

DATA SCIENCE UNDERGRADUATE MAJOR (BS, HBS)

This program is available at the following location:

- Corvallis

Options available:

- Advanced Data Science (<https://catalog.oregonstate.edu/college-departments/science/statistics/data-science-bs-hbs/advanced-data-science-option/>)
- Economics (<https://catalog.oregonstate.edu/college-departments/science/statistics/data-science-bs-hbs/economics-option/>)
- Environmental Economics and Policy (<https://catalog.oregonstate.edu/college-departments/science/statistics/data-science-bs-hbs/environmental-economics-policy-option/>)
- Life Science (<https://catalog.oregonstate.edu/college-departments/science/statistics/data-science-bs-hbs/life-science-option/>)
- Psychological Science (<https://catalog.oregonstate.edu/college-departments/science/statistics/data-science-bs-hbs/psychological-science-option/>)

The Bachelor of Science in Data Science provides a comprehensive curriculum designed to prepare students for careers in the rapidly evolving field of data science. Students will develop a strong foundation in computational and analytical tools, data science methodologies, and their practical applications, while also gaining a comprehensive understanding of the ethical implications involved in data systems and solutions. The major fosters critical thinking, problem-solving, and ethical decision-making, equipping graduates to thrive in a data-centric world.

Major Code: A051

Upon successful completion of the program, students will meet the following learning outcomes:

- Analyze and interpret data using statistical methods, computing skills, and other data science tools and technologies.
- Assess real-world data problems and propose analytical methods to achieve effective and ethical solutions.
- Communicate data findings clearly and effectively to diverse audiences, tailoring messages to ensure understanding and impact.
- Collaborate effectively within diverse teams, valuing different perspectives and fostering civil discourse to enhance problem-solving and project outcomes.

Code	Title	Credits
Required Core		
MTH 231	ELEMENTS OF DISCRETE MATHEMATICS	4
MTH 251Z	+*DIFFERENTIAL CALCULUS	4
MTH 252Z	INTEGRAL CALCULUS	4
MTH 267	LINEAR ALGEBRA FOR DATA SCIENCE	3
MTH 301	+*INTEGRAL HISTORIES AND SOCIAL ISSUES IN MATHEMATICS	3
ST 314 or ST 351	INTRODUCTION TO STATISTICS FOR ENGINEERS INTRODUCTION TO STATISTICAL METHODS	3-4

ST 411	METHODS OF DATA ANALYSIS	4
ST 412	METHODS OF DATA ANALYSIS	4
ST 421	INTRODUCTION TO MATHEMATICAL STATISTICS	4
ST 422	INTRODUCTION TO MATHEMATICAL STATISTICS	4
ST 437	DATA VISUALIZATION	3
CS 162	INTRODUCTION TO COMPUTER SCIENCE II	4
CS 261	DATA STRUCTURES	4
CS 340	INTRODUCTION TO DATABASES	4
WR 227Z or WR 362	+*TECHNICAL WRITING +*SCIENCE WRITING	3-4
DS 101	+EXPLORING CAREERS IN DATA SCIENCE	1
DS 201	+INTRODUCTION TO DATA SCIENCE	4
DS 231	PYTHON PROGRAMMING FOR DATA SCIENCE	4
DS 431	STATISTICAL LEARNING FOR DATA SCIENCE	3
DS 495	+*CAPSTONE AND CAREER: DATA SCIENCE	3
Electives ¹		
Select two data science courses from the following or complete an option:		6-7
DS 451	METHODS OF DATA ANALYSIS FOR COMPLEX AND NETWORK DATA	
DS 453	BAYESIAN MODELS FOR DATA SCIENCE	
DS 455	CAUSAL INFERENCE FOR EXPERIMENTAL AND OBSERVATIONAL DATA	
Select one statistics course from the following or complete an option:		3-4
ST 413	METHODS OF DATA ANALYSIS	
ST 415	DESIGN AND ANALYSIS OF PLANNED EXPERIMENTS	
ST 431	SAMPLING METHODS	
ST 436	R PROGRAMMING FOR DATA	
ST 439	SURVEY METHODS	
ST 441	PROBABILITY, COMPUTING, AND SIMULATION IN STATISTICS	
ST 443	APPLIED STOCHASTIC MODELS	
Select three additional upper-division courses of a data science nature or complete an option ²		9
Remaining Core Ed and Electives		88-91
Total Credits		180

