ENR 2000 Syllabus

Natural Resources Data Analysis, Spring 2024

Course Information

- **Course times and location:**

  Lecture (35380): Monday and Wednesday,10:20 – 11:15 am, Kottman Hall., Room 102.

  Lab group (35381): Monday, 12:10 – 2:10 pm Kottman Hall, Room 231A.

  Lab group (35382): Friday, 10:20 to 12:20 pm, Kottman Hall, Room 114.
- **Credit hours:** 3
- **Mode of delivery:** In Person

Instructor

- **Name:** Dr. Nadia Casillas Ituarte
- **Email:** casillas-ituarte.1@osu.edu
- **Office hours:** by appointment
- **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.

Teaching Assistant

- **Name:** Megan Greige
- **Email:** greige.1@buckeyemail.osu.edu
- **Office hours:** Wednesday from 11:30am to 2:00 pm Kottman Hall, Room 465.

Course Prerequisites

There are no prerequisites for this course.

Course Description

ENR 2000 fulfills 3-credit of the General Education (GE) Category Foundation: Mathematical and Quantitative Reasoning or Data Analysis.

This course focuses on understanding and applying basic statistical concepts, problem solving, and interpreting the results of statistical analysis. This course also covers the presentation and application of findings and uses statistical software programs like Excel and R in the computer lab. The course is designed to help students obtain an appreciation and working knowledge of statistics and data analysis procedures that will be useful in understanding academic and other literature, preparing for advanced statistics courses, and involvement in research.

At the end of the class students should be able to:

- recognize and apply basic statistical concepts and terminology
- solve problems applying the appropriate statistical concepts and methods
- interpret and communicate the results of statistical analyses
- correctly operate statistical software programs for data analysis (Excel, and R)
- acknowledge the importance of statistics and data analysis

General Education Expected Learning Goals and Outcomes

This course fulfils the General Education requirement for the Foundations, Mathematical and Quantitative Reasoning category. This course is designed to prepare students to be able to do the following:

- GOAL Successful students will be able to apply quantitative or logical reasoning and/or mathematical/statistical methods to understand and solve problems and will be able to communicate their results.
    - Expected Learning Outcome 1: Use logical, mathematical, and/or statistical concepts and methods to represent real-world situations.
    - Expected Learning Outcome 2: Use diverse logical, mathematical, and/or statistical approaches, technologies, and tools to communicate about data symbolically, visually, numerically, and verbally.
    - Expected Learning Outcome 3: Draw appropriate inferences from data based on quantitative analysis and/or logical reasoning.
    - Expected Learning Outcome 4: Make and evaluate important assumptions in estimation, modeling, and logical augmentation and/or data analysis.
    - Expected Learning Outcome 5: Evaluate social and ethical implications in mathematical and quantitative reasoning.

How This Course Works

Mode of delivery: This course is taught **in-person** course. We will meet **three** times per week, with two lectures and a computer lab session. Students are expected to attend all the scheduled meeting sessions.

- **Lectures** will be used to present material. Partial lectures will be posted on Carmen for each class session.
- **Computer lab** sessions will provide an opportunity to learn and use statistical software, review key concepts, and participate in small group activities.

Attendance and participation requirements: I have the following expectations for everyone taking this course:

- **Attending lectures and computer lab**: 3x per week
- **Participating in assignments**: You are expected to complete weekly assignments throughout the semester by the provided deadlines. These assignments include:
  - Homework assignments
  - Quizzes on Carmen
  - Computer lab activities
  - Class participation

- In the case of emergency or illness, contact Dr. Casillas as soon as possible to discuss possible accommodations.
- If classes are canceled (e.g., weather), we will meet virtually via CarmenZoom during our regularly scheduled time. I will share any updates via CarmenCanvas.

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 (lectures and a lab session for example) in addition to 6 hours of homework (homework, and quizzes for example) to receive a grade of C average.

