it all matters. Geographers synthesize and apply information from a broad spectrum of the social sciences, natural sciences, and humanities, and recognize the significance of differences from place to place. ISU Geography faculty members are energetic about their research and their discipline, and eager to convey to students that

"geography matters" for addressing challenges today in a globalized world. Overall scholarly production by faculty member has increased since the last Program Review period as measured by important indicators such as the total number of professional journal articles (50% increase) and the total number of internal and external grants (70% increase). Current faculty of the Geography Program can point to numerous other accomplishments in the realm of national scholarship, such as awards won, grant submissions and journal articles reviewed, and important disciplinary posts filled. Teaching evaluation begins with student input, as every student has an opportunity to complete an end-of-class questionnaire; continues with peer evaluations for most of the faculty; and culminates with either teaching portfolios or annual agendas that faculty prepare and submit to the DFSC regarding teaching accomplishments and plans. In the past year, four different Geography faculty members have won internal or external teaching awards.

D. Program goals and quality indices

Geography Program goals align squarely with many of the overarching University goals outlined in *Educating Illinois*. For example, many Geography majors engage in research with a faculty member during their undergraduate experience through an independent study, as a GEOMAP project assistant, or as a research assistant for a faculty member, thus fulfilling the goal of providing students with a "supportive and student-centered educational experience for high-achieving, diverse, and motivated students that promotes their success." Throughout the Geography curriculum, students are exposed to diverse cultures and places around the world, thereby "prepare[ing] students to excel in a globally competitive, culturally diverse, and changing environment." Geography students have ample opportunities to become engaged with our local communities, such as service-learning projects with the Town of Normal and Connect Transit in the Doing Geography (GEO 204) course or community mapping projects for not-for-profit organizations through GEOMAP. These projects and many other opportunities "foster an engaged community and enhance the University's outreach and partnerships both internally and externally" as set forth in *Educating Illinois.*

E. Student learning outcomes assessment plan and process.

Assessment of the undergraduate major is based on eight primary goals measured by four metrics (assignment grades within courses, the Senior Field Problem, professional practice experiences, and participation in professional and extracurricular activities) as outlined in the Student Learning Outcome Assessment Plan, now in place since 2007. Geography Club and Alpha Chapter of Gamma Theta Upsilon provide numerous out-of-class opportunities for Geography majors. Others come through the field experiences that the faculty members have built into the Geography Program. Alumni surveys of the Program, incomplete for the entire eight-year evaluation period but reintroduced recently, are overwhelmingly favorable. For example, 100% of recent (summer 2013, fall 2013, and summer 2014) respondents were satisfied or very satisfied with their experiences in the ISU Geography Program, and 86% of the same respondents felt that the Program prepared them very well or extremely well for their professional careers.

F. Specialized Accreditation.

Geography, as a discipline, does not have an accreditation or certification process. The teacher education component, however, does periodically undergo review along with the University and all campus programs that prepare teachers for the public schools. Since 2009, the Geography Teacher Education program has been highly accredited through the State of Illinois Higher Board of Education.

G. Responses to recommendations results from the previous Program Review.

A number of changes have been implemented since the previous Program Review, completed in fall 2006. The first major priority dealt with strengthening the quality of the Geography faculty. Over the

past seven years, Geography has hired five new professors. Publications, grants, and other scholarly productivity for the Department as a whole have increased substantially with these new faculty members, while the quality of teaching has remained strong and has even improved by some measures. Strengthening and enhancing our students' experience by attracting a greater number of capable students and improving curricular and co-curricular activities was identified as a second priority from the previous Program Review. Although difficult to measure, we feel that we continue to recruit, mentor, and turn-out high-quality students. The third major recommendation concerned plans to enhance our overall role in advancing the University mission of teaching, research, and service by continuing to develop our GIS and Cartographic Services Laboratory, maintaining our commitment to General Education, expanding our outreach and continuing education efforts, reinforcing our commitment to international studies programs on campus, and working more closely with alumni. Geography continues to play an integral role in General Education, and has consistently offered key courses and sections that serve hundreds of students across campus each semester. GIS and Cartographic Services has grown into GEOMAP, now an established research institute on campus with a dedicated space, equipment, and affiliated faculty/staff. GEOMAP has served clients from across campus (including the Office of the President), as well as others in the community and the state with projects and applied research while generating upwards of $850,000 in grants and contracts in the past eight years and providing hands-on research and project training for students.

