



THE OHIO STATE UNIVERSITY

STATISTICS: 2450 INTRODUCTION TO STATISTICAL ANALYSIS I SUMMER 2022

Course overview

Instructor & Office Hours

Instructor/TA/Grader: Daryl Swartzentruber

Email: swartzentruber.20@osu.edu

Zoom Office Hours: Mondays 11:00 AM-12:00 PM, Tuesdays/Thursdays 9:35-9:50 AM (but see meeting times below)

Meeting Days/Times

Tuesdays and Thursdays

Lecture: 8:00-9:35 AM

Recitation: 9:50-10:40 AM

These are the official meetings times for the class. However, since there is only one section, and there is no separate TA, the times for the finish of lecture and the start of recitation may be somewhat flexible. Also, there will be a couple of times this summer where asynchronous Zoom lectures and recitations will be replaced with recorded videos.

Course description

Calculus-based introduction to statistical data analysis. Includes sampling, experimental design, probability, binomial and normal distributions, sampling distributions, inference, regression, ANOVA, two-way tables. The prerequisite for this 3 credit hour course is differential calculus.

Your Support System

Lecturer	Provide the overarching view of the clusters of concepts.
Recitations	Reinforce and extend content covered in lecture. Students should expect to be active participants in these sessions.
Office Hours	Conducted in one large Zoom room, but you can email me if you need to speak with me privately.

Primary Course Goal:

- To develop skills in drawing conclusions & critically evaluating results based on data.

Course Objectives:

- To enable you to use statistical tools for presentation and descriptions of data
- To enable you to correctly apply probability rules and counting techniques.
- To enable you to understand the use of sampling distributions as the foundation of inference.
- To enable you to analyze data through linear regression, confidence intervals, and hypothesis tests.
- To enable you to use your knowledge of calculus to conceptually understand its role in computing probabilities.

Course learning outcomes

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

- Understand basic concepts of statistics and probability.
- Comprehend methods needed to analyze and critically evaluate statistical arguments.
- Recognize the importance of statistical ideas.

GE Course Information:

- Quantitative & Logical Analysis Category {Data Analysis Sub-category}
- Develop students' quantitative literacy and logical reasoning.
- Identify valid arguments
- Use mathematical models
- Draw conclusions & critically evaluate results based upon data.

Daryl's vision for your completion of STAT 2450

- You will become proficient in collecting, organizing, analyzing, and interpreting data
- You will become competent in the use of data analysis software.
- You will conceptually understand situations involving random phenomena.
- You will interpret findings and improve your ability to justify your results.
- Your metacognition & desire to reflect upon what you have learned will be heightened.
- You will respond to a problem by: considering any relevant assumptions, analyzing, and effectively communicating your results.
- You will gain a greater appreciation for statistics (and the underpinning mathematics).
- You will complete the Data Analysis General Education (GE) requirement.

Personal Vision Statement & Commitment

Personal <u>Vision Statement</u> for STAT 2450:	Personal <u>Commitment</u> to STAT 2450:
By successfully completing STAT 2450 I will:	To successfully complete STAT 2450, I must:
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Course Materials

Required course materials

- *Introductory Statistics: A Problem-Solving Approach (3rd ed.)* Kokoska.

ISBN: 9781319272685

This course requires electronic access to the accompanying web-based materials via Sapling. The ebook, quizzes, and homework assignments are all located within this resource.

The cost is \$67.49 through CarmenBooks.

The textbook and/or courseware for this course is being provided via CarmenBooks. Through CarmenBooks, students obtain publisher materials electronically through CarmenCanvas, saving them up to 80% per title. The fee for this material is included as part of tuition and is listed as CarmenBooks fee on your Statement of Account. In addition to cost-savings, materials provided through CarmenBooks are available immediately on or before the first day of class. There is no need to wait for financial aid or scholarship money to purchase your textbook.

Unless you choose to opt-out of the program, you do NOT need to purchase any materials for this course at the bookstore. For more information on the program or information on how to opt out, please visit the CarmenBooks website.

