Data Science @ Waterloo

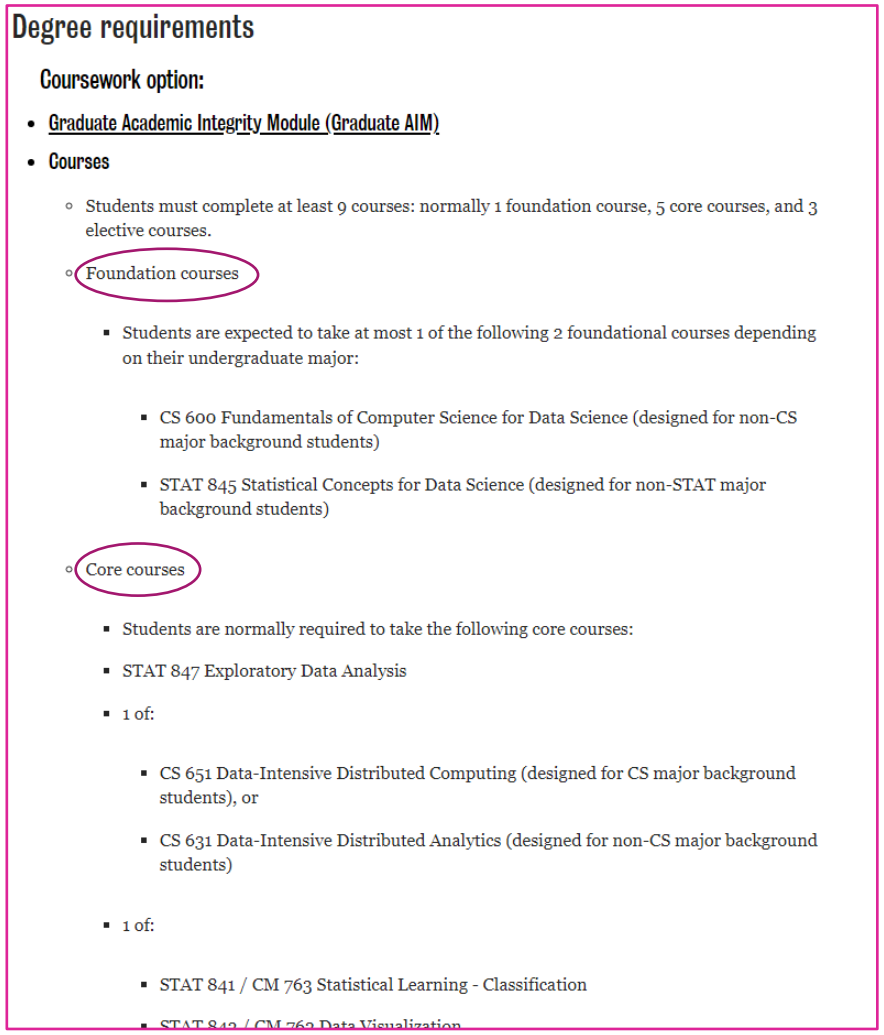
Course Selection Guide – Fall 2023

Professor M. Zhu, PhD

Program Director

UNIVERSITY OF WATERLOO | FACULTY OF MATHEMATICS

Foundation + Core Courses



Degree requirements

Coursework option:

- Graduate Academic Integrity Module (Graduate AIM)
- Courses
  - Students must complete at least 9 courses: normally 1 foundation course, 5 core courses, and 3 elective courses.
  - Foundation courses
    - Students are expected to take at most 1 of the following 2 foundational courses depending on their undergraduate major:
      - CS 600 Fundamentals of Computer Science for Data Science (designed for non-CS major background students)
      - STAT 845 Statistical Concepts for Data Science (designed for non-STAT major background students)
  - Core courses
    - Students are normally required to take the following core courses:
    - STAT 847 Exploratory Data Analysis
    - 1 of:
      - CS 651 Data-Intensive Distributed Computing (designed for CS major background students), or
      - CS 631 Data-Intensive Distributed Analytics (designed for non-CS major background students)
    - 1 of:
      - STAT 841 / CM 763 Statistical Learning - Classification
      - STAT 842 / CM 762 Data Visualization

- https://uwaterloo.ca/graduate-studies-academic-calendar/mathematics
- Foundation (CS 600, STAT 845)
  - fall only
- STAT 847 Core
  - winter only***
- CS 631/651 Core
  - fall + winter

STAT Core

- *nothing special to say*
- STAT 841 + STAT 842
  - typically, fall + winter
  - STAT 842 less mathematical, but many DS students have complained about tough grading
- STAT 844
  - typically, winter + spring

CS Core

- CS 680 vs CS 685
  - CS 685 very theoretical; only consider if your math is super strong
- CS 648 vs ~~CS 638~~
  - CS 638 only for students with inadequate CS background but not offered this year for DS***

Optimization Core

- CS 794/CO 673 vs CS 795/CO 602 + others (CO 663, …)
  - CS 794/CO 673
    - basically, “everyone” should take this one unless he/she is very strong in math
    - but available fall only***
  - CS 795/CO 602, CO 663, … all very hard and highly mathematical

Electives

- *nothing special to say*
- at the mercy of individual departments, difficult for us to guarantee spots
- STAT 940, Deep Learning popular in recent years
  - fall “regular” + winter online

Key Messages

- **STAT 847** is a “must take”; and it’s in the winter only.
- **STAT 842** may seem “easy”; but grading is tough.
- **CS 685** is very theoretical; most students should consider **CS 680** instead.
- **CS 638** is not available this year, unfortunately; being revamped.
- Optimization courses are hard!
  - Most students should only ever consider taking **CS 794/CO 673**; and it’s in the fall only.

Q&A

Course selection questions only today.

Other questions (ethics workshop, co-op, …) will be addressed at real program orientation in September.

UNIVERSITY OF WATERLOO | FACULTY OF MATHEMATICS