

STAT 462: Introduction to Mathematical Statistics II

CRN: 43624, Course Syllabus- Winter 2022

This course uses Canvas as the main learning platform. If you haven't used Canvas before, I recommend you take the PSU Learning Center's [remote readiness course](#) this week. If you've used Canvas and you just need occasional technical support, contact the [OIT Helpdesk](#). If they can't help you, please let me know.

Instructor: Nadeeshani Jayasena, Ph.D. (Preferred: Nadee, Pronouns: Sher/Her) (nadeej2@pdx.edu)

Student Drop-in (Office) Hours: 11:30 am – 12pm and 1:00 – 1:30pm on Tuesday and Thursday or by appointment in **FMH 460L**.

Class Meeting: Tuesday and Thursday, 10:00 – 11.15 am in **FMH 418**

Mid Exam: 10.00 – 11.15 am on Tuesday, Feb 1 in **FMH 418**

Final Exam: **10.15 am – 12.05 pm on Tuesday, March 15, in FMH 418**

Course Description:

Theory of probability, distributions of random variables, central limit theorem, sampling distributions, point and interval estimation, tests of hypotheses, analysis of variance. This is the second course in a sequence of three: Stat 461, Stat 462, and Stat 463 which must be taken in sequence.

Prerequisite: Stat 461

Required Textbook:

***Mathematical Statistics with Applications* (7th Edition) by Dennis D. Wackerly, William Mendenhall, Richard L. Scheaffer.**

The textbook is required for completing homework problems, and additional reading and examples.

Contents:

Chapters 5 - 8 will be covered. The objective is to introduce the joint probability distributions, independent random variables, central limit theorem, and point & interval estimations. The students are assumed to be familiar with the calculus of functions of several variables as well as probability distributions.

Course Format:

Lectures: Time in lecture will be devoted to introducing statistical concepts. The textbook will give numerous examples that you can follow to learn statistical theory and how to apply those to solve problems. Lecture handouts are incorporated in all lectures. Incomplete handouts will be posted on Canvas/ Modules weekly. Students are encouraged to bring these handouts in class, and complete handouts or make additional notes. The completed lecture handouts can be posted in Canvas/Modules after each class. Lecture handouts are not a substitution for lecture and practicing homework. They are intended to be guide line for the text, outlining some important topics in each section.

Course Objectives:

Besides mathematical introduction to the various concepts in probability and statistics, the students will be exposed to statistical thinking. This includes knowing the definitions of the concepts, understanding their meaning through examples, knowing the main results and their proofs, being able to use various statistical packages and interpret the results.

Student Learning Outcomes: Upon completion of this course the student should be able to:

1. Choose appropriate probability distributions and apply them to real world problems.
2. Be able to find the distributions of the transformed variables.
3. Be aware of the important sampling distributions.
4. Know the basic concepts and properties of point estimators, like sample proportion, sample mean, sample variance etc.
5. Know the basic concepts of confidence intervals and tests of hypotheses.

Success Plan:

This class is designed for you to succeed. Please follow this simple plan of action.

1. **Attend class:** You'll understand more, get a better grade, and life will be easier. Be on time. Ask questions. Please avoid side discussions - ask me!
2. **Form or join a study group:** Do your Homework with your study group. Teaching each other is a very effective way to learn. Making connections with other people is critical to your success in this course, in your career, and in your life.
3. **Follow the course:** You are responsible for ALL material covered in lecture and on Canvas. I will post all the announcements in Canvas/Announcements and not email those. Please check **Announcements and Modules in Canvas** daily.
4. **Notify me about Private Issues:** If you have an illness, personal issue, or disability, please notify me immediately to arrange the necessary support. Do not come to class if you are sick.

Evaluation:

Evaluation methods are a means to learning. They are not the goal. Learning is the goal. We evaluate in order to measure progress, and then we use the measurements to adjust and to make sure we are on track to our goals.

1. **Homework:** A set of homework problems from the textbook and other resources will be assigned according to tentative schedule below. You are encouraged to work on homework together in your study groups. **Homework is posted in Canvas/Assignments and the completed homework must be submitted as a single PDF to the same Assignments folder or in-person by the due time.** You are not required to type the answers. **Please don't email the assignment to instructor. The feedback for a completed homework is provided through Canvas and Answers are not posted.** An Extra Credit assignment may be given according to the instructor's discretion.
 - * The work on your homework must be your own.
 - * Main steps of work are expected.
 - * All or selected few questions will be graded.
2. **Exams:** There will be one midterm exam and one final exam. **Midterm has 75 minutes** while the **final exam has 110 minutes**. Exams are closed book and closed class notes. A calculator and one page of notes including both front and back are allowed.

