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 30 credits

Credit Requirement

Minimum 16 credits

Residence Credit Requirement

Minimum 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/.

Overall 3.00 GPA required.

Graduate GPA Requirement

Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/UW-1203/.

Other Grade 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.
COMP SCI 540  Introduction to Artificial Intelligence
COMP SCI/E CE 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.
COMP SCI/E CE/I SYE 524  Introduction to Optimization
COMP SCI 577  Introduction to Algorithms
COMP SCI/I SYE/MATH/STAT 726  Nonlinear Optimization I

Systems Requirement: Select a minimum of one class from below.
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 CE 707  Mobile and Wireless Networking
COMP SCI 740  Advanced Computer Networks

Humans and Data Requirement: Select a minimum of one class from below.
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.
COMP SCI 642  Introduction to Information Security
COMP SCI 702  Graduate Cooperative Education
COMP SCI 790  Master’s Thesis
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>COMP SCI 799</td>
<td>Master’s Research ¹</td>
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<tr>
<td>COMP SCI 900</td>
<td>Advanced Seminar in Computer Science ¹</td>
</tr>
<tr>
<td>STAT 611</td>
<td>Statistical Models for Data Science</td>
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<tr>
<td>STAT 612</td>
<td>Statistical Inference for Data Science</td>
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<tr>
<td>STAT 613</td>
<td>Statistical Methods for Data Science</td>
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**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.