

DATA ANALYTICS, BS (COLLEGE OF LETTERS AND SCIENCE)

There is data all around us. Businesses are looking to hire people who can manage that data, analyze it, and use it for more effective decision making. The Bachelor of Science in Data Analytics (BSDA) is designed for you to learn those skills.

The Bachelor of Science in Data Analytics is a special degree program that includes courses from the College of Letters and Science, the School of Information Studies, and other UWM colleges to provide a solid general education as well as an interdisciplinary approach to data analytics.

The BS in Data Analytics at UWM is unique because its goal is to train students to practice data analytics in a field they are most passionate about. If you enroll in this program, you will take foundational classes to build core data analytics skills, then specialize in data analytics for business, health, information science, natural sciences, social sciences, or geographic information sciences.

The career prospects for individuals with data analytics degrees are very positive. Data analytics skills are being used not only in industries that are obviously oriented toward using data, like information technology, sciences and business, but also in fields that more recently have begun to take full advantage of their data resources, like agriculture, atmospheric sciences, environmental sciences, geography, and healthcare.

Requirements

The B.S. in Data Analytics requires 33 credits in General Education courses, 16 credits in Foundation courses, 33 credits in Core courses, 24 credits in a Specialization, and electives to reach a total of 120 credits.

General Education Competency and Breadth Courses (<http://catalog.uwm.edu/policies/undergraduate-policies/#bachelorsdegreegeneraleducation>)

Code	Title	Credits
Oral and Written Communication Part A		
Grade of C or better in ENGLISH 102 or equivalent		3
Oral and Written Communication Part B		
ENGLISH 205	Business Writing	3
Quantitative Literacy Part A		
Grade of C or better in one of the following:		3
MATH 105	Introduction to College Algebra	
MATH 108	Algebraic Literacy II	
Equivalent course		
Quantitative Literacy Part B		
Choose one of the following:		3
MATH 208	Quantitative Models for Business	
MATH 211	Survey in Calculus and Analytic Geometry I	
MATH 213	Calculus with Life Sciences Applications	
MATH 221	Honors Calculus I	
MATH 231	Calculus and Analytic Geometry I	

Breadth Courses

Arts GER course	3
Humanities GER courses	6
Natural Science GER courses (including one lab or field experience)	6
Social Science GER courses	6
Foreign Language (two semesters or equivalent)	0-10
Total Credits	33

Foundation Courses

Code	Title	Credits
Mathematics		
MATH 240	Matrices and Applications	
MATH 212	Survey in Calculus and Analytic Geometry II (4 credits)	
<i>Choose one of the following (3 credits)</i>		
BUS ADM 210	Statistical Modeling in Business Analytics	
BUS ADM 211	Business Scholars: Statistical Modeling in Business Analytics	
ECON 210	Economic Statistics	
MTHSTAT 215	Elementary Statistical Analysis	
Computer Literacy 1 ¹		3
<i>Choose one of the following (3 credits)</i>		
BUS ADM 230	Introduction to Information Technology Management	
HS 224	Computational Tools for Healthcare Professionals	
COMPSCI 150	Survey of Computer Science	
Computer Literacy 2 ¹		3
<i>Choose one of the following (3 credits)</i>		
COMPSCI 202	Introductory Programming Using Python	
COMPSCI 240	Introduction to Engineering Programming	
COMPSCI 250	Introductory Computer Programming	
INFOST 350	Introduction to Application Development	
Total Credits		16

¹ Computer Literacy 1 and 2 can be satisfied by COMPSCI 250 and COMPSCI 251.

