Decision Analysis

ISE 5830
Spring 2023

Course Information

- **Mode of delivery:** In-Person
- **Course times:** MW 12:45pm-2:05pm
- **Course location:** Scott Lab N054
- **Credit hours:** 3

Instructor

- **Name:** Daniel B. Gingerich, Ph.D. (he/him/his)
- **Email:** gingerich.62@osu.edu

- **Office hours:** TBD
- **Preferred means of communication:**
  - My preferred method of communication for questions is **email.**
  - 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.

Course Prerequisites

For undergraduate students, the prerequisites for this course are ISE 3210 (Nonlinear and Dynamic Optimization) and STAT 3470 (Introduction to Probability and Statistics for Engineers). There are no prerequisites for this course for graduate students.

Catalog Description

Introduction to decision analysis, modern utility theory and risk modeling, Bayesian inference, value of information, multiattribute decision modeling, and application to engineering decisions under uncertainty.

Course Description

In his overview for non-decision analysts, Ralph Keeney describes decision analysis as “a formalization of common sense for decision problems which are too complex for informal use of common sense.” This is one of my favorite descriptions of the field and one that summarizes what we will cover in this course quite well. We will start off with a quick overview of *human mental processes* and why the common-sense approaches that have served our ancestors well for millennia may set us up for failure for certain decisions we face today. From there we will formalize our common sense with a series of axioms that will allow us to

responsibly structure and analyze complex decision problems, including decision problems with *uncertainties*, *risks* of uncertain outcomes, and *multi-attribute tradeoffs*. We will also discuss *Bayes' rule* (and if time allows a little bit of *Bayesian statistics*) and how decision analysis allows us to calculate the *value of information*.

Throughout this course, you'll also have opportunities to apply these techniques to real-world problems and work with actual decision makers. This will help you develop best practices as a decision analyst and how to incorporate learnings from *psychology and the behavioral sciences* into using decision analysis with real people and organizations.

Learning Outcomes

By the end of this course, students should successfully be able to:

- Have a broad understanding of decision problems;
- Model and 'solve' a decision problem;
- Assess people's attitudes towards risk and conflicting objectives, and their probability assessments;
- Discuss and understand how human mental processes and social decision-making affects decisions made by non-experts, experts, and organizations;
- Use appropriate software tools and programming languages to model and analyze decision problems

In addition to the above outcomes, this course also addresses several ABET Student Outcomes, in whole or in part, including:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (Outcome 1);
- An ability to communicate effectively with a range of audiences (Outcome 3); and
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions (Outcome 6).

How to Succeed In This Class

At the end of the semester, I typically ask the top students to share advice they would give future students on how to do well in the class. However, I have not yet taught this class, so I do not have advices specific to this class. But, I have taught classes in a similar format before and asked them for advice that should be relevant to this class as well. Here's what they told me:

- "The thing that helped me succeed the most was doing all of the practice questions before the quiz every week. These were very good review of what we did and it helped me immensely. I also made a small study guide before every quiz and made a large study guide (aside from the cheat sheet) for the exams. Also doing all extra credit helped!"
- "(1) As you said in the syllabus, attendance is key. You can explain it more clearly than any textbook can; (2) The days immediately following lecture, I would retake my own notes based off of yours, so I saw that material another time and was forced to engage with it in another medium. I would then attempt the relevant practice problems, that way I would have enough time to ask questions if needed. (3) Leading up to the exams, I would study a module a day that way I could get I could focus on it in depth and prepare my note sheet. (4) In terms of the project, just starting ahead of time that way you do not feel rushed if problems arise! None of these are groundbreaking practices but I hope it helps a little."
- "I'd say the main factor in my success was the focus I put on quizzes. I made sure each week to spend adequate time on doing all the practice problems for the quizzes. This allowed me to do well on the quizzes and minimize studying on the midterms. For the midterms, I started studying about a week before, but the studying was relaxed, and I only did an hour or so a day max. This way, I was very familiar with the material and was able to go through the test smoothly. To be quite honest, I did not read after the first few weeks as my schedule got quite busy. So, while reading can be helpful, it might not be required for success. For the project, my group was in very consistent contact with you and asked for help, which made sure we had a thorough and complete project by the end of the semester."
- "I think the thing that helped me succeed the most in class this year was really just showing up, paying attention every class period, and doing the assigned work. I know that kind of sounds like the bare minimum, but paying attention the entire lecture and then checking my understanding after really solidified a lot of the information and I found a lot of the material making sense intuitively. I also felt that as long as I understood all of the example problems in the class notes, I would be able to do fine on any of the quizzes or exams. I really felt that the "On-your-own" examples gave me a good chance to double check and make sure I really understood the problems before moving on. I think it is really easy to take lecture based classes and kind of mail-in just showing up and writing down notes, so to me it was actively participating and checking with myself that I understood the material after every class session that I think helped me succeed. I also felt like you provided a lot of opportunities for us to check that understanding (TopHat, Quizzes, Practice Problems, etc.) so my advice again would really just be to do the work presented and make sure you understand it."
- "My advice to future students would be to dedicate a specific time each week to work on the practice problems and take the quiz. By getting into a routine of working out the practice problems followed by completing the quiz, I was able to make sure I grasped the content before being evaluated on it."

