COLLEGE OF PROFESSIONAL STUDIES

MASTER OF SCIENCE IN DATA SCIENCE

Statistics and Analytics for the Real World

Solving real-world problems through statistical methods is the core of the Master of Science in Data Science program at National University. Coursework will ground you in how to apply statistical techniques and tools, and how to use methods such as in-depth analysis, synthesis, and evaluation for careers that could include the advanced application of data analytics in unique fields. The curriculum has been designed to include core courses in statistical topics; state-of-the-art analytical software will be used in all courses.

The program covers:
- Preparing you for careers using analytical database knowledge
- Skills and techniques in applying analytical database tools, techniques, and methods
- Analytical and predictive modeling, data acquisition, data mining, data security, and privacy
- How to design, develop, implement, program, and maintain data marts and data warehouses

Program highlights:
- Entire program can be completed online
- Construct data files using advanced statistical and data programming techniques to solve practical problems
- Design an analytic strategy to frame a potential issue and solution relevant to the community and stakeholders
- Develop team skills to ethically research, develop, and evaluate analytic solutions to improve organizational performance
- Evaluate machine learning methods and strategies for advanced data mining

Online and On-campus Programs
Monthly Starts and Accelerated Classes
WSCUC Accredited

LEARN MORE TODAY
The Master of Science in Data Science program is designed to provide students with a comprehensive foundation for applying statistical methods to solve real-world problems. One goal of this program is to prepare students for careers in data science with a broad knowledge of the application of statistical tools, techniques, and methods as well as the ability to conduct in-depth analysis, synthesis, and evaluation. Another goal is to prepare students for careers with analytical database knowledge, the ability to apply analytical database tools, techniques, and methods, and the ability to design, develop, implement, program, and maintain data marts and data warehouses.

To address the spectrum of issues in data science, this curriculum has been designed to include core courses in statistical topics as well as areas for advanced applications of data science in unique fields. Core topics include data modeling, data management, data mining, continuous and categorical data methods and applications, teamwork, and communication. Advanced topics include how to develop, implement, and maintain the hardware and software tools needed to make efficient and effective use of big data including databases, data marts, data warehouses, machine learning, and analytic programming. State-of-the-art analytical software will be used in all courses.

The culmination of this program is a three-month capstone project where real data from sponsoring organizations or publicly available data will be used to solve specialized problems in analytical database design, programming, implementation, or optimization.

Previous academic studies or industrial experience in such areas as math, statistics, computer programming, engineering, or science are helpful prerequisites for this master’s program. This degree is appropriate for both experienced professionals as well as recent college graduates.

**Program Learning Outcomes**

Upon successful completion of this program, students will be able to:

- Integrate components of data science to produce knowledge-based solutions for real-world challenges using public and private data sources.
- Evaluate data management methods and technologies used to improve integrated use of data.
- Construct data files using advanced statistical and data programming techniques to solve practical problems in data analytics.
- Design an analytic strategy to frame a potential issue and solution relevant to the community and stakeholders.
- Develop team skills to ethically research, develop, and evaluate analytic solutions to improve organizational performance.
- Design data marts.
- Analyze complex database queries for real-world analytical applications.
- Design medium-to-large data warehouses.
- Evaluate machine learning methods and strategies for advanced data mining.

**Degree Requirements**

To obtain the Master of Science in Data Science, students must complete at least 54 graduate units. A total of 13.5 quarter units of graduate credit may be granted for equivalent graduate work completed at another regionally accredited institution, as it applies to this degree, and provided the units were not used in earning another advanced degree. Please refer to the graduate admissions requirements for specific information regarding application and evaluation.

**Core Requirements**

(13 courses; 58.5 quarter units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAN 600</td>
<td>Fundamentals of Analytics</td>
<td></td>
</tr>
<tr>
<td>ANA 605</td>
<td>Analytic Models &amp; Data Systems</td>
<td></td>
</tr>
<tr>
<td>ANA 610</td>
<td>Data Management for Analytics</td>
<td></td>
</tr>
<tr>
<td>ANA 615</td>
<td>Data Mining Techniques</td>
<td></td>
</tr>
<tr>
<td>ANA 620</td>
<td>Continuous Data Methods, Appl.</td>
<td>ANA 615</td>
</tr>
<tr>
<td>ANA 625</td>
<td>Categorical Data Methods, Appl.</td>
<td>ANA 620</td>
</tr>
<tr>
<td>ANA 630</td>
<td>Advanced Analytic Applications</td>
<td>ANA 625</td>
</tr>
<tr>
<td>ANA 650</td>
<td>Database Design for Analytics</td>
<td></td>
</tr>
<tr>
<td>ANA 655</td>
<td>Data Warehouse Design &amp; Devel.</td>
<td>ANA 650</td>
</tr>
<tr>
<td>ANA 660</td>
<td>Advanced SQL Programming</td>
<td></td>
</tr>
<tr>
<td>ANA 665</td>
<td>Data Mining &amp; Machine Learning</td>
<td></td>
</tr>
<tr>
<td>ANA 699A</td>
<td>Analytic Capstone Project I</td>
<td></td>
</tr>
<tr>
<td>ANA 699B</td>
<td>Analytic Capstone Project II</td>
<td></td>
</tr>
</tbody>
</table>

For complete program information, see the National University Catalog 82, effective 10/2018.