H. Changes in the academic discipline, field, societal need, and program demand.

Employment outlooks and career trends are very favorable for geographers today. In its "Occupational Outlook Handbook," the U.S. Department of Labor projects a 29% growth in jobs for geographers from 2012 to 2022, a growth rate that is much faster than average for other careers. Much of this growth is expected to come in the area of geospatial technologies and Geographic Information Systems (GIS), which claim Geography as their academic disciplinary homes.

The relevance of geography continually poses new opportunities for how the subject is taught through the ISU undergraduate degree. Like many academic disciplines, Geography continues to evolve at a rapid pace, and each semester Geography faculty and staff adapt the curriculum and other Program activities to reflect these changes. For example, four suggested "Concentrations in Geography" were developed with recommended courses for students to select from in the major subfields of Geography based on current career demands.

I. Major Findings and Recommendations

Geography faculty members are in agreement that the Program Review process highlighted several strengths of the Program as well as areas for future growth. Current strengths include: scholarly productivity of faculty members and students, a strong sense of departmental community between faculty members and students, professional development opportunities for students, ample research and field trips experiences for students, breadth and curriculum diversity in the Program, the development of GEOMAP, the presence of an active departmental colloquium series, and student and faculty collaboration with the Illinois Geographic Alliance. Current areas for future growth include: increasing the number of students who participate in "high impact practices" (study abroad, Honors Program, etc.), continuing to educate students about graduate school opportunities, increasing advisement and mentoring opportunities available to students, continuing to screen and support Geography teacher education students, ensuring coherence in the undergraduate curriculum, continuing to lead the development of GIS research and education on campus, and exploring the possible development of a graduate (Master's) program in Geography.

J. Initiatives and Plans for the Next Program Review Cycle

Faculty members have worked to address recommendations from the last Program Review, and its aftermath. Moving forward, faculty members will continue to explore ways to develop the identified areas of growth, while maintaining current Program strengths. Specifically, the following action items will be pursued in the next eight year: expanding the number of "high impact practices" and increasing the number of students who participate in such activities; further developing recruiting strategies to increase the number and diversity of Geography majors; enhancing the scholarly reputation of the ISU Geography Program and affiliated faculty members; and improving various aspects of advising, mentoring, and curriculum development.

3. Appendix III – Draft – Environmental Studies Sequence

EXECUTIVE SUMMARY

This proposal seeks to establish an Environmental Studies sequence under the Major in Geography. The Environmental Studies sequence will explore the vulnerabilities, challenges, and opportunities facing human communities as they interact with the natural environment in sustainable ways in the face of rapid social and environmental change. The sequence will work to integrate vital expertise of faculty in several existing programs in areas of physical, natural, social, and information sciences, including agriculture, biological sciences, chemistry, economics, sociology, health science, philosophy, political science, geology, and geography. The program will strengthen ISU's research capacity to tackle global and local environmental issues through sustainability by means of holistic research of dynamic interactions between nature and society. The proposed sequence will complement existing majors at ISU, strengthening the training our students receive and better prepare them for either graduate studies or careers in environmental fields. The development of an Environmental Studies sequence will advance the mission of ISU and illustrate commitment to Educating Illinois (EI) as follows:

- An Environmental Studies sequence will provide students with an additional undergraduate experience that would prepare students to excel globally (EI, Goal (G) 2);
- Environmental related position growth is expected to expand 25% in the upcoming years (United States Department of Labor, 2013), developing an Environmental Studies sequence establishes a curriculum in a field with workforce needs (EI G2, Strategy (S) 1);
- By being an interdisciplinary program by nature, an emphasis on environmental issues would increase partnerships across campus and within the community (EI G1, S2 and G3, S1);
- Opportunities for student participation in environmental related research would be enhanced through the addition of course related projects and independent research with faculty (EI G1, S2 and G2 S2).

