CSC 485-001: Data Science Capstone
Spring 2026

Classroom:	Accinno 101 MWF 1:30–2:20pm		
Professor:	Michael Chou	**Email:**	mchou@providence.edu
Office:	Howley 222	**Hours:**	M 10am–12pm W 11:30am–12:30pm (or by appointment)

Course Description: In this capstone course, the student will find a data set and use the tools from the previous data science courses to analyze the data. The final product will be a portfolio presentation that can be shared with a perspective employer and part of the student's signature work.

Course Overview: The goal of this course is to have two completed projects for presentation along with an accompanying project paper. One set of presentations will take place mid semester, and one during finals week.

The critical checkpoints for a project are as follows:

- **Statement of Question:** Students will develop 2-3 possible questions to explore throughout the semester. A brief explanation of each question will be given to give context to non-experts, and students will identify possible types of data that might be useful.
- **Identification of Datasets of Interest:** Students will choose one question of focus, and identify 2-3 datasets that will help them answer this question. Students will identify the steps necessary to acquire these datasets.
- **Draft Data Audit:** Students will gain an understanding of the datasets they are using, with the goal of making sure that their data is reusable, and their work is reproducible. This is also a mechanism for understanding the origins of the data to help uncover bias. Precise text of the data audit assignment will be provided.
- **Data Draft Analysis:** Students will use the knowledge gained in data analysis from previous courses to create models and compelling visualizations of their data. Model results and visualizations will be accompanied by 100 word text.
- **Presentation:** Students will create a short 5-10 minute presentation highlighting key takeaways from the project and at least one illustrative data visualization. Students will present this slide in conversation with the class.
- **Project Paper:** Students will prepare a paper that specifically addresses their policy question. This paper will include a "Data Overview" section which contains a narrative version of the data audit a "Methodology" section that includes details of models used, a "Results" section that discusses model output and validation, and a "Conclusions" section that frames results in terms of the posed question.

As each student's project will have varying needs, there is no strict deadline for the other checkpoints. Rather, this will be addressed personally through weekly reports.

Weekly Reports: Students will set weekly personal goals. They will submit weekly reports discussing which goals they met, the difficulties that prevented completion of certain goals, and any ideas on how to proceed. Students will submit these through weekly github commits, along with up to date files relevant to their project.

Grading: Satisfactory setting and reflection of weekly goals will count for 40% of the final grade. The presentations and papers will count for the remaining 60%. A more specific rubric for the presentations and papers will be provided during the semester.

Attendance: Attendance is required. Class time will be used in a variety of ways. Either as common work time, introducing new tools, addressing common problems, etc. If you absolutely cannot make a class then email me ahead of time.

Academic Integrity: Academic integrity is of the utmost importance in maintaining the high standards of scholarship in our community. Academic dishonesty is considered to be a serious offense against the community and represents a significant breach of trust between the professor, the classmates, and the student. There are many forms of academic dishonesty including plagiarism, falsifying data, misrepresenting class attendance, submitting the same work in two courses without prior approval, unauthorized discussion or distribution of exams or assignments, and offering or receiving unauthorized aid on exams or graded assignments. Violations of academic integrity will not be tolerated and will typically result in a 0 for the assignment up to an F for the course depending on the severity of the infraction.

Special Accommodations: If you have a documented disability and have been approved for academic accommodations, please contact me privately during my office hours as early as possible in the semester. All accommodations must be arranged through the Office of Academic Services. You may reach Disability Support at 865-1121.

Diversity and Inclusion: It is my intent to provide students from all backgrounds the best course possible. The diversity students bring into the class is a resource, a strength, and a benefit. I will make every effort to present material and activities that are respectful of your various identities, including (but not limited to) those tied to ethnicity, race, gender, religion, sexuality, disability, age, socioeconomic status, and culture. It is critical that we work together to create a safe and bias-free learning environment in which all students can thrive and succeed. I take this mission very seriously and your suggestions on how to best accomplish it are always encouraged and appreciated.

Mental Health: As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may affect your ability to attend class, concentrate, complete work, take an exam, or participate in daily activities. If mental health and adjustment concerns are causing distress, please speak to me and/or reach out for personal support. Remember that asking for help is a sign of strength and courage.