GRADTDA 5911 Syllabus

MTDA Capstone I Autumn 2023

Course Information

- **Course times and location:** The Autumn 2023 semester will begin on August 22, 2023. To provide a meaningful online learning experience, we will use a blend of synchronous and asynchronous delivery. See "How This Online Course Works" for more details. **The first synchronous session is scheduled for August 28, 2023.**

- **Credit hours:** 3

- **Mode of delivery:** Distance Learning

Instructor

- **Name:** Dr. Emily Nutwell (she/her/hers)

- **Email:** nutwell.1@osu.edu

- **Office location:** 350A Pomerene Hall (Project Zone)

- **Office hours:** By appointment. Please visit https://tdai.osu.edu/education/masters-translational-data-analytics/mtda-program to use the scheduling tool.

- **Preferred means of communication:**

  o My preferred method of communication for questions is **email nutwell.1@osu.edu**

  o My class-wide communications will be sent through the Announcements tool in Carmen Canvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to be sure you receive these messages.

Instructor

- **Name:** Dr. Yuehua (Zoe) Duan (she/her/hers)

- **Email:** duan.425@osu.edu

- **Office location:** 350E Pomerene Hall (Project Zone)

- **Office Hours:** By appointment through Microsoft Bookings scheduling tool in the Carmen Course.

- **Preferred means of communication:**

  o My preferred method of communication for questions **is email duan.425@osu.edu**

Course Description

This course will provide experiential learning for students in data analysis with design thinking on non-trivial data sets. Students in cooperation with project sponsors formulate data questions and create complete workflows. Emphasis on teamwork, translational competency and professional competency in data rich environments by deploying and using computing technology, data analysis methods and creation of user interfaces.

Learning Outcomes

The goal of the MTDA Capstone sequence is to enhance student's learning through authentic real-world experiences. To meet this goal, the program focuses on the following learning outcomes:

Outcome Name	Outcome Definition
1. Perform Professionally	Students individually exhibit integrity, accept responsibility, take initiative, and provide leadership necessary to ensure project success as part of a diverse team.
2. Demonstrate an organized approach to a data analytics project	Students will collectively use an iterative process to align project expectations and guide progress.
3. Establish Team Relationships for Quality Performance	Students establish relationships and implement practices with team members, advisors, and clients that support high performance and continuous improvement.
4. Manage Project Schedule and Resources	Students plan, monitor, and manage project schedule, resources, and work assignments to ensure timely completion.
5. Apply Knowledge, Research and Creativity	Students utilize prior knowledge, independent research, published information, and original ideas in addressing problems and generating solutions.
6. Make Decisions Using Broad-Based Criteria	Students make project decisions based on business and data understanding
7. Use Contemporary Tools	Students demonstrate effective use of contemporary tools for data analysis, data visualization, and data story telling.
8. Data Preparation and Modeling for Evaluation	Students evaluate project outcomes based on appropriate modeling techniques.
9. Communicate for Project Success	Students use formal and informal communications with team members, advisors, and clients to document and facilitate progress and to enhance impact of projects.

How This Online Course Works

Mode of delivery: This course is 100% online. There is a scheduled synchronous (real-time) session in Zoom which will be held Mondays 5:30PM – 7:30 PM.

Meet as class: There will be three times where attendance is mandatory. We will meet at the beginning of the semester for a project pitch day, middle for mid-semester presentations, and end of semester presentations.

Synchronous Session: most weeks, we will meet synchronously for a short lecture, and teams will meet in breakout rooms. Instructors will be available for questions. These session are strongly encouraged. Teams are expected to meet weekly to discuss the project in addition to meeting with their sponsors weekly. Individual teams will be responsible for meeting synchronously with the sponsor and with each other to work on the project.

Content will be delivered asynchronously, and synchronous meetings will review this content and answer questions.

Pace of online activities: This course is divided into **weekly modules** that are released at least one week ahead of time. Student teams are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

Credit hours and work expectations: This is a [3] credit-hour course. According to Ohio State bylaws on instruction (go.osu.edu/credit hours), students should expect around [3] hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to [6] hours of homework (readings, team meetings, client meetings, and project assignments, for example) to do well in the course.