I want to highlight three common features of these responses, because these students that did well picked up on key elements of how I designed this class and the assessments for it.

First, they completed the **practice problems** every week, often right after the class session in which I assigned them. I design the practice problems with two goals in mind. First, they are designed to give you additional practice for the concepts that we cover in a particular topic so that you can continue to refine and extend the skills and approaches we cover in

class. Second, they are designed to give you information on how well you actually understand the concepts. That information is extremely valuable to you as a student because it tells you what you need to study more and it tells you what you need to get help on. *When you struggle with practice problems, that is a sign to ask for help from me or a classmate.* I want to know what you're struggling with on the practice problems, so I can help you and I can help your classmates with because it is almost certain that someone else is struggling with it too. I *do not* give out solutions to the practice problems, because I want you to understand a solution – not memorize it and memorization is what students tend to do if they are given a solution to a problem they do not understand. Practice questions are not graded assessments, so I encourage collaboration on them! I will also have a discussion board set-up for each practice problem set, so that you can ask for help there and discuss solutions. I will monitor discussion boards and step in to answer questions or correct misperceptions at least twice a week.

Second, they prepared well for **weekly quizzes**. There is a large body of literature that shows the value of spaced studying rather than cramming for exams. Quizzes are my attempt to get you to do that. So, take quizzes seriously and use them as incentives to space your preparation for exams. I also would encourage you to shift your thinking about quizzes away from an "assessment of what you *already* know" towards an "assessment of what you *don't yet* know". Quizzes are another way for you to understand if there is material that you this class keeps layering new content onto the old and starts building off past topics quickly. If you struggle with an early topic, you are going to struggle with later topics if you do not ask for help.

Third, they start the **group project** early. That gives you time to respond to things that come up with plenty of time and to ask for help when you need it. The project is an opportunity for you to apply what you're learning in the class to a real-world problem; it is not meant for you to get frustrated with what you're learning in class.

Fundamentally, I design classes where you have plenty of no-stake (TopHat questions, practice problems) and low-stake (quizzes) opportunities to learn what you do not yet know. Students that do well understand this interpretation of these opportunities and use that information to do well in this class.

Course Topics

This course can be split into roughly three parts.

Part I: Common Sense: Its Complexities and Formalization
We start the class by talking about how people, especially non-experts, make decisions and why an individual may make sub-optimal decisions. We then move on how to formalize decisions and the philosophy of decision analysis. Finally, we will perform decision analysis for a particular type of decision maker – the expected value decision maker. Topics in this part include:

- Human Mental Processes
- Introduction to Decision Analysis
- Modeling Decisions
- Expected Value Decision Making

Part II: Extending Decision Analysis
With an understanding of expected value decision making, we then move on to understand the conditions in which an expected value decision maker would make a different decision. This could happen when a decision parameter changes its value past a critical point or by learning about how an uncertain event will play out. Finally, we'll explore an interesting (and surprisingly impactful) application of decision analysis – how it is used to assess the value of intangibles, like the value of reducing a fatal risk. Topics in this part include:

