University *of* New Haven

TAGLIATELA COLLEGE OF ENGINEERING

ECECS Department

DSCI 6051-01
Data Science Capstone Projects
Fall 2021
Meeting Times and Location(s): Thursday 07:55 pm – 9:55 pm, via zoom
Credit Hours: 3
Muhammad Aminul Islam, Assistant Professor
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Department Chair: Ali Golbazi   AGolbazi@newhaven.edu

COURSE SYLLABUS

This syllabus is informational in nature and is not an express or implied contract. It is subject to change due to unforeseen circumstances, as a result of any circumstance outside the University's control, or as other needs arise. If, in the University's sole discretion, public health conditions or any other matter affecting the health, safety, upkeep or wellbeing of our campus community or operations requires the University to make any syllabus or course changes or move to remote teaching, alternative assignments may be provided so that the learning objectives for the course, as determined by the University, can still be met. The University does not guarantee that this syllabus will not change, nor does it guarantee specific in-person, on-campus classes, activities, opportunities, or services or any other particular format, timing, or location of education, classes, activities, or services.

All students should review the syllabus and the requirements for online testing using video or other video utilization in the course in order to determine if they wish to remain in the course. Enrollment in the course is an agreement to abide by and accept all terms. Remember that you may elect to drop or withdraw from this course before the end of the drop/add period.

If you are a student who believes that you require a reasonable accommodation related to camera usage for any assignment in this course, a representative of the Accessibility Resource Center (ARC) will review your request so that appropriate accommodations can be arranged. Students requesting accommodation(s) must be registered with the Accessibility Resource Center (ARC), and if not, must work with staff in the Accessibility Resource Center (ARC) to ensure that documentation of a disability is on file.

If you are a student with concerns regarding camera usage as a component in this course that does not rise to the level for a requested accommodation from the Accessibility Resource Center

Course Description:

Students may receive exemption from prerequisites at the instructor's discretion. The final capstone project comprises design and development of the strategic vision and the tactical operation plan for a data science challenge in a specific focus area. Students will participate in the organization, formulation, implementation, and presentation of the work done in the focus area. This course will provide the student with an opportunity to apply the data science skills developed in the program to a protracted real world project. Students will work with an industry partner or government sponsor to leverage a data set provided by the sponsor. Each student will develop their project by constructing a problem statement, proposing a solution, developing an experimental process for achieving a solution, and identifying success criteria for completion to be approved by the supervising faculty member and project sponsor. 3 credits.

Required Text(s):

No required text.

Other:

Reading materials and research articles related to the course topics will be posted on Canvas.

Course Structure/Course Format/Course Objectives:

Students will work in a team on a semester project that involves building a complete data science pipeline from data cleaning, processing to building models, and finally writing a final reports.

Course Objectives:

To apply knowdlege acquired in the data science courses to solve real world problems.

Student Learning Outcomes:

Upon successful completion of this course, students should be able to apply their skills and knowledge to solve data science problems.

Course Requirements & Assessment:

Please see official University of New Haven Academic Policies located in the links below:
[Graduate Grading System](#)

Assignments/Projects
The students will work on a semester long project. They are expected to
1. Select a project topic and identify the deliverables with inputs from stakeholder
2. The work should touch seleced components in MLOps explained in "MLOps: Continuous delivery and automation pipelines in machine learning (https://cloud.google.com/architecture/mlops-continuous-delivery-and-automation-pipelines-in-machine-learning)
3. Prepare a project schedule (preferable with Gantt Chart) with milestone
4. Weekly update and evaluation against the milestones.
5. Use continuous development/integration for building the models.
6. Write and publish the codes and projects.

Examinations

There will be no final exam. Instead the student will mae a presentation and submit a final report along with a short write-up and a short video describing the project.

Grading:

Grades earned are based on your performance on homework, quizzes, exams and the final exam.

