

## **AY22-34-A Proposal for a New Interdisciplinary Minor in Data Science**

**Committee A has reviewed the revised proposal on April 13, 2023 and recommends approval.**

The following changes to the original proposal have been made following the Senate request at the March 28, 2023 meeting:

- a. The PSYC 317 class was removed from the minor.
- b. Two economics classes (recommended by David Selover and approved by the economics chair) were added.
- c. The change was made to require students to pick between the two classes with the same name: BDA 411 *Intro to Machine Learning* or CS 422 *Introduction to Machine Learning*. We are not able to change the name of a specific class without the change going through the appropriate approval process. At most, we could ask the departments to change the names, but there is no mechanism to require distinct departments to change names of courses that have the same names. In addition, changing the names would not address concerns that the courses have overlapping content. Having students select between the two classes was determined to be the best way to address the concern.
- d. The names of the program directors and chairs who approved the minor are included in the file.

# OLD DOMINION UNIVERSITY

## PROPOSAL FOR A NEW INTERDISCIPLINARY MINOR

### Data Science

A minor may be chosen by students to support their major, to offer greater job opportunities on graduation, or to provide recognition in a second area of study. Completion of an approved minor will meet the upper-division General Education requirement. Interdisciplinary minors require 12 credit hours of 300/400-level courses selected from at least two different disciplines with a maximum of six credits from any one discipline. Please refer to the *Undergraduate Catalog* for the complete policy on minors.

Minimum enrollment expectations for minors are five graduates in five years or the minor will be discontinued.

Proposed Action (check one): New Minor

1. Name of proposed minor: Data Science
2. Description of proposed minor or change to an existing minor:

The increased amount of available data has heightened the demand for data science savvy employees across a range of fields. The minor in data science will allow students from various majors to gain foundational knowledge in the basics of data science and to practice these skills through a choice of application areas across different domains. A minor in data science can improve students' data literacy, making them more aware and comfortable working with data.

3. Rationale for proposal: (address what the proposed minor will accomplish for students)

Students from different majors can enhance their preparation for various careers by completing the data science minor. This minor will equip students with knowledge of the way data is collected, analyzed, and applied. It will also enhance their knowledge of data applications and data interpretation, thus enriching the career path they choose. After completing two core courses, students choose two additional courses that best fits with their career goals. Students majoring in any field would be better prepared for their careers, as the use of data-based decision making is increasing across domains. The minor will provide the basic knowledge needed to understand data science tasks and students will be cognizant of the ethical issues surrounding data usage.

4. Majors likely to enroll in the minor (for new minors):

This minor is targeted at students in various majors at Old Dominion University, including mathematics, computer science, engineering, business, geography, sociology, political science, criminal justice, health services and others. The target audience includes students interested in

careers requiring either the application of data analytical tools, the ability to communicate about data, or the need to make evidence-based decisions.

5. Projected enrollment and why (for new minors):

Based on cybersecurity, business analytics and similar minors:

Year	Projected Enrollment
2023	25
2024	30
2025	35
2026	40

6. Proposed Effective Term: Fall 2023

7. Resources needed:

Minimal new resources are being committed to support the development of the data science education and research initiatives at the university. All courses will be taught by existing faculty.

8. Program requirements:

[List below all courses required for the minor, the prerequisites, and the total hours required for the minor. Submit the appropriate information through the online Course Inventory Management (CIM) process in CourseLeaf ([nextcatalog.odu.edu/courseadmin](http://nextcatalog.odu.edu/courseadmin)) for all new courses/course changes.]

Data Science Interdisciplinary Minor Coordinator

Dr. Sampath Jayarathna, Assistant Professor, Department of Computer Science,

For completion of the Minor, students must have a minimum overall grade point average of 2.00 in all courses required for the minor exclusive of pre-requisites. At least six (6) hours of the required twelve (12) must be taken through courses offered by Old Dominion University

Three credit hours in the interdisciplinary minor may be in the major if a major course is listed as an option for the interdisciplinary minor. As such, it will be credited toward both the major and the interdisciplinary minor. Interdisciplinary minors require 12 credit hours of 300/400-level courses selected from at least two different disciplines with a maximum of six credits from any one discipline. Course substitutions may be approved by the interdisciplinary minor coordinator.

