



UNIVERSITY
OF OREGON

Spatial Data Science and Technology Proposal Executive Summary

Program Description and Justification

1. Identify the institution, degree, and title of the program.

Institution: Department of Geography, University of Oregon

Degree: BA or BS

Title: Spatial Data Science and Technology

2. Describe the purpose and relationship of the proposed program to the institution's mission and strategic plan.

The objective of the proposed Spatial Data Science and Technology major is to educate students in the development and use of geospatial data and technologies, the analysis and visualization of geospatial data, and how to employ these skills in a fast growing geospatial technologies industry. The proposed Spatial Data Science and Technology major is grounded in the disciplinary foundations of Geographic Information Science (GIScience), which couples together theory and methods from Geography and Computer Science. In recent decades, these foundations have led the global pursuit to utilize advances in location-based services, computational sciences, spatial analytics, and visualization approaches to address a diversity of problems facing the world.

The proposed program embodies the University of Oregon's goal to prepare students for the world through a liberal arts education. The program accomplishes this by offering a novel undergraduate degree that integrates geospatial technical skills with a societal consciousness that is emphasized through the current general education renaissance. The use of geospatial data and technologies is inherently trans-disciplinary in application. While Geography is its historic home, the use and study of geospatial data and technologies has already and will continue to broaden outside of a singular discipline. Core faculty are involved in a diversity of centers at the University of Oregon, including the Environmental Science Institute, the Institute of Cognitive and Decision Science, and the Sustainable Cities Initiative, which allows us to provide cross-disciplinary teaching and research opportunities for undergraduate students.

3. What evidence of need does the institution have for the program?

A report by the United States Department of Labor's Employment and Training administration states "Because the uses for geospatial technology are so widespread and diverse, the market is growing at an annual rate of almost 35 percent, with the commercial subsection of the market expanding at the rate of 100 percent each year." We have already witnessed the impact of this demand on our program as multiple graduates from our current programs in Geography have been recruited to work in this industry in cities across the country. Examples include alumni who are have

recently been employed by Apple and MapBox (a web mapping company) in Silicon Valley, National Geographic in Washington, D.C., and The New York Times in New York City.

In addition to the market demand of industry, the demand for a Spatial Data Science and Technology major is evident by the increase in student enrollment in our existing courses and in the GIScience focus of our Geography major. One clear example is the increase in enrollment in Geog 181: Our Digital Earth, which was first offered in fall 2012 to 28 students, and is being offered in fall 2015 with an enrollment cap of 127 students. Furthermore, of the multiple focus streams that Geography majors can declare, the GIScience focus stream contained 44% of our programs major in 2014, a number that has rapidly increased in the past five years.

4. Are there similar programs in the state? If so, how does the proposed program supplement, complement, or collaborate with those programs?

The proposed program most significantly complements the University of Oregon's Geography major. Graduating with a double major in Spatial Data Science and Technology and Geography would enhance students' ability to attain employment and provide meaningful contributions to the rise of the geospatial data and technology industry in the context of globalization and global environmental change.

Other programs that share similar interests at the University of Oregon include Computer Information Science (CIS) and Planning, Public Policy and Management (PPPM). We are in the process of building curricular ties with CIS to ensure that students are aware of course offerings and ways in which majors from both programs can assist students with attaining employment in related fields. We will also continue our existing relationship with PPPM to ensure that students in that program are able to take courses and potentially also major in Spatial Data Science and Technology, which would assist their potential for employment in planning and policy.

Outside of the UO, this major complements a proposed major at Oregon State University by The College of Earth, Ocean and Atmospheric Sciences. But it should be clear that the two proposed majors are fundamentally different. While our Spatial Data Science and Technology Major is a flexible, 48 credit major that makes students career ready for the geospatial technology industry, OSU's proposed major is a traditional Geography degree (of which they do not currently have – hence the reason for their proposal) consisting of 80+ credits, in which courses in GIS complement the ability of students to conduct geographic research in such areas as natural resource management, planning, etc. In addition, while our program exposes students to computational programming and literacy and teaches students a variety of geospatial software applications and technologies in order to make them adept in a fast changing industry, the OSU program is mostly focused on training students in GIS with a single software platform.

Another complementary program external to UO is the Graduate Certificate in GIS offered by Portland State University. Again, these two programs share similarities in that they are both training students in the use of various geospatial technology and data formats. However, PSU's program is a graduate program (unlike ours which is solely focused on undergraduates), and is focused on solely training GIS skills rather considering how geospatial technologies and data can be considered in the broader general education requirements.