DATA ANALYTICS AND APPLIED ARTIFICIAL INTELLIGENCE, BS (SCHOOL OF INFORMATION STUDIES)

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 & Science, the College of Community Engagement & Professions, the Lubar College of Business, and the College of Engineering & Applied Science 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 and Applied Artificial Intelligence 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.

An average GPA of 2.000 on all coursework attempted at UWM is required for this degree. In addition, students must achieve an average 2.000 GPA on all coursework attempted, including transfer work. A minimum 2.000 GPA must be earned, on average, on 300-level and above courses taken to satisfy the advanced requirements. Students satisfy the residency requirement for the degree by completing at UWM both a minimum of 15 credits of the required advanced courses in the major (300 level and above) and a minimum one of 30 credits overall.

General Education Competency and Breadth Courses (https://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
Cultural Diversity GER course (recommend selecting course that also meets other breadth area)		0-3
Humanities GER courses		6
Natural Science GER courses (including one lab or field experience)		6
Social Science GER courses		6
Language other than English (two semesters or equivalent)		0-10
Total Credits		**33**

Foundation Courses

Code	Title	Credits
Mathematics		
MATH 212	Survey in Calculus and Analytic Geometry II	4
MATH 240	Matrices and Applications	3
Statistics		
Choose one of the following:		3
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]		
Choose one of the following:		3
BUS ADM 230	Introduction to Information Technology Management	
COMPSCI 150	Survey of Computer Science	
HCA 224	Computational Tools for Healthcare Professionals	
Computer Literacy 2 [1]		
Choose one of the following:		3
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		
Choose two of the following:		6
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	
Databases		
Choose one of the following:		3
BUS ADM 434	Data Base Management Systems	
INFOST 410	Database Information Retrieval Systems	
HI 537	Health Information Technology and Management	
COMPSCI 557	Introduction to Database Systems	
Analytics and Artificial Intelligence		
Choose two of the following:		6
BUS ADM 336	ERP Simulation and Data Analysis	
BUS ADM 431	Introduction to Machine Learning for Business	
BUS ADM 435	Introduction to Artificial Intelligence for Business	
BUS ADM 437	Introduction to Social Media Analytics for Business	
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		
Choose one of the following:		3
BUS ADM 438	Information Technology Management Topics:	
INFOST 370	Data Analysis and Visualization for the Information Professional	
GEOG 405	Cartography (4 credits)	
Statistics		
Choose two of the following:		6
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		
ENGLISH 310	Writing, Speaking, and Technoscience in the 21st Century	3
Ethics		
Choose one of the following:		3
BUS ADM 530	Privacy and Information Security for Business	
INFOST 661	Information Ethics	
COMPSCI 395	Social, Professional, and Ethical Issues	
HCA 311	Law and Ethics for Healthcare Professionals	
PHILOS 237	Technology, Values, and Society	
SOCIOL 327	Data, Technology, and Society	
Capstone/Fieldwork/Thesis		
Choose one of the following:		3
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**
Select any 24 credits; Sub-specializations are listed so students may focus their coursework.		
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	ERP Concepts and Issues	
BUS ADM 539	Web Application Server Development	
BUS ADM 540	ERP Certification	
Supply Chain		
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	
Marketing		
BUS ADM 360	Principles of Marketing	
BUS ADM 462	Marketing Research	
Finance		
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	
Recommended [2]		
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**
This specialization will require 3-6 credits from a different specialization as approved by the Program Director.		
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	
Recommend one of the following: [2]		
CHPS 222	Language of Medicine	
BMS 205	Foundations of Diagnostic Science: Exploring Health, Technology, and Ethics	
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**
Choose at most one of the following methods courses:		
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
Choose at most one of the following multiple regression courses:	
ECON 310	Introduction to Econometrics and Data Science
PSYCH 610	Experimental Design
SOCIOL 461	Social Data Analysis Using Regression
And, take courses from the list below to complete 24 credits:	
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)
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.

Second Degree

A student wishing to complete a second degree in BSDA will need to complete all 33 credits of the Core Courses. They must complete the Foundations courses to be eligible for this degree. They are not required to complete the Electives with specialization, as their first major may fulfill that role in the degree.

College of Community Engagement and Professions 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 (https://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.