

# BACHELOR OF SCIENCE DATA ANALYTICS

STEM DESIGNATED

Prepare for a career in a high-demand field!

“Big Data” is everywhere! All industries rely on and use data to make important decisions – it’s not just tech companies like Google or Facebook that need skilled employees who can work with data. Manufacturers need to understand the demand for their product and the shopping habits of their customers. The service sector needs to understand product variations and pricing – for example, airlines that need to schedule different routes and different pricing option for a single flight. Retailers need to understand traffic patterns of in-store shoppers to site new locations. Consulting firms need to crunch data related to the behavior of voters, future college students, consumers of news so they can best advise their clients. And of course tech companies need to understand the browsing styles of online users. Whether your career plans involve working for an ad agency, a pharmaceutical manufacturer, a health care system, or an online platform, a degree in data analytics can take you there.

## WHAT IS DATA ANALYTICS

Our data analytics degree is interdisciplinary because data analysis takes place in every type of industry. Students will learn the foundations of analysis – this involves calculus, statistics, data mining, and computer programming – and how they are used in the real-world to solve real business problems. Equally as important, students will learn how to present data in a business setting – how to formulate and pose the problem; how to gather, validate and explain the data; and how to present scenarios and options to solve the problem at hand using data. Such communication skills are also critical to becoming a successful data analyst who is trusted by management as a credible and articulate resource within the company. A well-trained data analyst therefore serves as a bridge between the data and the users of the data, putting meaning and context to the data while also making sure data is used in an ethical manner.

## HOW IS DATA ANALYTICS DIFFERENT FROM DATA SCIENCE?

Data analysts and data scientist fill related and complementary positions in a company and must work closely together. A data scientist or data engineer has much more training and education in math and computer science and their duties are more related to the actual computer programming required to build a good database and extract the right data. The scientist/engineer must collaborate with an analyst to understand what data is needed for the problem at-hand and what type of data needs to be generated so that they can write their programming code accordingly. Data scientists are also the people who usually create the algorithms needed to analyze data. If you are more interested in computer programming and algorithms, you should explore UWM’s bachelor’s degree in data science instead.



## JOB OUTLOOK

According to a report from the employment outlook firm Burning Glass, there are currently 1,066,354 employed data analysts and 61,799 data scientists in the American workforce. The U.S. Bureau of Labor Statistics estimates that over the next ten years the number of positions for data analysts will grow by 25% while the number of openings for data scientists will grow by 20%.

## DATA ANALYTICS REQUIREMENTS

Because data analysts are found across industries, our program provides maximum flexibility to pursue related coursework in specific disciplines. For example, if you want to work with healthcare data, coursework in nursing, healthcare administration, or public health would be taken in order to gain background knowledge specifically in that industry. Having that specific contextual knowledge plus foundational analysis skills will make your transition to a job in healthcare easier! On the other hand, if your interest is business or marketing, you can take coursework in marketing and then courses in data analytics to become a marketing data analyst. So, the BSDA allows you to practice data analytics in any field of your choice.

**CONTACT US - ADMISSIONS** For admissions or application questions, contact [iss@uwm.edu](mailto:iss@uwm.edu) and visit our international admissions page [uwm.edu/cie/international-admissions/](http://uwm.edu/cie/international-admissions/)

**CONTACT US - ACADEMICS** Questions about program requirements or credits should be sent to the program advisor Chris Pahl at [datascience-degrees@uwm.edu](mailto:datascience-degrees@uwm.edu)

### FOUNDATIONAL MATH/PROGRAMMING (16 CREDITS)

Math 240	Matrices and Applications
Math 212	Survey in Calculus and Analytical Geometry II
Bus Adm 210 or 211, Econ 210, or MthStat 215	choose one statistical analysis course
Bus Adm 230, HS 224, or CompSci 150	choose one computer literacy course (or CompSci 250 for intro programming)
Comp Sci 202, 240, or 250, or InfoSt 350	choose one intro programming course (or CompSci 251 if you chose CompSci 250 above)

