NATIONAL UNIVERSITY

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 Analytics 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

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NATIONAL UNIVERSITY

MASTER OF SCIENCE IN DATA SCIENCE

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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)

BAN 600	Fundamentals of Analytics
ANA 605	Analytic Models & Data Systems
	Prerequisite: BAN 600
ANA 610	Data Management for Analytics
ANA 615	Data Mining Techniques
ANA 620	Continuous Data Methods, Appl.
	Prerequisite: ANA 615
ANA 625	Categorical Data Methods, Appl.
	Prerequisite: ANA 620
ANA 630	Advanced Analytic Applications
	Prerequisite: ANA 625
ANA 650	Database Design for Analytics
ANA 655	Data Warehouse Design & Devel.
	Prerequisite: ANA 650

ANA 660	Advanced SQL Programming
	Prerequisite: ANA 655
ANA 665	Data Mining & Machine Learning
	Prerequisite: ANA 660
ANA 699A	Analytic Capstone Project I
	Prerequisite: All core in an analytics program with a minimum GPA of 3.0 or approval of Academic Program Director.
ANA 699B	Analytic Capstone Project II
	Prerequisite: ANA 699A