UGC Report on Geography and Environmental Systems (GES) Annual Program Review
DRAFT 12.4.19
Prepared by Bambi Chapin (SAHAP)

A. Introduction

The department of Geography and Environmental Systems (GES) offers a B.A. degree in Geography & Environmental Studies, a B.S. degree in Environmental Science & Geography, an M.S./Ph.D. (including an option for a 5-year accelerated B.S./M.S. degree), and a Master of Professional Studies (M.P.S.) in Geographic Information Systems at Shady Grove. In addition, the department offers a minor in Geography, a minor in Environmental Science, and a certificate in GIScience.

Since the prior review, the department reports having consolidate its growth: the number of undergraduate majors held steady at around 300 (although the Dean's later report notes a 15% decline from 2014 to Fall 2017); the faculty increased from 11 to 13 tenured or tenure-track faculty, plus 2 lecturers; the number of research grants and peer-reviewed publications remained strong. In addition, the department has experienced continued grown in its lower division courses from 1,909 in 2010/11 to 2,660 in 2016/17.

B. Student Learning Outcomes

The goals of the GES program are to enable students "to apply thinking from both natural sciences and social sciences to solve important environmental, urban, and geospatial problems" (GES APR 2018, 15). The department explicitly links this overall goal and its more specific learning outcomes with UMBC's GEP competencies, particularly those related to "critical analysis and reasoning; scientific and quantitative reasoning; technological competency specifically in geospatial techniques; oral and written communication; socio-cultural competency related to citizenship at multiple scales; information literacy related to environmental, urban, and global and local geographic issues; and application of these reasoning and communication competencies to solve real-world problems" (15).

The department distinguishes learning outcomes to assess for introductory courses, upper-level courses, and students' overall experience. At the introductory level, they assess two learning outcomes that reach across three 100-level courses, two of which are required in either the BA or BS and all of which carry a GEP designation. Focused on the understanding and application of basic concepts, these outcomes are assessed through "course examinations, Blackboard quizzes, in-class activities, and assignments" (17). At the upper level, three outcomes are assessed, focusing on understanding through application, communication, and technical skills. These are assessed a variety of ways including course examinations, written research papers and projects, in-class/lab exercises, and oral presentations, using rubrics with coordinated categories and benchmarks. The learning outcomes for students' overall experience expect that students will be able to apply what they have learned to "real-world problems" (18) and the pursuit of employment or graduate training, and that they will report on their experiences in the program. There are primarily assessed through internship evaluations, interviews, and surveys.

C. State of the Discipline; Program Modifications; Program Changes

Since the previous APR, the GES department has merged the two BS degrees into one and the two BA degrees into one, ensuring all students share core training, including in geospatial techniques, theory, and "current issues in geography and environment" (16). While each degree has its own content and methodological, they also share cross cutting concerns in "global sustainability," "urban systems," and "conservation science." Since the last review, the department has also put significant energy into developing more and more effective writing intensive course.

In addition to these improvements, the department reported particular strengths in their upper-level and writing intensive course offerings, their advising and teaching effectiveness, and in fostering critical thinking and problem solving. However, in both the introductory and in the upper level courses, they are grappling with obstacles in providing students opportunities to practice what they are learning in the classroom. Significant obstacles include limited numbers of TAs to lead break out groups in the large lecture groups and difficulties getting students in advanced classes to field sites, experiences which they see as needed for all of their majors.

D. Undergraduate Curriculum

Core courses are required across the undergraduate degrees and programs offered in GES, providing shared training across the programs. Most student in GES undergraduate programs – including the B.A., the B.S., the geography minor, and the certificate program – are required to take the foundational course, "Physical Geography" (GES 110). All majors are also required to take "Exploring the Environment: A Geospatial Perspective" (GES 286) and "Introduction to Geographic Information Systems" (GES 386), which together provide foundational training in geospatial techniques and analysis. In addition, some B.A. students and all minors in Geography are required to take "Human Geography" (GES 102), while B.S. students, BA student who choose this option, and minors in Environmental Science take "Introduction to Environmental Science" (GES 120). B.S. students and minors in Environmental Science also take "Environmental Science Lab and Field Techniques" (GES 220).

