DSCI 591: Data Science Capstone I

Course Syllabus

Credits: 3-hour lecture [3 credits]
Winter 2025
Short Title: Capstone I

General Information

Course Instructor: Lei Wang
Instructor Contact Information: lw474@drexel.edu
Office Hours; Location: TBD

Email is the best way to contact. **Be sure to include a subject line and start the subject with a reference to the course.** For example: "DSCI 591 Question" would work. **Email without a clear subject may be deleted with spam**

Student Learning Information

Course Description

Explores data science in practice as an open-ended team activity. Initiates an in-depth multi-term capstone study applying computing and informatics knowledge in a data science project. Teams work to develop a significant product with advisors from industry and/or academia. Explores data science-related issues and challenges involved in the application domain of the team's choice. Applies a development process structure for project planning, specification, design, implementation, evaluation, and documentation.

College/Department: College of Computing & Informatics
Repeat Status: Not repeatable for credit
Restrictions: None
Pre-requisites: None

Course Purpose Within a Program of Study

This course is designed to enable students in the Master of Science in Data Science (MSDS) program to gain real-world experience with an open-ended data science project. It is taken during the second-to-last term of the program in a two-term sequence. This is a required course for all CCI MSDS students.

Statement of Expected Learning

Upon successful completion of this course, students will be able to:

- form a disciplinarily balanced data science project team,
- collaboratively scope a data science project and develop a plan of proposed work,
- collaboratively build and prototype project components, and
- written artifacts communicating project progress to varied constituents.

As learning outcomes, students completing this course should be able to contribute as a member of a data science project team; identify motivations and a development strategy to formulate a data science project; determine, identify, acquire, and store data sets critical to a project's success; and assess and navigate expected and unexpected project obstacles.

Course Materials

Required and Recommended Texts, Readings, and Resources

None

Required and Supplemental Materials and Technologies

None

Assignments, Assessments, and Evaluations

Graded Assignments and Learning Activities

The course will have several components:

- Project Reports
- Final Project Presentation

Grading Matrix

- Project Reports (75%)
- Final Project Presentation (25%)

Re-Marking

- If you are dissatisfied with a grade or point deduction, you can request re-marking (must within 5 days of receiving grade).
- All re-marking requests must be done through written (paper or email) descriptions of why you think the grade is in error.
- Please note that it is very rare that changing disputed grades actually affects a student's calculated letter course grade. The corrections are usually insignificant. If you wish to appeal a course grade, school policies apply.

Team Member Evaluation

- All students on a single team initially receive the same grade. However, each team member will evaluate the performance of every other member in his/her team. The instructor reserves the right to adjust the grade based on the team evaluation results.
- All students of a team must have their names listed clearly on the front page of the reports. Each team's work must be unique – one team cannot collaborate with another team.

Grade Scale

The following scale will be used to convert points to letter grades:

Points	*Grade*	*Points*	*Grade*	*Points*	*Grade*
97-100	A+	84-86.99	B	70-73.99	C-
94-96.99	A	80-83.99	B-	67-69.99	D+
90-93.99	A-	77-79.99	C+	64-66.99	D
87-89.99	B+	74-76.99	C	0-63.99	F

Note that the instructor may revise this conversion if/when necessary.

Course Schedule

Week	Class Activities	Deliverable
1	create Google Cloud account; Process and Project Overview;	Project preference
2	Project Selection and Project Description	
3	Identifying Data Sources	Data science capstone project launch report
4	Specifying Data Sources and Data Pre-processing	
5	Team Meeting Time	
6	Project Pitches	Presentation Data Acquisition and Pre-processing report
7	Team Meeting Time	
8	Team Meeting Time	
9	Team Meeting Time	Exploratory Data Analytics report
10	Status Presentation	Status Presentation

Notice: Appropriate Use of Course Materials

It is important to recognize that some or all of the course materials provided to you may be the intellectual property of Drexel University, the course instructor, or others. Use of this intellectual property is governed by Drexel University policies, including the policy found here: https://drexel.edu/it/about/policies/policies/01-Acceptable-Use/

Briefly, this policy states that course materials, including recordings, provided by the course instructor may not be copied, reproduced, distributed or re-posted. Doing so may be considered a breach of this policy and will be investigated and addressed as possible academic dishonesty, among other potential violations. Improper use of such materials may also constitute a violation of the University's Code of Conduct found here: https://drexel.edu/compliance-privacy-audit/compliance/policies/cpo-1-01/ *and will be investigated as such.*

Academic Policies

This course follows university, college, and department policies, including but not limited to:

- Academic Integrity: https://drexel.edu/provost/policies/academic-integrity/
- Academic Integrity Policy: https://drexel.edu/studentlife/community_standards/code-of-conduct/academic-integrity-policy/
- Academic Integrity Conduct Process: https://drexel.edu/studentlife/community_standards/code-of-conduct/academic-integrity-policy/academic-integrity-conduct-process/
- Disability Resources: https://drexel.edu/oed/disabilityResources/overview/
- Course Add/Drop Policy: https://drexel.edu/provost/policies/course-add-drop/
- Course Withdraw Policy: https://drexel.edu/provost/policies/course-withdrawal/
- Drexel Student Learning Priorities: https://drexel.edu/provost/assessment/outcomes/dslp/
- Support for Equality and Diversity: https://drexel.edu/oed/

Academic Honesty

You may use AI programs e.g. ChatGPT to help generate ideas and brainstorm. However, you should note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic. Beware that use may also stifle your own independent thinking and creativity.
You may not submit any work generated by an AI program as your own. If you include material generated by an AI program, it should be cited like any other reference material (with due consideration for the quality of the reference, which may be poor).
Any plagiarism or other form of cheating will be dealt with severely under relevant Drexel policies.
http://www.drexel.edu/provost/policies/academic_dishonesty.asp

Incomplete Policy

Incomplete grades are contingent upon instructor approval and will only be considered in extenuating circumstances beyond the student's control. The instructor is under no obligation to offer an incomplete grade. At least 80% of the graded coursework must have already been completed in order for an incomplete grade to be considered (per the recommendation of the Provost's Office). An incomplete contract with an instructor-determined due date for delivery of the completed work must be completed by the student and the instructor. It can be found here:
http://www.drexel.edu/provost/policies/pdf/forms/incomplete.pdf

Initial Course Participation

Initial Course Participation (ICP): Class attendance is critical to your success as a student. Missing classes may impact your class success and your federal financial aid. For online section, class attendance will be counted as completion of deliverables on time.

Class Cancellation

On rare occasions, instructors may be delayed or unable to attend a scheduled class due to unforeseen circumstances. In the event that an instructor does not appear in class and has not notified the class of his/her expected arrival time, class is cancelled 15 minutes after the scheduled start of class. More information about class cancellations can be found at: https://drexel.edu/provost/policies/cancellation_instructor_absence/

Course Change Policy

The instructor(s) may, at his/her/their discretion, change any part of the course before or during the term, including assignments, grade breakdowns, due dates, and schedule. Such changes will be communicated to students via the course web site. This web site should be checked regularly and frequently for such changes and announcements.

Student with Disability Statement

Students requesting accommodations due to a disability at Drexel University need to request a current Accommodations Verification Letter (AVL) in the ClockWork database before accommodations can be made. These requests are received by Disability Resources (DR), who then issues the AVL to the appropriate contacts. For additional information, visit the DR website at https://drexel.edu/oed/disabilityResources/overview/ , or contact DR for more information by phone at 215.895.1401, or by email at disability@drexel.edu.