

DATA SCIENCE AND ANALYTICS (M.S.)

Master of Science Program

Program Code: MS-AS

Major Code: DSA

Data Science and Analytics Interdisciplinary Unit

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Science and Math Complex 379

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dataanalytics.buffalostate.edu/ ([https://](https://dataanalytics.buffalostate.edu/)

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The M.S. in Data Science and Analytics offers advanced practical training for in-demand modern skills to manipulate, organize and present data essential for informed, evidence-based decision-making and planning across industries. This program is open to students with basic programming and statistical skills from all undergraduate majors. Courses cover highly marketable techniques using data analytics tools, computer coding, machine learning, geospatial programming, data design, visualization, and analysis. Students will develop professional skills in project management, communications, data governance, and creative problem-solving for effective collaboration. Unique components of the program include workshops with local experts and an applied-skills internship with industry partners.

Admission Requirements

1. A bachelor's degree from an accredited college or university with a minimum cumulative GPA of 2.5 (4.0 scale).
2. A two- to three-page statement of intent (essay) that includes the following:
 - educational and professional objectives; and
 - an explanation of the reasons for interest in data science and analytics
3. An interview with the program coordinator or a DSA faculty member. The student will be contacted for an appointment after the completed application is received.

In addition, all applicants must review the Admission to a Graduate Program (<http://ecatalog.buffalostate.edu/graduate/admission-graduate-program/>) section in this catalog.

Program Requirements

| Code | Title | Credit Hours |
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| Required Courses (18 credit hours) | | |
| CIS 512 | INTRODUCTION TO DATA SCIENCE AND ANALYTICS | 3 |
| CIS 600 | MACHINE LEARNING FOR DATA SCIENCE | 3 |

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| MAT 616 | ELEMENTS OF MATHEMATICS, PROGRAMMING AND COMPUTER SCIENCE FOR DATA SCIENCE | 3 |
| MAT 646 | INTRODUCTION TO STATISTICS FOR DATA SCIENCE | 3 |
| SPF 689 | METHODS AND TECHNIQUES OF EDUCATIONAL RESEARCH | 3 |
| XXX 690 or DSA 690 | MASTER'S PROJECT (where XXX is the department of the student's Master's Project Adviser) | 3 |
| Elective Courses (12 credit hours) | | 12 |
| Choose four courses by advisement from the following (each course is 3 credit hours) | | |
| BUS 519 | COMMUNICATION FOR LEADERS AND MANAGERS | |
| COM 547 | DATA ANALYTICS FOR STRATEGIC COMMUNICATION | |
| DSA 501 | DATA ORIENTED COMPUTING AND ANALYTICS | |
| DSA 601 | MACHINE LEARNING MODELS IN PYTHON | |
| DSA 610 | DATABASES AND THE DATA SCIENCE INFORMATION LIFE CYCLE | |
| DSA 650 | DATA STRATEGY AND GOVERNANCE | |
| GEG 584 | GEOSPATIAL PROGRAMMING | |
| GEG 585 | INTERACTIVE AND WEB-BASED MAPPING | |
| HEA 730 | DATA VISUALIZATION AND STORYTELLING | |
| PSM 601 | PROJECT MANAGEMENT FOR MATH AND SCIENCE PROFESSIONALS | |
| PSM 602 | COMMUNICATION STRATEGIES FOR MATH AND SCIENCE PROFESSIONALS | |
| Or additional elective courses by advisement | | |
| Total Credit Hours | | 30 |

Students will:

1. select and apply an appropriate statistical, mathematical or computational model for a given quandary

2. acquire data from data scraping and open sources and understand the ethical and legal ramifications of data acquisition
3. store, clean, organize, and manipulate real world data from multiple sources
4. compose and present an effective oral, written report or dynamic dashboard, to a lay audience (including storytelling and data visualization) that enhances the audience's understanding and reveals properties of the data
5. use the appropriate software or programming application (Python, SQL, SAS, SPSS, Excel) to manage and analyze data
6. perform effectively as a member of a team to execute a project and will understand what contributes to team success
7. integrate context specific information into their data manipulation allowing them the flexibility to interpret data from many different environments