DATA SCIENCE, MS

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirementstext), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	Yes

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW-Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

Requirement	Detail
Minimum Credit Requirement	30 credits
Minimum Residence Credit Requirement	16 credits
Minimum Graduate Coursework Requirement	15 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: https://policy.wisc.edu/library/UW-1244 (https://policy.wisc.edu/library/UW-1244/).
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/).
Other Grade Requirements	None.
Assessments and Examinations	None.
Language Requirements	No language requirements.

REQUIRED COURSES

Code	Title	Credits
Statistics Core		
STAT 611	Statistical Models for Data Science	3
STAT 612	Statistical Inference for Data Science	3
STAT 613	Statistical Methods for Data Science	3
Computer Sciences Core		
Complete 1 course from each category for a total of 9 credits		9
Algorithms		
COMP SCI/E C E/ I SY E 524	Introduction to Optimization	
COMP SCI 577	Introduction to Algorithms	
COMP SCI/I SY E/ MATH/STAT 726	Nonlinear Optimization I	
Systems		
COMP SCI 537	Introduction to Operating Systems	
COMP SCI 544	Introduction to Big Data Systems	
COMP SCI 564	Database Management Systems: Design and Implementation	
COMP SCI 640	Introduction to Computer Networks	
COMP SCI 642	Introduction to Information Security	
COMP SCI 739	Distributed Systems	
COMP SCI 744	Big Data Systems	
COMP SCI 764	Topics in Database Management Systems	
Humans and Data		
COMP SCI 765	Data Visualization	
COMP SCI/ ED PSYCH/ PSYCH 770	Human-Computer Interaction	
Machine Learning Core		
Complete 2 courses from the list below for a total of 6 credits		6
COMP SCI 540	Introduction to Artificial Intelligence	
COMP SCI/ E C E 760	Machine Learning	
COMP SCI/ E C E 761	Mathematical Foundations of Machine Learning	
COMP SCI 762	Advanced Deep Learning	
STAT 451	Introduction to Machine Learning and Statistical Pattern Classification	
STAT 453	Introduction to Deep Learning and Generative Models	
STAT 615	Statistical Learning	
Data Science Electives		
Complete 6 credits from the courses below [1]		6

COMP SCI/E C E/ I SY E 524	Introduction to Optimization
COMP SCI 537	Introduction to Operating Systems
COMP SCI 564	Database Management Systems: Design and Implementation
COMP SCI/ B M I 576	Introduction to Bioinformatics
COMP SCI 577	Introduction to Algorithms
COMP SCI 640	Introduction to Computer Networks
COMP SCI 642	Introduction to Information Security
COMP SCI 702	Graduate Cooperative Education
COMP SCI/I SY E/ MATH/STAT 726	Nonlinear Optimization I
COMP SCI 736	Advanced Operating Systems
COMP SCI 739	Distributed Systems
COMP SCI 744	Big Data Systems
COMP SCI 763	Security and Privacy for Data Science
COMP SCI 764	Topics in Database Management Systems
COMP SCI 765	Data Visualization
COMP SCI/ E C E 766	Computer Vision
COMP SCI 769	Advanced Natural Language Processing
COMP SCI/ ED PSYCH/ PSYCH 770	Human-Computer Interaction
COMP SCI 784	Foundations of Data Management
COMP SCI 799	Master's Research
COMP SCI/E C E/ STAT 861	Theoretical Foundations of Machine Learning
L I S 461	Data and Algorithms: Ethics and Policy
STAT 303 & STAT 304 & STAT 305	R for Statistics I and R for Statistics II and R for Statistics III
STAT 349	Introduction to Time Series
STAT 351	Introductory Nonparametric Statistics
STAT/ COMP SCI 403	Internship Course in Comp Sci and Data Science
STAT 411	An Introduction to Sample Survey Theory and Methods
STAT 421	Applied Categorical Data Analysis
STAT 433	Data Science with R
STAT 443	Classification and Regression Trees
STAT 456	Applied Multivariate Analysis
STAT 461	Financial Statistics
STAT/ COMP SCI 471	Introduction to Computational Statistics
STAT 575	Statistical Methods for Spatial Data
STAT/B M I 620	Statistics in Human Genetics
STAT 701	Applied Time Series Analysis, Forecasting and Control I
STAT 760	Multivariate Analysis I
STAT 761	Decision Trees for Multivariate Analysis
STAT 771	Statistical Computing
STAT/ECON/ GEN BUS 775	Introduction to Bayesian Decision and Control I
I SY E 620	Simulation Modeling and Analysis
I SY E 624	Stochastic Modeling Techniques
I SY E/ COMP SCI 719	Stochastic Programming
I SY E/ COMP SCI 723	Dynamic Programming and Associated Topics
I SY E/COMP SCI/ MATH 728	Integer Optimization
Total Credits	**30**

[1] Courses listed both as core course and as an elective may count toward either the requirement, but not both.

Students in this program may not take courses outside the prescribed curriculum without faculty advisor and program director approval. Students in this program cannot enroll concurrently in other undergraduate or graduate degree programs.