



Department of Mathematics

College of Science

University of Salahaddin- Erbil

Subject: Introduction to Probability

Course Book: Second Year Mathematics

Lecturer's name: Swar Omer Ahmed

Academic Year: First semester-2023/2024

Course Book

1. Course name	Introduction to Probability
2. Lecturer in charge	Swar Omer Ahmed
3. Department/ College	College of Science- Department of Mathematics
4. Contact	e-mail :swar.ahmed@su.edu.krd Tel: (optional)
5. Time (in hours) per week	Theory: 3 Tutorial:1
6. Office hours	
7. Course code	SM203
8. Teacher's academic profile	<p>Swar Omer Ahmed, PhD in Applied Statistics, Mathematics Department- College of Science- Salahaddin University-Erbil.</p> <p>Qualification</p> <p>PhD In Applied Statistics (2020) Salahaddin University-Erbil.</p> <p>M.Sc. In Statistics (2007), Mustansiriyah University – Baghdad.</p> <p>B.Sc. in Mathematics (1999), Salahaddin University-Erbil.</p> <p>Teaching Experience:</p> <p>From 2007 worked as an assistant lecturer and then lecturer,teaching at different levels undergraduate.</p>
9. Keywords	Probability, PDF, CDF, Conditional Probability, Random variable, Binomial Distributions ... etc.
10. Course overview:	
<p>The basic concept of Probability and statistics are studied in order to help students in understanding the value of Statistics acquiring knowledge, so that preparing them with in-depth learning principles of Probability. Topics, Probability density function (PDF) and cumulative density function (CDF), discrete and continuous Probability distributions with some special types of pdfs including their characteristics as mean, variance and moment generating function. Multivariate random variables topics is a part in this course with studying the relation between two random variables by finding correlation coefficient of them. Finally, the function of univariate and multivariate random variables are discussed.</p>	
11. Course objective:	
<p>This course is an introduction for Probability and statistics, the fundamental theory of random variable distribution and the multivariate Probability distribution will be taken to prepare the students to get ready studying the mathematical statistics and Applied statistics courses. In addition, it is preparing the students conducting graduating projects or research by doing surveys and analysing data to make conclusions.</p>	
12. Student's obligation	

- a. Students have a commitment to come on time and remain in the classroom for the duration of scheduled classes.
- b. Keeping the lecture hall quite.
- c. All devices must be turned off.
- d. When lecturer ask questions, Students can raise their hand before answering.
- e. Students are obliged to write tests and final examinations at the times scheduled by the lecturer or the Department.

13. Forms of teaching

A copy of the lecture notes are given to students in advance, in addition to presentation for extra lecture using data show. Home works and exercises are given too.

14. Assessment scheme

For this different assessment measures are considered course, Quizzes, graded homeworks and two fixed exams. The total grades calculated as follows:30% for exams and 10% for others while final exam holds 60%.

15. Student learning outcome:

- a. After successful completion of the course, students should be able to Find expected values, variance and moment use joint probability distribution.
- b. Students will be able to be learning effectively express themselves in statistical terms either in written or oral form.
- c. Students will be able to learning Demonstrate ability to think critically and effectively by utilizing the concept of Probability, Discrete and Continuous Random Variables and their probability distributions.

16. Course Reading List and References:

1. STEPHENS, L. J. 1998 “ SCHAUM'S OUTLINE OF THEORY AND PROBLEMS OF BEGINNING STATISTICS”, McGraw-Hill Pub., Inc.
2. Hogg, R. V., Graig, A. T. (1978) “Introduction to mathematical Statistics”, 4th edition, Macmillan Pub Co., Inc.
3. Hogg, V. R., Craig, A. T., McKean, J. W. 2013 “Introduction to Mathematical Statistics”, 7th ed, Pearson Education, Inc.
4. John J. K, 2009 “A Probability and Statistics Companion”, by John Wiley & Sons, Inc.
5. Douglas C. M. 2011 “Applied Statistics and Probability for Engineers” 5th ed, John Wiley & Sons, Inc.

17. The Topics:	Lecturer's name
<p>Week 1-4: The basic concept in statistics.</p> <ul style="list-style-type: none"> • Some Definitions • Types of Data and Variables • Levels of Measurements <p>Frequency Distributions and Graphs.</p> <ul style="list-style-type: none"> • Frequency Distribution tables • The categorical frequency distribution • The grouped frequency distribution • Determining The Classes (Limit, Midpoint, cumulative Frequency, Boundary, Relative Frequency and Percentage with Central Angles) • Charts (Ogive, Pie, Histogram and Polygon) 	<p>Swar Omer Ahmed</p>

<ul style="list-style-type: none"> • Measures of central tendency (Mean, Mode, Median) • Measures of Variation (Range, variance and Standard Deviation) and Skewness <p><u>Week 5-13:</u></p> <p>Probability Theory</p> <ul style="list-style-type: none"> • Some concept in Probabilities • Conditional Probabilities • The Total Theorem and Bays Theorem <p>Random Variables</p> <ul style="list-style-type: none"> • Random Variables and its Types (discrete and continues). • Probability Distribution (density and mass) Function. • Cumulative Distribution Function • Mathematical Expectation of a Random Variable • Mean, Variance and Moment Generating Function <p>Notes: The course program does not include the examination days, which need at least a week; thus, the total number of weeks in a course year will be: (14).</p>	
<p>18. Practical Topics (If there is any)</p>	
<p>19. Examinations: Questions in the examination will be arranged the matching mode by way of the examples and exercises that I give delivered in the lecture notes. Sometimes will be having extra mark in examination for worthy students. Many of the questions will be taken from References.</p>	
<p>20. Extra notes: Answers of examination will be finding in the board's declaration mathematic department after every examination.</p>	
<p>21. Peer review: The syllabus is good for the second stage students' college / mathematic Department. It prepares students to understand statistics and digest the simple but advanced methods of probability and Statistics.</p>	