Project proposal	5%
Weekly progress update	35%
Midterm review	10%
Project Code	25%
Final Report	20%
Presentation	5%
Total**	100%

**Final Grades are assigned with the following scale:

Graduate Scale

Grades Scored Between			Letter Equivalent
97	to	100	A+
94	to	Less than 97	A
90	to	Less than 94	A-
87	to	Less than 90	B+
84	to	Less than 87	B
80	to	Less than 84	B-
77	to	Less than 80	C+
74	to	Less than 77	C
70	to	Less than 74	C-
Less than 70			F

The calculation of final grades is determined by the faculty member. The calculated grade in the total column in Canvas may or may not be reflective of your final grade.

Expectations:
Students are expected to spend at least two hours on academic studies outside for, and in addition to, each hour of class time.

Course Outline/Schedule:

Day/Date	Topic/Note	Items Due
Thursday, August 26	Overview	
Thursday, September 2	Project proposal	
Thursday, September 9	Weekly update	
Thursday, September 16	Weekly update	
Thursday, September 23	Weekly update	
Thursday, September 30	Weekly update	
Thursday, October 7	Weekly update	
Thursday, October 14	Midterm review	
Thursday, October 21	Weekly update	
Thursday, October 28	Weekly update	
Thursday, November 4	Weekly update	
Thursday, November 11	Project code	
Thursday, November 18	Project report	
Thursday, November 25	Thanksgiving break (no class)	
Thursday, December 2	Presentation	

Diversity Statement
The University of New Haven embraces diversity and recognizes our responsibility to foster a diverse, inclusive, and welcoming environment in which all members of the Charger community of all backgrounds and identities can learn, work, and live together. We benefit from the academic, social, and cultural developments that arise from a diverse campus that is committed to equity, inclusion, belonging, and accountability.

We have a responsibility as a community and as individuals to address and remove barriers, achieve success, and sustain a culture of inclusivity, empathy, kindness, and compassion. We encourage, welcome, and embrace participation in ongoing dialogue, engagement, and education to critically examine and thoughtfully respond to the changing realities of our community. Diversity, equity, inclusion, acceptance, and belonging enrich the Charger community and are instrumental to institutional success and fulfillment of the University mission.

Reporting Bias Incidents
At the University of New Haven, there is an expectation that all community members are committed to creating and supporting a climate which promotes civility, mutual respect, and open-mindedness. There also exists an understanding that with the freedom of expression comes the responsibility to support community members' right to live and work in an environment free from harassment and fear. It is expected that all members of the University community will engage in anti-bias behavior and refrain from actions that intimidate, humiliate, or demean persons or groups or that undermine their security or self-esteem.

If you have an immediate safety concern for yourself or others, and/or believe someone poses an immediate threat to themselves or others, please contact University Police at 203-932-7070 or call 911. Community members can report bias-motivated incidents by completing the form

at **www.newhaven.edu/biasreporting**. Community members are encouraged to complete this form if they are the target of bias or harassing behaviors, witness such behaviors, or gain knowledge of these behaviors occurring within the University community. All matters concerning bias and harassment will be handled by the Dean of Students Office and Human Resources Office.

University-wide Academic Policies

A continually-updated list of University-wide academic policies and descriptions of key university student resources, can be found on Canvas. You can access them by simply clicking on the (?) help button.

The University-wide academic policies include (but are not limited to) the University's attendance policy, procedures for both adding / dropping a course and course withdrawals, an explanation for the sorts of circumstances where incomplete (INC) grades could be considered by the faculty, and the academic integrity policy (among others). Also in this location you will find information regarding the process for reporting bias and topics related to our maintaining a positive learning environment (including, but not limited to, discrimination and sexual misconduct).

The list of key university student resources to enable learning include (but are not limited to) the University's Center for Student Success, Writing Center, Center for Learning Resources, and the Accessibility Resource Center.

Course Delivery Options (choose the statement that describes the modality of *your* course).
*For courses with a location of ONLI that also list time and day information, students should plan to be available during that time for synchronous online learning. Classes with no time listed are asynchronous, fully online, and coded ONLI. Due to social distancing requirements, some courses will be offered in Hybrid or Flex formats. **Online learning may occur at any time, depending on how the University may determine classes are best taught under any circumstance.** All courses, including selected labs, practicums, project-based, and clinical courses may require limited, additional meeting times to accommodate accreditation, regulatory, and similar requirements and students will be advised about this at the beginning of those classes.*

Hybrid: Students attend in-person for half of the scheduled course time and the other half of the class content is available online. Students are only required to attend in-person on their designated day(s) and students **need not attend classes virtually**.