RATIONALE

As the human population grows larger, we are becoming more aware of the environment as our life support system. Our need for clean air and water, energy resources, fertile soil, etc. becomes more urgent with the addition of each new human on the planet, and we recognize the need to share these resources with the other species on this planet. Because of this urgency, environmental issues have become very important internationally, nationally, and locally. The next generation will need more people who are trained to study and respond to environmental issues. We will need teams of people who can study these issues from scientific, technical, ethical, political, economic and social perspectives.

A rapid wave of environmental program proliferation began following the introduction of the concept of sustainable development in 1987 (Maniates and Whissel, 2000; Romero and Jones, 2003). The renewed interest in development of environmental curricula is tied to increasing awareness of the complex challenges posed by global environmental issues and achieving sustainable futures. These newly created environmental curricula (as well as many realigned existing environmental programs) have focused their attention on the social, political, and ecological contexts of environmental issues combined with a new emphasis on complexity, systems understanding, and the relevance of temporal and spatial scales (Vincent and Focht, 2009). The evolution of the concept of sustainability, rapid growth of

ecosystem and social system knowledge, expanding internet technologies, and the emergence of new interdisciplinary research approaches are sustaining the momentum toward systems-oriented approaches to the examination of environmental issues. Concomitantly, the recognition of the importance of cultural, social, and political aspects of environmental problems in education and research has also increased dramatically (Ginsberg et al., 2004; Vincent and Focht, 2009).

With increased interest from students and faculty, the Environmental Studies discipline is flourishing. The field of environmental studies is broadly recognized as a legitimate area of academic investigation, as indicated by the every-expanding presence of societies and divisions within societies and professional organizations devoted to environmental fields. Environmental studies looks at complex problems in an interdisciplinary manner. For example, environmental professionals incorporate policy work and physical science data into their teaching and scholarship. An Environmental Studies sequence would send a signal to the broader academic community and to foundations and funders, that ISU is seriously committed to advancing today's environmental scholarship and rigorously training the next generation of environmental thinkers and practitioners.

The curricular and organizational changes put forth in this proposal will help our students to engage with the environment in an empowering way and to develop the skills and thought models that can help society to overcome the numerous environmental challenges it faces. An Environmental Studies sequence emphasizes coherent and rigorous paths that will contribute to the changes toward a more sustainable world, supporting the vision put forth Educating Illinois.

The new Environmental Studies sequence suggested in this proposal will benefit ISU by building a reputation as a leader in sustainability and environmental issues. It will also help attract new students to the University that are interested in majoring in environmental studies; a field that is rapidly growing in terms of student demand and employment opportunities.

Since the late 1980's the necessity and urgency of implementing strategies to achieve a sustainable future have been broadly acknowledged in the United Nations declarations at Rio (1992) and Johannesburg (2007). The momentum in the global political realm is driving the development of new education programs centered on the concepts of sustainability and the realignment of many current programs toward sustainability as a core principle. Environmental Studies programs are at the forefront of this transition and are experiencing rapid growth both in the numbers of degree programs as well as in enrollment. The majority of programs report enrollment growth; 58% report a growth trend in enrollment from 2003-08 and another 29% reported steady enrollment for that period. These data indicate an increase of approximately 3.3% for undergraduate enrollments in environmental programs, reaffirming a decade-long trend of continued growth in U.S. (American Geosciences Intstitute, 2013). Undergraduate Environmental Studies programs have an average enrollment of 54students.

Potential students looking at the ISU website can examine the list of majors, but a major with Environment or Environmental in the title is absent from that list. We are seeing a large and growing number of students declaring an environmental focused major at competing institutions. However, potential students who are passionate about the environment, environmental policy or law, or sustainable business may perceive ISU as only weakly committed to these fields, which is not the case. The presence of an Environmental Studies Sequence will help ISU to recruit the best and brightest Environmental majors.

