

MAJOR AND MINOR IN DATA SCIENCE

Begins Fall 2018



LOYOLA
UNIVERSITY MARYLAND

PROGRAM OVERVIEW

The major in Data Science offers students a thorough data science educational experience. The new and evolving field of Data Science is at the nexus of business, computer science, and statistics. The inter-disciplinary degree blends computer science and statistics courses with information systems courses to render students adaptable to any domain with rigorous statistical and computational skills. The program addresses the ethical dilemmas data scientists face.

LEARNING AIMS

- ◆ Utilize statistical descriptive and inferential methods to solve data-intensive applied problems.
- ◆ Write computer programs in languages used for data science (e.g. Python, R) to collect, clean, and analyze data.
- ◆ Formulate data science questions and apply a variety of data analysis techniques for data discovery, description, prediction and prescription.
- ◆ Communicate data science results in oral, written, and visual forms to technical and non-technical audiences.
- ◆ Advocate for ethical decisions in the use of data.

PROPOSED COURSE SEQUENCE:

First Year:

Fall: MA251, CS151;
Spring: ST210/EC220, IS251/BH251

Second Year:

Fall: CS/MA295/MA395, DS303;
Spring: ST310, IS353/CS485

Third Year:

Fall: ST465, IS358;
Spring: ST472, elective

Fourth Year:

Fall: elective, elective
Spring: DS496

12 REQUIRED COURSES

CS151 - Computer Science 1
CS295 - Discrete Structures *or*
MA295 - Discrete Structures *or*
MA395 - Discrete Methods
MA303/PH303/CS403/DS303 - Data and Information
IS251/BH251 - Data Analytics and Information Systems
IS353 - Data Management and Database Systems *or*
CS485 - Database Management Systems
IS358 - Business Intelligence and Data Mining
MA251 - Calculus I
ST210 - Introduction to Statistics *or*
ST265 - Biostatistics *or* EC220 - Business Statistics
ST310 - Statistical Computing
ST465 - Experimental Research Methods
ST472 - Applied Multivariate Analysis
DS496 - Ethical Data Science Capstone

3 ELECTIVES

The electives can be selected from select courses in: Computer Science, Economics, Information Systems, Mathematics, Statistics

QUESTIONS?

Prof. Christopher Morrell
4501 North Charles Street
Baltimore, MD 21210
chm@loyola.edu
410-617-2629

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What is Data Science?

Data Science involves extracting information or learning from data with the goal of making predictions of future events. Methods include combining multiple sources of data, applying artificial intelligence and machine learning techniques, and modeling data using statistical methods.

Why Data Science?

The program is designed to meet the needs of students entering the field of Data Science. There is a projected need for 140,000 to 190,000 positions in data analytics experts by 2018 (2011 McKinsey report). Locally, there is a need to support the business and governmental sectors.

What career paths can I pursue with this degree?

After earning a degree in data science, students are qualified to work in industry and government where their skills will help support decision-making. Jobs that utilize these skills include data scientists, business analysts, domain-specific managers, data mining analysts, and business intelligence specialists.