Attendance and participation requirements: Consistent engagement is expected. For course content which will be delivered asynchronously; you will be expected to manage your time and actively participate fully in the class. Three synchronous sessions are considered mandatory, with other synchronous sessions *strongly encouraged.*

Communication is important. We realize that you are adult students and require flexibility. Please communicate any concerns ahead of time, and we will work with you to make sure you have a positive learning experience.

You are encouraged to actively engage in this class, ask questions to the instructors, work on your capstone project with your team, and share your experiences relative to the subjects and discussion that day.

- **Participating in online activities for attendance**: MULTIPLE TIMES PER WEEK
  You are expected to log in to the course in Carmen multiple times per week for

asynchronous content delivery. If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible.*

- **Zoom meetings**: ONE TIME PER WEEK
  Three live, scheduled classes are required, while others are strongly encouraged. If you cannot attend a certain session, work with your team and the instructor. Occasional absence from these sessions is understandable, but these sessions are to give you the opportunity to work collaboratively with the instructors and your team. It is expected that you meet as a team at a minimum of one time per week, preferably during the synchronous weekly class sessions.

- **Participating in live sessions and/or online meetings with client**: ONE TIME PER WEEK
  You are expected to log in to Carmen Zoom (or other virtual conferencing tool) for team client meetings every week. You must log in for your scheduled team sessions and participate synchronously. If you have a situation that might cause you to miss a meeting, discuss it with your instructor and your team *as soon as possible.*

- **Office hours**: AS NEEDED. Visiting with the instructor during general office hours is optional but encouraged. Office hours will be Weds 4-5:30 and by appointment

- **Required course materials and technologies:** Carmen Canvas and CarmenZoom (if client prefers other virtual conferencing tool such as Teams, you may need to use that in addition to Zoom).

Textbooks
Required:
- Require readings/materials will be provided through Carmen Canvas

Recommended/optional:
- Optional readings/materials will be provided through Carmen Canvas

Other fees or requirements (none)

Course technology

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)
- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

Baseline technical skills for online courses

- Basic computer and web-browsing skills
- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide. Carmen uses include:
    - Access materials for the course, including syllabus and daily schedule, class presentations, video resources, assignment files, helpful websites, and supplemental information.
    - Check for course-related announcements.
    - Submit your completed assignments
    - Check your grades.

Required Technology skills specific to this course

- Carmen Zoom virtual meetings
- Recording a slide presentation with audio narration (with captioning)
- Recording, editing, and uploading video

Required equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication

Required software

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found at go.osu.edu/office365help.

Carmen access

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and IT support staff will work out a solution with you.

Course assignment elements

General:

This is a course which will provide a "culminating design experience". This course is required to complete earn a Master's in Translational Data Analytics from the Ohio State University. Students will work in multidisciplinary teams and are assigned to work on realistic and open-ended data science projects in conjunction with an industry sponsor. Teams will use the CRISP-DM process model for data science projects with overarching team-based agile principles to design and conduct their capstone projects. This course is intended to closely simulate a real industrial, team-oriented process.

Typical teams consist of 3-4 students. Teams communicate results of their work both orally and in writing.

Project concepts will be pitched to the students by the project sponsors, and teams will rank the projects in order of interest. Best efforts will be made to match projects to interest. Students will be organized into teams and will be responsible to contact their sponsor and establish regular meeting times with their sponsors. Project teams are expected to regularly meet as a team and meet with their sponsors in addition to required meetings with the instructor for the class.

The capstone project will focus on independent work so that students can self-direct their culminating capstone experience. The first semester will focus on Business Understanding and Data Understanding of the CRISP-DM model and conclude with an Exploratory Data Analysis and a project sprint. The primary deliverable for the first semester will be to develop a comprehensive project plan which will serve as the input for the second semester sprints.

Documentation:

Documentation is a key factor to the success of the project. The team maintains an ongoing record of the project in electronic form. File sharing, such as Teams or One Drive is recommended for documentation so that all team members can collaborate easily. A Teams channel will be established for the course. Students and sponsors will be able to access the general channel along with their specific team channel. **The use of Google Drive or Docs is not allowed to protect students and sponsors. Use only OSU-approved file sharing platforms to maintain data privacy and security.**

 All course deliverables must be uploaded to Carmen. To protect sponsor information created and exchanged during the project, all students sign a Student Participation Agreement at the beginning of the project.

