Effective August 2023

DATA SCIENCE - COMPUTER SCIENCE CONCENTRATION

120 total credits required
42 upper division credits required
Please review with the Data Science Advisor

ALL UNIVERSITY CORE CURRICULUM (AUCC)

<table>
<thead>
<tr>
<th>Status</th>
<th>Category</th>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A)</td>
<td>Intermediate writing</td>
<td>CO 150 or HONR 193</td>
<td>3</td>
</tr>
<tr>
<td>1B)</td>
<td>Quantitative Reasoning</td>
<td>MATH 156 (preferred) or MATH 160</td>
<td>4</td>
</tr>
<tr>
<td>1C)</td>
<td>Diversity, Equity, and Inclusion</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>2)</td>
<td>Advanced Writing</td>
<td>CO 300, 301B, 302, or JTC 300</td>
<td>3</td>
</tr>
<tr>
<td>3A)</td>
<td>Biological and Physical Science w/ lab</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>3A)</td>
<td>Biological and Physical Science</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3B)</td>
<td>Arts &amp; Humanities</td>
<td>CS 150B</td>
<td>3</td>
</tr>
<tr>
<td>3B)</td>
<td>Arts &amp; Humanities</td>
<td>CS 201/PHIL 201</td>
<td>3</td>
</tr>
<tr>
<td>3C)</td>
<td>Social &amp; Behavioral Science</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3D)</td>
<td>Historical Perspectives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4)</td>
<td>Depth and Integration</td>
<td>DSCI 445 and DSCI 478</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td></td>
<td>39</td>
</tr>
</tbody>
</table>

CORE COURSES (Total of 58 credits) – Must complete ALL core courses

COMPUTER SCIENCE

__ CS 150B - Culture and Coding [3]
__ CS 164 - CS1 - Computational Thinking w Java [4]
__ CS 165 CS2 - Data Structures [4]
__ CS 201 - Ethical Computing Systems [3]
__ CS 220 - Discrete Structures & their Applications[4]

MATHEMATICS

__ MATH 151 - Math Algorithms in Matlab I [1]
__ MATH 156 - Math for Computational Science I [4]
__ MATH 256 - Math for Computational Science II [4]

DATA SCIENCE

__ DSCI 100 - First Year Seminar in Data Science [1]
__ DSCI 235 - Data Wrangling [2]
__ DSCI 320 - Optimization Methods in Data Science [3]
__ DSCI 335 - Inferential Reasoning in Data Analysis [3]
__ DSCI 336 - Data Graphics and Visualization [1]
__ DSCI 369 - Linear Algebra for Data Science [4]
__ DSCI 445 - Statistical Machine Learning [3]
__ DSCI 478 - Capstone in Data Science [4]

STATISTICS

__ STAT 158 - Introduction to R Programming [1]
__ STAT 315 - Intro to Theory & Practice of Statistics [3]
__ STAT 341 - Statistical Data Analysis I [3]
__ STAT 342 - Statistical Data Analysis II [3]
Effective August 2023

COMPUTER SCIENCE CONCENTRATION REQUIREMENTS

Take Both:
___ CS 214 - Software Development [3]
     (CS 253 meets this requirement)
     (CS270 or CS 280A1 meets this requirement)

Select One of the Following:
___ CS 320 - Algorithms--Theory and Practice [3]
___ CS 370 - Operating Systems [3]

Select a minimum of two (2) additional computer science electives (not already taken)
___ CS 314 - Software Engineering [3]
___ CS 320 - Algorithms--Theory and Practice [3]
___ CS 370 - Operating Systems [3]
___ CS 420 - Introduction to Analysis of Algorithms [4]
___ CS 425 - Intro to Bioinformatics Algorithms [4]
___ CS 430 - Database Systems [4]
___ CS 435 - Introduction to Big Data [4]

* See CS Major check sheet for when upper division CS courses are typically offered.

Data Science Electives – Select at least nine (9) credit hours from Data Science Electives List that you are not already taking (number of courses will vary based on the credit hours of the courses)
___ DS Elective 1: ____________ [ ]
___ DS Elective 2: ____________ [ ]
___ DS Elective 3: ____________ [ ]
___ DS Elective 4: ____________ [ ]

Data Science Electives List
DSCI 473 - Intro to Geometric Data Analysis [2]
DSCI 475 - Topological Data Analysis [2]
ECON 202 - Principles of Microeconomics [3]
ECON 204 - Principles of Macroeconomics [3]
ECON 435 - Intermediate Econometrics [3]
MATH 301- Introduction to Combinatorial Theory [3]
MATH 317 - Advanced Calculus of One Variable [3]
MATH 331 - Introduction to Mathematical Modeling [3]
MATH 332 - Partial Differential Equations [3]
MATH 345 - Differential Equations [4]
MATH 360 - Mathematics of Information Security [3]
MATH 450 - Introduction to Numerical Analysis I [3]
MATH 451 - Introduction to Numerical Analysis II [3]
MATH 460 - Information and Coding Theory [3]
STAT 351 - Sports Statistics and Analytics I [3]
STAT 400 - Statistical Computing [3]
STAT 420 - Probability and Mathematical Statistics I [3]
STAT 421 - Introduction to Stochastic Processes [3]
STAT 430 - Probability and Mathematical Statistics I [3]
STAT 440 - Bayesian Data Analysis [3]
STAT 451 - Sports Statistics and Analytics I [3]
STAT 460 - Applied Multivariate Analysis [3]

Additional Notes:

- Although there is not a specified grade required for courses in the major, it is important to be aware of prerequisite requirements. Grades of C are better are often necessary, and some courses require B or better in prerequisite coursework.
- A cumulative GPA of 2.0 or above is required to remain in good academic standing
- Students pursuing the Data Science major with a CS concentration are not eligible for any minors offered by the Computer Science Department
- MATH 160, 161, and 261 will substitute for MATH 156 + 256