DATA ENGINEERING, 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	None.

REQUIRED COURSES

Code	Title	Credits
Data Engineering Foundations: Complete all classes.		**12**
COMP SCI 739	Distributed Systems	
COMP SCI 744	Big Data Systems	
COMP SCI 764	Topics in Database Management Systems	
COMP SCI 774	Data Exploration, Cleaning, and Integration for Data Science	
Machine Learning Requirement: Select a minimum of 2 courses from the list below.		**6**
COMP SCI 540	Introduction to Artificial Intelligence	
COMP SCI/ E C E 760	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	
Algorithms Requirement: Select a minimum of one class from below.		**3**
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 Requirement: Select a minimum of one class from below.		**3**
COMP SCI 407	Foundations of Mobile Systems and Applications	
COMP SCI 537	Introduction to Operating Systems	
COMP SCI 564	Database Management Systems: Design and Implementation	
COMP SCI 640	Introduction to Computer Networks	
COMP SCI/ E C E 707	Mobile and Wireless Networking	
COMP SCI 740	Advanced Computer Networks	
Humans and Data Requirement: Select a minimum of one class from below.		**3**
COMP SCI 765	Data Visualization	
COMP SCI/ ED PSYCH/ PSYCH 770	Human-Computer Interaction	
Approved Electives: Select any course from above or from the list below.		**3**
COMP SCI 642	Introduction to Information Security	
COMP SCI 702	Graduate Cooperative Education [1]	
COMP SCI 790	Master's Thesis [1]	

	COMP SCI 799	Master's Research [1]
	COMP SCI 900	Advanced Seminar in Computer Science [1]
	STAT 611	Statistical Models for Data Science
	STAT 612	Statistical Inference for Data Science
	STAT 613	Statistical Methods for Data Science
Total Credits		**30**

[1] COMP SCI 799 Master's Research, COMP SCI 790 Master's Thesis, COMP SCI 702 Graduate Cooperative Education, and COMP SCI 900 Advanced Seminar in Computer Science can be taken for a combined total of at most three elective credits.

- Courses used as an elective cannot also be used to fulfill data engineering fundamentals requirements or breadth requirements for machine learning, algorithms, systems, and humans and data.

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.