Summary - BS in Data Science at University of Oregon

Presented to the Statewide Provost's Council on August 1, 2019

Brief description of the anticipated program

We propose a BS undergraduate degree in Data Science with specialization in a large number of application domains. This degree is quantitatively focused (i.e., requiring courses in computer science, mathematics, probability and statistics, and machine learning), with courses in ethics and applications of these concepts to a specific domain (e.g., biology or finance). The degree finishes with a capstone project demonstrating mastery of data science concepts within the student's chosen domain of specialization.

In 2017 President Schill created the UO Presidential Data Science Initiative to strengthen UO's ability to help solve some of the world's greatest research challenges through the use of data. In AY17-18 a visioning committee conducted an in-depth study of all aspects of such a program. In the discussions of undergraduate offerings in Data Science[1], there was general consensus that the most meaningful form of bachelor's degree for UO students would be one in which general principles were covered side-by-side with domain-specific applications of the general approaches; a heavy admixture of domain-specific considerations is fundamental.

Program location and modality

This will be a residential program at the Eugene campus of the University of Oregon, housed within the College of Arts and Sciences (CAS). Delivery of the program will require strong interaction between the new Data Science Program; the Departments of Computer and Information Science, Mathematics, and Philosophy; and numerous domain departments/programs across CAS, the College of Education, the Lundquist College of Business, the Phil and Penny Knight Campus for Accelerating Scientific Impact, and other UO schools and colleges.

Anticipated start date

We expect to enroll our first cohort of new undergraduates in Fall 2020. We will provide alignment plans for existing undergraduates who have been following a quantitative curriculum to intercept the program at that time, as well. For the first rollout, we intend to support four application domains: Biology, Geography, Business Analytics, and Linguistics. We expect to recruit many other domains in the first year of operation.

The proposed timeline for program approval is: October - curriculum committees, November - UO Senate, December - UO Board of Trustees, January - SPC, February - HECC, March - NWCCU.

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[1] See "A Vision for Implementing the Presidential Initiative in Data Science at the University of Oregon", https://datascience.uoregon.edu/sites/datascience1.uoregon.edu/files/data_science_report_2018.pdf.

Anticipated enrollment, at launch and goals for 5 and 10 years out

As with any new program, the goal is to start small (20-30 students in the first intake) while debugging the curriculum. The strong demand for qualified data science graduates will cause rapid growth of the program soon after its launch. At full capacity (~ten years), we expect to graduate approximately 200 students each year. We expect an intake of approximately 400 students each year, with approximately 1000 students across the 4 years pursuing data science degrees. At five years, we would expect ~500 total students, graduating ~100 of them each year. For comparison, this is 20% smaller than the current size of the UO's Computer and Information Science cohort.

1st Year (2020)	2nd Year (2021)	3rd Year (2022)	4th Year (2023)	5th Year (2025)	10th Year (2030)
25 enrolled	100 incoming 125 enrolled	150 incoming 250 enrolled	200 incoming 405 enrolled 25 graduating	200 incoming 490 enrolled 100 graduating	400 incoming 1000 enrolled 200 graduating

Statewide needs and goals & alignment with the UO's mission and strategic plan

Experienced data scientists are a growing economic need. The January 2019 report from Indeed, one of the top job sites, showed a 29% increase in demand for data scientists year over year, and a 344% increase since 2013. Data from the technology job site Dice showed a 32% increase in job postings year over year; Dice also noted that the job postings are from companies in a wide variety of industries, not just technology (e.g., investment banking, insurance, healthcare). Indeed currently lists 89 open data science jobs in Oregon; if the current year-on-year growth rate continues, this means that there will be 317 open data science jobs in 2024 when we produce our first group of graduates.

The University of Oregon is a comprehensive public research university committed to exceptional teaching, discovery, and service. As a growing interdisciplinary field, a data science degree program is essential to UO's mission, and a key presidential initiative. The proposed program will deliver a strong data science curriculum, where quantitative data analytic skills are acquired side-by-side with application domain knowledge. Graduates will walk away with the skills they need to enter the workforce, addressing the statewide economic need for data scientists. More broadly, this program will help to train a new generation of researchers and continues to enhance the UO's role as a premier research university.

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