



THE OHIO STATE UNIVERSITY

SYLLABUS:

STAT 3470 – INTRODUCTION TO PROBABILITY AND STATISTICS FOR ENGINEERS

(ONLINE)

Course overview

Instructors

Amartya Ghosh (ghosh.147@buckeyemail.osu.edu)

Office hours: Tuesdays and Thursdays , 4:00pm – 5:00pm EDT, or by appointment. Office hours will be held on CarmenZoom (<https://osu.zoom.us>) . Office hours start from 5/19/2020.

Teaching Assistants

- 1) Hengrui Luo (luo.619@buckeyemail.osu.edu)
- 2) Meijia Shao (shao.390@buckeyemail.osu.edu)
- 3) Yuan Gao (gao.957@buckeyemail.osu.edu)

Course description

The course is an introduction to probability and statistics for engineers. Topics covered include probability, Bayes Theorem, discrete and continuous random variables, probability distributions, expected values, sampling distributions, point estimation, confidence intervals, hypothesis testing and least squares regression models. A more detailed list of topics can be found in the tentative schedule below.

Course learning outcomes

General Education (GE) Requirement: This course satisfies the GE requirement in Data Analysis.

Expected Learning Outcomes: Upon successful completion of this course, students understand basic concepts of statistics and probability, comprehend methods needed to analyze and critically evaluate statistical arguments, and recognize the importance of statistical ideas.

Course materials

Probability and Statistics for Engineering and the Sciences (9th edition), by Jay Devore.

The ebook is included with **WebAssign**, the homework management system used in this class. Instructions on purchasing options will be posted on Carmen.

Online Course Delivery

Each week one or more lecture videos will be posted on the course website. Each video will be approximately 15 minutes in length. You are responsible for watching the videos and studying the material that is assigned each week. In addition to the lecture videos, weekly assignments will be posted on the class website. You will be given ample time to complete the assignments.

The instructor will hold weekly office hours via Zoom. The dates and times have been mentioned at the beginning of the syllabus and will also be posted on the Carmen website. In case office hours need to be changed, the changed scheduled will be mentioned through Carmen Announcements. The instructor will initiate and manage active discussion boards, also via Carmen.

The vast majority of the course can be completed **asynchronously**, meaning that you will be able to study materials and work on assessments according to your own schedule. Regularly, live Zoom meetings will take place. See the **Staff Response** section below.

Assessment

Homework: There will be weekly homework assignments via WebAssign. The assignments will be completed and submitted online, through the WebAssign interface.

Exams: There will be one midterm exam and one final exam. **All exams will be delivered remotely, via Carmen.** The midterm exam will be held in the second or third week of June.

Exact time and date of midterm will be announced later. The final exam will take place at the time and date established by the University. Information regarding the exams will be posted well in advance through the course website. (*Proctorio* may be used for the exam.)

Quizzes: There will be some quizzes through out the semester. These will be mostly multiple choice or short answers to help students assess their performance.

Grade Distribution:

Homework : 20 %
Quiz: 25%
Mid term: 25 %
Final: 30 %

Course schedule

The following is a tentative weekly list of topics which will be covered during this course:

(Dates will be added when the course is offered.)

Week	Topic
1	Introduction, sample spaces, counting, probability
2	Independence, random variables, probability distributions, expectation
3	Binomial, Poisson probability distributions.
4	Probability density functions (pdfs), cumulative density functions (cdfs), the Normal distribution
5	Exponential, Gamma distributions, joint probability distributions.
6	Expected values, Covariance and Correlation
7	Statistics, sampling distributions
8	Point estimation, Confidence intervals
9	Confidence intervals
10	Hypothesis testing

11	Simple linear regression, Model checking.
12	Transformations, Multiple regression

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help>, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Baseline technical skills necessary for online courses

- Basic computer and web-browsing skills
- Navigating Carmen; the following website may help you if you encounter difficulties with Carmen: <https://resourcecenter.odde.osu.edu/canvas/>.

Necessary equipment

- Computer: current Mac (macOS) or PC (Windows 8+) with high-speed internet connection and an up-to-date browser. A number of publicly available computers are available on campus, here is a link for their locations <https://odde.osu.edu/public-computing>.
- CarmenZoom text, audio, and video chat. If you need technical assistance, either call 614-688-HELP, or refer to the online instructions: <https://resourcecenter.odde.osu.edu/carmenzoom>

Staff response

Staff feedback and response time

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

Canvas Conversations

A course instructor or teaching assistant will reply to messages sent via Canvas Conversations within **24 hours on school days (Monday – Friday, excluding university holidays; list of holidays at <http://registrar.osu.edu/staff/bigcal.asp>)**.

Discussion board

We will check and reply to messages in the discussion boards as appropriate every **24 hours on school days**.

Live Zoom office hours.

Each week, there will be live Zoom office hours. Office hours begin from 5/19/2020.

If you have questions about the Mastery Assessments (Quizzes) or notice any typos in the material, please message us directly via Canvas Conversations or through email – please do not use the Discussion board.

Attendance, participation, and discussions

Communication guidelines

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

- **Writing style:** While there is no need to communicate as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) 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.
- **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.

Other course policies

Academic integrity policy

Policies for this online course

- **Assessments:** You must complete the assessments yourself, without any external help or communication.
- **Exams** may use *Proctorio* as a proctoring tool.

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 we recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are 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 (<http://oaa.osu.edu/coam.html>)
- *Ten Suggestions for Preserving Academic Integrity* (<https://oaa.osu.edu/coamtensuggestions.html>)
- *Eight Cardinal Rules of Academic Integrity* (<http://www.northwestern.edu/uacc/8cards.htm>)

Advising

For help navigating this large university, you will find that you need advising. In addition, advisors can help you get information regarding accessing course materials to meet the needs of diverse learners. For more information, visit the university's advising website at <https://advising.osu.edu/>. In addition to advising services, OSU main campus students may find assistance at <http://ssc.osu.edu>.

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.

Statement on Title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu

Accessibility accommodations for students with disabilities

Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, slds@osu.edu; slds.osu.edu.

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.

- Carmen (Canvas) accessibility (<https://community.canvaslms.com/docs/DOC-2061>)
- Streaming audio and video