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Baccalaureate Core course. Applies to general education requirements for undergraduate students in a catalog year up to 2024-2025

+

Core Education course. Applies to general education requirements for undergraduate students in catalog year 2025-2026 and beyond

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Writing Intensive Curriculum (WIC) course

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Students may complete an option but it is not required for the major. For students who do not select an option, they must complete the elective requirements for the major

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These may include non-blanket upper-division MTH, CS, BDS courses or other courses approved by the departmental head advisor

Major Code: A051

Degree plans are subject to change and the following is only an example of how students may complete their degree in four years. Students should consult their advisor to determine the best degree plan for them. Contact details for advisors can be found on the Academic Advising (<https://catalog.oregonstate.edu/advising/>) page.

First Year

Fall		Credits
DS 101	+EXPLORING CAREERS IN DATA SCIENCE	1
WR 121Z	+*COMPOSITION I	4
Core Ed: Communication, Media & Society		3-4
Core Ed: Arts & Humanities General		3-4
Core Ed: Transitions		2
Credits		15
Winter		
DS 201	+INTRODUCTION TO DATA SCIENCE	4
Core Ed: Arts & Humanities Global		3-4
Core Ed: Social Science		3-4
Elective		4
Credits		16
Spring		
DS 231	PYTHON PROGRAMMING FOR DATA SCIENCE	4
Core Ed: Scientific Inquiry & Analysis		4
Core Ed: Difference, Power & Oppression Foundations		3-4
Elective		3
Credits		14

Second Year

Fall		
MTH 231	ELEMENTS OF DISCRETE MATHEMATICS	4
MTH 251Z	+*DIFFERENTIAL CALCULUS	4
CS 162	INTRODUCTION TO COMPUTER SCIENCE II	4
Core Ed: Scientific Inquiry & Analysis		4
Credits		16
Winter		
CS 261	DATA STRUCTURES	4
MTH 252Z	INTEGRAL CALCULUS	4
WR 227Z	+*TECHNICAL WRITING	3-4
or WR 362	or +*SCIENCE WRITING	
Elective		3
Credits		15
Spring		
MTH 267	LINEAR ALGEBRA FOR DATA SCIENCE	3
CS 340	INTRODUCTION TO DATABASES	4
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS	3
or ST 351	or INTRODUCTION TO STATISTICAL METHODS	
Elective		4
Credits		14

Third Year

Fall		
ST 411	METHODS OF DATA ANALYSIS	4
ST 421	INTRODUCTION TO MATHEMATICAL STATISTICS	4
Elective		4
Elective		3
Credits		15
Winter		
ST 412	METHODS OF DATA ANALYSIS	4
ST 422	INTRODUCTION TO MATHEMATICAL STATISTICS	4
Elective		4
Elective		3
Credits		15
Spring		
DS 431	STATISTICAL LEARNING FOR DATA SCIENCE	3
MTH 301	+INTEGRAL HISTORIES AND SOCIAL ISSUES IN MATHEMATICS	3
ST 437	DATA VISUALIZATION	3
Option or Elective Course		3
Elective		3
Credits		15

Fourth Year

Fall		
Option or Elective Course		15
Credits		15
Winter		
Option or Elective Course		15
Credits		15
Spring		
DS 495	+*CAPSTONE AND CAREER: DATA SCIENCE	3
Elective		12
Credits		15
Total Credits		180

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+

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