Data Science Minor

**Required courses:**
1. Math 2830 Introductory Statistics, Math 3382 Statistical Theory, or Math 3800 Probability and Statistics for Engineers
2. Math 4830 Applied Statistics or Math 4387 Applied Regression Analysis
3. Math 1376 Programming for Data Science or ISMG 4400 Web Application Development (Programming Fundamentals with Python)
4. Math 3376 Data Wrangling & Visualization
5. 2 eligible department-approved electives (discussed in more detail below).

The following table is a breakdown the Data Science core, including relevant prerequisites:

<table>
<thead>
<tr>
<th>Choose one:</th>
<th>Data Science Core</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2830 Introductory Statistics</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Math 3800 Prob/Stat for Engineers</td>
<td>Calc III (co-requisite)</td>
<td></td>
</tr>
<tr>
<td>Math 3382 Statistical Theory</td>
<td>Calc III</td>
<td></td>
</tr>
<tr>
<td>Choose one: Math 4830 Applied Statistics</td>
<td>Math 2830</td>
<td></td>
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<tr>
<td>Choose one: Math 4378 Applied Regression Analysis</td>
<td>Math 3800 or 3382, Math 3191 or 3195</td>
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<tr>
<td>Choose one: Math 1376 Programming for Data Science</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Choose one: ISMG 4400 Web Application Development</td>
<td>ISMG 2800 and ISMG 3500 (co-requisite)</td>
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</tr>
<tr>
<td>Math 3376 Data wrangling &amp; visualization</td>
<td>Math 2830 or 3382 and programming experience</td>
<td></td>
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</tbody>
</table>

**Currently eligible electives:**
MATH 3191 - Applied Linear Algebra
MATH 3195 - Linear Algebra and Differential Equations
MATH 3200 - Elementary Differential Equations
MATH 3301 - Introduction to Optimization in Operations Research
MATH 3302 - Simulation in Operations Research
MATH 4390 - Game Theory
MATH 4394 - Experimental Designs
MATH 4408 - Applied Graph Theory
MATH 4650 - Numerical Analysis I
MATH 4660 - Numerical Analysis II
MATH 4733 - Partial Differential Equations
MATH 4791 - Continuous Modeling
MATH 4792 - Probabilistic Modeling
MATH 4793 - Discrete Math Modeling
MATH 4794 - Optimization Modeling
MATH 4810 - Probability
MATH 6330 - Workshop in Statistical Consulting
ECON 4030 - Data Analysis with SAS
ECON 4811 - Introduction to Econometrics
CSCI 3287 - Database System Concepts
CSCI 3963 - Network Structures
CSCI 4455 – Data Mining
CSCI 4580 – Data Science
CSCI 4788 – Bioinformatics
CSCI 4930 – Machine Learning
CSCI 4931 – Deep Learning
CSCI 4951 – Big Data Systems
ISMG 3000 – Technology in Business
ISMG 3500 - Enterprise Data and Content Management
GEOG 4080: Geographic Information Systems
GEOG 4081: Introduction to Cartography and Computer Mapping
GEOG/GEOL 4070: Remote Sensing II: Advanced Remote Sensing
GEOG 4085: GIS Applications for the Urban Environment
GEOG 4090: Environmental Modeling with GIS
GEOG 4091: Open Source Software for Geospatial Applications
GEOG 4092: GIS Programming and Automation
GEOG 4095: Deploying GIS Functionality on the Web
GEOG 4235: GIS Applications in the Health Sciences