

Data Science Major, Bachelor of Science (79 credit hours)

A major in data science prepares graduates to pursue a life of curiosity, exploration, and knowledge creation. Graduates of this program will have developed an intuition for discovering meaning in data and will have the skills needed to provide value and purpose in almost any field.

**Major Requirements:**

**Mathematics Core (26 credit hours):**

- MATH 2010, Calculus I, 4 credit hours
- MATH 2020, Calculus II, 4 credit hours
- MATH 3010, Linear Algebra, 4 credit hours
- MATH 3020, Calculus III, 4 credit hours
- MATH 3200, Mathematical Models, 3 credit hours
- MATH 4010, Probability, 3 credit hours
- MATH 4020, Advanced Statistics, 3 credit hours
- POSC 2420, Applied Statistics Lab, 1 credit hour

**Computer Science Core (27 credit hours):**

- CPSC 2020, Fundamentals of Computational Thinking and Programming, 4 credit hours
- CPSC 2030, Object-Oriented Analysis and Design, 4 credit hours
- CPSC 2040, Introduction to Data Science, 4 credit hours
- CPSC 2080, Introduction to Cybersecurity, 3 credit hours
- CPSC 2100, Database Programming, 4 credit hours
- CPSC 2330, Introduction to Web Applications, 4 credit hours
- CPSC 2500, Data Structures and Algorithms, 4 credit hours

**Professional Core (20 credit hours):**

- BSNS 2310, Business Analytics, 3 credit hours
- CPSC 3520 Introduction to Artificial Intelligence, 4 credit hours
- CPSC 4100 Advanced Databases and Big Data Analytics, 4 credit hours
- CPSC 4430, Software Engineering, 4 credit hours
- Any 3 credit hours from the following:
  - CPSC 4480, Technical Certification, 1 credit hour
  - CPSC 4840, Data Science Internship, 2-4 credit hours
  - CPSC 4970, Senior Project, 2-4 credit hours
- CPSC 4950, Senior Seminar: Professional Development, 1 credit hour
- CPSC 4960, Senior Seminar: Ethics, 1 credit hour

**Communication Elective (3 credit hours):**

- Choose one of the following ( or another elective approved by the data science advisor):
  - ARTS 2100, Introduction to Graphic Design
  - COMM 2200, Visual Communication
  - ENGL 3140, Writing and Digital Media
  - ENGL 3160, Professional Writing and Editing

**Domain Elective (3 credit hours):**

A major in data science also requires a major or minor in an application domain, as approved by a data science advisor. Suggested minors include: Accounting, Biology, Chemistry, Criminal Justice, Marketing, Management, Physics, Psychology, Social Media, and Sports Marketing.

- One course at the level of 3000 and above in the application domain

*Suggested domain elective courses:*

<p><i>Natural Sciences</i>          BIOL 4050, Genetics          CHEM 3100, Analytical Chemistry          CHEM 4110, Thermodynamics and Kinetics          ENGR 4120, Computational Mechanics</p>	<p><i>Falls School of Business</i>          ACCT 3110, Managerial Accounting          BSNS 2450, Data Analysis and Decision-Making for Business          BSNS 3240, Operations Management          MATH 3400, Mathematics of Finance</p>
<p><i>Social Sciences</i>          SOCI 3700, Introduction to Social Research          POSC 3140, Elections, Public Opinion, and Democracy          POSC 3360, War, Peace, and Security          PSYC 3240, Experimental Design</p>	<p><i>Humanities</i>          BIBL 2050, Methods in Biblical Exegesis          HIST 2300, Historical Inquiry          RLGN 3120, Current Issues in Christian Ethics</p>

In the Liberal Arts Program, several requirements are fulfilled by this major:

- The Quantitative Reasoning requirement is fulfilled by CPSC 2020
- The Experiential Learning requirement is fulfilled by CPSC 4430
- The Speaking Intensive requirement is fulfilled by CPSC 4950
- One Writing Intensive requirement is fulfilled by CPSC 4960

**Proposed Course Sequence:**

Freshman: CPSC 2020, MATH 2010; CPSC 2030, 2040, MATH 2020, Minor 1

Sophomore: CPSC 2100, 2500, MATH 3010; CPSC 2080, 2330, BSNS 2310

Junior: CPSC 4430, Comm. Elective, Minor 2, Minor 3; CPSC 3520 or 4100, 2080, MATH 2120, 3200, POSC 2420

Senior: CPSC 4950, CPSC 4480/4840/4970, MATH 4010, Minor 4; CPSC 3520 or 4100, 4960, MATH 4020, Domain Elective

**Data Science BS Major: Suggested 4 Year Course Sequence**

<b>SEMESTER 1</b>	<b>16</b>	<b>SEMESTER 2</b>	<b>18</b>
CPSC 2020 (Quant. Reasoning)	4 Hours	CPSC 2030	4 Hours
MATH 2010	4 Hours	CPSC 2040	4 Hours
ENGL 1110	3 Hours	MATH 2020	4 Hours
LART 1050	1 Hours	Minor 1	3 Hours
Foreign Language	4 Hours	ENGL 1120	3 Hours

<b>SEMESTER 3</b>	<b>17</b>	<b>SEMESTER 4</b>	<b>18</b>
CPSC 2100	4 Hours	CPSC 2330	4 Hours
CPSC 2500	4 Hours	MATH 3020	4 Hours
MATH 3010	4 Hours	BSNS 2310	3 Hours
Personal Wellness	2 Hours	Scientific Ways of Knowing	4 Hours
BIBL 2000	3 Hours	COMM 1000	3 Hours

<b>SEMESTER 5</b>	<b>16</b>	<b>SEMESTER 6</b>	<b>18</b>
CPSC 4430	4 Hours	CPSC 3520 or CPSC 4100*	4 Hours
Communication Elective	3 Hours	CPSC 2080	3 Hours
Minor 2	3 Hours	MATH 2120	4 Hours
Minor 3	3 Hours	POSC 2420	1 Hour
Christian Ways of Knowing	3 Hours	MATH 3200	3 Hours
		Global/Intercultural Ways of Knowing	3 Hours

<b>SEMESTER 7</b>	<b>16</b>	<b>SEMESTER 8</b>	<b>18</b>
CPSC 4950	1 Hour	CPSC 3520 or CPSC 4100*	4 Hours
CPSC 4480/4840/4970	3 Hours	CPSC 4960	1 Hour
MATH 4010	3 Hours	MATH 4020	3 Hours
Minor 4	3 Hours	Domain Elective	3 Hours
Aesthetic Ways of Knowing	3 Hours	Civil Discourse + C.R.	2-4 Hours
Social/Behavioral Ways of Knowing	3 Hours	Civic Ways of Knowing	3 Hours

\*CPSC 3520 + CPSC 4100 are offered alternate years, and can be taken Semester 6 or 8.

Questions? Please contact the [Department of Computer Science](#).