The proposed Environmental Studies sequence grew out of faculty and student concern about the environment and our collective desire to advance both basic and applied environmental scholarship. ISU currently has an Environmental Studies minor. In the 1990s, the Environmental Studies minor was developed as an interdisciplinary minor. The Department of Geography-Geology took ownership of the minor to ensure continuity in advising. The number of students in the minor has ranged from a low of 6 students in the 1998-1999 academic year to 78 in the 2010-2011 academic year, with 57 students during the 2012-2013 academic year (Figure 1). The majority of students minoring in Environmental Studies

have declared a major in the College of Arts and Sciences (65.5%), with the College of Applied Science and Technology serving as the home to an additional 27.3% of the students (Figure 2). Geography is the dominant major among the students minoring in Environmental Studies, followed by Biological Sciences and Renewable Energy. The number of students minoring in Environmental Studies illustrates student interest in an environmental curriculum. The interest is further supported by inquiries for the Advisor for the Minor in Environmental Studies as to why ISU does not have a Major in Environmental Studies

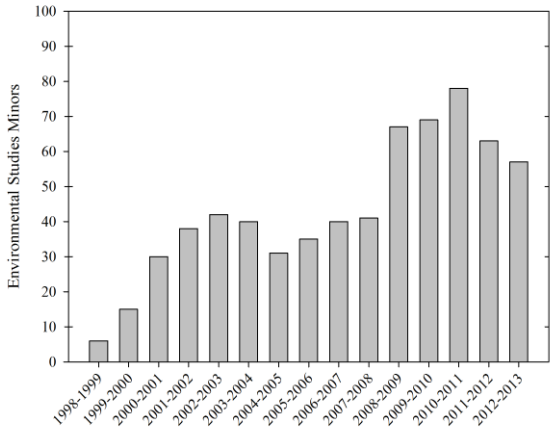

Figure 1: Environmental Studies Minors: 1998-1999 to 2012-2013

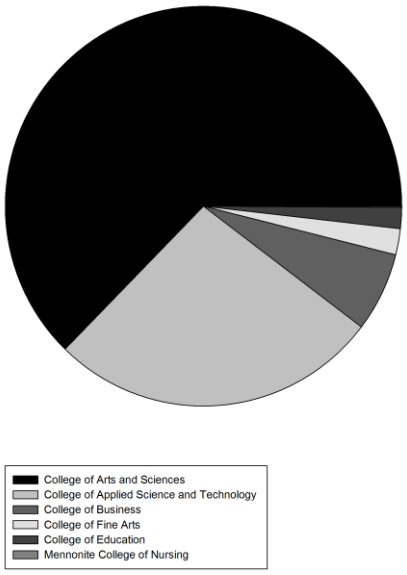

Figure 2: Distribution of Environmental Studies Minors across the Colleges at ISU

Job Outlook

Demand is high for the graduates of environmental studies and related programs, and student interest in these programs is growing. The U.S. Department of Labor (2013) projects a 25% increase in the number of environmental positions by 2020 and the online job site search engine SimplyHired.com indicates a large number of current postings (>125K) for environmental positions. Articles in the New

York Times (Lohr, 2009; Rimer, 2009) report an emerging trend toward more environmental students choosing careers in public service, government, teaching, and the sciences. In addition, the Princeton Review 2009 survey indicates students are expressing more interest in environmental issues; 66% said they would include an institution's commitment to environmental issues (including academic offerings) in their assessment of which college to attend (Vincent, 2009). Separate from any career successes, the interdisciplinary nature of an Environmental Studies sequence bridges the science-humanities-social science nexus, which by definition is a strong liberal arts degree. Data show that students with environmental degrees continue their education in a variety of graduate school programs in areas such as geography, geology, planning, landscape architecture, environmental policy, environmental sciences and studies, law, writing, cultural anthropology and political science (United States Department of Labor, 2013).

Graduates of the Environmental Studies sequence can expect to participate in a wide diversity of careers. In general, the Environmental Studies graduates will be more involved in the social, political, and economic dimensions of sustainability and environmental change. Table 1 provides several examples of possible career paths associated with an Environmental Studies degree.