- [Kokoska] [SaplingPlus for The Basic Practice of Statistics] • [3rd edition] • [Macmillan]
- Access the courseware for this title through the Macmillan Higher Education Learning tab on the left-side of the course navigation.

STUDENT REGISTRATION INSTRUCTIONS

- Log into STAT 2450 through Carmen.
- Click the MacMillan App in the left navigation panel.
- Click the Achieve Learning link (note: if you encounter an error message or blank screen, you will need to adjust your browser settings and/or disable pop-up blockers).
- Agree to Macmillan Learning terms of use and end user agreement.
- Select your access option (credit card payment, use an activation code, or, request trial access). Click on any Sapling assignment link to launch the assignment.
- Follow the associated steps and continue to your assignment page.
- You are now enrolled in the course and can access future assignments through the links on your instructor's course page.
- To access your ebook click on the image of the cover on the right sidebar of your course site. Create an account or login with an existing Macmillan Learning ebook account.

Need Help? The publisher's technical support team can be reached by phone, chat, or by email via the Student Support Community. To contact support please open a service request by filling out the webform: <https://macmillan.force.com/macmillanlearning/s/contactsupport>.

Optional materials

- Texas Instruments 83 Plus (or higher) Graphing Calculator.
- University provided iPad.

Technology Support

For help with your password, university email, CarmenCanvas, or any other technology issues, questions 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 \(HELP\)](tel:614-688-4357)
- **Email:** servicedesk@osu.edu

Technology Skills Needed for This Course

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

Required Equipment

- **Computer:** current Mac (MacOS) or PC (Windows 10) 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) to use for BuckeyePass authentication

If you do not have access to the technology you need to succeed in this class, review options for technology and internet access at go.osu.edu/student-tech-access.

Required Software

Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Visit the [installing Office 365 \(go.osu.edu/office365help\)](https://go.osu.edu/office365help) help article for full instructions.

Grading

Grades

Assignment or category	Percentage	Your Grade
Recitations	10%	
Homework	20%	
Quizzes	20%	
Midterm Exam (June 30)	25%	
Final Exam (July 28)	25%	
Total	100	

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

Recitations

You will be put in groups of 4-5 people. During the recitation, you will work with your group in a breakout room on the recitation activity. Those students that are present during the recitation will be able to submit one recitation activity as a group and will all receive the same score. The recitations will be graded out of 4 points based on both completion and accuracy. If anyone is absent during the recitation they must submit the activity on their own. They can get help from their group but they must submit their own work. They will also be given a one point deduction on their recitation score. The recitations will need to be submitted in Carmen by noon of the day following the recitation. At the end of the semester the lowest recitation grade will be dropped.

Homework

There will be six homework assignments you will need to complete in Achieve, the online homework system. These will typically be due on Tuesdays at 11:59 PM. You have unlimited attempts to complete the homework without penalty. You may get help from each other, from your instructor in office hours, or from the discussion board in Carmen. No homework grades will be dropped.

Quizzes

There will be six quizzes that are also in Achieve. They will typically be due on Wednesdays at 11:59 PM. There is a 90 minute time limit on the quizzes, and you only get one chance to answer each question. You may not get help on the quizzes from your classmates, the instructor, the Carmen discussion boards, or any other outside resource. At the end of the semester the lowest quiz grade will be dropped.

Exams

Exams will take place during the normal class period. They will be proctored via the same Zoom meeting as the lectures. The exact format of the exam will be announced on Carmen at a later date.

Tokens

You will each start the semester off with 4 “tokens” that can be used for the following:

- A 24-hour extension on a homework or quiz assignment.
- The ability to miss a recitation without a point deduction.
- Getting credit for a late recitation activity.

To use one of these tokens you must email me with the subject “STAT 2450 Token” and describe what you would like to use the token for. Homework and quiz extensions should be requested by 5:00 PM the day the assignment is due in order to ensure you get the full extension.

Course Schedule

Includes tentative due dates. Refer to the CarmenCanvas course for up-to-date due dates.