The B.A. in Geography & Environmental Studies requires a minimum of 48 credits. This includes 4 required GES courses and a statistics course, as well as 10 elective courses. The B.S. degree in Environmental Science & Geography requires 63 credits. This includes 7 required GES classes, as well as 5 GES electives and 6 courses in basic science and math. The minors in Geography and in Environmental Science each require 4 upper level GES electives in addition to the 2 required courses indicated above. For the certificate in GIScience, students must take 4 required courses and 3 elective courses. In addition, the GES department has designed a program for majors who are planning to teach Earth and Space Science at the secondary level, but have so far been unable to connect their "students with teacher certification programs in the Education Department at UMBC" (12). In addition, the department reports that it is working to develop 8 focal areas to help students hone their expertise and identities, 3 within the BA, 2 within the BS, and 3 cutting across the majors.

E. Research Opportunities for Undergraduates

The GES department encourages undergraduates to engage in research, either through independent projects of their own or with faculty-led projects. GES students have presented at URCAD and several have co-authored publications with faculty. Faculty have helped students find financial support for their research through Undergraduate Research Award, as well as supporting them more directly though faculty research funds. However, the department would like to be able to provide all of their advanced students with field experiences, something made difficult by limited transportation options as referenced above.

F. Undergraduate Advisement

Since students who declare a GES major typically choose their own faculty advisor, the number of students advised by a single faculty member varies from 5 to 25, with a few faculty advising as many as 40 students. The department acknowledges the need to consider a more equitable distribution of advisees, although we note that this situation remains as it was reported at the previous APR. Outlines of program requirements are available to students on the department's website. Student career interests are typically discussed in advisement sessions.

G. Council of Majors; Undergraduate Honors; Awards; Recognition

Among departmental opportunities for promoting and recognizing student involvement are a Council of Majors and an honors society, Gamma Theta Upsilon. The Council of Majors organizes events ranging from “welcome back” barbeques to professional development roundtables with faculty on issues such as job searches and getting into graduate school. The honors society hosts a well-attended annual dinner recognizing academic achievement. The department notes that the robustness of the Council of Majors and the honors society varies from year to year depending on the students and faculty mentor involved and constrained by the lack of a space to meet.

H. Faculty Development; Teaching Quality

The department evaluates is teaching effectiveness through SSEQs, student participating in promotion and tenure reviews, and informal feedback from students. The faculty are also active in discussions of teaching and in determining how best to make the undergraduate curriculum better addresses student needs. The department chair provides opportunities for faculty mentoring and instructional guidance. The University Faculty Development Center is well-utilized as a resource by GES faculty. It should be noted that almost all lower-level courses are taught by full-time faculty.

I. Additional Comments; Summary Evaluation

The external reviewers commended the GES undergraduate program. They noted the strength of the curriculum, the dedication of the faculty, the effectiveness of the assessment plan, and the enthusiasm of the undergraduates about the department. Both the reviewers and the Dean saw the department as well poised to build on its strong curriculum and faculty, especially given its position bridging the natural and social sciences, connecting to organizations outside of the university, and its increasing relevance as a discipline.

The department's most pressing need – as reported in their self study, as recommended by the reviewers, and as endorsed by the Dean – is for more space, a need that was noted as pressing in the prior APR as well. The second most pressing need according to the reviewers is the need for more support for graduate students, a need supported by the Dean particularly as GA positions would support undergraduate teaching in large lecture courses.

In addition, the reviewers had two recommendations related to the undergraduate program specifically. First, they recommend that the undergraduate curriculum be reviewed to "reduce bottle necks" and increase active learning opportunities. Second, the reviewers recommend providing better transportation support so that students will have opportunity to take courses out in the field. In its Post-APR Action Plan, the department indicates that it plans to address both of these recommendations.