The growth and evolution of environmental careers have accelerated over the past two decades in response to the urgent need to address complex, global, and interlinked societal and environmental problems. New environmental careers in environmental sustainability, including those addressing alternative energy, climate change, and sustainable development, are among those that have arisen since 2000 (Vincent and Focht, 2010). In "Environmental Careers in the 21st Century," Doyle et al. (Doyle et al., 1999) reported that fewer than 230,000 people were employed in environmental work in 1970; this figure increased to nearly 2.5 million by 1998 making this one of the most rapidly growing fields of employment. Although this growth cannot be guaranteed for the future, global concerns with climate change, biodiversity and mass species extinction, pollution prevention, creating sustainable communities, environmental justice, ecological literacy, and clean water suggest that this field will continue to expand. The Bureau of Labor Statistics (2013) projects employment of environmental positions is expected to grow by 25 percent from 2010 to 2020. Heightened public interest in the hazards facing the environment, as well as the increasing demands placed on the environment by population growth, is projected to spur demand for environmental scientists and specialists. Further demand is also expected as a result of new and increasingly complex environmental laws and regulations. In addition to governmental support for research and education, there is good evidence that the number of environmental jobs in the private sector will increase substantially in the future. Anticipated job growth will be with the public sector, the private sector, nonprofit organizations and academia. In addition to job openings due to growth, there will be additional demand for new employees with environmental training to replace those who retire, advance to management positions, or change careers (United States Department of Labor, 2013).

Table 1: Careers and Occupations associated with an Environmental Studies degree

Consulting	Environmental Education Teacher	Recycling/Waste Management
Local/State/National Government	Urban/Regional Planning	Community Forestry
Parks and Recreation	Environmental Health	Environmental Research
International Development	Non-government Organizing and Advocacy	Regulatory management
Environmental Law	Energy Consultant	Public Information Manager
Business Managers	Sustainable Food and Agriculture	
Journalist		
Policy analyst		

Because environmentally related jobs often focus on long-term growth and community viability, funding is becoming more available. Already, stimulus money amounting to more than $363 million has been directed to Illinois programs to assist environmental programs like water quality planning, a clean diesel grant program and clean water funds (United States Department of Labor, 2013). In Illinois, it is projected that by 2018, there will be an increase of 9.9% in science, technology, engineering and math (STEM) jobs, which will include environmental positions (Ecker and McGregor, 2012).

EARNINGS - COMPENSATION

The median annual wage of environmental specialists was $61,700 in May 2011. The lowest 10 percent earned less than $37,850, and the top 10 percent earned more than $107,990 (United States Department of Labor, 2013). Median annual earnings in the industries employing the largest number of environmental specialists in 2006 were as follows:

Federal executive branch	$82,490
Management, scientific, and technical consulting services	$57,280
Engineering services	$56,080
Local government	$52,100
State government	$50,590

According to the National Association of Colleges and Employers, beginning salary offers in July 2007 for graduates with bachelor's degrees in an environmental field averaged $38,336 a year. In Illinois, the median starting salary for an environmental specialist is $44,200, with a salary range of $38,000 to $119,000 (American Geosciences Intstitute, 2012).

CURRICULAR PROGRAM

In 2007, the Council of Environmental Deans and Directors of the National Council for Science and the Environment (CEDD/NCSE) commissioned a comprehensive look at Environmental programs across the U.S., identifying 840 programs offering 1,183 baccalaureate and graduate degrees located at 652 colleges and universities(Vincent, 2010). While the study identified significant variety in among the degree programs, basic commonalities among Environmental programs emerged. The four identified concepts are:

1. programs should focus on the interfaces between human and natural systems;
2. programs should adopt a holistic, interdisciplinary educational approach that fosters synthesis and systems thinking skills;
3. program curricula should include key concepts from the natural sciences, social sciences, applied sciences and humanities;
4. programs should promote understanding of both the sociopolitical and natural aspects of environmental problems, the limits of technology and science, and the importance of acknowledging and reporting uncertainty.

Collectively, the four concepts reveal the holistic mission of an Environmental program, which is to prepare students to address environmental issues using interdisciplinary knowledge and insights gained from systems approaches and different epistemological viewpoints.

Multiple surveys of environmental professionals concluded that in addition to knowledge of basic science, system interactions, and policy, a high level of competency in general skills: written and oral communication; critical thinking; leadership; organizing projects; teamwork; and facilitation are requirements for career success (Deverman, 2006; Hull, 2009; Thomas et al., 2007).

