

# DATA SCIENCE AND APPLIED ARTIFICIAL INTELLIGENCE, GRADUATE CERTIFICATE

The graduate Certificate in Data Science and Applied AI is designed for students who desire a sequence of graduate-level courses that focus specifically on Data Science and Artificial Intelligence and that can be accessed both online and in-person for maximum flexibility.

Data Science - the analysis of data from any discipline to extract meaningful insights for strategic, operational, and tactical decision making - is increasingly in demand in business, economics, the sciences, politics, and many other disciplines. Faculty members from across campus team up to deliver this program collaboratively, reflecting the multidisciplinary nature of this field. Artificial Intelligence leverages insights from data science to enhance the capabilities of human decision makers.

The Certificate requires 15 credits across five courses, with one course in each of the categories: data science, statistics, programming, and artificial intelligence, and one other course selected to reflect the student's primary area of interest.

## Admission Requirements

### Application Deadlines

Application deadlines vary by program, please review the application deadline chart (<http://uwm.edu/graduateschool/program-deadlines/>) for specific programs. Other important dates and deadlines can be found by using the One Stop calendars (<https://uwm.edu/onestop/dates-and-deadlines/>).

### Admission

The minimum GPA for admission is 2.75 in a prior bachelor's or post-baccalaureate degree (or cumulative credits after admission to a dual bachelor-master's degree program). Students applying to the program are expected to have proficiency, demonstrated through coursework, exams, or a portfolio, in the following areas: Linear Algebra (3 credits), Multivariable Calculus (4 credits), Statistics (3 credits), and Computer Literacy (6 credits). Those without these proficiencies may be admitted when they have 6 credits or fewer of the proficiency requirements remaining to be completed, but proficiency coursework does not count towards the Certificate.

### Application

- Students wishing to obtain this certificate must declare their intention by applying to the program office or director.
- All graduate certificate applicants—even those already enrolled in a UWM graduate program—must apply to the Graduate School through the Panthera Admission Application (<https://graduateschool-apply.uwm.edu/>).
- Graduate degree and previously admitted graduate non-degree students who decide to pursue a certificate program must submit the Panthera application before completing 6 credits in the certificate sequence.
- Applicants must possess a baccalaureate degree and have a minimum 2.75 cumulative undergraduate grade point average to be admitted into a certificate program.

## Credits and Courses

The Certificate requires 15 credits across five courses, with one course in each of the categories: data science, artificial intelligence, statistics, and programming, and one other course selected to reflect the student's primary area of interest.

Code	Title	Credits
<b>Data Science</b>		
Select one of the following:		3
INFOST 582G	Introduction to Data Science	
BUS ADM 767	Ideas and Applications of Data Science in Different Fields	
BUSMGMT 709	Predictive Analytics for Managers	
COMPSCI 425G	Introduction to Data Mining	
<b>Artificial Intelligence</b>		
Select one of the following:		3
BUS ADM 745	Artificial Intelligence for Business	
BUS ADM 812	Machine Learning for Business	
COMPSCI 411G	Machine Learning and Applications	
COMPSCI 422G	Introduction to Artificial Intelligence	
COMPSCI 710	Artificial Intelligence	
COMPSCI 711	Introduction to Machine Learning	
<b>Statistics Courses</b>		
Select one of the following:		3
ATM SCI 500G	Statistical Methods in Atmospheric Sciences	
BUS ADM 754	Statistical Analysis	
INFOST 687G	Data Analysis for Data Science	
PH 702	Introduction to Biostatistics	
<b>Programming Courses</b>		
Select one of the following:		3
BUSMGMT 744	R Programming for Business Analytics	
COMPST 702	Introductory Programming Using Python	
COMPSCI 715	Programming for Machine Learning	
<b>Elective Course</b>		
Select one course from the MSDS curriculum subject to the approval of the Program Director, who will ensure curricular duplication is minimized.		3
<b>Total Credits</b>		<b>15</b>

## Additional Requirements

### Transfer Credit

The program follows the standard rules for certificates and allows up to three (3) credits of prior graduate-level coursework to be transferred. All transfer credits are subject to Graduate School transfer policy and must be approved by the Program Director of the graduate Certificate in Data Science and Artificial Intelligence program.

### Grade Point Average Requirement

In line with Graduate School policy, completion of the Certificate requires a cumulative GPA in program courses of at least 3.00.

## **Time Limit**

Certificate requirements must be completed within four (4) years of initial enrollment in the program.

## **Articulation with Degree Programs**

1. Credits and courses required for a certificate may double count toward meeting UWM graduate degree requirements subject to the following restrictions:
  - Degree programs must approve the courses from certificates that can double count toward the degree.
  - All credits taken in completion of certificate requirements may count towards a UWM graduate degree as long as they do not contribute more than 90% of the total credits needed to obtain the degree. (Note: Students in PhD programs must still complete the minimum residency requirements)
  - Certificate courses used toward meeting degree requirements must be completed within the time limit for transfer credit.
2. Courses completed for a degree may be counted toward a subsequent certificate, subject to all certificate policy requirements.
3. A course may count toward no more than one certificate and one degree.
4. Students may not earn a certificate subsequent to a concentration in the same area.