Course Materials, Fees and Technologies

Textbooks

Required

Exploring Statistics: Tales of Distributions, 12th Edition by Chris Spatz (2016). Conway, Arkansas: Outcrop Publishers. You may use an older edition (the 10th edition and earlier is known as Basic Statistics: Tales of Distributions), but it is recommended that you do not use a book prior to the 10th Edition due to omissions and errors. It is available at the University Bookstore, Outcrop Publishers, and other online sources. Expected cost: $25-$50.

Recommended

Statistics in Plain English, 2nd or 3rd Edition by Timothy C. Urdan. This book provides helpful clarification on statistical concepts and terminology. An e-book is available online through the library.

Optional

Introductory Statistics by Open Stax, by Barbara Illowsky and Susan Dean (2020). https://openstax.org/details/books/introductory-statistics. The book is an open-source textbook and is available for free online.

Other Materials

- **Basic calculator**. No mobile phone calculators or programmable graphing calculators allowed on exams.

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) help article for full instructions.

Program R and RStudio: https://www.r-project.org/ Program R is a free (open source) software environment for statistical computing and graphics. Program R is available for both Windows and MacOS. People from all over the world are turning to R for data analysis. R users make up a community of students, researchers, analysts, and statisticians that benefit from the open exchange of statistical script and packages between users.

SPSS Statistics: As a student at Ohio State University, you have full free access to SPSS Statistics. This statistical package allows students to facilitate data analysis by using common data management functions.

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, 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)
- **Email:** servicedesk@osu.edu

Grading and Faculty Response

How Your Grade is Calculated

Assignment category	Points
Exam #1	12
Exam #2	12
Final Exam	12
11 Homework assignments	22
11 Quizzes	11
11 Lab activities	22
Journal Article Review	6
Class participation and attendance	3
Total	**100**

Descriptions of Major Course Assignments

Exams (36% total)

Description: Exams will take place in-person on the specified dates and times. Only in rare extenuating circumstances can they be taken early or late, and this will require permission of the instructor and/or documentation by university authorities.

Homework (22% total)

Description: Student will complete a total of 11 homework assignments to be turned in on the day they are **due at the first meeting day of the week (Monday or Tuesday), at the beginning of the lecture**. Any assignments turned in after this time will be considered late and will receive a 10% penalty. For each additional day (24 hours) the assignment is late, a 10% penalty will be deducted

from the final grade. **No assignment will be accepted after 3 days** in which it is due, unless documentation of a valid excuse is provided.
You will be given **one waiver** of the late penalty in the event you are ill, forget the assignment, or any other reason. In this case, the assignment must be turned in by 8 am the next day or the late paper policy will apply unless special arrangements are made with the instructor. The instructor should be notified as soon as possible. All homework assignments must be written legibly, with answers clearly marked by circling or putting a box around them. All work must be shown so that we can give all possible points.

Quizzes (11% total)

Description: Students will complete a total of 11 quizzes throughout the semester, all of which will be completed using Carmen. These quizzes are based on reading from the textbook and material covered in lecture. To get credit**, the quiz must be completed by each Friday at 8 pm**. The quizzes are graded to help you further understand the concepts.

Lab activities (22% total)

Description: Unless otherwise specified, all lab sections will meet in Kottman Hall 114. All computer lab activities must be turned in **by 8:00 pm the day of the lab session**. If you have a valid excuse for missing lab, please contact the instructor as soon as possible so that arrangements can be make**. If you need to switch lab sections for a particular week, please notify the instructor in advance.**
You are expected to attend the computer lab section that you signed up for. Only in limited situations and with prior permission of the instructor, will you be allowed to change lab sections. The one-time waiver of the late penalty can also be applied to a lab assignment (but not both homework and lab).

Journal Article Review (6% total)

Description: A review of a journal article will be assigned. More details will be described in class. The purpose of the assignment will be to provide student experience with reviewing the statistical rigor of an analysis in the primary literature.

