



P14003
Data Analytics (Major - BS)

New

Requestor: Breeann Flesch
Submitted: 2021-04-12 16:00:11
Submitting as: Faculty Member or APA

The queue for this request is:

- Division Chair
- Division Curriculum/Graduate Chair
- Curriculum Committee
- Faculty Senate
- Dean (LAS)
- Provost
- President
- External

Request for a: Program
Level Undergraduate
Type of Request: New (course, program, focus/concentration, or temporary course)
Will this be offered within an existing division or department? Yes
Type of program Major
Division Computer Science
Is this curricular change driven by assessment data you have collected? No
Summary/Rationale for proposal

We are proposing the establishment of Bachelor of Science (BS) and Bachelor of Applied Science (BAS) degrees in Data Analytics at Western Oregon University. Data analytics and data science are constantly evolving fields and becoming essential to domains such as business, e-commerce, finance, government, health-care, science, telecommunications and more. As more and more domains rely on collecting and analyzing data, the demand for data analysts and data scientists will continue to grow. This major is designed to prepare graduates to meet his growing need.

WOU's data analytics program is interdisciplinary and built on a foundation of Mathematics, where students will develop their skills in quantitative literacy, logical reasoning, statistics and linear algebra. Also foundational to this degree is coding skills, which will be developed through Computer Science courses, and technological skills, which will be developed through Information Systems courses. These skills will be further developed and put into the framework of the data analytics field with Data Analytics courses, including a high-impact capstone experience.

Title of new program, requirement, focus, or concentration Data Analytics
Faculty Listing

Professors: Breeann Flesch, Jie Liu, Becka Morgan, Scot Morse, Cheryl Beaver, Scott Beaver, Hamid Behmard, Laurie Burton

Associate professors: Thaddeus Shannon, Matthew Ciancetta, Matthew Nabity

Assistant professor: Lucas Cordova, Ben Cot?, Leanne Merrill

Mission, Learning Outcomes, Etc.

The Data Analytics program prepares students to thrive in the constantly evolving field of working with big data. The field is interdisciplinary by nature and is built on a foundation of Mathematics, Computer Science, Information Systems and Data Analytics courses. This program emphasizes the applied practice of data analytics techniques for solving problems in the real world.

1. Use relevant technology for the analysis of large, complex, or messy data sets to design, implement, and evaluate analytics-based solutions.
2. Use quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality.
3. Collect, analyze and assess evidence to reach informed conclusions and judgments.

Description

Mathematics

- MTH 231 Elements of Discrete Math I (4 credits) OR MTH 251 Calculus I (4 credits)
- MTH 232 Elements of Discrete Math II (4 credits) OR MTH 252 Calculus II (4 credits)
- MTH 243 Introduction to Probability and Statistics (4 credits)
- MTH 244 Introduction to Probability and Statistics II (4 credits) OR BA 367 Regression Analysis (3 credits)
- MTH 308 Computational Linear Algebra (4 credits)

Computer Science

- CS 161 Computer Science I (4 credits)
- CS 162 Computer Science II (4 credits)
- CS 436 Dynamic Systems Simulation (4 credits)

Information Systems

- IS 240 Information Management I (4 credits)
- IS 301 Information Systems Automation (4 credits)
- IS 340 Information Management II (4 credits)

Data Analytics

- DATA 101 Foundations of Data Analytics (4 credits)
- DATA 432 Introduction to Data Analytics (4 credits)
- DATA 434 Data Visualization (4 credits)
- DATA 436 Learning from Data (4 credits)
- DATA 438 Analysis of Social and Economic Networks (4 credits)

Capstone Project

- DATA 471 Advanced Techniques (4 credits)
- DATA 472 Data Analytics Project Management (4 credits) OR IS 470 Project Management (4 credits)
- DATA 473 Data Analytics Project Implementation (4 credits) OR IS 475 Project Implementation (4 credits)

Total Credits 75-76 credits

Note:

Data Analytics students must have a grade of C or better in courses that are used to satisfy the major requirements. Students must also have a C or better in all listed prerequisite courses unless waived by the course instructor and the computer science division chair.

Catalog ID:

Required HECC Form

Thumbnail	Name	Size	Actions
	HECC-Data-Analytics-Proposal_w-budget.docx	109128	

Degree Type BS

Credits required for degree 75-76

Describe any prerequisite credits needed for the college ready freshman

All of the prerequisites for college ready freshman are included in the program. The only course with a prerequisite not explicitly listed in the program is MTH 243, which has a prerequisite of MTH 101 or MTH 095, but college ready freshman can test directly in to MTH 243 using WOU's placement exam.

Program Outcomes

Learning Outcome

Alignment to University Learning Outcomes

Programs affected/consulted

Computer Science / Information Systems:

This was originally discussed in the the division in early fall, about the idea of moving forward with a stand-alone major in Data Analytics. The rough draft proposal as developed over winter break and brought to the division at the January 5, 2021 Division meeting. The division had a separate meeting on January 28, 2021 at 3:00 pm to discuss faculty feedback on the rough draft. The feedback was then incorporated into the proposal. At the February Division meeting, updates were provided based on the incorporated feedback and conversations with stakeholders. The proposal came to the CSD at the March division meeting as new business and a further opportunity to feedback (no more was added at that time). The full (including details on the MTH courses) proposal came the CSD at the April meeting as old business and was voted to approve unanimously.

