## Master of Science

# Data Science and Analytics with a Concentration in Engineering and Big Data Analysis (MS)

Sampath Jayarathna, Graduate Program Director
Krishnanand Kaipa, Engineering & Big Data Analytics Concentration Coordinator

## Engineering & Big Data Analytics Concentration

The purpose of this concentration is to provide students with a thorough understanding of the methods and technologies to handle big data and to instill engineering problem-solving skills rooted in big data solutions. It will further prepare them to become professionals trained in advanced data analytics, with the ability to transform large streams of multiple data sources into understandable and actionable information for the purpose of making decisions. The coursework (12 credits) will enable students to learn and practice the following competencies: data collection, data storage, processing and analyzing data, reporting statistics and patterns, drawing conclusions and insights and making actionable recommendations.

## Admission

The requirements for admission to the Master of Science in Data Science and Analytics are as follows:

1. A baccalaureate degree in computer science, electrical and/or computer engineering, mathematics, statistics, information system & technology, or a related field from a regionally-accredited institution or an equivalent institution outside the U.S.; students holding a bachelor's degree in an unrelated field will need competency in topics related to basic statistics and computer science.
2. GRE scores with a 50% or better attainment on quantitative reasoning (or waiver (https://www.odu.edu/sites/default/files/documents/GRE-Waiver_1.pdf))
3. Current scores on the Test of English as a Foreign Language (TOEFL) of at least 230 on the computer-based TOEFL or 79 on the TOEFL iBT, or IELTS 6.5 overall.

Students with previously completed work at a regionally-accredited institution may submit a request for a maximum of 12 elective graduate credit hours to be transferred into the program. If approved by the admission committee, it will be added to the transcript.

## Curriculum Requirements

The program requires 30 credit hours. The curriculum includes two concentrations: computational data analytics and, business intelligence and analytics. A capstone project is required.

### Data Science & Analytics Core

| Core Requirements | | |
|---|---|---|
| DASC/CS 620 | Introduction to Data Science and Analytics | 3 |
| CS 624 | Data Analytics and Big Data | 3 |
| CS 625 | Data Visualization | 3 |
| STAT 603 | Probability Models for Data Science and Analytics | 3 |
| STAT 604 | Statistical Tools for Data Science and Analytics | 3 |
| **Total Credit Hours for Concentration** | | **12** |
| **Capstone Course** | | **3** |
| **Total Credit Hours** | | **30** |

## Engineering & Big Data Analytics Concentration

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|---|---|---|
| Select two of the following: | | 6 |
| ENMA 754 | Big Data Fundamentals | |
| MSIM 715 | High Performance Computing Simulation and Data Analytics | |
| ECE 607 | Machine Learning I | |
| Select two of the following: | | 6 |
| ECE 784 | Computer Vision | |
| MSIM 695 | Topics in Modeling and Simulation | |
| MSIM 574 | Transportation Data Analytics | |
| MAE 740 | Autonomous and Robotic Systems Analysis and Control | |
| CEE 722 | Cluster Parallel Computing | |
| ECE 651 | Statistical Analysis and Simulation | |
| ECE 780 | Machine Learning II | |
| **Total Credit Hours** | | **12** |