Core Courses

Code	Title	Credits
Programming Languages		
<i>Choose two of the following (6 credits)</i>		
BUS ADM 335	Introduction to Business Application Development	
BUS ADM 432	Object-Oriented Systems Development	
INFOST 350	Introduction to Application Development (Cannot be used in this category if it was used to satisfy the 'Computer Literacy 2' requirement)	

INFOST 440	Web Application Development
BIO SCI 502	Introduction to Programming and Modeling in Ecology and Evolution
COMPSCI 351	Data Structures and Algorithms
MTHSTAT 216	Introduction to Statistical Computing and Data Science
GEOG 325	Introduction to Data Science with R, Python, and GIS (4 credits)
Databases	3
<i>Choose one of the following (3 credits)</i>	
BUS ADM 434	Data Base Management Systems
INFOST 410	Database Information Retrieval Systems
HCA 537	Health Information Technology and Management
COMPSCI 557	Introduction to Database Systems
Analytics and Big Data/Data Mining	6
<i>Choose two of the following (6 credits)</i>	
BUS ADM 336	Enterprise Systems and Data Analytics
BUS ADM 536	Business Intelligence
INFOST 582	Introduction to Data Science
INFOST 687	Data Analysis for Data Science
INFOST 691	Special Topics in Information Science: ('Computer Forensics' is eligible. Other topics offered in a specific offering of this course must be approved for the degree by the Director of the Program.)
ATM SCI 600	Data Analytics
COMPSCI 411	Machine Learning and Applications
COMPSCI 422	Introduction to Artificial Intelligence
COMPSCI 425	Introduction to Data Mining
ECON 411	Economic Forecasting Methods
GEOG 215	Introduction to Geographic Information Science
GEOG 525	Geographic Information Science (4 credits)
Visualization	3
<i>Choose one of the following (3 credits)</i>	
BUS ADM 438	Information Technology Management Topics:
INFOST 370	Data Analysis and Visualization for the Information Professional
GEOG 405	Cartography (4 credits)
Statistics	6
<i>Choose two of the following (6 credits)</i>	
MTHSTAT 361	Introduction to Mathematical Statistics I
MTHSTAT 362	Introduction to Mathematical Statistics II
ATM SCI 500	Statistical Methods in Atmospheric Sciences
ECON 413	Statistics for Economists
ECON 513	Introduction to Econometrics
Communication	3

ENGLISH 310	Writing, Speaking, and Technoscience in the 21st Century
Ethics	3
<i>Choose one of the following (3 credits)</i>	
BUS ADM 530	Privacy and Information Security for Business
INFOST 661	Information Ethics
HS 311	Law and Ethics for Healthcare Professionals
COMPSCI 395	Social, Professional, and Ethical Issues
PHILOS 237	Technology, Values, and Society
SOCIOL 327	Data, Technology, and Society
Capstone/Fieldwork/Thesis	3
<i>Choose one of the following (3 credits)</i>	
BUS ADM 389	Real Estate Internship
BUS ADM 394	Human Resources Management Internship
BUS ADM 396	Finance Internship
BUS ADM 397	Marketing Internship
BUS ADM 398	Supply Chain & Operations Management Internship
BUS ADM 400	Accounting Professional Internship
BUS ADM 439	Information Technology Management Professional Internship
BUS ADM 459	Finance Professional Internship
BUS ADM 469	Marketing Professional Internship
BUS ADM 479	Supply Chain & Operations Management Professional Internship
BUS ADM 494	International Business Internship
BUS ADM 534	Information Technology Practicum
BUS ADM 600	Management Analysis
INFOST 408	Nonprofit Information Technology
INFOST 490	Senior Capstone
INFOST 495	Information Internship
COMPSCI 595	Capstone Project
ECON 489	Internship in Economics, Upper Division
MTHSTAT 489	Internship in Mathematical Statistics, Upper Division
MATH 599	Capstone Experience (1 credit)
GEOG 600	Perspectives on Geography
GEOG 698	GIS/Cartography Internship
Total Credits	33

Electives in Different Specializations (24 credits in each specialization)

Code	Title	Credits
Business		24
<i>Select any 24 credits; Sub-specializations are listed so students may focus their coursework.</i>		
BUS ADM 532	Web Development for Open Business Systems	
BUS ADM 533	Introduction to Connected Systems for Business	
BUS ADM 536	Business Intelligence	

