

# Data Science Major (BS)

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Data is being generated at all times, arriving from multiple sources at an incredible rate. Nearly every device connected to the internet is generating data, and those capable of analysis and study of it are increasingly in demand. The ongoing generation of “big data” has resulted in a new job market: business leaders, scientists, engineers, and leaders from all walks of life have realized that they need scientists with the knowledge and ability to analyze, and understand the implications of the data and then communicate their findings. In addition to the data that is being constantly generated through modern commercial use of the internet, an abundance of data has been in existence for some time. The proper study and understanding of the implications of this data is increasingly important.

The Lyon College Data Science program will provide students with the theoretical background and initial problem-solving experiences focusing on three general broad areas: science, business and economics, and social sciences and humanities.

**NOTE: To graduate with a Bachelor of Arts or Bachelor of Science degree from Lyon College, students must successfully complete a minimum of 120 semester credit hours comprised of our required Core curriculum (44-48 hours), the requirements of at least one major (credit hours vary per major), and a selection of our Liberal Arts electives. They must also earn at least a 2.00 cumulative grade point average for all work taken at Lyon College and a 2.00 cumulative grade point average in their major, minor, and concentration.**

## Summary of Requirements for a Major in Data Science

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## Computer Science Core Competence

Computer Science Core Competence

Item #	Title	Credits
	CSC 100, CSC 109, or CSC 115	3
MTH 115	Discrete Mathematics	3
CSC 245	Introduction to Digital Logic	3
CSC 265	Algorithms	3
CSC 330	Database Theory and Application	3

# Math Core Competence

## Math Core Competence

Item #	Title	Credits
MTH 210	Calculus I	4
MTH 220	Calculus II	4
MTH 330	Linear Algebra	3
	MTH 360 or BUS 323	3
	CSC 415 or MTH 415	3

# Data Science Core Competence

## Data Science Core Competence

Item #	Title	Credits
DSC 105	Introduction to Data Science	3
DSC 205	Introduction to Advanced Data Science	4

# Data Science Specialization - Two Courses

## Data Science Specialization - Two Courses

Item #	Title	Credits
DSC 302	Data Visualization	3
DSC 305	Machine Learning	3
DSC 401	Data Science Applications and Programming	3
DSC 450	Data Science Independent Study	3
DSC 482	Data Science Special Topics	3

# Requirements for Science Track

## Requirements for Science Track

Item #	Title	Credits
	Data Science Elective Group - Science Track	9-12
	Data Science Independent Study Lab	3

# Requirements for Business & Economics Track

## Requirements for Business & Economics Track

Item #	Title	Credits
	Data Science Elective Group - Business & Economics Track	15

# Requirements for Social Sciences/Humanities/Fine Arts Track

## Requirements for Social Sciences/Humanities/Fine Arts Track

Item #	Title	Credits
CSC 105	Digital Humanities	3
	Data Science Independent Study Lab	3
	Data Science Elective Group - Social Sciences/Humanities/Fine Arts	6

## CORE CURRICULUM

### CORE CURRICULUM

Item #	Title	Credits
	Core Curriculum Requirements (In addition to Major hours)	44-48
	<b>Total Credits</b>	<b>104-111</b>

## CSC 100, CSC 109, or CSC 115

One of the following:

Item #	Title	Credits
CSC 100	Introduction to Programming in C++	3
CSC 109	Introduction to Programming in Python	3
CSC 115	Introduction to Programming in Java	3

## MTH 360 or BUS 323

Item #	Title	Credits
MTH 360	Probability and Statistics	3
BUS 323	Statistical Applications to Business Decision Making	3

## CSC 415 or MTH 415

Item #	Title	Credits
CSC 415	Numerical Analysis	3
MTH 415	Numerical Analysis	3

## Data Science Elective Group - Science Track

The student will take three science (BIO/CHM/PHY) classes at the 200 level or above.

The student will enroll in DSC 450, 1 hour, and participate in a course-related project under the supervision of the advisor and the professor for each class.

## Data Science Independent Study Lab

For each class, the student will take a DS lab (1 hour) with a course related project.

## Independent Study Lab

Independent Study Lab

Item #	Title	Credits
DSC 450	Data Science Independent Study	3

### Data Science Elective Group - Business & Economics Track

**The student will meet requirements for a minor in Business and Economics OR complete the following classes:**

### Business & Economics Track

Business & Economics Track

Item #	Title	Credits
ECO 101	Principles of Economics I	3
ECO 102	Principles of Economics II	3
ACC 210	Financial Accounting	3
ACC 211	Managerial Accounting	3
ECO 306	Econometrics	3

### Data Science Elective Group - Social Sciences/Humanities/Fine Arts

With approval from your advisor and the professor for each class, the student will complete two classes from either Social Science, Humanities, or Fine Arts divisions. (ANT/ART/ENG/FRN/HIS/JRN/MUS/POL/RPH/SPN)

For each class, the student will take a DS lab (1 hr) with a course-related project.