### PROGRAMMING CORE (6 CREDITS)

Choose two not already selected:

Bus Adm 335	Introduction to Business Application Development
Bus Adm 432	Object-Oriented Systems Development
InfoSt 350	Introduction to Application Development
InfoSt 440	Web Application Development
BioSci 502	Introduction to Programming and Modeling in Ecology and Evolution
CompSci 351	Data Structures and Algorithms
MthStat 216 or MthStat 566	Introduction to Statistical Computing and Data Science or Computational Statistics
Geog 325	Intro to Data Science with R, Python, and GIS
Geog 215	Intro to Geographic Information Science
Geog 525	Geographic Information Science

### VISUALIZATION (3 CREDITS) Choose one:

Bus Adm 438	Information Technology Management Topics: Social Network Analytics
InfoSt 370	Data Analysis and Visualization for the Information Professional
Geog 405	Cartography

### DATABASES (3 CREDITS) Choose one:

Bus Adm 434	Data Base Management Systems
InfoSt 410	Database Information Retrieval Systems
HCA 537	Health Information Technology and Management
Comp Sci 557	Intro to Database Systems

### COMMUNICATION & ETHICS (6 CREDITS)

English 310	Writing, Speaking and Technoscience in the 21st Century
Bus Adm 530, HS 311, Philos 237, CompSci 395, Social 327, or InfoSt 661	Choose one ethics course

### ANALYTICS & DATA MINING (6 CREDITS)

Choose two:

Bus Adm 336	Enterprise Systems and Data Analytics
Bus Adm 536	Business Intelligence
Infost 582	Intro to Data Science
Infost 687	Data Analysis for Data Science
AtmSci 600	Data Analytics
CompSci 411	Machine Learning and Applications
Comp Sci 422	Introduction to Artificial Intelligence
CompSci 425	Intro to Data Mining
Econ 411	Economic Forecasting Methods
Infost 691	Special Topics - Computer Forensics (or other relevant sub-titles)

### ADVANCED STATISTICS (6 CREDITS)

Choose two:

MthStat 361	Introduction to Mathematical Statistics I
MthStat 362	Introduction to Mathematical Statistics II
AtmSci 500	Statistical Methods in Atmospheric Sciences
Econ 413	Statistics for Economics
Econ 513	Intro to Econometrics

### SPECIALIZATION (24 CREDITS)

Choose a specialization and dive deeper into advanced coursework to prepare for a data job in that industry sector. A full list of options will be available on our website.

<b>Business</b>	Sample courses: Business Intelligence, Intro to Connected Systems for Business, Enterprise Systems Concepts and Issues, Financial Modeling, Supply Chain Analytics
<b>Information Science and Technology</b>	Sample courses: Web Design, Survey of Information Security, Native Mobile Applications, or Ethical Hacking
<b>Health</b>	Sample courses: Healthcare Database Design and Management, Public Health Research Methods, Language of Medicine, Introduction to Diagnostic Medicine
<b>Natural Science</b>	Sample courses: Regression Analysis, Genomic Data Analysis, Sequence Analysis, Intro to Probability Models
<b>Social Science</b>	Sample courses: Research Methods in Psychology, Experimental Design, Introduction to Crime Analysis, Political Data Analysis
<b>Geography</b>	Sample courses: Remote Sensing: Environmental and Land Use Analysis, Spatial Analysis, Intermediate Geographic Information Science, Watershed Analysis

### CAPSTONE (3 CREDITS)

Complete an experiential learning component such as an internship, research project or capstone project that blends classroom learning with real-life work experience.

### OTHER REQUIREMENTS

Students are required to satisfy other general requirements and may have room in their schedule for electives.

- English 102 College Writing and Research and English 205 Business Writing
- 3 arts credits chosen from a list
- 6 humanities credits chosen from a list
- 6 natural science credits chosen from a list and including at least one lab
- 6 social science credits chosen from a list
- World language – students complete through the second level of a language other than English either through two years of high school language or two semesters of college language
- Electives to reach 120 credits to graduate