I am interested in your learning and your approach to problems. Therefore, partial credit will be given when you have solved parts of the problem correctly. Showing your work allows me to assess whether you are on the right track. **Be able to show complete work when completing Homework and Exam.**

Grading Policy and Conversion Guideline for % Grade to Letter Grade

Homework	40%
Mid Exam	30%
Final exam	30%
Total	100%

- * (In order to receive a Pass with the Pass/No Pass option, a grade of C or better *must* be earned. A grade of C- is *NOT* a passing grade.)
- * Based on the overall grade (%) the letter grade will be assigned according to Table 1 after rounding your grade properly.

Table 1:

Score (%)	Letter Grade	Score (%)	Letter Grade	Score (%)	Letter Grade	Score (%)	Letter Grade
93-100	A	87-89	B+	77-79	C+	67-69	D+
90-92	A-	83-86	B	73-76	C	63-66	D
		80-82	B-	70-72	C-	60-62	D-
						0-59	F :-(

[PSU Grading System](#) and [Drop, Withdraw and Cancellations](#).

Academic Support and Course Policies:

Course Attendance and Make-up Policies

This is an **in-person or On-Campus** course. The zoom meetings are scheduled in Canvas/Zoom for those who cannot attend in-person due to various reasons. To **join zoom class meetings, always go to the course in Canvas, click Zoom and then click Join next to the scheduled date.** Attendance is expected in all lectures. The recorded zoom lectures will be posted in Canvas. If there is an emergency, please notify the instructor to arrange the necessary support and provide a valid document when appropriate. Attendance includes your showing up to class meetings and meeting the instructor during office hours. If you are unable to complete assignments by their due dates you **must email me before the due date** to ask for an extension. If you believe you have extenuating circumstances, please email me as well.

Disturbances:

Classroom disturbances that impede on other students' opportunity to learn will not be tolerated. Disturbers will first be asked to stop. If the disturbance continues, the student will be asked to leave the class.

Disability Service:

PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. The [Disability Resource Center \(DRC\)](#) provides reasonable accommodations for students who encounter barriers in the learning environment. The DRC is in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu.

If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, then contact the DRC to schedule an appointment and initiate a conversation about reasonable accommodations. If you already have accommodations, please contact me to make sure that I have received a faculty notification letter and discuss your accommodations. Students who need accommodations for exams and quizzes are expected to contact me well before their due dates.

Mental Health and Counseling Services:

All of us need a support system, and many students benefit from the use of counseling services. The [Student Health & Counseling center \(SHAC\) at PSU](#) works with students to identify and address issues related to personal growth, self-confidence, anxiety, depression, eating disorders, academic difficulties, and career indecision. PSU provides counseling services to students at no cost and are offering virtual appointments to students during this time. For urgent mental health needs, students should call or walk into the SHAC, which is still open to support students' mental and physical health.

Academic Integrity Policy:

Students are expected to adhere to guidelines concerning academic dishonesty outlined in [University's Student Code of Conduct](#). Students are encouraged to contact me for clarification of these guidelines if they have questions or concerns.

You (students) are encouraged to work together on homework problems, but the work you turn in must be your own (unless the assignment specifically states otherwise). Work on quizzes and exams must be your own. **Any act of academic dishonesty will result in a score of zero on the item in question and notification of department and university officials.** Further action may be taken as warranted. Subsequent offenses will result in an F in the class. You are capable of meeting my expectations for this course. If you are concerned about how well you are doing in this course, please discuss with me instead of considering academic misconduct.

Safe Campus Statement

Portland State University desires to create a safe campus for our students. As part of that mission, PSU requires all students to take the learning module entitled [Creating a Safe Campus: Preventing Gender Discrimination, Sexual Harassment, Sexual Misconduct and Sexual Assault](#). If you or someone you know has been harassed or assaulted, you can find the appropriate resources on [PSU's Enrollment Management & Student Affairs: Sexual Prevention & Response website](#).