- Sensitivity Analysis
- Bayes' Rule*
- Expected Value of Information
- Valuing Intangibles with Decision Science

Part III: Decision Analysis for Real People
Real applications of decision analysis are rarely as straight-forward as one facing an expected value decision maker with a perfectly characterized decision. Instead, decision analysts are often asked to include individual's preferences towards risk, consider competing objectives, or use expert judged probabilities. Finally, decisions are often constrained by organizational dynamics, so we'll explore how these constraints guide organizational decision-making and how they can be loosened through creativity. Topics in this part include:

- Expected Utility Decision Making and Risk Preferences
- Multi-Objective Decision Making
- Expert Elicitation of Subjective Probability
- Creativity in Decision Making and Organizational Behavior

* If time allows at the end of the semester, we will discuss Bayesian statistics and Bayesian belief networks.

Grading and Faculty Response

How Your Grade is Calculated

Your grade for the course will come from in-class work, quizzes, and exams.

Assignment Category	Points
In-Class Engagement	10
Weekly Quizzes	20
Amid Term Exams	20
Practice Elicitations	10
Project	40

Letter grades will be assigned as follows based on net weighted grade (NWG).

NWG	Letter Grade	NWG	Letter Grade
		0.7700 ≤ NWG < 0.8000	C+
0.9300 ≤ NWG	A	0.7300 ≤ NWG < 0.7700	C
0.9000 ≤ NWG < 0.9300	A-	0.7000 ≤ NWG < 0.7300	C-
0.8700 ≤ NWG < 0.9000	B+	0.6700 ≤ NWG < 0.7000	D+
0.8300 ≤ NWG < 0.8700	B	0.6000 ≤ NWG < 0.6700	D
0.8000 ≤ NWG < 0.8300	B-	NWG < 0.6000	E

Descriptions of Major Course Assignments

In-Class Engagement (10% of grade)

Description: These assessments are designed to keep you engaged in class. These assessments may involve some TopHat quizzes in which you will make a prediction or submit results of calculations you have just made. They are designed to follow best pedagogical practices to keep you engaged in class and to provide me with real-time information that would allow me to adjust mid-lecture. As a result, their usefulness is specific to the session in which they take place. Given that life happens and sometimes you may miss a class or two, I will automatically subtract three times the average number of points per day from the total number of points available, and set this as the maximum number of points available. As it is the maximum amount available, you will not be able to get more points than this. This will allow you to miss roughly three days of class without penalty or need to do make-up work. If you miss more than three days of class, I strongly encourage you to reach out to me to discuss alternate arrangements.

Weekly Quizzes (20% of grade)

Description: There will be ten graded quizzes. These quizzes are designed to assess your knowledge of course content and to help you keep pace with the class as we move forward.

Quizzes #1-#9 will be administered via Carmen and due at 5:00pm on Friday, but will remain open so that you can submit without late penalty until 11:59pm on the following Sunday. I do this because I am not guaranteed to respond to emails over the weekend, and so want to encourage you to submit when I will still answer questions or address issues that may pop up with Carmen. Quiz #10 will be done in class and have a unique format that will be discussed in advance of the quiz.
In addition to these ten quizzes, there will be an optional Quiz #0 in the first week of the class that will be graded on a completion basis. This quiz will be designed to allow you to self-assess how well you remember some of the mathematics and engineering principles that you'll use in this class. If you complete this quiz, it will replace your lowest quiz score.

Amid-Term Exams (20% of grade)

Description: Throughout the course of the semester, there will be two exams, each worth 10% of your grade, the dates of which are included in the course schedule. Exam #1 will cover Human Mental Processes, Introduction to Decision Analysis, Modeling Decisions**,** and Expected-Value Decision Making. Exam #2 will cover Sensitivity Analysis, Bayes' Rule**,** Expected Value of Information, and Valuing Intangibles with Decision Science. If I am notified in advance, exams may be made-up for excused absences. However, make-up exams may be different in form and structure (e.g., include an oral exam component) to in-class exams.

