

# COLLEGE OF ARTS AND SCIENCES

## DATA SCIENCE

### Faculty

- Jonathan Amburgey
- Spencer Bagley
- Bill Bynum
- Russ Costa
- Jonas D'Andrea
- Helen Hu
- Kathy Lenth
- Jingsai Liang (Chair)
- Sean Raleigh
- Bianca Thompson

### Data Science Goals

- **Critical thinking**
  - Apply data analysis to solve real problems and make predictions in real world contexts.
  - Scrape, clean, process, and evaluate the validity of data from publicly available sources.
  - Explore and contrast different methods of data visualization.
- **Creativity**
  - Employ novel and flexible strategies for attacking real-world issues.
- **Collaboration**
  - Effectively work in teams to use data science.
  - Leverage unique talents and skills in a group setting to make the whole better than the sum of its parts.
- **Communication**
  - Discuss data and conclusions using effective verbal presentation and written explanation.
- **Global responsibility**
  - Apply data analysis to better understand real problems around the globe.
  - Consider the ethical ramifications of gathering, storing, and analyzing data.

### Program Objectives

The program offers an academic minor.

The Data Science minor is designed to help students develop the ability to use data to answer research questions and make predictions and decisions. The minor offers core classes that provide a foundation in mathematics, computer science, and statistics. The program culminates in a capstone project that requires students to apply their data knowledge to a project related to their major or another area of interest.

### Data Science Minor

Requirement Description	Credit Hours	Prerequisites
<b>I. Required Core Courses</b>	<b>22</b>	
CMPT 190 Learning to Code (Python)	2	
DATA 110 Explorations in Data Science*	4	
DATA 220 Introduction to Statistics	4	
DATA 350 Statistical Modeling	4	DATA 220
DATA 360 Data Science with Python	4	CMPT 190 or CMPT 202 AND DATA 220
WCSAM 203 Linear Algebra	4	
<b>II. Electives</b>	<b>4</b>	
Take four credit hours of elective courses		
BUSI 400 Business Analytics	4	BUSI 300
CMPT 307 Databases Note: Students with credit for DATA 307 should not register for CMPT 307. Contact CMPT faculty for directed studies options.	4	CMPT 202
CMPT 311 Machine Learning	4	CMPT 202 or CMPT 306

Requirement Description	Credit Hours	Prerequisites
DATA 307 Databases for Data Science Note: DATA 307 cannot be taken by students who already have credit for CMPT 307.	2	CMPT 190
DATA 370 Statistical Learning	4	DATA 350
Any 300-level DATA course Special Topics in DATA	2	Varies by course
<b>III. Capstone Project</b>	<b>1</b>	
DATA 470 Capstone Project	1	Complete all core courses except DATA 360, which may be taken as a co-requisite.
<b>Total Hours for the Data Science Minor</b>	<b>27</b>	

\*Honors students may use HON 232 Data/Society/Decision-Making as a substitute for DATA 110 Explorations in Data Science.

**Note:** Students majoring in Computer Science can use CMPT 202 Introduction to Data Structures as a substitute for DATA 190 Learning to Code (Python).

**Note:** The courses listed in Section II (Electives) cannot be "double-dipped" with courses in other majors. In practice, what this means is that Computer Science and Business Computer Information Systems majors may not use CMPT 307 Databases as an elective for Data Science, and CMPT 311 Machine Learning may only be used once, either to satisfy upper-division elective credit in CMPT or to satisfy elective credit for the Data Science minor, but not both.