



MAST 387: Data Science Lab (Fall 2026)

Instructor:	Dr. J. Zhang
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Office Hours:	Tuesdays and Thursdays, 10:00–11:30.
Important:	Students should get the above information from their instructor and from the course Moodle site. The instructor is the person to contact should there be any questions about the course.
Class Schedule:	Tuesdays and Thursdays, 8:45-10:00.
Prerequisites:	STAT 280 ; and MAST 333 or STAT 360 . Previous experience with programming is assumed, but not necessarily in Python.

Reading Week

Begins on Saturday, October 10 and ends on Friday, October 16, 2026. No classes that week.

Objectives

The objective of data science is to extract meaningful insights from data using mathematics, statistics, and computer science. This course is a hands-on introduction to the essential tools needed for this purpose, with particular emphasis on data preparation, visualization, and exploration. A tentative list of topics to be covered includes:

- Python fundamentals, NumPy, Pandas
- Data pre-processing: cleaning, preparation, and wrangling
- Data exploration: summary statistics, visualization, dimension reduction, interpretation
- Database creation and management
- Structured data: time series, text, images, videos, networks
- Introduction to machine learning on data analysis
- Extensive illustrations and examples with real-world datasets

The course will include extensive programming in Python, presented via Jupyter notebooks.

Textbooks

There will *not* be one main textbook for this course. Lectures will be based on different sources, including but not limited to the following textbooks:

Python for Data Analysis: Data Wrangling with Pandas, NumPy, and Jupyter, by W. McKinney, O'Reilly Media, 3rd Edition, 2022. <https://concordiauniversity.on.worldcat.org/oclc/1341278534>

Data Science from Scratch: First Principles with Python, by J. Grus, O'Reilly Media, 2nd Edition, 2019. <https://concordiauniversity.on.worldcat.org/oclc/1097183567>

Data Science Using Python and R, by C.D. Larose and D.T. Larose, John Wiley and Sons, 2019. <https://concordiauniversity.on.worldcat.org/oclc/1089273491>

Assessment

Students will be evaluated based on homework assignments, a mid-term project, and a final project, according to the following grading scheme:

20% Homework + 30% Mid-term project + 50% Final project.

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Plagiarism

Cases of plagiarism will be treated according to the University policy.

Student Services

You may wish to access the many services available to you as a Concordia student. An overview of these resources can be found here: <https://www.concordia.ca/students/services.html>

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: <https://www.concordia.ca/conduct/academic-integrity.html>" [Undergraduate Calendar, Sec 17.10.2]

Behaviour

All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the [Code of Rights and Responsibilities](#) which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in university activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property

Content belonging to instructors shared in online courses, including, but not limited to, online lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Students are also forbidden to use

their own means of recording any elements of an online class or lecture without express permission of the instructor. Any unauthorized sharing of course content may constitute a breach of the [Academic Code of Conduct](#) and/or the [Code of Rights and Responsibilities](#). As specified in the [Policy on Intellectual Property](#), the University does not claim any ownership of or interest in any student IP. All university members retain copyright over their work.

Use of Concordia email

Your [Concordia email](#) is the official channel for all university communications, as required by the university's [Policy on Concordia email accounts for students and employees](#). Please use your Concordia email for all communication related to this course and check it regularly so you don't miss important information. [Learn more about how to access your Concordia email](#).

As a student, you are expected to follow the email policy and to use your Concordia email in a respectful and responsible manner. The policy helps ensure that communication across the university is secure, reliable, and consistent.

Extraordinary circumstances

In the event of extraordinary circumstances and pursuant to the [Academic Regulations](#) the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.