

# DATA SCIENCE AND MATHEMATICS MAJOR (M)

The name of the program is Data Science and Mathematics (DSM). The DSM program will develop individuals with a strong quantitative background, especially in data science, mathematics and statistics. This program will be offered at the baccalaureate level as a Bachelor's of Science. No certificate or credentials will be awarded. This program will be housed in the School of Arts & Sciences and the Department of Mathematics. The program will use the traditional undergraduate format. The program will use face-to-face delivery methods with a few online courses.

## Program Learning Outcomes

Students will:

- Analyze and interpret data using an ethical approach stemming from a Christian worldview. Apply and appreciate mathematics as an appropriate paradigm in order to investigate God's creation.
- Apply data science and mathematical problem solving strategies to solve a variety of real-world applications.
- Demonstrate the ability to select and apply appropriate statistical analysis to interpret information.
- Discern appropriate algorithms and software tools for problem solving. Demonstrate the ability to prove and disprove conjectures.
- Communicate solutions and concepts in oral, written, and symbolic formats.

## Curriculum - Data Science Concentration

Code	Title	Hours
<b>Core Requirements (<a href="https://catalog.cuw.edu/undergraduate/university/acad-prog/trad/core/">https://catalog.cuw.edu/undergraduate/university/acad-prog/trad/core/</a>)</b>		<b>45</b>
<b>Major Requirements</b>		<b>35</b>
<b>Electives</b>		<b>40</b>
Minor: Optional		
<b>Total Hours</b>		<b>120</b>

## Major Requirements

Code	Title	Hours
<b>Required Core Course</b>		
MATH 2050	Statistics I	
<b>Required Courses</b>		
DSAA 2000	Introduction to Data Science and Analysis	3
DSAA 4000	Senior Research Seminar	3
MATH 2010	Calculus I	4
MATH 2020	Calculus II	4
MATH 3050	Statistics II	3
<i>Data Science Concentration</i>		
CSC 2000	Coding I - Fundamentals	3
CSC 2050	Coding II - Algorithms	3
CSC 3030	Database Fundamentals	3
CSC 4400	Coding III - Data Structures	3
DSAA 3000	Data Mining and Predictive Analysis	3

DSAA 3100	Visual Analytics	3
<b>Total Hours</b>		<b>35</b>

Curriculum - Mathematics Concentration

Code	Title	Hours
<b>Core Requirements (<a href="https://catalog.cuw.edu/undergraduate/university/acad-prog/trad/core/">https://catalog.cuw.edu/undergraduate/university/acad-prog/trad/core/</a>)</b>		<b>45</b>
<b>Major Requirements</b>		<b>37</b>
<b>Electives</b>		<b>38</b>
Minor: Optional		
<b>Total Hours</b>		<b>120</b>

## Major Requirements

Code	Title	Hours
<b>Required Core Course</b>		
MATH 2050	Statistics I	
<b>Required Courses</b>		
DSAA 2000	Introduction to Data Science and Analysis	3
DSAA 4000	Senior Research Seminar	3
MATH 2010	Calculus I	4
MATH 2020	Calculus II	4
MATH 3050	Statistics II	3
<i>Mathematics Concentration</i>		
MATH 2200	Discrete Math	3
MATH 2030	Calculus III	4
MATH 3210	Abstract Algebra	3
MATH 3250	Linear Algebra and Differential Equations	4
MATH 3310	Geometry	3
MATH 4410	Real Analysis	3
<b>Total Hours</b>		<b>37</b>

## Plan - Data Science

Course	Title	Hours
<b>Semester 1</b>		
MATH 2010	Calculus I	4
MATH 2050	Statistics I	3
ENG 1040	Introduction to Writing	3
CCE 1010	Christian Citizen	3
REL 1000	The Bible	3
<b>Hours</b>		<b>16</b>
<b>Semester 2</b>		
MATH 2020	Calculus II	4
DSAA 2000	Introduction to Data Science and Analysis	3
CCE 1030	Western Thought & Worldview	3
REL 1100	Christian Faith	3
HHP		1
CORE		3
<b>Hours</b>		<b>17</b>
<b>Semester 3</b>		
DSAA 3000	Data Mining and Predictive Analysis	3
CCE 1020	Western Culture & Worldview	3
HHP 1100	Stewardship of the Body	1
CSC 2000	Coding I - Fundamentals	3
CORE		3
CORE		4
<b>Hours</b>		<b>17</b>

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<b>Semester 4</b>		
DSAA 3100	Visual Analytics	3
CCE 1040	Science & Humanity	3
CSC 2050	Coding II - Algorithms	3
CORE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Semester 5</b>		
CSC 4400	Coding III - Data Structures	3
MATH 3050	Statistics II	3
CORE		3
ELECTIVE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Semester 6</b>		
CSC 3030	Database Fundamentals	3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Semester 7</b>		
ELECTIVE		3
DSAA 4000	Senior Research Seminar	3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Semester 8</b>		
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Total Hours</b>		<b>125</b>

Course options and schedule are subject to change.

## Plan - Mathematics

Course	Title	Hours
<b>Semester 1</b>		
MATH 2010	Calculus I	4
MATH 2050	Statistics I	3
ENG 1040	Introduction to Writing	3
CCE 1010	Christian Citizen	3
REL 1000	The Bible	3
<b>Hours</b>		<b>16</b>
<b>Semester 2</b>		
MATH 2020	Calculus II	4
DSAA 2000	Introduction to Data Science and Analysis	3
CCE 1030	Western Thought & Worldview	3
REL 1100	Christian Faith	3
CORE		3
<b>Hours</b>		<b>16</b>
<b>Semester 3</b>		
MATH 2030	Calculus III	4
CCE 1020	Western Culture & Worldview	3
HHP 1100	Stewardship of the Body	1
CORE		3

CORE		4
<b>Hours</b>		<b>15</b>
<b>Semester 4</b>		
MATH 2200	Discrete Math	3
CCE 1040	Science & Humanity	3
CORE		3
CORE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Semester 5</b>		
MATH 3310	Geometry	3
MATH 3050	Statistics II	3
CORE		3
HHP		1
ELECTIVE		3
<b>Hours</b>		<b>13</b>
<b>Semester 6</b>		
MATH 3210	Abstract Algebra	3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Semester 7</b>		
MATH 3250	Linear Algebra and Differential Equations	4
DSAA 4000	Senior Research Seminar	3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
<b>Hours</b>		<b>16</b>
<b>Semester 8</b>		
MATH 4410	Real Analysis	3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
ELECTIVE		3
<b>Hours</b>		<b>15</b>
<b>Total Hours</b>		<b>121</b>

Course options and schedule are subject to change.