Assignments:

Written: Written documents follow the format identified in the respective assignment description. Due to the wide range of project types, some sections of the assignment description may not apply or may require modification to fit the project. The team will work with the instructors to facilitate these changes. The instructors will review and comment on each deliverable.

Oral Presentations: Typically, presentations are in PowerPoint (or PDF) form to summarize the work performed by the student team. Teams are encouraged to review each presentation with the instructor before presenting to the project sponsor. Class presentation requirements will be clearly defined in individual assignments.

Final Deliverables:

In addition to the required presentations, an initial data dictionary, project plan, and codebook will be required as final deliverables for the semester. A one-page executive summary will also be required to provide recommendations for future action in the second semester. Submit all final deliverables electronically to Carmen.

Grading

How your grade is calculated

Week	Assignments (Week Due)	Points
1	** Class Begins	
2	Introduction/Ambiguous Problems	5
3	Dataverse/Project Selection	0
4	Business Chemistry and Inclusive Teams	10
5	CRISP-DM Discussion Post	10
6	Business Understanding: The Problem Space	15
7	Business Understanding Presentation	20
8	Data Understanding: Data Dictionary (First Draft)	20
9	**Fall Break: Catch Up Week	---
10	Data Understanding: EDA Team Choice	15
11	Project Plan	20
12	Sprint 1: Story-point Planning	15
13	Mid-Sprint Check-in	0
14	Data and Code Submission	15
15	** Thanksgiving: Catch Up Week	0
16	Semester 1: Final Presentation	20
16	Executive Summary Written Report	20

See course schedule on Carmen for all detailed assignments and due dates.

Late assignments

Each student will be assigned three "flex-points" to use as needed. For each day late, it will cost one flex-point. One a student has used all flex points, individual grades on late assignments will be deducted 10% per day late.

Team and Individual Assignments

The capstone is a team-based course, but individual contribution is required. Grades on assignments will be a combination of individual contributions and team synthesis and evaluation of the projects.

Grading scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70 –72.9: C-
67 –69.9: D+
60 –66.9: D
Below 60: E

Instructor feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** For large weekly assignments, you can generally expect feedback within **7 days**.

- **Email:** I will reply to emails within **48 hours on days when class is in session at the university**.

Course Evaluation

- A series of evaluation tools will be used throughout the course. Final evaluation will include University SEI and forms developed by the instructor. Halfway through the semester, student will be asked to perform an optional rapid evaluation of their team and the course. Students are encouraged to speak up about difficulties / problems they are having with the course early so that we can quickly work towards a solution.

Other course policies

Health and Safety Requirements

All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (https://safeandhealthy.osu.edu), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will be warned first, and disciplinary actions will be taken for repeated offenses.

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. For the textbook, journal articles, or other course materials, list at least the author, title, and page numbers. For online sources, include a link.
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work on your team's BOX folder, and then copying into Carmen Canvas.

Academic integrity policy

Ohio State's academic integrity policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student*

Conduct is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct. **If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the university's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:
- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Diverse and Inclusive Class

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

You can report incidents of bias to the Bias Assessment and Response Team (Links to an external site.)

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit equity.osu.edu or email equity@osu.edu.

Your mental health

As a student you may experience a range of issues that can cause barriers to learn, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you find yourself feeling isolated, anxious or overwhelmed, please know that there are resources to help: ccs.osu.edu. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org. The Ohio State Wellness app is also a great resource available at go.osu.edu/wellnessapp.

Student Emergency Financial Support

The **Student Advocacy Center** staff members are continuing to serve students during normal business hours and are accepting online appointments.

The **Student Emergency Fund** is available to students who may otherwise be at risk of dropping out of college due to an unexpected financial emergency. If you, or a student you know, are experiencing an unplanned expense, the Student Emergency Fund may be an option. Their office is accepting applications and may be able to award up to $1,000 to eligible students. **Learn more and apply**.

The Together As Buckeyes emergency grants program, funded primarily by the federal Coronavirus Aid, Relief and Economic Security (CARES) Act, is available to all students — undergraduate, graduate and professional — through the Student Financial Aid office. To apply for a grant, students need to complete a one-page Emergency Request form and provide any supporting documentation. The Office of Student Financial Aid will process applications after determining eligibility based on each student's circumstances and guidance from the U.S. Department of Education.