Week	Meeting Dates	Topics	Assignments (Due Dates)
1	June 7, 9	Chapters 1-2	Rec 1 (6/8), Rec 2 (6/10)
2	asynchronous	Chapters 3-4	Hw 1 (6/14), Qz 1 (6/15), Rec 3-4 (6/17)
3	June 21, 23	Chapters 4-5	Hw 2 (6/21), Qz 2 (6/22), Rec 5 (6/22), Rec 6 (6/24)
4	June 28, 30	Chapters 5-6	Hw 3 (6/28), Qz 3 (6/29), Rec 7 (6/29), Midterm (6/30)
5	July 5, 7	Chapters 6-8	Rec 8 (7/5), Rec 9 (7/7)
6	July 12, 14	Chapters 8-9	Hw 4 (7/12), Qz 4 (7/13), Rec 10 (7/13), Rec 11 (7/15)
7	July 19, 21	Chapters 9-12	Hw 5 (7/19), Qz 5 (7/20), Rec 12 (7/20), Rec 13 (7/22)
8	July 26, 28	Chapter 12	Hw 6 (7/26), Qz 6 (7/27), Rec 14 (7/27), Final (7/28)

Additional Policies, Resources, & Information

Instructor feedback and response time

Grading and feedback

Recitation scores and feedback will typically be given by the next recitation.

Midterm exams should be graded within one week.

E-mail

All course e-mail correspondence must be done through a valid OSU name.n account.

Expect a 24-hour (school day) response time when communicating with the instructor.

We are here to support you, but just not quite in a true “on-demand” sense.

Discussion Boards

Expect a 24-hour (school day) response time for messages posted on a discussion board.

Student participation and responsibility

We expect you to be actively engaged in the learning process. You are responsible for your learning. Successful students perform a variety of positive academic behaviors like: reviewing the Carmen page, downloading notes, being proactive in contacting a TA or classmate as necessary, etc.. Please seek assistance in managing any non-academic responsibilities prior to any potential for under-performance.

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. I will provide specific guidance for discussions on controversial or personal topics.
- **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.
- **Synchronous sessions:** During our Zoom sessions I ask you to use your real name and a clear photo of your face in your Carmen profile. During our full-group lecture time, you may turn your camera off if you choose. When in breakout rooms or other small-group discussions, having cameras and mics on as often as possible will help you get the most out of activities. You are always welcome to use the [free, Ohio State-themed virtual backgrounds](https://go.osu.edu/zoom-backgrounds) (go.osu.edu/zoom-backgrounds). Remember that Zoom and the Zoom chat are our classroom space where respectful interactions are expected.

Academic integrity policy

A guiding principle is that, if you are considering doing something that might be unethical, then “**Don’t do it!!**” This mantra applies to both academic and non-academic settings.

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

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. <http://studentlife.osu.edu/csc/>.

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. In short, if you are considering doing something that might be unethical, then resist and refrain from pursuing it. This will help you in college and well-beyond.

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)

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

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](https://go.osu.edu/ccsondemand) (go.osu.edu/ccsondemand) are available. You can reach an on-call counselor when CCS is closed at [614- 292-5766](tel:614-292-5766). **24-hour emergency help** is available through the [National Suicide Prevention Lifeline website](https://www.suicidepreventionlifeline.org) (suicidepreventionlifeline.org) or by calling [1-800-273-8255\(TALK\)](tel:1-800-273-8255). [The Ohio State Wellness app](https://go.osu.edu/wellnessapp) (go.osu.edu/wellnessapp) is also a great resource.

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 \(SLDS\)](#). After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. 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.

Disability Services Contact Information

- Phone: [614-292-3307](tel:614-292-3307)
- Website: slds.osu.edu
- Email: slds@osu.edu
- In person: [Baker Hall 098, 113 W. 12th Avenue](#)

Accessibility of Course Technology

This online 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 as early as possible.

- [CarmenCanvas accessibility](http://go.osu.edu/canvas-accessibility) (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- [CarmenZoom accessibility](http://go.osu.edu/zoom-accessibility) (go.osu.edu/zoom-accessibility)