BUS ADM 537	Enterprise Systems Concepts and Issues
BUS ADM 539	Web Application Server Development
BUS ADM 540	ERP Certification
<i>Supply Chain</i>	
BUS ADM 370	Introduction to Supply Chain Management
BUS ADM 436	Systems Analysis and Design
BUS ADM 478	Supply Chain Analytics
BUS ADM 571	Quality and Six Sigma Tools
<i>Marketing</i>	
BUS ADM 360	Principles of Marketing
BUS ADM 462	Marketing Research
<i>Finance</i>	
BUS ADM 350	Principles of Finance
BUS ADM 450	Intermediate Finance
BUS ADM 451	Investment Finance
BUS ADM 457	Financial Modeling
BUS ADM 458	Venture Finance
<i>Recommended²</i>	
BUS ADM 300	Career and Professional Development (1 credit)
Information Science and Technology	24
INFOST 240	Web Design I
INFOST 315	Knowledge Organization for Information Science and Technology
INFOST 320	Web Design II
INFOST 325	Information Security I
INFOST 340	Introduction to Systems Analysis
INFOST 350	Introduction to Application Development (If not used already as part of the Foundations requirement)
INFOST 375	Multimedia Web Design
INFOST 383	Native Mobile Applications
INFOST 430	Multimedia Application Development
INFOST 465	Legal Aspects of Information Products and Services
INFOST 491	Advanced Topics in Information Science & Technology: ³
INFOST 583	Survey of Information Security
INFOST 584	Survey of Web and Mobile Content Development
INFOST 695	Ethical Hacking I
INFOST 691	Special Topics in Information Science: ³
Health	24
<i>This specialization will require 3-6 credits from a different specialization as approved by the Program Director.</i>	
HCA 307	Epidemiology for the Health Sciences
HCA 444	Introduction to Text Retrieval and Its Applications in Biomedicine
HCA 541	Healthcare Information Systems Analysis and Design
HCA 542	Healthcare Database Design and Management

PH 355	Public Health Research Methods I
PH 410	True Lies: Consuming and Communicating Quantitative Information
PH 455	Public Health Research Methods II
<i>Recommend one of the following:²</i>	
HS 222	Language of Medicine
BMS 205	Introduction to Diagnostic Medicine
NURS 352	Health and Illness Concepts 1: Introduction
Natural Sciences	24
BIO SCI 469	Genomic Data Analysis (2 credits)
FRSHWTR 504	Quantitative Freshwater Analysis
FRSHWTR 514	Analytical Techniques in Freshwater Sciences
FRSHWTR 640	Sequence Analysis
MTHSTAT 563	Regression Analysis
MTHSTAT 564	Time Series Analysis
MTHSTAT 568	Multivariate Statistical Analysis
MATH 583	Introduction to Probability Models
ACTSCI 391	Investment Mathematics I (4 credits)
ACTSCI 591	Investment Mathematics II
ACTSCI 593	Actuarial Models I
ACTSCI 594	Actuarial Models II
ACTSCI 596	Actuarial Statistics I
ACTSCI 597	Actuarial Statistics II
Social Sciences	24
<i>Choose at most one of the following methods courses:</i>	
CRM JST 662	Methods of Social Welfare Research
POL SCI 203	Introduction to Political Science Research
PSYCH 325	Research Methods in Psychology (4 credits)
AFRIC 301	Research Methods in African & African Diaspora Studies
SOCIOL 361	Research Methods in Sociology
<i>Choose at most one of the following multiple regression courses</i>	
ECON 310	Research Methods for Economics
PSYCH 610	Experimental Design
SOCIOL 461	Social Data Analysis Using Regression
<i>And, take courses from the list below to complete 24 credits.</i>	
CRM JST 510	Introduction to Crime Analysis
CRM JST 520	Analysis Oriented Technology: Spatial Data Analysis; Crime Mapping; ArcGIS
GEOG 215	Introduction to Geographic Information Science
GEOG 525	Geographic Information Science (4 credits)
GEOG 547	Spatial Analysis (4 credits)
POL SCI 390	Political Data Analysis
POL SCI 392	Survey Research
PSYCH 510	Advanced Psychological Statistics
SOCIOL 352	Social Networks
Geographic Information Science	24