A. Required Courses: 2 courses – 6 credits

1. DASC 300. Foundations of Data Science
2. DASC 357E Ethics and Data

B. Elective Courses: 2 courses – 6 credits

BDA 401. Programming Languages for Data Sciences.  
 BDA 411. Intro to Machine Learning or CS 422. Introduction to Machine Learning  
 BNAL 306. Business Analytics II  
 CHP/PUBH 445. Health Services Research Methods  
 CYSE 420. Applied Machine Learning in Cybersecurity  
 CS 432. Web Science  
 CRJS 344. Social Science and Crime Mapping  
 CRJS/SOC 436. Capstone Research Project.  
 ECE 407. Introduction to Game Development  
 ECON 311. Causality  
 ECON 400. Quantitative Economics  
 EXSC 420. Research Methods in Exercise Science  
 GAME 440. Advanced Visual Design and Digital Graphics for Games  
 GEOG 402 Geographic Information Systems  
 GEOG 425. Internet Geographic Information Systems  
 HPE 406. Tests and Measurement in Physical Education and Health  
 MSIM 480. Introduction to Artificial Intelligence  
 OEAS 451W. Data Collection and Analysis in Oceanography  
 POLS 418. Quantitative Methods  
 SEPS 420. Fashion Research  
 STAT 310. Introduction to Data Analysis  
 STEM 382. Industrial Design

9. Description (showing new copy or revised copy) for the next *Undergraduate Catalog*:

This interdisciplinary minor in data science is focused on the analytical and ethical principles of data collection, data analysis, and the application of data in various domains. An interdisciplinary foundation is used to demonstrate the connections between phenomena studied by scientists and the impact of scientific data analysis on businesses and societies. The program includes coursework focusing on the principles of data analysis as well as coursework selected by students to apply those principles to topical domains.

10. Schedule for offering courses for new minors (include whether the minor can be completed in two years and whether it will be available through Distance Learning):

The minor in data science can be completed in two years and some courses maybe available through distance learning. Course offerings are managed by individual departments, but all courses will be offered at least once per academic year, and many are offered both Fall and Spring semesters.

11. Effect on current department course schedule—for new minors:

There is no anticipated effect on current schedules.

## APPROVED

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Holly A. H.  
Handley

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Originator of Request



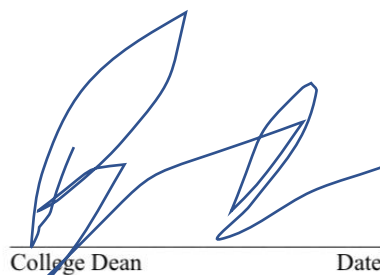
3/2/23

Department Chair

*Saltuk Karahan*

3/2/23

Chair, College Committee



College Dean

Date

External Department Chair(s)  
(If applicable)

Date

Chair, Faculty Senate  
Committee A

Date

Provost

Date

External chairs or program directors approved by email:

Jim Blando, Community and Public Health  
Mona Danner, Sociology and Criminal Justice  
Fred Dobbs, Oceanography  
Oscar Gonzalez, Electrical and Computer Engineering  
Sue Kimmel, STEMPS  
Jonathan Leib, Political Science and Geography  
Ling Li, Information Technology and Decision Sciences  
Robert McNab, Economics  
Gordon Melrose, Mathematics and Statistics  
Ravi Mukkamala, Computer Science  
Kevin Moberly, Game Studies  
Dylan Wittkower, Philosophy and Religious Studies  
Xihe Zhu, Human Movement Sciences

Approved by Deans on the Data Science Executive Committee