GRADTDA 5911 Syllabus

MTDA Capstone I Autumn 2021

Course Information

- **Course times and location:** Synchronous work will be scheduled xxxx xxxx. These synchronous times will be used when needed. Instruction will mostly occur asynchronously,

- **Credit hours:** 3

- **Mode of delivery:** Distance Learning

Instructor

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

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

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

- **Office hours:** Weds 4-5:30 or by appointment. Evenings and week-ends possible if arranged ahead of time.

- **Preferred means of communication:**

    - My preferred method of communication for questions is **email or through Carmen**

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

Teaching Assistant

- **Name:** [first and last name of TA]

- **Email:** [lastname.#@osu.edu]

- **Recitation times:**

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 design decisions based on design requirements, life-cycle considerations, resource availability, sustainability, and associated risks.
7. Use Contemporary Tools	Students demonstrate effective use of contemporary tools for data analysis, data visualization, and data story telling.
8. Test and Defend Design Performance	Students collectively test and defend performance of a multi-discipline design with respect to at least one primary design requirement.
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. For the first few sessions, we will meet as one group during this time until we form teams. After teams are formed, teams will schedule a 30-min block within this timeframe with the instructor or GTA to discuss project progress. Course content will be delivered asynchronously through Carmen. Capstone teams will be responsible to schedule time with the sponsor to complete course requirements

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/credithours), 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 in discussion boards. It is expected that you attend synchronous time with the instructor and GTA.

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 instructor and GTA, 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**
  All live, scheduled events for the course, are required. If you cannot attend a certain session, work with your team and the instructor. Occasional absence from these sessions are acceptable, but these sessions are to give you the opportunity to work collaboratively with the instructor and GTA.

- **Participating in live sessions and/or online meetings with client**: **ONE TIME PER WEEK**
  You are expected to log in to CarmenZoom (or other virtual conferencing tool) for team client meetings every week. You must log in for your scheduled team sessions and

participate synchronously via Zoom. 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:** CarmenCanvas and CarmenZoom (if client prefers other virtual conferencing tool, you may need to use that in addition to Zoom).

Textbooks

Required:
- Lohr, Steve. (2015) *Dataism, The revolution transforming decision making, consumer behavior, and almost everything else.* Harper Collins
- Other require readings will be provided through Carmen Canvas

Recommended/optional:
- Norman, D. (2013) *The design of everyday things.* Basic Books.

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

- o   Check your grades.

Required Technology skills specific to this course

- CarmenZoom 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 practice modern

development principles applying the concept of design thinking, user-focused design, and minimally viable product. This course is intended to closely simulate a real industrial, team-oriented process.

Typical teams consist of three students. Teams communicate results of their work both orally and in writing. Much attention is given to formal oral presentations to the client and formal written documentation of the project.

Student teams will form the first semester, and these will be the teams for both semesters going forward. The first semester will focus on mini-challenges. Multiple teams will work on the same challenge to see how different teams approach each challenge differently. Typically, there will be two challenges considered, and each team will be assigned to one of the challenges.

The larger project will begin later in the first semester. Project concepts will be presented to the teams, and teams will select three projects of interest. Best efforts will be made to match projects to interest. Teams will make initial contact with the sponsors, scope the problem, and research the problem space. The semester will conclude with a presentation of the mini-challenge and status report for the larger project.

The mini-challenges as well as the larger project will follow the CRISP-DM process model to guide the projects.

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. Documentation includes all submitted assignments, meeting minutes, research results, technical documentation, trip visit summary. **The use of Google Drive or Docs is not allowed in order to protect client confidentiality. All course deliverables must be uploaded to Carmen.** If applicable, each person maintains and submits an Intellectual Property Notebook. In order 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 instructor and GTA to facilitate these changes. The instructor or GTA will review and comment on each deliverable. **When submitting the next assignment of the report, teams are required to respond to comments and incorporate recommended changes in the previously submitted section. A summary of these changes should be noted in the Appendix. A portion of the overall evaluation depends on the effectiveness and completeness of these changes.**

Oral Presentations: Typically, presentations are in PowerPoint (or PDF) form to summarize the written document for the client. Teams are encouraged to review each presentation with the team's faculty advisor before given to the industry contact. Course faculty grades and comments on the presentation. Presentations are limited to 15 minutes and 10 slides followed by a 15-minute discussion.