Online asynchronous (ONLI): Fully online asynchronous course with **no live, required class sessions**.

Remote synchronous (ONLI with specific meeting time): Fully online synchronous course. **Students attend virtually at the assigned class time.**

Flex: Half of the students attend each class session in-person and the other half attends virtually at the same time.

On-Ground: Fully on-ground course with every student meeting in-person.

Clinical/Laboratory: Practical courses that have an on-ground required component.

UNIVERSITY STUDENT SUPPORT SERVICES

The University recognizes that students can often use some help outside of class and offers academic assistance through several offices.

Accessibility Resources Center

Students with disabilities, chronic health-related conditions, or military service-connected disorders are encouraged to share, in confidence, information about course specific approved reasonable accommodations. The Accessibility Resources Center, located in Sheffield Hall, is responsible for and committed to providing supports and resources that serve to promote educational equity and ensure that students are able to participate in the opportunities available at the University of New Haven. Reasonable accommodations are not made without written documentation from the Accessibility Resources Center.

Center for Learning Resources (CLR)

The Center for Learning Resources (CLR), located in the Peterson Library, provides academic content support to the students of the University of New Haven using metacognitive strategies that help students become aware of and learn to apply optimal learning processes in the pursuit of creating independent learners. CLR tutors focus sessions on discussions of concepts and processes and typically use external examples to help students grasp and apply the material.

Center for Student Success (CSS)

The Center for Student Success provides students with a multitude of resources available on campus and assists students in fulfilling their educational, social and personal goals.

Counseling & Psychological Services (CAPS)

CAPS offers confidential, free services in order to support student mental health and wellbeing. The services include individual and group therapy, support groups, consultations, and 24/7 crisis support. We are available in person and remotely, and are in the office M-F, 8:30-4:30. Please call us to schedule an appointment or with any questions at 203-932-7333; you can also schedule online. If you experience a mental health crisis after hours, you can call our main number for support.

Myatt Center

The Myatt Center for Diversity and Inclusion is committed to creating a multicultural environment through intentional education, campus community engagement, and valuing the unique identities of each member of the Charger Community. Our commitment to diversity is driven by the core values of connection, belonging, inclusivity, equity, acceptance, and

accountability. The Myatt Center's focus is to create a respectful and inclusive environment based our awareness and ability to engage with others who are different on many levels including ethnicity, race, sexual orientation, gender, military, religious belief, and life experiences.

Marvin K. Peterson Library

The Library provides access to online databases, e-books, e-journals, electronic U.S. Government Documents, print books, educational games, and audiovisual materials. A search can be conductedthrough all these resources at once by using the search box "Articles, Books, & More."
The Library provides three floors with individual quiet study space, collaborative group study space, study rooms with technology, whiteboards, Dell desktops, iMacs, scanners, and printers.   The entire library is a wireless zone.

Librarians assist in locating relevant sources of information for research papers, thesis, honors thesis, and other projects. Librarians answer general reference questions and help with effectively evaluating sources of information. Help is available through a Chat Service, 24/7 Ask a Librarian Service, a Zoom Reference Service, and by E-Mail. Complete the Research Consultation Form to arrange a time convenient for you.

 LibGuides are created to assist students with research. They contain an overview of resources available through the library, as well as tutorials, subject guides, and course specific guides.

University Writing Center

The mission of the Writing Center is to provide high-quality tutoring to undergraduate and graduate students as they write for a wide range of purposes and audiences. Tutors are undergraduate and graduate students who are majoring in a variety of fields across the University. We are here to work with you at any stage in the writing process; just bring in your assignment, your ideas, and any writing you've done so far. To make an appointment, you can register for an account with our scheduling site https://newhaven.mywconline.com or visit us in person at our desk on the first floor of Peterson Library (just to the left after you enter the library).