M.S. in Data Science at Loyola University Maryland

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Professor of Statistics

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loyola.edu/datascience
What is Data Science?

• extracts knowledge and insights from data
• interdisciplinary field: computer science, statistics, and business
• “data science is the art of turning data into actions”
Brings together disparate data sources to recognize new opportunities and improve current practices
What is the Need?

National need:

- Number of Job Openings: 22,672 positions in US (2,011 within 50 miles of Baltimore) on glassdoor.com (4/3/2018)

- Number of companies hiring: 6000 to 7500 in one year
Need for data scientists

- McKinsey Global Institute report concludes, "a shortage of the analytical and managerial talent necessary to make the most of Big Data is a significant and pressing challenge (for the U.S.)."
  - Estimates that there will be four to five million jobs in the U.S. requiring data analysis skills by 2018, and
  - Large numbers of positions will only be filled through training or retraining.
  - Project a need for 1.5 million more managers and analysts with deep analytical and technical skills “who can ask the right questions and consume the results of analysis of big data effectively”

- IBM Predicts Demand For Data Scientists Will Soar 28% by 2020 (from a Forbes article)
Work Features

- Number 1 job for work-life balance\(^1\)

- Salary:
  - National average: $120,931
  - Baltimore area average: $106,898\(^2\)


How much can I expect to earn?

**Source** - O’Reilly 2017 Data Science Salary Survey
Why Loyola?

• creating ethical data scientists
• ethics integrated into the learning aims
• care for the whole person
• faculty-student relationships
• location, location, location
  • strong employers in Baltimore/Washington
  • NASA, NSA, NOAA, DOD, Lockheed Martin, Booz Allen Hamilton and many more
• helping students adjust to changing times
• educates students in an interdisciplinary field
• meets growing societal need
Program

- applied program
- cornerstone: 2-semester interdisciplinary practicum
- first semester: students design an individual or group project using data from an industrial partner
- second semester: complete the project
- work with companies, government agencies, and non-profits for projects with mentors
- program board: reviews design and completed project
Hybrid courses

- Each course will be delivered in a hybrid format.
- At least 50% of the course will be delivered in-person at the Columbia Graduate Center
- Up to 50% will be delivered on-line
- Accommodates the busy schedule of part-time students
Learning aims

• students will understand the underlying principles of data science and be able to keep up with this expanding field
• students will be proficient in analyzing complex data from diverse sources by discovering key relationships within the data
• students will be able to model data using machine learning techniques.
• students will be able to model data using statistical models
• students will be able to predict future outcomes that can be used to advise decision makers on their course of action
• students will be knowledgeable of general ethical principles, how these principles apply to data science, and the social context of data science
Mathematics/Statistics Prerequisites

- university-level calculus and at least one other university-level mathematics course
- introductory statistics
- the statistics prerequisite can be satisfied by taking GB 715 – Applied Business Statistics (or an approved introductory statistics course at another institution)
Computing Prerequisites

- introduction to computer science/programming
- students are expected
  - to use control structures including functions, if-statements, and loops to solve problems using Python
  - to utilize lists
  - to have some experience reading and writing files
- programming prerequisite can be satisfied by any of the following
  - prior coursework
  - professional experience
  - taking the online Computer Science I course at Loyola during the summer. This course teaches problem solving using Python.
  - taking an online programming course such as Code Academy’s Python Course with Projects. An online course will be followed by a proficiency exam administered by Loyola at the applicant's expense
<table>
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<th>Credit total</th>
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<td>CS703</td>
<td>Programming for Data Science</td>
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<td>ST710</td>
<td>Statistical Computing</td>
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<td>DS730</td>
<td>Introduction to Data Science</td>
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<td>DS851</td>
<td>Business Intelligence and Data Mining</td>
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Admission Process

- [http://www.loyola.edu/academics/data-science/admission](http://www.loyola.edu/academics/data-science/admission)
- Deadline: Fall term - May 15
- Online application
- Official transcripts from **all** colleges and universities attended
- Essay
- A number of merit-based scholarships will be awarded. No separate application is required.
Tuition and Financial Aid

$1000/ credit

Financial Aid information available at:
www.loyola.edu/department/financialaid/graduate

Financial Aid Questions:
Brandon Gumabon, bggumabon@Loyola.edu, 410-617-2559
Danielle Ballantyne, dballantyne@Loyola.edu, 410-617-5205

Visit www.loyola.edu/datascience to begin your application

THANK YOU
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