Annual Departmental Assessment Report

Department or Program: ___Geography_____
Academic Year of Report: __2020-2021_____
Department Contact Person for Assessment:__Leslie McLees_____

Section 1: Learning Objectives Assessed for this Report
For each major in the department, list the learning objectives that were assessed during this period.

Geography

Learning Objective 2: Identify and use geospatial techniques to analyze spatial data towards problem solving or modeling

Learning Objective 3: Exhibit the ability to critically analyze geographic problems, ask research questions, understand methods, and conduct research

Spatial Data Science and Technology

Learning Objective 3: Understand the societal implications of geospatial data and technologies, including issues surrounding privacy and security of individual-level data containing locational information, the types of inequalities that certain geospatial technologies produce, and the role that geospatial technologies play in humanitarian crises.

Learning Objective 4: Utilize geospatial data and technologies for collecting data, employ analytical and visualization methods for interpreting such data, and communicate effectively to a range of audiences.

Section 2: Assessment Activities
GEOGRAPHY MAJOR

For Learning Objective (LO) 2 we examined data from GEOG 481: GIScience I and GEOG 498: Geospatial Project Design

GEOG 481: GIScience I is a course all Geography majors take to examine the foundations of spatial data science. The course introduces students to the concepts behind organizing, analyzing, and visually presenting geospatial information with an eye on how to answer spatial problems, from calculation the viewshed in remote environments for research to decide on the best agricultural data to use in answering questions about soils and crop production. This assessment in this course is based on exams on lectures (40%) which cover concepts and theories and extensive lab work (60%) that assess student application of concepts in a real-world problem. The class is often a gateway into the spatial data science and GIS foci within the geography department and also ensure that even geography majors who do not want to focus on GIS have some exposure to the concepts and applications for this in-demand skill. The class normally fills to capacity, or close to it, and is taken by students from a variety of major. The average final grades from the class are between 73% and 76% for the terms assessed, once scores below 30% are taken out to account for students who did not complete the coursework. Lab work final scores ranged between 75.7% and 79.1 percent and final exam scores ranged between 73.3% and 83.3%.

GEOG 321: Climatology is a popular course that explores the interactions between the several environmental systems (atmosphere, ocean, and biosphere) that create the earth's climate and it's changes. This course covers the basics of energy and moisture in the climate system, atmospheric circulation processes and patterns, and the spatial and temporal variations of climate, including those produced by human action. Students are assessed based on Five online quizzes, the completion of ten exercises that involve the analysis of information from the Internet that illustrates the day-to-day and seasonal variations of weather and climate and ten "weather report" activates. Given the relevance of this subject, it generally enrolls very well and is taken by about half of the students in our program. The average student grade in this class in Spring 2020 was an 84%. This was a term when the university had to quickly transition to remote and online learned due to COVID, but demonstrates that even with a difficult and complex subject, students were able to grasp the concepts presented in a well-design course.

Summary of LO2. We believe we are meeting learning objective 2. The variety of courses and methodologies used to analyze geographic information in our program is large. These courses are indicators of students ability to analyze a variety of types of information and the course scores reflect a strong grasp of the processes.

For LO 3 we examined the material from GEOG 419: The Professional Geographer and GEOG 498: Geospatial Project Design.

GEOG 419: The Professional Geographer: This course focuses on helping students reflect on the transferable and specific skills they have developed in their experiences in Geography, other courses, and in their own lives. The final project for the course is a synthesis of these skills and interests in a professional online portfolio that they can build upon after the course. Activities throughout the course help students synthesize what they have done to see geography through a broader and cohesive lens, rather than a series of classes. This course is only open to Geography and Spatial Data Science and Technology (SDS) majors. The two-credit course fulfills a requirement for the Geography major.

The assessment for LO 3 relies upon the final online portfolios to measure whether students have developed mastery of L21, and we will use portfolios from Fall 19 and Winter 20. Data was collected from the grade sheets in Canvas, an examination of submitted portfolios. Students are graded on how the selection of projects they present relate to the overall skills and interests they want to promote as well as the type of career they hope to enter. They are also graded on visual design, clarity, and broad reflection of work they've completed (particularly in geography), and that these artifacts are presented clearly for a non-geographer yet show their depth and breadth of knowledge and skills in the discipline.

Examples of work reflected in these portfolios are various spatial data science projects (GIS, cartography, spatial analysis, etc.), storymaps from other courses (181, 201, 468), policy briefs and reports (465) and other types of projects students complete as they go through the major. The theme throughout these projects require students to identify a focus or research question, identify the appropriate methods and sources, and engage in critical think to effectively answer it.

In 2019-2020 the course was taught twice by Leslie McLees, the Undergraduate Program Director, advisor, and Instructor. In the Fall of 2019 the average score on this portfolio was an 84% with 21 students enrolled in the course. One student had been allowed in who wasn't a GEOG or SDS major, and they did not finish the course. In the Winter of 2020 Leslie McLees offered the course again and the average score on this assignment was an 83.1%. One student who struggled throughout the term did not complete the assignment.

GEOG 498: Geospatial Project Design is offered each year as a way for students to combine their various geospatial and project design skills into a large, class project for an external party. This class is designed to focus on both learning how to work with a real GIS client, and how to be critical about the act of mapping.

