DATA SCIENCE - M.S.

College of Arts and Sciences
Department of Computer Science
Department of Mathematical Sciences
www.kent.edu/cs

Contact Information
• Program Coordinator: Hassan Peyravi | gradinfo@cs.kent.edu | 330-672-9047
• Chat with an Admissions Counselor

Fully Offered
• Kent Campus

Admission Terms
• Fall
• Spring

Description
The Master of Science degree in Data Science provides a focus on developing scientists who will understand the theories, methods and tools of data science and apply data science to solving research and workplace questions in the natural, health and social sciences for businesses and industries.

Data science is an emerging STEM discipline founded on the principles of mathematics and the sciences and developed through a synthesis of mathematics and computer science. One may think of data science as a blending together of methods and ideas from analysis, statistics, databases, big data, artificial intelligence, numerical analysis, graph theory and visualization for the purposes of finding information in data and applying that information to solving real-world problems.

Admission Requirements
• Bachelor’s degree from an accredited college or university for unconditional admission
• Minimum 3.000 undergraduate GPA (on a 4.000 point scale) for unconditional admission
• Prerequisite mathematics and computer science courses
• Official transcript(s)
• Two letters of recommendation
• English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning one of the following:
  • Minimum 525 TOEFL PBT score (paper-based version)
  • Minimum 71 TOEFL IBT score (Internet-based version)
  • Minimum 74 MELAB score
  • Minimum 6.0 IELTS score
  • Minimum 50 PTE score
  • Minimum 100 Duolingo English Test score

For more information about graduate admissions, please visit the Graduate Studies website. For more information on international admission, visit the Office of Global Education website.

Program Learning Outcomes
Graduates of this program will be able to:
1. Ask the questions so that problems in a particular business or industrial situation become clear.
2. Determine if the problem may be addressed with data science methods and tools, and if yes, propose potential methods for solving the problems.
3. Make suggestions for how data science may be used to enhance the quality and value of currently existing products (whether the products are physical or methods) and how data science may be used in the development of new products.

Program Requirements

Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 63005</td>
<td>ADVANCED DATABASE SYSTEMS DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>CS 63015</td>
<td>DATA MINING TECHNIQUES</td>
<td>3</td>
</tr>
<tr>
<td>CS 63016</td>
<td>BIG DATA ANALYTICS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 50015</td>
<td>APPLIED STATISTICS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 50024</td>
<td>COMPUTATIONAL STATISTICS</td>
<td>3</td>
</tr>
<tr>
<td>MATH 50028</td>
<td>STATISTICAL LEARNING</td>
<td>3</td>
</tr>
</tbody>
</table>

Culminating Experience Requirement, choose from the following:

- CS 69099 CAPSTONE PROJECT
- CS 69099 & CS 69192 and GRADUATE INTERNSHIP
- MATH 67199 THESIS I
- CS 69199 THESIS I

Major Electives, choose from the following:

- BSCI 60104 BIOLOGICAL STATISTICS
- CS 54201 ARTIFICIAL INTELLIGENCE
- CS 57206 DATA SECURITY AND PRIVACY
- CS 63017 BIG DATA MANAGEMENT
- CS 63018 PROBABILISTIC DATA MANAGEMENT
- CS 63100 COMPUTATIONAL HEALTH INFORMATICS
- CS 64201 ADVANCED ARTIFICIAL INTELLIGENCE
- CS 64402 MULTIMEDIA SYSTEMS AND BIOMETRICS
- CS 67302 INFORMATION VISUALIZATION
- CS 69098 RESEARCH
  or MATH 67098 RESEARCH
- ECON 62054 ECONOMETRICS I
- ECON 62055 ECONOMETRICS II
- ECON 62056 TIME SERIES ANALYSIS
- EHS 52018 ENVIRONMENTAL HEALTH CONCEPTS IN PUBLIC HEALTH
Minimum Total Credit Hours: 30

Graduation Requirements
The culminating experiences may be a master's thesis or an integrated learning experience. The master's thesis requires a written thesis, a public defense of the thesis and approval by the student's supervisory committee.

The integrated learning experience may include a substantial capstone project or a capstone project and internship. For either non-thesis option, students must prepare a written document explaining and/or demonstrating their capstone project or internship activity and its significance. In addition, students must give a public presentation of their capstone project or internship, and the written document and presentation must be approved by their supervisory committee.

Roadmap
This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.