Class participation and attendance (3% total)

Description:
For class participation, we will institute “random call” in our lecture discussions where the instructors will choose a student’s name at random to answer questions or discuss the lecture material. At the beginning of the course we will hand out and collect index cards that ask for your name preferences. We will then randomly draw cards without replacement until everyone has had an opportunity to participate in lecture discussions. This procedure will help provide all students an opportunity to contribute to class and has been shown to decrease student anxiety regarding class participation (Knight et al., 2016). This method also overcomes historical disparities of who contributes to class discussions and can eliminate the implicit bias of your instructors regarding who we call on during lecture. In addition, these cards will help us evaluate your participation throughout the term (contribute to your participation grade) and hopefully motivate you to engage in the course material and be active learners. We understand that for some students this process might create more anxiety. If this applies to you, you may ask to be removed from the in-person call list and we will provide an alternative option for you to answer lecture questions.

Knight, J.K., Wise, S.B., & Sieke, S. 2016. Group Random Call Can Positively Affect Student In-Class Clicker Discussions. CBE-Life Sciences Education 15:ar56, 1-11.

For attendance, we will use ***Top Hat*** (www.tophat.com). Students will be able to check attendance by using Apple or Android smartphones and tablets, laptops, or through text message. For instructions on how to create a Top Hat account and enroll in our Top Hat course, please refer to the invitation sent to your school email address or consult Top Hat's Getting started Guide (https://bit.ly/31TGMlw). Our class join code is: **167616.**

Late Assignments

Homework assignments, Quizzes, and Lab activities:
All assignments are due at the start of class unless otherwise stated. Any assignments turned in after the due date will receive a **-10% penalty** per day. No assignment will be accepted after 3 days from when it is due unless documentation of a valid excuse is provided.

Missed exams will result in a grade of 0% unless an extenuating circumstance occur. The instructor will determine on a case-by-case basis if an excuse is acceptable. Examples of these circumstances entail military duty, lengthy illness, extended hospitalization or other serious issues with official documentation.

Instructor Feedback and Response Time

I am providing the following list to give you an idea of my intended availability throughout the course.

- **Preferred contact method:** If you have a question, please contact me first through my email: casillas-ituarte.1@osu.edu. Please only use your OSU email account to contact me. I will reply to emails within **48 hours on days when class is in session at the university**.
- **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.
- **Grading and feedback:** For assignments submitted before the due date, I will try to provide feedback and grades within **ten days**. Assignments submitted after the due date may have reduced feedback and grades may take longer to be posted.

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

Academic Integrity Policy

See Descriptions of Major Course Assignments for specific guidelines about collaboration and academic integrity in the context of this online 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 (https://trustees.osu.edu/bylaws-and-rules/code), 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:

- 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. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

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.

Diversity

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

To learn more about diversity, equity, and inclusion and for opportunities to get involved, please visit:

- https://odi.osu.edu/
- https://odi.osu.edu/racial-justice-resources
- https://odi.osu.edu/focus-on-racial-justice
- https://cbsc.osu.edu/

In addition, this course adheres to **The Principles of Community** adopted by the College of Food, Agricultural, and Environmental Sciences. These principles can be found at https://cfaesdei.osu.edu/about-us/cfaes-principles-community. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (https://cfaesdei.osu.edu/). If you have been a victim of or a witness to harassment or discrimination or a bias incident, you can report it online and anonymously (if you choose) at https://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 or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th floor of the Younkin Success Center and 10th floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available 24/7 **by dialing 988 to reach the Suicide and Crisis Lifeline**.

For students in the College of Food, Agricultural, and Environmental Sciences, David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor on the Columbus campus. To contact David, please call 614-292-5766. Students should mention their affiliation with CFAES if interested in speaking directly with David.

Religious Accommodations

It is Ohio State's policy to reasonably accommodate the sincerely held religious beliefs and practices of all students. The policy permits a student to be absent for up to three days each academic semester for reasons of faith or religious or spiritual belief.

Students planning to use religious beliefs or practices accommodations for course requirements must inform the instructor in writing no later than 14 days after the course begins. The instructor is then responsible for scheduling an alternative time and date for the course requirement, which may be before or after the original time and date of the course requirement. These alternative accommodations will remain confidential. It is the student's responsibility to ensure that all course assignments are completed.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting Accommodations

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. 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.