PROPOSED CURRICULUM

The proposed curriculum was developed following the CEDD/NCSE (Vincent, 2010) and the reported data from employers (Deverman, 2006; Hull, 2009; Thomas et al., 2007). To establish base knowledge in Environmental Studies the following the core was developed:

Total number of hours Environmental Studies: minimum 50 hours

Required Courses

GEO 204 – Doing Geography (3 credits)

Introduction to geographical methodology and techniques with an emphasis on development of skills in analyzing spatial data. Prerequisite: 9 hours of Geography

GEO 205 – Living in the Environment (3 credits)

This course familiarizes students with major schools of thought regarding the human-environment relationship and then applies these analytical frameworks to a series of 'objects of interest' in the world (e.g. carbon dioxide, trees, wolves, and uranium). In doing so, students consider the complex ways that humans and non-humans influence each other, how and why human-environment relationships have changed over time, and the social and ecological consequences of these changing interactions.

BSC 201 – Ecology (4 credits)

Course provides a biological perspective on the interactions between organisms and their environment at the individual, population, community, and ecosystem levels of organization. Course is regularly taught in Biology. Prerequisite BIO 197.

GEO 238 – Quantitative Methods (3 credits)

Course is an introduction to univariate parametric statistical methods used by Environmental professionals.

GEO 276 Environmental Geology (3 credits)

GEO 303 – Geographic Information Systems (3 credits)

Fundamental principles of geographic information systems; emphasis on raster and vector based systems and their applications to spatial analysis.

GEO 305 – Remote Sensing (3 credit hours)

Basic principles of remote sensing, image interpretation, photogrammetry, and digital image processing. Prerequisites: GEO 204, 238, or consent of the instructor.

GEO 315 – Seminar in Geography (3 credit hours)

Designed to acquaint the student with career opportunities in geography and in related fields. Includes senior field problem. Prerequisites: GEO 204, 300.

GEO 334 – Political Ecology (3 credits)

This course examines themes, theories, and methods from political ecology, a field of study dedicated to understanding the interactions between processes of environmental change and social, political, and economic dynamics. Topics covered include the environmental impacts of capitalist resource development, the social dimensions of waste and pollution, the political dimensions of environmental conservation, and how forms of social difference – e.g. class, gender, race, or ethnicity – relate to environmental and resource issues. Prerequisite: GEO 205 or consent of the instructor.

Capstone (4 credits)

Capstone internship, research experience or field experience selected from GEO 398, GEO 299, or GEO 287. This could be tailored to an individual students needs/wants.

Core: 29 credit hours

<u>Interdisciplinary Courses</u>

Environmental Studies BS would require additional sciences: 8 credit hours (prerequisite for BSC 201)

BIO 196 - Biological Diversity (4 credit hours)

BIO 197 - Molecular and cellular basis of life (4 credit hours)

<u>Electives – minimum 21 hours from the following:</u>

GEO 304 GIS Applications (3) PreReq GEO 303

GEO 306 Regional and Area Studies

GEO 308 Quantitative Methods in Geography II (3) PreReq GEO 238

GEO 313 Energy and Sustainability (3) PreReq GEO 205 (vacant)

GEO 315 – Seminar in Geography (3) PreReq GEO 204, 300.

GEO 336 Urban Geography (3)

GEO 342 Economic Geography (3) PreReq GEO 135 or 142 or Consent

GEO 341 Climate and Global Environmental Change (3) PreReq GEO 100 or Consent

GEO 344 Biogeography (3) PreReq GEO 100 or consent

ANT 273 Foodways (3) PreReq ANT 102 or 185 recommended

ANT 373 Archeology of political Economy (3) PreReq ANT 102 or 274 or Consent

AGR 201 Resources, Food, and Society: A Global Perspective (3)

AGR 203 Agriculture and the Environment (3)

AGR 225 Renewable Energy and Agriculture (3) PreReq AGR 110 or ECO 105

AGR 234 Soil and Water Conservation (3)

COM 274 Environmental Communications (3) PreReq COM 111

ECO 202 Current Economic Issues (3) PreReq ECO 105

ECO 255 Intro to Environmental and Natural Resource Economics (3) PreReq ECO 105

ECO 236 Economics of Energy and Public Policy (3) PreReq ECO 105

HSC 384 Hazardous Materials Regulation (3) PreReq CHE 140

PHI 236 Values and the Environment (3)

PHI 250 Philosophy of Science (3)

PHI 310 Topics in Philosophy of Science (3)

PHY 207 Energy and Climate (3) PreReq MAT 113, 120, 130, or 145

POL 222 Urban Politics and Problems (3) PreReq 101, 105 or 106 or Consent

POL 236 Environmental Politicis and Policy (3) PreReq POL 101, 105, or 106 or Consent

SOC 330 Society and the Environment (3) PreReq SOC 106

TEC 260 Research and Analytical Tools in Renewable Energy (3) PreReq TEC 160; MQM 100 Major/minor only or consent of advisors.