With the goal of being inclusive and ethical, this course teaches students through active learning, discussion, and technology how to conduct a GIS project to tell stories which connect with people that are relevant to society and the environment. In the Fall of 2019 the class worked on a project with groups such as Beyond Toxics, a local non-profit in Eugene, and graduate students needing significant spatial analysis. .

Assessment for the course is divided up among several pieces of the project, and each team works directly with their client to serve their client's needs. They create a project plan, storyboard out their proposed project process, gather and manage data for the client, and then create a final product and present it to the client. Assessments are based on the deliverables for each component of this project and on reading reflections, discussions, and their contributions to the group.

While this class has a low enrollment due to the intense workload of supervising four different projects, it is a class that brings together many of the skills students learn in their other spatial data science courses and it is usually exclusively taken by geography and spatial data science majors. In the Fall of 2019 the class average was a 93%, with the range of final scores being between 77.6% and 100%. In Fall of 2020, the average was 94% with a range between 89% and 98.4%. This higher than usual class average reflects the intense amount of one-on-one work that the instructor Carolyn Fish conducts with the students and their groups.

Summary of LO3

We believe we are meeting objective LO3. The projects in these two classes, while qualitatively very distinct, present significant challenges for students. Both courses push students think beyond individual skills and methods and conceptualize a larger goal of being able to ask questions and articulate holistically how to address geographic issues, whether in designing a project or presenting their variety of work as a geographer.

SPATIAL DATA SCIENCE AND TECHNOLOGY MAJOR

Learning Objective 3: Understand the societal implications of geospatial data and technologies, including issues surrounding privacy and security of individual-level data containing locational information, the types of inequalities that certain geospatial technologies produce, and the role that geospatial technologies play in humanitarian crises.

Learning Objective 4: Utilize geospatial data and technologies for collecting data, employ analytical and visualization methods for interpreting such data, and communicate effectively to a range of audiences.

For LO 3 and LO4 we evaluated GEOG 498 and GEOG 419

GEOG 498: Geospatial Project Design is offered each fall as a way for students to combine their various geospatial and project design skills into a large, class project for an external party. This class is designed to focus on both learning how to work with a real GIS client, and how to be critical about the act of mapping. With the goal of being inclusive and ethical, this course teaches students through active learning, discussion, and technology how to conduct a GIS project to tell stories which connect with people that are relevant to society and the environment. There are units that focus on the ethics of data collection and use with a critical eye to the design of mapping tools that can reinforce inequities and marginalization. In the Fall of 2019 the class worked on a project with groups such as Beyond Toxics, a local non-profit in Eugene, and graduate students needing significant spatial analysis based on both qualitative and quantitive data.

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GEOG 419: The Professional Geographer is offered in the fall and winter term each year by Leslie McLees. This class assists students in creating a portfolio for their many projects (both in geography and spatial data science coursework and other experiences beyond the classroom) and pushes them to articulate clearly the skills and concepts they've developed in using geospatial technologies to collect, organize, and visualize data from various sources. Students have final projects from a variety of course: Advanced Cartography, Web Mapping, Drones and Mapping, GIS and Python, Remote Sensing, and often more. These final portfolios reflect a range of approaches to the effective use and display of information, something the also focuses on more generally as well. For each product in their portfolio, students have to write concise descriptions of what they did, how, and the results, forcing them to effectively communicate their approach and methods in collecting, analyzing, and visualizing geospatial information.

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Summary of LO3 and LO4

Our analysis of these two comprehensive courses that push students to articulate a variety of skills and knowledge leads us to conclude that we are fulfilling both LO3 and LO4. These two courses really push students to think holistically about the range of methods and concepts that they learn throughout this major.

Section 3: Actions Taken Based on Assessment Analysis

Our assessment activities pull from a variety of courses, but in the future, we could also ensure that the courses we consistently use to assess learning objectives are aware that their courses are used for that purpose. That would help us more effectively and concisely be able to assess the program and make changes as needed. As a result of this assessment, the undergraduate director, Leslie McLees, will confer with the incoming department head, Xiaobo Su, about developing a more tailored list of courses to assess and then ask instructors to map at least one formative assessment to that learning objective.

Section 4: Other Efforts to Improve the Student Educational Experience

We continue to offer courses that are in demand, and have added an interdisciplinary Climate Studies minor to allow students to focus more on those issues. The continued development of career readiness and professional development is important in the culture of our student body. In the coming year, one of the projects of the undergraduate director is to create templates for faculty to incorporate career ready activities into their assignments.

Section 5: Plans for Next Year

Geography major

For the academic year of 2021-2022 we will assess learning objectives 1 and 4. These objectives are:

1. Exhibit a general understanding of major biophysical and social patterns in the world, and the key drivers that give rise to those patterns.
4. Demonstrate effective written, verbal, and graphic communication skills

Spatial Data Science and Technology major

For the academic year f 2021-2022 we will access learning objectives 1 and 2. These objectives are:

1. Exhibit a general understanding of the geographic and mathematical foundations of spatial data science and technologies.
2. Demonstrate knowledge of the geographic context of technology infrastructure, geographic data needs, and technology interface design and therefore have the potential to contribute to the development of geospatial data and technologies.

Once a more concise list of classes that represent these learning objectives are identified, the undergraduate director can ask faculty what they believe the best way is to assess the LO in their classes. This assessment report will be shaped with the faculty and their input on whether this is an appropriate way to assess the learning outcome and their classes will be discussed. There is also the potential of incorporating a career readiness-based learning outcome as we reflect on and potentially revise this major in the coming years.