Practice Elicitations (10% of grade)

Description: For two of the three topics in Part III of the course (risk preferences, multi-attribute utility theory, and expert elicitation), you will interview someone to elicit their utility functions or subjective probabilities. More details, including deadlines for each topic will be posted to Carmen. You will be allowed to pick which two topics you wish to do elicitations for. Each elicitation submission will be worth 5% of your final grade.

Project (40% of grade, breakdown below)

Description: A key part of learning how to do decision analysis, is to do decision analysis. As such, I have partnered with **TBD** to give you experience doing a real decision analysis problem. Instructions on the project will be posted to Carmen and discussed in class. The project will be broken down into many different pieces throughout the course of the semester:

- Team Contract and Evaluation (5% of grade): Once you have formed your project team, you will need to submit a team contract (3% of grade) laying out expectations for how you will work together. At the end of the semester, you will submit a team evaluation (2% of grade) for how you all met the expectations laid out in the team contract.
- Decision Description (5% of grade): In early March, you will write a brief memo describing the problem facing our community partner *as you understand it* and lay out what factors you think matter, the values you believe to be relevant, and how you plan to analyze the problem.
- Decision Analysis Results (5% of grade): In early April, you will write a brief memo describing the results of your analyses and initial recommendations you may make to the community partner.
- Final Report and Presentation (20% of grade): On the last day of class, your team will submit a final report discussing the problem, your analysis of the decision problem, and

your recommendations to our community partner. During our final exam time slot, teams will give a short presentation about their recommendations. I will provide the top three reports to our community partner and will work to give the top three teams an opportunity to present their work to the community partner.

- Reflections (5% of grade): Over the course of the semester, I will have you write a series of journal reflections to get you to think about the process of doing decision analysis and engaging with decision makers. These reflection assignments will be posted and submitted through Carmen.

By default, the grade for the final project deliverable will be shared by all members of the group. If a team member does not contribute, please reach out to me to discuss next steps and resolution.

Attendance and Missed or Late Assignments

Because their goal is to provide you and I with real-time information, I do not allow make-up work for in-class engagement and activities points except in extremely limited circumstances in which I am notified of in advance. As there will be many of these assessments throughout the semester and I automatically lower the maximum grade to account for absences, you should not worry if you miss a day or two of class. You will be fine. For longer absences, I strongly encourage you to talk to me so that we can develop a plan for how you can keep up with the class.

Late Policy: I will accept practice elicitations and project components submitted within 24 hours of the posted deadline without penalty. Assignments submitted 24-72 hours after a deadline will be accepted, but at a 50% penalty. Assignments submitted more than 72 hours after the deadline will be accepted and feedback will be provided, but will not be graded.

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 614-688-4357 (HELP) at any time for technical problems.

- **Preferred contact method:** If you have a question, please contact me first through my Ohio State email address. I will reply to emails within **24 hours on days when class is in session at the university**. I will respond to emails sent between 5:00pm on Friday and 8:00am on Monday by Tuesday at 8:00am
- **Class announcements:** I will send all important class-wide messages through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to ensure you receive these messages.
- **Discussion board:** I will check and reply to messages in the discussion boards once mid-week on Wednesday at 9:00am and once at the end of the week on Friday at 4:00pm.
- **Grading and feedback:** For the quizzes, you can generally expect feedback within **two class sessions**. For the projects, you can generally expect feedback within **three class sessions**.

Course Materials, Fees, and Technologies

Required Materials and/or Technologies

There is one required textbook for the course. I will assign readings from this book and expect you to do the assigned readings. An electronic version of this book is available through CarmenBooks. You will need the book to access the DecisionTools software that we will use for this class.

- Clemen and Reilly (2014). Making Hard Decisions (with DecisionTools) 3rd ed. South-Western Cengage Learning. ISBN 978-0-538-79757-3.

In addition, we will use selections from the following books, various peer-reviewed articles, and podcasts. Electronic versions of these books are all available through the OSU library. Instructions on how to access them are on Carmen.

- Morgan (2017). Theory and Practice in Policy Analysis: Including Applications in Science and Technology. Cambridge University Press, ISBN 978-1-316-88266-5 (eBook).
- Downey (2021). Think Bayes, 2nd ed. O'Reilly Media, Inc. ISBN 978-1-492-08946-9.