TEC 262 Energy Management (3) PreReq TEC 111. Major/minor only or consent of advisors

TEC 329 Sustainable buildings and urban development (3) PreReq TEC 120 or 211 & Jr. Standing. Major/minor only or consent of advisors.

Principal skills of graduates: Students will be able to identify current and anticipated environmental crises facing mankind; acquire advanced knowledge of human-environment science and apply that knowledge to the real world. Specifically students will be able to integrate social and political environmental debates with expertise of and debates among physical and information scientists; communicate and work with scientific information for policy development and implementation; develop mitigation and adaptation strategies to global environmental change at the local and regional scale (e.g. Midwest).

EXPECTED STUDENT OUTCOMES

General Goal 1: Each graduate will possess and apply critical thinking and problem solving skills to environmental problems.

Specific Outcomes:

General Goal 1:a. Each graduate will demonstrate an in-depth understanding of the interdisciplinary relationship of cultural, ethical, and social aspects of local/global environmental issues.

General Goal 1:b. Each graduate will demonstrate the ability to solve open-ended problems using scientific methodology.

General Goal 1:c. Each graduate will demonstrate the ability to develop valid research questions and hypotheses.

General Goal 1:d. Each graduate will demonstrate the ability to employ GIS to read, construct, and comprehend thematic maps and derive perspective output from a map.

General Goal 1:e. Each graduate will demonstrate the ability to apply proper techniques for data acquisition and interpretation in a problem-solving context.

General Goal 1:f. Each graduate will conduct literature reviews to obtain information, including accessing all forms of literature to investigate topics, critiquing sources, and organizing information in a meaningful way.

General Goal 2: Each graduate will demonstrate strong oral and written communication skills, the ability to work in a collaborative environment, and professional attitudes and behavior.

Specific Outcomes:

General Goal 2:a. Each graduate will deliver oral presentations, demonstrating the ability to effectively communicate discipline specific and interdisciplinary concepts.

General Goal 2:b. Each graduate will write scholarly papers using acceptable format and organization with citations to appropriate literature.

General Goal 2:c. Each graduate will actively participate in collaborative projects and academic field trips.

General Goal 2:d. Each graduate will demonstrate the ability to respect and integrate diverse environmental worldviews in a problem-solving context.

Environmental Studies in the context of University Mission

We consider this program to build on ISU's missions and Educating Illinois. The program will train students to be advocates for environmental issues and enter values-based careers, working towards improving environmental conditions world-wide and respecting life through biodiversity preservation. We envision that in the next decade environmental issues (e.g., global climate change, habitat destruction, invasive species, nitrogen deposition, among others) will become more pressing and garner more attention in the public and private sphere. Thus, through this proposed majors we will address the growing need for environmental professionals.

PROJECTION OF ANTICIPATED ENROLLMENTS

Our intention with the development of the Environmental Studies Sequence is to maintain the quality and integrity of the Geography-Geology Department's successful programs while diversifying the offerings available. Thus, our primary goal is to attract students with a different primary interest in environmental sciences compared to our current, typical Geography and Geology majors. Using the numbers of ISU students in the Environmental Studies Minor and the enrollment of students in similar

programs at Northern Illinois University, 90 current majors (Lenczewski, 2013), we project that eventually 60-70 students will enroll in this program.

EXPECTED OUTCOMES

Our graduates will possess new skill sets that fill needs across a broad spectrum of society. In so doing, ISU will expand its reputation with a key mission and creed of nurturing student success by giving our diverse student body unique opportunities for hands-on research and learning activities in cooperation with an active and successful faculty.