Mathematics:

On January 19, 2021, we emailed the rough draft of the proposal to the Mathematics department for review. The draft included the request for the Mathematics Department to develop two new courses and use three existing MTH courses. I then joined the Mathematics Department meeting on January 22, 2021 to discuss the proposal and get feedback. The feedback was positive, and from there the Mathematics Department formed a subcommittee to develop the two new courses and determine FTE needs for the HECC paperwork. On March 22, 2021 the chair of the subcommittee, Leanne Merrill, provided the details of the new courses as well as FTE needs. The two new MTH courses will be entered into the portal from the Mathematics Department, while the rest of the proposal will be entered by the Computer Science Division.

Business:

After the CSD approved moving forward with the rough draft at the January 5th, 2021 meeting, we reached out to the Business and Economics Division for feedback. We met with leadership (Hamid, Zenon & Bojan) from that division on January 19, 2021 at 2:00 pm. We agreed that BA 367 is a great option for folks seeking this degree, and that their is capacity in the class. We also agreed that there no other BA classes that would fit as the currently exist (although some skills overlap). Lastly, we discussed the development of the future Sports Management major and how some Data Analytics classes would be a great fit for the Sports Analytics concentration.

Faculty and Facilities Needed (for Dean review only)

For the Mathematics Department (the additional sections of MTH 243 and 231 will only be needed if existing courses are full):

2022-2023: 4 credits, one additional section of MTH 243
2023-2024: 12 credits, one additional section of MTH 243, MTH 244 and MTH 231
2024-2025: 16 credits, one additional section of MTH 243, MTH 244, MTH 231 and MTH 308
2025-2026: 16 credits, one additional section of MTH 243, MTH 244, MTH 231 and MTH 308
2026-2027: 16 credits, one additional section of MTH 243, MTH 244, MTH 231 and MTH 308

For the Computer Science Division:

Almost all of the courses in this program are already offered by the CSD. The two new courses, DATA 101 and DATA 471 will be offered with reallocation of FTE, requiring no additional FTE for the first five years.

Notes/Comments

This proposal is coming from two different divisions. The bulk is coming from the Computer Science Division (three program proposals and nine course proposals), and two additional new course proposals are coming from the Mathematics Department in the Natural Science & Mathematics Division.

Supporting Documents

Thumbnail	Name	Size	Actions
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Related Courses:

https://wou.edu/facultysenate/curriculum/courseviewrequest?id=14014	DATA 101 Foundations of Data Analytics	New: General Education P14010 Foundational Skills P14003 Foundational Skills P14008 (Critical Thinking)	Foundation Critical Thinking Breeann Flesch Computer Science: na Faculty Senate: Sent: 2021-05-19 08:22:06. View
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https://wou.edu/facultysenate/curriculum/view/request?id=14017 C14017	MTH 244 Introduction to Probability and Statistics II New	Modify: Prefix, Prerequisites	P14010 P14003 P14008	Leanne Merrill	Natural Sciences & Mathematics	Faculty Senate: Sent: 2021-05-18 18:10:47.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14018 C14018	MTH 308 Linear Algebra New		P14010 P14003	Leanne Merrill	Natural Sciences & Mathematics	Faculty Senate: Sent: 2021-05-18 18:10:47.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14019 C14019	IS 432 Introduction to Data Analytics New	Modify: Prefix, Prerequisites	P14010 P14003 P14008	Breeann Flesch	Computer Science: na	Faculty Senate: Sent: 2021-05-18 18:10:47.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14020 C14020	IS 434 Visualization New	Modify: Prefix, Prerequisites	P14010 P14003 P14008	Breeann Flesch	Computer Science: na	Faculty Senate: Sent: 2021-05-18 18:10:47.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14021 C14021	IS 436 from Data New	Modify: Prefix, Prerequisites	P14010 P14003	Breeann Flesch	Computer Science: na	Faculty Senate: Sent: 2021-05-18 18:10:48.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14022 C14022	IS 438 Analysis of Social and Economic Networks New	Modify: Course goals, Prefix, Prerequisites	P14010 P14003	Breeann Flesch	Computer Science: na	Faculty Senate: Sent: 2021-05-18 18:10:48.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14023 C14023	DATA 471 Techniques for Data Analytics New		P14010 P14003	Breeann Flesch	Computer Science: na	Faculty Senate: Sent: 2021-05-18 18:10:48.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14024 C14024	DATA 472 Data Analytics Project Development New		P14010 P14003	Breeann Flesch	Computer Science: na	Faculty Senate: Sent: 2021-05-18 18:10:48.	View
https://wou.edu/facultysenate/curriculum/view/request?id=14025 C14025	DATA 473 Data Analytics Project Deployment New		P14010 P14003	Breeann Flesch	Computer Science: na	Faculty Senate: Sent: 2021-05-18 18:10:48.	View

<https://wou.edu/faculty/senate/curriculum/view-request?id=14026> [IS 470 Project Management](#) [Prerequisites](#)

Breeann Flesch
Computer Science: Information Systems
Faculty Senate: Sent: 2021-05-18 18:10:48.
[View](#)

Division chair decision:



Yes by Breeann Flesch (2021-04-16 15:29:49)

Comments:

Division curriculum chair decision:



Yes by Thaddeus Shannon (2021-04-16 15:54:30)

Comments:

Curriculum Committee Decision:



Yes by Laurie Burton (2021-05-18 18:09:46)

Comments:

Senate Decision: Pending:

Sent to Leigh Graziano (graziano1@wou.edu), on: 2021-05-18 18:09:46

LAS Dean Decision: Pending: Kathy Cassity (cassityk@wou.edu),

Provost/VPAA Decision: Pending: Rob Winningham (winninr@wou.edu),

President Decision: Pending: Rex Fuller (rfuller@wou.edu),

External Board Decision (reported by Provost): Pending: Rob Winningham (winninr@wou.edu),

Entered into appropriate systems by registrar's office: Pending: Amy Clark (clarkaj@wou.edu),

Entered into catalog: Pending: (),