M.S. in Analytics

Concentration in Data Science

Georgetown University

The Graduate School of Arts & Sciences

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Presenters

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Professor and Program Director

Heather Connor
Program Coordinator

Panelists: Joo Chung (alum)
Kendra Gedney (student)
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

There is huge demand for talent to supply the extraordinary growth of data analytics in business and industry. A recent Forbes web posting (May 2017) reports that annual demand for data scientists (including data developers and engineers) will reach 700,000 by 2020.

SOURCE: McKinsey Global Institute analysis
Georgetown MS Analytics

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

- Computer Science
- Mathematics & Statistics
- Computer Science
Curriculum

30 Credit Program

• **Online**, 0-credit, FREE, prep course on advanced Python, R, and command line programming in the summer prior to matriculation (Georgetown Summer Session II: Mid-July to Mid-August)

• Five-course (15-credits) core provides strong working knowledge of computational and statistical methods central to data science.

• Five-course (15 credits) of electives from the Analytics program or departments throughout the graduate school.

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

## Required Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANLY-501</td>
<td>Introduction to Data Analytics</td>
</tr>
<tr>
<td>ANLY-502</td>
<td>Massive Data Fundamentals</td>
</tr>
<tr>
<td>ANLY-503</td>
<td>Scientific and Analytical Visualization</td>
</tr>
<tr>
<td>ANLY-511</td>
<td>Probabilistic Modeling and Statistical Computing</td>
</tr>
<tr>
<td>ANLY-512</td>
<td>Statistical Learning for Analytics</td>
</tr>
</tbody>
</table>
## Electives Offered by Analytics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ANLY-520</td>
<td>Effective Presentation for Technology &amp; Science</td>
</tr>
<tr>
<td>ANLY-550</td>
<td>Structures and Algorithms for Analytics</td>
</tr>
<tr>
<td>ANLY-561</td>
<td>Optimization</td>
</tr>
<tr>
<td>ANLY-580</td>
<td>Natural Language Processing</td>
</tr>
<tr>
<td>ANLY-590</td>
<td>Deep Learning</td>
</tr>
<tr>
<td>ANLY-601</td>
<td>Advanced Pattern Recognition</td>
</tr>
</tbody>
</table>
Curriculum

<table>
<thead>
<tr>
<th>Electives from Math &amp; Comp Sci</th>
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<tbody>
<tr>
<td>COSC-544 Probabilistic Proof Systems</td>
</tr>
<tr>
<td>COSC-578 Statistical Machine Learning</td>
</tr>
<tr>
<td>COSC-579 Computer Vision</td>
</tr>
<tr>
<td>COSC-589 Web Search and Sense-Making</td>
</tr>
<tr>
<td>MATH-412 Mathematics of Climate</td>
</tr>
<tr>
<td>MATH-611 Stochastic Simulation</td>
</tr>
<tr>
<td>MATH-645 Categorical Data Analysis</td>
</tr>
</tbody>
</table>

and others from Math and CS

Electives are also available in Public Policy, and will be in Business and Biostatistics
Applicant Demographics (F 2017)

Gender

- Male: 51%
- Female: 49%

Nationality

- Domestic: 15%
- International: 85%
Applicant Demographics

Undergrad (mean) GPA Trends

<table>
<thead>
<tr>
<th></th>
<th>2015--16</th>
<th>2016--17</th>
<th>2017--18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>3.35</td>
<td>3.48</td>
<td>3.48</td>
</tr>
<tr>
<td>Admitted</td>
<td>3.38</td>
<td>3.62</td>
<td>3.59</td>
</tr>
<tr>
<td>Enrolled</td>
<td>3.3</td>
<td>3.55</td>
<td>3.57</td>
</tr>
</tbody>
</table>
Applicant Demographics (F 2017)

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

Work Experience (years)
- < 1: 45%
- 1 - 3: 39%
- 3 - 5: 12%
- > 5: 4%
Application Deadlines

• January 15 --- Priority Scholarship Consideration
• March 15 --- Deadline for International Students
• April 1 --- Deadline for Domestic Students
Admission Process

Application Materials

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

Prerequisites

- 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 and R. Some exposure to command line interface (e.g. Linux) is helpful.
Admission Process

Bonus 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 based on departmental need and student skills. 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
  - How did you stand out?
- Programming Experience
  - College-level coursework, Work experience, MOOCs, Certificates
Internships, Research, and Post-Graduate Employment

• The Cawley Center offers Career Fairs for all Georgetown Students. Analytics program now hosting career mini-fairs.

• The Analytics program has placed interns at Lawrence Livermore National Laboratory (LLNL), The Peace Corps, The Urban Institute, PwC, Ancestry.com, Amazon.com and many others.

• We have alumni working at Booz Allen Hamilton, Amazon.com, US Digital Services at the White House, Capital One, American Society for Engineering Education, Deloitte, Discover Financial, and others.
Internships, Research, and Post-Graduate Employment

• Georgetown University is developing a strategic liaison with LLNL with Analytics in a prime role.

• There are paid research opportunities on campus (e.g. Public Policy, Computer Science, ...).

• The Analytics program continually builds new corporate relationships to enable curriculum development, internships, and post-graduate employment.
Additional Information

Thank You for Attending!

If you have other questions that we were unable to answer during this webinar, please email

gradanalytics@georgetown.edu
Question & Answer
Competitive Program

“Where did you go rather than Georgetown MS Analytics?” (39 respondents)