In addition, I will often provide "for further reading" recommendations. Those will often be additional books for certain topics or methods that dive into the topics in greater detail. I provide them in case there are particular things you want to know more about. These will be posted in Carmen.

Finally, we will use the following pieces of software:

- **TopHat.** TopHat is an app for phones and certain tablets that I use for in-class polling, to assess your engagement, and to share my powerpoint slides. You have a free account through TopHat as an Ohio State University student and should be able to download it through the Apple AppStore or the Google PlayStore.
- **DecisionTools.** DecisionTools is an Excel add-on package that is an industry standard for decision analysis. The Student Trial Version can be downloaded here, although you will need access to a copy of the Clemen and Reilly text in order to activate it. We will be primarily using the Precision Tree tool.

If time allows, we will also dive into Bayesian statistics and Bayesian belief networks using the following pieces of software.

- Jupyter Notebooks via **Google Colaboratory.** The Google Colaboratory is a way of sharing and running Python Jupyter notebooks in an internet browser. Links to Google Colaboratory notebooks will be posted to Carmen for appropriate sections.
- **Netica.** Netica is a piece of software used for modeling Bayesian belief networks from Norsys Software Corp. it is available for download here and the free version will be sufficient for our purposes.

CarmenCanvas Access

You will need to use BuckeyePass (buckeyepass.osu.edu) 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 do each of the following:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device (go.osu.edu/add-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.
- Install the Duo Mobile application (go.osu.edu/install-duo) on 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.

Technology Skills Needed for This Course

- Basic computer and web-browsing skills
- Navigating CarmenCanvas (go.osu.edu/canvasstudent)
- CarmenZoom virtual meetings (go.osu.edu/zoom-meetings)

Technology Support

For help with your password, university email, CarmenCanvas, or any other technology issues, or requests, contact the IT Service Desk, which offers 24-hour support, seven days a week.

- **Self Service and Chat**: go.osu.edu/it
- **Phone:** 614-688-4357 (HELP)
- **Email:** servicedesk@osu.edu

Other Course Policies

Discussion and Communication Guidelines

The following are my expectations for how we should communicate as a class on Carmen's discussion boards. 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 or other course materials, list at least the 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, and then copying into the Carmen discussion.

Academic Integrity Policy

See Descriptions of Major Course Assignments for specific guidelines about collaboration and academic integrity in the context of this class.

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 (studentconduct.osu.edu), 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. I believe that the COAM process is the best way to ensure that you receive due process in resolving allegations of academic misconduct. As a result, I will spend the time necessary to work with COAM in getting academic misconduct issues resolved. When we discuss the value of a statistical life, I will briefly mention a mall in of Nashville, TN. If you send me a picture of a mall – any mall – by January 13th at 5:00pm, I will give you 2.5 percentage points of extra credit on Exam I. To protect the secrecy of the process, don't discuss this opportunity with your classmates. 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:

- Committee on Academic Misconduct (go.osu.edu/coam)
- Ten Suggestions for Preserving Academic Integrity (go.osu.edu/ten-suggestions)
- Eight Cardinal Rules of Academic Integrity (go.osu.edu/cardinal-rules)

Copyright for Instructional Materials

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. This does include materials developed by the instructor for the class (e.g., practice problems, quizzes, exams). Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

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 on Ohio State's Title IX website (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, visit the OIE website (equity.osu.edu) or email equity@osu.edu.

Commitment to a Diverse and Inclusive Learning Environment

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 their 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.

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. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, on-demand mental health resources (go.osu.edu/ccsondemand) are available. You can reach an on-call counselor when CCS is closed at 614- 292-5766**. 24-hour emergency help** is available through the National Suicide Prevention Lifeline website (suicidepreventionlifeline.org) or by calling 1-800-273-8255(TALK). The Ohio State Wellness app (go.osu.edu/wellnessapp) is also a great resource.

Requesting Accommodations

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 (SLDS). 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 can be contacted by phone (614-292-3307), through their website (slds.osu.edu), by email (slds@osu.edu), or in person (Baker Hall 098, 113 W. 12th Avenue).

This course requires use of CarmenCanvas (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.