As the Environmental Studies Sequence becomes more widely known, ISU will:

1. Positively impact overall enrollment at ISU by making it a destination school for socially and environmentally conscious students, regardless of their chosen major.

2. Expand cross-disciplinary research and cooperation by our productive faculty;

3. Improve and expand ISU's relationship with the Normal-Bloomington area community and with regional high schools and community colleges, and

4. Enhance external funding, both public and private;

We seek to make general awareness of issues of the environment and sustainability proud campus-wide themes. An Environmental Studies Sequence will help enhance ISU's reputation in the Academic community, and contribute to a well-educated regional workforce.

REFERENCES

American Geosciences Intstitute, 2012, Competitive *Median Salaries Across Industry Sectors for Geoscience-related Occupations in 2011, *in* Gonzales, L.M., ed., Geoscience Currents, Volume 63, p. 1.

—, 2013, U.S. Geoscience Enrollments and Degrees Grow Robustly in 2011-2012, *in* Gonzales, L.M., ed., Geoscience Currents, Volume 68, p. 1.

Deverman, R., 2006, Guiding Ideas: Key Skills to Lead Environmental Professionals. : Environmental Practice, v. 8, p. 156-158.

Doyle, K., Heizmann, S., and Stubbs, T., 1999, The Complete Guide to Environmental Careers in the 21st Century Washington, D.C., Island Press.

Ecker, D., and McGregor, J., 2012, What the Illinois job market will look like in 2018, Crain's Chicago Business: **http://www.chicagobusiness.com/article/20120120/EMPLOYMENT/120119808/what-the-illinois-job-market-will-look-like-in-2018**.

Ginsberg, B., Doyle, K., and Cook, J.R., 2004, The ECO Guide to Careers That Make a Difference: Washington DC, Island Press, 329 p.

Hull, R., 2009, Transition From Student To Employee: The Necessary Science And Skills, *in* Allen-Gil, S., Stelljes, L., and Borysova, O., eds., Addressing Global Environmental Security Through Innovative Educational Curricula: NATO Science for Peace and Security Series C: Environmental Security, Springer Netherlands, p. 75-81.

Lenczewski, M., 2013, Acting Director, Institute for the Study of the Environment, Sustainability, and Energy; University of Northern Illinois.

Lohr, S., 2009, Crème de la Career, New York Times.

Maniates, M.F., and Whissel, J.C., 2000, Environmental Studies: The Sky Is Not Falling: BioScience, v. 50, p. 509-517.
Rimer, S., 2009, Community Organizing Never Looked so Good., New York Times.
Romero, A., and Jones, C., 2003, Not all are created equal: An analysis of the environmental programs/Departments in U.S. Academic Institutions until May 2003: Macalester Environmental Review, p. 1-19.
Thomas, I., Lane, R., Ribon-Tobon, L., and May, C., 2007, Careers in the environment in Australia: surveying environmental jobs: Environmental Education Research, v. 13, p. 97-117.
United States Department of Labor, 2013, Occupational Outlook Handbook, 2012-13 Edition, Environmental Scientists and Specialists, Bureau of Labor Statistics, Volume 2013: **http://www.bls.gov/ooh/life-physical-and-social-science/environmental-scientists-and-specialists.htm**.
United States Federal Government, 2013, Recovery.Gov Track the Money, Volume 2013: **http://www.recovery.gov/Pages/default.aspx**, United States Federal Government,.
Vincent, S., 2009, Growth in Environmental Studies and Science Programs: Association for Environmental Studies and Sciences, v. 2, p. 4.
—, 2010, Interdisciplinary Environmental Education on the Nation's Campuses: Elements of Field Identity and Curriculum Design. A research study conducted by the Council of Environmental Deans and Directors of the National Council for Science and the Environment: Washington, D.C., National Council for Science and the Environment, p. 40.
Vincent, S., and Focht, W., 2009, US higher education environmental program managers' perspectives on curriculum design and core competencies: Implications for sustainability as a guiding framework: International Journal of Sustainability in Higher Education, v. 10, p. 164-183.
—, 2010, In Search of Common Ground: Exploring Identity and Core Competencies for Interdisciplinary Environmental Programs: Environmental Practice, v. 12, p. 76-86.