Philadelphia University	PHILADELPHIA	Approval date:
Faculty of Science	UNIVERSITY	Issue:
Department of Mathematics	THE WAY TO THE FUTURE	Credit hours: 3
Academic year 2023/2024	Course Syllabus	Bachelor

Course information

Course #	Course title	Prerequisite	
0250232	Probability Theory	0216121	
Course type		Class time	Room #
University Requi	Sat, Mon 12:40 – 13:55	2827	

Instructor Information

Name	Office No.	Phone No.	Office Hours	E-mail
			Sat, Mon 09:45 - 11:00	
Dr. Heba Ayyoub	21019	2466	Sun, Tues 11:15 – 12:30	hayyoub@philadelphia.edu.jo

Learning Method

Learning Method			
☑ Face to face	□ Online	□ Blended	

Course Description

Course Description
This course covers the principles of probability and its axioms. We introduce the rule of probability
and random variables (Discrete and Continuous) and their distributions, expectations, variances and
moment generating functions. Some special distributions will be cover.
Course Objectives
At the conclusion of the course, students will be able to
1) Learn probability, conditional probability, and concept of independence.
2) Study the discrete probability distributions, cumulative probability distribution as Bernoulli, Binomial,
Geometric, Negative Binomial and Poisson distributions and their mean and variance.
3) Finally, learn the continuous probability distributions as Uniform, Exponential, Gamma, Beta and
Normal distributions.

Course Learning Outcomes

Outcomes
Knowledge
K1 Understanding the fundamental concepts for discrete and continuous variables.
K2 Learn probability, conditional probability, and concept of independence.
Skills
S1 Students will use various techniques for concisely describing variables.
S2 Students will effectively apply the statistics in working with probabilities.
Competence
C1 Students will have learned to find means, variances and moment generating functions of random variables or functions of random variables.
C2 Students will understand different methods for distribution functions of random variables.

Learning Resources

Course textbook	Introduction to Probability Theory and Statistical Inference, Harold J. Larson, 3 rd Edition, John Wiley and Son.	
Supporting References	 Probability and Statistical Inference, Robert V. Hogg, Elliot A. Tanis and Dale L. Zimmerman, 9th Edition. Mathematical Statistics with Applications, Dennis D. Wackerly, William Mendenhall and Richard L. Scheaffer, 7th Edition, Thomson 	
Teaching Environment	☑ Classroom □ Laboratory □ Learning platform □ Other	

Meetings and Subjects Timetable

Week	Торіс	Learning Methods	Tasks
1 Oct 12 – Oct 16	 Course Syllabus: Explanation of the study plan for the course and what is expected to be accomplished by the students. Technology Preliminaries: Moodle, Microsoft Teams. Chapter (1): Set Theory 1.1 Set Notations, Equality and Subsets 1.2 Sets Operation 	Face to Face Learning	
	Oct 16: Last day to add / drop a course		
2 Oct 19 – Oct 23	Chapter (2): Probability 2.1 Sample Space; Events	Face to Face Learning	
3 Oct 26 – Oct 30	2.2 Probability Axioms 2.3 Finite Sample Spaces	Face to Face Learning	
4 Nov 2 – Nov 6	2.4 Counting Techniques2.5 Some Particular Probability Problems	Face to Face Learning	Quiz
5 Nov 9 – Nov 13	2.6 Conditional Probability	Face to Face Learning	Assignment

6 Nov 9 – Nov 13	2.7 Independent Events	Face to Face Learning		
	Nov 23 – Dec 4: Midterm Exam			
7 Nov 23 – Nov 27	 Chapter (3): Random Variables and Distribution Functions 3.1 Random Variables 3.2 Distribution Functions and Density Functions 	Face to Face Learning	Quiz	
8 Nov 30 – Dec 4	3.3 Expected Values and Summary Measures	Face to Face Learning		
9 Dec 7 – Dec 11	3.4 Moments and Generating Functions	Face to Face Learning		
10 Dec 14 – Dec 18	Chapter (4): Some Standard Probability Law 4.1 The Bernoulli and Binomial Probability Laws	Face to Face Learning	Assignment	
11 Dec 21 – Dec 25	4.2 Geometric and Negative Binomial Probability Laws	Face to Face Learning		
12 Dec 28 – Jan 1	4.4 The Poisson Probability Law	Face to Face Learning	Quiz	
13 Jan 4 – Jan 8	4.5 The Uniform, Exponential and Gamma Probability Laws	Face to Face Learning		
14 Jan 11– Jan 15	4.5 The Uniform, Exponential and Gamma Probability Laws (Cont.)	Face to Face Learning		
15 Jan 18 – Jan 22	4.6 The Beta and Normal Probability Laws	Face to Face Learning		
16	Jan 25 – Feb 5: Final Exam			

Assessment Methods and Grade Distribution

Assessment Methods	GradeWeight	Assessment Time (Week No.)	Link to Course Outcomes
Mid Term Exam	30%	8	K1, K2, C1
Various Assessments *	30%	Continuous	S1, S2, C1, C2
Final Exam	40%	16	K1, K2, C1
Total	100%		

* Includes: quiz, in class and out of class assignment, presentations, reports, videotaped assignment, group or individual projects.

Important Instructions

- 1. At least two quizzes will be given. Students are not permitted to make up any missed quizzes.
- 2. Homework problems will be assigned on Microsoft Teams/Moodle. Students are required to submit their solutions by the specified due dates. Late submissions will not be accepted.
- 3. Students are not allowed to copy solutions for homework problems from other students or any other resources. However, discussing problems with other students is encouraged.
- 4. The final exam will cover all topics presented in the syllabus.

Course Polices

Policy	Policy Requirements	
Passing Grade	The minimum passing grade for the course is (50%).	
Missing Exams	 Missing an exam without a valid excuse will result in a zero grade to be assigned to the exam or assessment. A Student who misses an exam or scheduled assessment, for a legitimate reason, must submit an official written excuse within a week from the exam or assessment due date. A student who has an excuse for missing a final exam should submit the excuse to the dean within three days of the missed exam date. 	
Attendance	The student is not allowed to be absent more than (15%) of the total hours prescribed for the course, which equates to four lectures days. If the student misses more than (15%) of the total hours prescribed for the course without a satisfactory excuse accepted by the dean of the faculty, she/he will be prohibited from taking the final exam and the grade in that course is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the course without a student of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due to illness or a compulsive excuse accepted by the dean of the course is due	
Academic Honesty	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as: cheating, plagiarism (academic theft), collusion, and violating intellectual property rights.	