

Palestine Polytechnic University

Faculty of Applied Sciences

4509 - Probability Theory

First semester 2019-2020

Course Name : (4509) Probability Theory.
Prerequisites : Introduction to Statistics and Calculus III
Class Schedule : Sun. Thur. 12:00-1:50, Room B+411.
Instructor : **Name:** Monjed H. Samuh
E-mail: monjedsamuh@ppu.edu
Website: <http://staff.ppu.edu/monjedsamuh>
Office : B+503.
Office Hours : Sun. Tues. Thur. 10:00-11:50.
: or by appointment (via email).

Textbook Sheldon Ross (2014), A First Course in Probability, 9th Edition. PEARSON.

Recommended Texts

1. Hogg, R. V., & Tanis, E. A. (2014). Probability and statistical inference, 9th Edition. PEARSON.
2. Hogg, R. V., McKean, J. W., & Craig, A. T. (2012). Introduction to mathematical statistics, 7th Edition. PEARSON.

Course Description This course covers the principles of probabilities including random experiments and their sample space, probability definitions, axioms of probability, rules of probability, and methods of enumeration. Moreover, we will study the random variables and their distributions, expectations and variances. We will introduce Chebyshev's inequality and moment generating function. Finally, we will discuss the law of large numbers and the central limit theorem.

Intended Learning Outcomes After the completion of this course, students should be able to:

1. Define the concept of probability;
2. Give and work with different probability models;
3. Derive and use the moment generating function;
4. Define and work with the concepts of multivariate distributions;
5. Determine distributions of functions of random variables;
6. State, explain and use the central limit theorem.

Course Outline and Calendar

Chapters/Topics	HOURS
Combinatorial Analysis	6
Axioms of Probability	6
Conditional Probability and Independence	6
• Random Variables	6
Continuous Random Variables	6
Jointly Distributed Random Variables	6
Properties of Expectation	3
Limit Theorems	6

Course Policies

- Please do the reading from the sections to be covered before coming to class each day. Your instructor will be planning class activities assuming you have done the reading.
- **Homework:** There will be two types of homework assignments.
 1. **Mini Homework:** these are problems which arise while lecturing. I will assign a mini homework almost every class day.
 2. **Major Homework:** these are set of problems assigned weekly.
- You may collaborate on homework, but you must write your submitted work in your own words. All steps are required, this includes showing calculations, derivations, and proofs.
- You have to devote to this class several hours per week of concentrated attention to understand the subject enough so that standard problems become routine. If you think that coming to class and reading the examples while also doing something else is enough, you're in for an unpleasant surprise on the exams.
- Attending classes is compulsory; according to the University regulations, a student who misses more than 8 lectures will be prevented from entering the final exam.
- In the event that a student has to miss a class, he is responsible to get caught up with the materials covered and homework assigned.
- No make-up tests will be hold in any circumstance, any student with accepted excuse will be given the grade of the final transferred to appropriate weight. Make-up of the final test will follow the university regulations.
- All students are expected to be in the classroom on time. Being late will be treated as being absent.
- It is the **student's responsibility to observe the academic calendar for important dates.**
- It is the **student's responsibility to be knowledgeable about the rules and regulations that govern your study at the university.**

- I assume, the students come to class to learn, I come to class to teach.
 - We will be respectful of everyone in class.
 - Mobiles should be turned off before the beginning of each class, no exceptions.
 - There will be no talking in class, except to ask instructor questions or share comments with the entire class. Talking is disruptive to the class and disrespectful to the Instructor.
 - There will be no texting, reading, eating, etc., while in class.
- Cheating will be dealt with according to the University rules.
- Wastah is the thing that the Instructor hates the most!. Definitely, No grade will be changed because of Wastah.

Teaching Methods

- Explaining concepts and applications through lectures using white-board.
- Group discussions and solving problems.
- Problems and exercises will be assigned from the text on each section at the time of discussing the section.

Grade Distribution

- Your final grade will depend on the following components with these proportions:
 - **Assignments and Quizzes (10%): Quizzes may not be announced in advance.**
 - **First Exam (25%).** 7th Week: Oct. 15, 2019 (Tuesday).
 - **Second Exam (25%).** 12th Week: Nov. 19, 2019 (Tuesday).
 - * If the exam is not held for any reason (urgent circumstances), it will be immediately postponed to the next regular class.
 - **Final Exam (40%):** Comprehensive.
- You need to achieve at least 60% in order to pass the course.