DATASCI 560: Quantitative Sciences Capstone

Contact Hours: three 1 hour or two 2-hour sessions weekly plus an average of 50 minutes of meeting time to discuss projects with faculty outside of class. In addition, there will be 6 hours of regular, out-of-class work required as preparation for in-class work
Credit Hours: 4
Prerequisites: DATASCI 550 (Quantitative Sciences Project)

Instructor: Kevin McAlister
Semester Summer 2026
Meeting Time and Place: xxx
Office: xxx
Office Hours: xxx
Email/Contact: xxx
Course Website: xxx
TA: xxx

COURSE DESCRIPTION

DATASCI 560: Quantitative Sciences Capstone is a culminating experience for DATASCI master's students. It is a distinctive collaboration between the graduate school and community where organizations (i.e., non-profits, corporations, other university units) bring their unique challenges, and DATASCI students provide theoretically sound, analytically rigorous and creative solutions. The capstone provides an opportunity for students to apply their knowledge of the foundations, theory and methods of data science to address data driven problems in industry, government, and the non-profit sector.

A major theme of the capstone project is developing professional skills and practicing communications skills. There will be 3 special discussions over the project to discuss professional ethics and the responsibility of providing honest work and honest answers to clients. Often client-based work creates the temptation to provide clients with the answers they expect and this is often the easiest path. This course will emphasize the importance of not designing the data analysis around a particular answer but instead the correct answer.

The specific topic of the capstone course is variable and dependent on the project sponsor. All projects will be data-driven and have well-defined deliverables. For example, a deliverable might be a policy recommendation, a data visualization, an app, a coding script, etc. All students are expected to learn how to work with large datasets in a collaborative environment. Because of the collaborative nature of the project, all students are required to contribute equally in the joint effort.

ADMINISTRATIVE POLICIES

Email policy: We will use the course's Canvas website for all group interactions outside of our weekly meeting hour. That way, any questions or comments students have can be viewed and shared among the whole group.

Office hours: TBA

DISABILITY ACCOMMODATIONS

Emory University is committed under the Americans with Disabilities Act and its Amendments and Section 504 of the Rehabilitation Act to providing appropriate accommodations to individuals with documented disabilities. If you have a disability-related need for reasonable academic adjustments in this course, provide the instructor(s) with an accommodation notification letter from Access, Disabilities Services and Resources office. Students are expected to give two weeks-notice of the need for accommodations. If you need immediate accommodations or physical access, please arrange to meet with instructor(s) as soon as your accommodations have been finalized. Students requiring any academic accommodation should consult with the Office of Disability services (http://www.ods.emory.edu/) and discuss the issue with the professor within the first week of class.

ACADEMIC INTEGRITY

The honor code is in effect throughout the semester. By taking this course, you affirm that it is a violation of the code to cheat on exams, to plagiarize, to deviate from the teacher's instructions about collaboration on work that is submitted for grades, to give false information to a faculty member, and to undertake any other form of academic misconduct. You agree that the teacher is entitled to move you to another seat during examinations, without explanation. You also affirm that if you witness others violating the code you have a duty to report them to the honor council: http://catalog.college.emory.edu/academic/policies-regulations/honor-code.html

GRADING AND EVALUATION

Evaluation of the course will be based on three components:

40%	Individual grade, decided by the professor, based on the perceived effort, participation and engagement of the individual student, as judged by interaction during the weekly meeting, on Canvas, and more generally throughout the development of the project.
30%	Common grade, decided by the professor based on the quality of the final report and presentation.
30%	Based on peer evaluation. Each member of the team will give a numeric score to every other member of the team by the end of the semester. This is a very serious responsibility being granted to the students, and each student is expected to give their classmates a grade based only on their perception of the effort contribution

of each other to the group effort. These grades must be decided individually (i.e., without consulting other teammates) by each member of the team, and communicated to the professor in writing. The professor will then average the grades received by each student. Peer evaluations will be completely anonymous between team members.

Procedure for Appealing a Grade: If you believe that your grade is incorrect or unfair, you should submit your concerns, in writing, to the professor. The written appeal should fully summarize what you believe the problems are and why. The professor will consider your appeal. This grade will be final. Note that grades may go up or down during an appeal.

Attendance: Attendance to weekly meetings is mandatory in this class.

Incomplete grades: Incomplete grades will not be given unless there is an agreement between the instructor and the student prior to the end of the course. The instructor reserves the right to determine if the incomplete grade will be given; requests for incompletes will generally be granted only in extreme circumstances.

Important Dates

Capstone partners expect periodic progress updates throughout the semester and a final deliverable that consists of a presentation of findings/insights, applicable models/code, and a recommended course of action. The key deadlines will be negotiated with the project sponsor before the semester begins.

COURSE READINGS

Relevant course readings will be assigned based on the particular project.

COURSE SCHEDULE

Although the specific schedule for projects will differ, each project will go through the following key phases: Exploration, Development, Initial Report, Revision, Final Report and Final Presentation

Semester before the course:

- Faculty Meet with clients and discuss questions, data, and feasibility
- Groups are formed

Week 1

First meeting:

- Groups meet for first time

- Discussion of differences between client driven and individual focused meetings
- Professionalism and Ethics discussion 1

Second Meeting:

- Kick-off meeting.
- Presentation by clients or surrogates
- Discussion of project logistics.
- Exploration begins.

Week 2

- Data exploration document due
- First list of client questions and concerns due

Week 3

- First set of client answers provided
- Data exploration continues
- First proposal for models due

Week 4

- Feedback on models provided
- Revised Analysis Begins

Week 5

- Professionalism and Ethics discussion 2
- Work Week

Week 6-7

- Internal presentation of preliminary analysis
- Feedback and refinement of presentation

Week 8

- Milestone Meetings
- Written mid-term progress reports due

Week 9

- Internal discussion of client feedback
- Revised plan discussed.

Week 10-11

- Work weeks with meetings with faculty leader

Week 12

- Professionalism and Ethics discussion 3

Week 13

- Internal presentation of final presentation
- Feedback and revision list
- Final Analysis preformed.

Week 14

- Work on final client presentation and report.

Week 15

- Written final report due and oral final presentation as a team.