Final Deliverables:
The Final Written Report is a formal design document written by the team as a compilation of all previous assignments throughout the project associated with the design process. In addition to these previous assignments, the final report also includes a one-page executive summary, final test results, recommendations for future action, and all detailed product/process documentation. This report documents the entire design process from Problem Definition thru Recommendations and is written in a stepwise fashion throughout the two semesters with each "chapter" transitioning smoothly from the previous one. The team submits a final oral presentation to the client and presents a project poster during the Capstone Design Showcase. Submit all final deliverables electronically to Carmen and Box.

Grading and faculty response

How your grade is calculated

Assignment category		Points
Introductory assignments	Introduction and Goal Setting	5
	Process Models	5
	Team charter	5
Business Understanding	Business Objectives	5
	Resource Availability, project requirements, risk assessment and contingencies	5
	Data mining goals	5
Data Understanding	Collect Initial Data	5
	Describe and Explore Data	5
	Verify data quality	5
Data Preparation	Clean Data	5

	Construct and Integrate Data	5
	Data Formatting	5
Modeling	Select modeling technique	5
	Generate Test Design	5
	Build and assess model	10
Evaluation	Evaluate Results	5
	Review Process	5
	Determine Next Steps	5
Deployment	Plan Deployment	5

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

Late assignments

Late submissions will ordinarily not be accepted. Please refer to Carmen for due dates. In the event of an emergency, please contact both members of the instructional team before the due date to see if accommodations can be made. 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**.

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- **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. During the semester, you will schedule at least one online half-hour session with the instructor to discuss your developing mastery of engineering design, receive direct feedback on your project, debrief on the course, and provide suggestions for course improvement.

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

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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 learning, 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.

Engineering students are encouraged to reach out to Mary Decenzo (Links to an external site.)**,** LISW-S, SSW, CTP-Cor Stephanie Day (Links to an external site.)**,** Ed.D. PCC-S. Both are an Embedded Clinical Counselors in the College of Engineering, also serving in the Office of Student Life Counseling and Consultation Service www.ccs.osu.edu. (Links to an external site.)They can be reached at: decenzo.4@osu.edu and day.715@osu.edu.

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 schedule

Week	Topics	Assignments (assignment details & deadlines provided on Carmen Canvas)
1	**Welcome to the course, introduction to process models** **Team assignments**	**Introduction and Goal Setting**
2	**Overview CRISP-DM Process model data science lifecycle, introduction to mini-challenges**	**Book club Discussion 1; Team Charter and Project Scope**
3	**Business understanding, problem definition, evaluation planning**	**Book club Discussion 2; Customer goals, define business success criteria**

Week	Topics	Assignments (assignment details & deadlines provided on Carmen Canvas)
4	Business Understanding and Data Understanding	Book club Discussion 3; Resource availability, requirements, risks
5	Data Understanding	Book club Discussion 4; Collect, describe, and explore data. Verify data quality.
6	Data Preparation	Book club Discussion 5; Construct, integrate, and format data
7	Modeling	Book club Discussion 5; Select modeling approach, generate test design, build and assess model
8	Evaluation / Large Project Introductions	Book club Discussion 6
9	Evaluation / Large Project Introductions	Book club Discussion 6; Evaluate, review work, propose next steps
10	Deployment / Large Project business understanding, problem definition, evaluation planning	Book club Discussion 7: Begin final report / poster presentation
11	Large Project business understanding, problem definition, evaluation planning	Book club Discussion 8: Final Report
12	Large Project Business Understanding and Data Understanding	Book club Discussion 10; Resource availability, requirements, risks
13	Report out and presentations	Book club Discussion 11; Poster Presentations
14	Large Project Business Understanding and Data Understanding	Report Business / Data Understanding
15	Large Project: Moving Forward	Progress Report: Plans for Second semester
Finals week		Final Reflection

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