Franklin County Department of Job and Family Services has amended its Prevention, Retention and Contingency Program to provide targeted relief for families impacted by the COVID-19 pandemic. The Franklin County COVID-19 Response PRC Program provides eligible families with $500 in one-time cash assistance to help address emergent needs and expenses brought about by the public health emergency. Families can apply online today.

The **Student Wellness Center** offers financial coaching through the Scarlet and Gray Financial nationally recognized peer financial coaching program. Through the program, students will learn about financial goal setting, banking basics, budgeting, credit education, debt repayment education and saving and retirement education. Learn more.

Food Assistance

It's a common idea that pervades American culture: when you're in college, it's simply a rite of passage to sustain yourself on cheap, unhealthy food. We disagree. We highly recommend OSU's **Buckeye Food Alliance** Lincoln Tower 150 food pantry (https://www.buckeyefoodalliance.org) and the MidOhio Foodbank (https://www.midohiofoodbank.org). The **Buckeye Food Alliance** will remain open to support students in need. Starting Monday, March 23 the pantry will be open Monday/Thursday 10 a.m. – 2 p.m.; Tuesday/Wednesday 4 – 8 p.m. and Friday 11 a.m. – 3 p.m. If these times do not

work for your schedule, you can schedule a special appointment by contacting Nick Fowler at fowler.318@osu.edu.

Accessibility accommodations for students with disabilities

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- CarmenCanvas accessibility
- Streaming audio and video
- CarmenZoom accessibility
- Collaborative course tools

Student COVID-related Accommodation Process

The university is committed to supporting students and program participants with COVID-19 based risk factors. Student Life Disability Services, in conjunction with the Office of Institutional Equity, will work with students who are vulnerable to complications from COVID-19 to ensure that they have the necessary resources to participate in university life as safely as possible. Ohio State students from any campus may submit a COVID-related accommodation request. Students registered with Student Life Disability Services can work directly with their assigned Access Specialist to modify their accommodations or make additional COVID-based accommodation requests.

Syllabus Statement with COVID Process Addition

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's [request process](#), managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Course TOPICS

These topics will be discussed throughout the course:

- Ambiguous Problems and Project Management
- CRISP-DM Process Model
  - Agile and Scrum
- Business Understanding
  - Business Chemistry: Team Analysis and Team Inclusivity
  - Do Some Research: Library Resources
  - Understand Your Sponsor
- Data Understanding
  - Data Dictionary
- Effective Data Storytelling
- Project Plan Development for Second Semester
- Project Quality: Reliability and Repeatability
- Exploratory Data Analysis

Course schedule

Week	Topics	Class Meeting	Assignments Due (Assignment details & deadlines provided on Carmen Canvas)
1	Welcome Module / Course Introduction	Asynchronous	None
2	Capstone Project	Synchronous, Required	Introduction/ Ambiguous Problems Discussion Post

Week	Topics	Class Meeting	Assignments Due (Assignment details & deadlines provided on Carmen Canvas)
3	Team Kick-off	Asynchronous (Labor Day)	Project Selection and Dataverse Account
4	Setting the Stage: CRISP-DM / Agile	Synchronous	Business Chemistry and Inclusive Teams
5	Doing Some Research	Synchronous	CRISP-DM Discussion Post
6	Business Understanding	Synchronous	Jigsaw: Research the Problem Space
7	Data Dictionary	Synchronous, Required	Business Understanding: Presentation
8	Preliminary EDA	Synchronous	Data Dictionary
9	No Class: Catch Up Week	No Class	None: Fall Break
10	Project Plan	Individual Teams	Exploratory Data Analysis Team Choice
11	Story point Sprint 1 Planning	Asynchronous	Project Plan
12	Data and Coe Submission: Reliability and Repeatability	Individual Teams	Sprint Planning
13	Mid Sprint Check-in	Individual Teams	None
14	Final Wrap Up	Asynchronous	Data and Code Submission
15	Thanksgiving	No Class	None
16	Semester 1 Presentation	Full Class	Semester 1 Presentation and Executive Summary

Syllabus version 2.2 last updated August 17, 2022