M.S. in Analytics
Concentration in Data Science

Georgetown University
The Graduate School of Arts & Sciences
Presenters

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Data Science Overview

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Data Science is rapidly growing interdisciplinary field that combines **computer science**, **statistics**, and **mathematical modeling** to obtain insights, knowledge, and predictive capability about processes from data.
What is Data Science

There is enormous need for talent in data science to sustain this revolution in business and industry.

In a recent report of the McKinsey Global Institute, "By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the knowhow to use the analysis of big data to make effective decisions."

SOURCE: McKinsey Global Institute analysis
Georgetown Graduate Analytics

M.S. in Analytics is an interdisciplinary degree program offered by The Graduate School of Arts & Sciences

The Graduate School of Arts & Sciences
Mathematics & Statistics
Computer Science
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Curriculum

33 Credit Program

• Online, 3-credit asynchronous summer prep course on advanced Python, R, and command line programming.
  • Taken during summer after admission acceptance.

• The five-course, 15-credit core is designed to give students a strong working knowledge of computer science and statistical methods central to data science.

• 15 additional elective credits offered by the Analytics program or partnership programs throughout the graduate school.

As the data science landscape continues to change and grow, so will our core and elective offerings.
## Curriculum

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Required</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number</td>
<td>Course Title</td>
<td></td>
</tr>
<tr>
<td>ANLY-500</td>
<td>Summer Programming Prep Course</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-501</td>
<td>Introduction to Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-502</td>
<td>Massive Data Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-503</td>
<td>Scientific and Analytical Visualization</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-511</td>
<td>Probabilistic Modeling and Statistical Computing</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-512</td>
<td>Statistical Learning for Analytics</td>
<td>3</td>
</tr>
</tbody>
</table>
## Electives Offered by the Analytics Program

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANLY-520</td>
<td>Effective Presentation for Technology &amp; Science</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-531</td>
<td>Databases</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-540</td>
<td>Technology &amp; Policy for Data Privacy</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-550</td>
<td>Structures and Algorithms for Analytics</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-561</td>
<td>Optimization</td>
<td>3</td>
</tr>
<tr>
<td>ANLY-905</td>
<td>Internship</td>
<td>.25</td>
</tr>
</tbody>
</table>

Additional electives are being developed in advanced machine learning, text analytics, and decision and game theoretic analytics.
## Electives

### Popular Offerings from Math & Comp Sci

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSC-455</td>
<td>Image Processing</td>
<td>3</td>
</tr>
<tr>
<td>COSC-572</td>
<td>Natural Language Processing</td>
<td>3</td>
</tr>
<tr>
<td>COSC-578</td>
<td>Statistical Machine Learning</td>
<td>3</td>
</tr>
<tr>
<td>COSC-589</td>
<td>Web Search and Sense-Making</td>
<td>3</td>
</tr>
<tr>
<td>MATH-412</td>
<td>Mathematics of Climate</td>
<td>3</td>
</tr>
<tr>
<td>MATH-611</td>
<td>Stochastic Simulation</td>
<td>3</td>
</tr>
<tr>
<td>MATH-640</td>
<td>Bayesian Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MATH-645</td>
<td>Categorical Data Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives also available in Public Policy, Business, and Biostatistics
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Application Materials

- Online Application
- Non-refundable Application Fee
- Resume or CV
- Statement of Purpose
- Supplementary Data Form
- Official Transcripts from all prior higher-education institutions
  - *International applicants who attended institutions outside the United States* must use a transcript evaluation service
- Official Recommendations (3)
- GRE score
- TOEFL / IELTS score, if applicable
Admission Process

Important Dates

- January 15 - deadline for priority consideration
- March 15 - deadline for International applicants
- April 01 - deadline for U.S. applicants
- Summer 2017 - Online Programming Prep Course
Admission Process

Prerequisite Coursework

- Multivariable Calculus  (3 credits)
- Linear Algebra  (3 credits)
- Calculus-based Statistics  (3 credits)
- Computer Programming (3 credits)
  - C++, Java, and/or Python
- Programming Languages
  - Python
  - R
  - UNIX/Command Prompt
Admission Process

Desired Coursework / Experience

• Data Structures
• Analysis of Algorithms
• Data bases
• Machine Learning
• Data Mining
• Computational Statistics
Admission Process

Scholarship & Financial Aid

A limited number of merit-based scholarships are awarded to exceptional applicants and to continuing students on a case-by-case basis.

There are opportunities for assistantships (research, teaching, grading) for Analytics students on a departmental need and student skill basis. These opportunities become available at the beginning of each semester.
Admission Process

Application Tips

*How to Impress the Review Committee*

- All-inclusive review of application materials
- *Statement of Purpose* – Why Georgetown, why Data Science?
- *Letters of Recommendation*
  - Education, Work, Life Experience
  - How did you stand out?
- Programming Experience
  - College-level coursework, Work experience, MOOCs, Certificates
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Applicant Demographics

### Gender
- Female: 52%
- Male: 48%

### Nationality
- Domestic: 19%
- International: 81%
Applicant Demographics

Most Frequent Applicant Undergrad Majors

- Mathematics: 73
- Economics: 35
- Statistics: 21
- Computer Science: 17
Applicant Demographics

Average Undergrad GPA Trends

- **2015-16**
  - Applied: 3.35
  - Admitted: 3.38
  - Enrolled: 3.30

- **2016-17**
  - Applied: 3.48
  - Admitted: 3.62
  - Enrolled: 3.55

Legend:
- Applied
- Admitted
- Enrolled
Applicant Demographics

Applicant Status

- Full Time: 94%
- Part Time: 6%

Work Experience (years)

- <= 1: 50%
- 1 - 3: 32%
- 3 - 5: 7%
- >= 5: 11%
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Question & Answer Session