GEOG 403	Remote Sensing: Environmental and Land Use Analysis (4 credits)
GEOG 437	Qualitative Methods in Geography
GEOG 547	Spatial Analysis (4 credits)
GEOG 515	Watershed Analysis and Modeling
GEOG 625	Intermediate Geographic Information Science (4 credits)
GEOG 647	ArcGIS Programming with Python (4 credits)
URBPLAN 591	Introduction to Urban Geographic Information Systems (GIS) in Planning
CRM JST 520	Analysis Oriented Technology: Spatial Data Analysis; Crime Mapping; ArcGIS

² Recommended courses do not count toward the specialization unless approved by the Director. They are merely recommended additional courses.

³ Specific topics courses need to be approved for the degree by the Program Director. A topic course cannot be used again if applied to a prior degree requirement category.

General Electives

With the help of their academic advisor, students will select electives to complete the 120 total credits required for the degree. Electives are tailored to each student's interests and career goals.

Letters & Science Advising

During your time at UWM, you may have multiple members of your success team, including advisors, peer mentors, and success coaches. Letters and Science students typically work with at least two different types of advisors as they pursue their degrees: professional College Advisors and Faculty Advisors. Departmental Faculty Advisors focus on the major while L&S College Advisors advise across your entire degree program.

College Advisors are located in Holton Hall and serve as your primary advisor. They are your point person for your questions about navigating college and completing your degree. College Advisors will:

- assist you in defining your academic and life goals;
- help you create an educational plan that is consistent with those goals;
- assist you in understanding curriculum, major and degree requirements for graduation, as well as university policies and procedures;
- provide you with information about campus and community resources and refer you to those resources as appropriate; and
- monitor your progress toward graduation and completion of requirements.

Faculty Advisors mentor students in the major and assist them in maximizing their development in the program. You will begin working with a Faculty Advisor when you declare your major. Faculty Advisors are an important partner and will:

- help you understand major requirements and course offerings in the department;
- explain opportunities for internships and undergraduate research and guide you in obtaining those experiences; and

- serve as an excellent resource as you consider potential graduate programs and career paths in your field.

Students are encouraged to meet with both their College Advisor and Faculty Advisor at least once each semester. Appointments are available in-person, by phone or by video.

Currently enrolled students should use the Navigate website (<https://uwmilwaukee.campus.eab.com>) to make an appointment with your assigned advisor or call (414) 229-4654 if you do not currently have an assigned Letters & Science advisor. Prospective students who haven't enrolled in classes yet should call (414) 229-7711 or email let-sci@uwm.edu.

Honors in the College of Letters and Science

Dean's Honor List

GPA of 3.750 or above, earned on a full-time student's GPA on 12 or more graded credits in a given semester.

Honors College Degree and Honors College Degree with Distinction

Granted to graduating seniors who complete Honors College requirements, as listed in the Honors College (<http://catalog.uwm.edu/honors-college/>) section of this site.

Commencement Honors

Students with a cumulative GPA of 3.500 or above, based on a minimum of 40 graded UWM credits earned prior to the final semester, will receive all-university commencement honors and be awarded the traditional gold cord at the December or May Honors Convocation. Please note that for honors calculation, the GPA is **not** rounded and is truncated at the third decimal (e.g., 3.499).

Final Honors

Earned on a minimum of 60 graded UWM credits: Cum Laude - 3.500 or above; Magna Cum Laude - 3.650 or above; Summa Cum Laude - 3.800 or above.