Title IX Reporting

As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. As a member of the university community, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find a list of those individuals on [PSU's Enrollment Management & Student Affairs: Sexual Prevention & Response website](#). For more information about Title IX, please complete the required student module "Creating a Safe Campus: Preventing Gender Discrimination, Sexual Harassment, Sexual Misconduct and Sexual Assault" in the "All Courses" section of Canvas.

Incomplete Policy

Students do not have a right to receive or demand an Incomplete grade. The option of assigning an Incomplete grade is at the discretion of the instructor when the following criteria are met. For the full Incomplete Policy see [here](#).

Eligibility Criteria:

1. Required satisfactory course completion/participation.
2. Reasonable justification for the request.
3. Incomplete grade is not a substitute for a poor grade.
4. Written agreement. (See [Incomplete Grade Contract](#))
5. Resolving the Incomplete.

Flexibility Statement

As the instructor, I reserve the right to modify course content and/or substitute assignments and learning activities in response to institutional, weather, or class situations.

Classroom Requirements for All Students and Faculty Due to Covid-19

The University has established rules and policies to make the return to the classroom as safe as possible. It is required for everyone to follow all the Return to Campus rules and policies. To participate in this class, PSU requires students to comply with the following.

Masks Required at all Times in Classroom

- [Wear a mask or face covering indoors](#) at all times. Your mask or face covering must be properly worn (fully covering nose and mouth and tight fitting). Mesh masks, face shields, or face covering that incorporates a valve designed to facilitate easy exhalation are not acceptable. **Because a mask must be worn in the classroom, there should be no eating or drinking in the classroom.** If you have a medical condition or a disability that prevents you from wearing a mask or cloth face covering, you must obtain an accommodation from the [Disability Resource Center \(DRC\)](#) to be exempt from this requirement.
- CDC, State, and County guidance does not limit class size for in-person instruction or require physical distancing.

Vaccination

- Be vaccinated against COVID-19 and complete the [COVID-19 vaccination attestation](#) form. Those students with medical or nonmedical exemptions or who will not be on campus at all must complete the process described on "COVID-19 Vaccine Exemption Request Form" to establish those exemptions.

Health Check, Illness, Exposure or Positive Test for COVID-19

- Complete the [required self-check for COVID-19 symptoms before coming to campus each day](#).
- If you are feeling sick or have been exposed to COVID-19, do not come to campus. Call SHAC to discuss your symptoms and situation (503.725.2800). They will advise you on testing, quarantine, and when you can return to campus.

- If you test positive for COVID-19, [report your result to SHAC](#) and do not come to campus. SHAC will advise you on quarantine, notification of close contacts and when you can return to campus.
- Please notify me, (i.e. your instructor), should you need to miss a class period for any of these reasons so that we can discuss strategies to support your learning during this time.
- If I become ill or need to quarantine during the term, either I or the department chair will notify you via PSU email about my absence and how course instruction will continue.

Failure to Comply with Any of these Rules

As the instructor of this course, the University has given me the authority to require your compliance with these policies. If you do not comply with these requirements, I may ask you to leave the classroom or I may need to cancel the class session entirely.

In addition, failure to comply with these requirements may result in a referral to the Office of the Dean of Student Life to consider charges under PSU's Code of Conduct. A student found to have violated a university rule (or rules) through the due process of student conduct might face disciplinary and educational sanctions (or consequences). For a complete list of sanctions, see Section 14 of the [Student Code of Conduct & Responsibility](#).

Guidance May Change

Please note that the University rules, policies, and guidance may change at any time at the direction of the CDC, State, or County requirements. Please review the University's main [COVID-19 Response](#) webpage and look for emails from the University on these topics.

Course Calendar/Schedule

Tentative Course Schedule

Week	Week	Besides readings from textbook, Assignments due
Jan 3 – Jan 9	1	Review Homework on Friday
Jan 10 – Jan 16	2	Homework 1 on Friday
Jan 17 – Jan 23	3	
Jan 24 – Jan 30	4	Homework 2 on Friday
Jan 31 – Feb 6	5	Mid Exam, in class, on Tuesday
Feb 7 – Feb 13	6	
Feb 14 – Feb 20	7	Homework 3 on Friday
Feb 21 – Feb 27	8	
Feb 28 – Mar 6	9	Homework 4 on Friday
Mar 7 – Mar 13	10	
Tuesday, Mar 15	11	Final Exam, in class (10.15 am – 12.05 pm)