If you are isolating while waiting for a COVID-19 test result, please let me know immediately. Those testing positive for COVID-19 should refer to https://safeandhealthy.osu.edu/tracing-isolation-quarantine for resources. Beyond five days of the required COVID-19 isolation period,

I may rely on Student Life Disability Services to establish further reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

Disability Services Contact Information

- Phone: 614-292-3307
- Website: https://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 (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- CarmenZoom accessibility (go.osu.edu/zoom-accessibility)
- Microsoft Excel accessibility (https://www.microsoft.com/en-us/accessibility/microsoft-365)
- RStudio accessibility (https://irc.jhu.edu/wp-content/uploads/2022/09/RDP-1.4.1717-VPAT-WCAG.pdf)

Course Schedule

Week	Topic	Assignment
1 Jan 8-Jan 12	Introduction to data analysis: Frequency Distribution and graphs (Chapters 1-2)	• No Homework • No computer lab
2 Jan 15-Jan 19	Measures of central tendency and variability (Chapters 2-4)	• Homework 1 due Jan 17th • Quiz 1 due Friday, Jan 19th • Monday Lab: No class MLK Jr. • Friday Lab: Lab 1
3 Jan 22-Jan 26	Measures of variability; other descriptive statistics (Chapters 4-5)	• Homework 2 due Jan 24rd • Quiz 2 due Friday, Jan 26th • Monday Lab: Lab 1 • Friday Lab: Lab 2
4 Jan 29-Feb 2	Other descriptive statistics; correlation (Chapters 5-6)	• Homework 3 due Jan 31st • Quiz 3 due Friday, Feb 2nd • Monday Lab: Lab 2 • Friday Lab: Lab 3
5 Feb 5-Feb 9	Regression and probability (Chapters 6-7)	• Homework 4 due Feb 7th • Quiz 4 due Friday, Feb 9th • Monday Lab: Lab 3 • Friday Lab: Lab 4
6 Feb 12-Feb 16	Theoretical distributions (Chapter 7)	• Homework 5 due Feb 14th • Quiz 5 due Friday, Feb 16th • Monday Lab: Lab 4 • Friday Lab: Lab 5
7 Feb 19 -Feb 23	Samples, sampling distributions, and confidence intervals (Chapter 8)	• Exam 1: Feb 21st • No Quiz, No Homework • No Lab
8 Feb 26-March 1	Samples, sampling distributions and confidence intervals (Chapter 8)	• Homework 6, due Feb 28th • Quiz 6 due Friday, March 1st • Monday Lab: Lab 5 • Friday Lab: Lab 6 (take home)
9 March 4-March 8	Hypothesis testing: One sample design (Chapter 9)	• Homework 7, due March 6th • Quiz 7 due Friday, March 8th • Monday Lab: Lab 6 (take home) • Friday Lab: Lab 7

Week	Topic	Assignment
10	SPRING BREAK	
11 March 18-March 22	Hypothesis testing: Two sample designs (Chapters 9-10)	• Homework 8, due March 20th • Quiz 8 due Friday, March 22th • Monday Lab: Lab 7 • Friday Lab: Lab 8
12 March 25-March 29	Hypothesis testing: Two sample designs (Chapter 10)	• Homework 9, due March 27th • Quiz 9 due Friday, March 29th • Monday Lab: Lab 8 • Friday Lab: Lab 9
13 April 1-April 5	Hypothesis testing: Two sample designs (Chapters 10)	• Exam 2: April 3rd • No Quiz, No Homework • No lab
14 April 8-April 12	Analysis of variance: One way classification (Chapter 11)	• Homework 10, due April 10th • Quiz 10 due Friday, April 12th • Monday Lab: Lab 9 • Friday Lab: Lab 10
15 April 15-April 22	Analysis of variance: Chi-square test (Chapter 11 and 14)	• Article due Friday, April 19th • Homework 11 due April 17th • Quiz 11 due Friday, April 19th • Monday Lab: Lab 10 • Friday Lab: Lab 11 • Monday Lab: Lab 11
16	Final Exam	• Apr 25 10-11:45 am
Homework is due right before class		
Quizzes are due Fridays at 8:00 pm		
Lab reports are due at 8:00 pm the day of the lab		
Article assignment is due April 19th at 8:00 pm		