

Ministry of Higher Education and Scientific research



Department of *Mathematics*

College of *Science*

University of *Salahaddin-Erbil*

Subject: *Mathematical Statistics*

Course Book: *Third Year Mathematics*

Lecturer's name: *Khwazbeen Saida Fatah*

Academic Year *2023-2024* – *First Semester*

Course Book

1. Course name	Mathematical Statistics
2. Lecturer in charge	Khwezbeen Saida Fatah
3. Department/ College	Mathematics / Science
4. Contact	Khwezbeen.fatah@su.edu.krd khwezbeen@yahoo.com Tel: 07503018989
5. Time (in hours) per week	Theory: 3
6. Office hours	Monday 10:30 – 12:30; Thursday 10:30 – 11:30
7. Course code	
8. Teacher's academic profile	<p>Khwezbeen Saida Fatah, PhD in Applied Statistics Assistant Professor, Mathematics Department College of Science, Salahaddin University Email: khwezbeen.fatah@su.edu.krd</p> <p>Qualifications:</p> <ul style="list-style-type: none"> • PhD in Applied Statistics (2009), University of Glamorgann, UK • MSc in Simulation (1985), University of Wales, U.K • BSc in Mathematics (1979) University of Sulaimani, Iraq. <p>Teaching Experience:</p> <p>From 1986 worked as an assistant lecturer, a lecturer and then as assistant professor at Mathematics Department/ College of Science/ Salahaddin University/Iraq teaching at different levels/undergraduate and post graduate, supervising MSc and PhD projects.</p> <p>Other Employments</p> <ul style="list-style-type: none"> • Director for Computer & Internet Center, Salahaddin University (1997-2004) • Computer Supervisor for Central Bureau for Admissio Salahaddin University (1998-2002) • Internet Supervisor for Safeen Center for International communications (1996-1998) • Internet Supervisor for Kurdistan National Assembly in Erbil (1998-2000). <p>Languages:</p> <ul style="list-style-type: none"> • English • Arabic • Kurdish <p>Publications:</p> <p>Published papers mostly in applied statistics and 4 published book</p>
9. Keywords	Probability Theory, Distribution of Random Variables, transformation of variables for finding dis fn for more than one R.Vs; Moments method and Order Statistics; t-distribution and F-distribution with applications.

<p>10. Course overview: The first semester for Mathematical Statistics course is designed as one of the main core courses for third year undergraduate students with prior knowledge of basic statistics (Descriptive Statistics) and probability theory. It is continuation for the previous year course “Introduction to Statistics and Probability Theory”, starting with a comprehensive revision of the main concepts of statistics and probability theory then the rest of the course will be devoted to different methods for finding the dis fn for more than one random variables such as transformation of variables; moment method in addition to order statistics; this will introduce students to elements of statistical inference and help them understand the role of statistical inference in solving real life problems. Finally, sampling and sampling distribution is given.</p>
<p>11. Course objective: To provide students with a solid grounding in probability theory and mathematical statistics of statistical inference. The student is introduced to methods for finding the distribution function for different random variables; this will help students to study sampling theory and estimation in the second semester.</p>
<p>12. Student's Obligation: Students should attend lectures. There will be two examinations and a comprehensive final examination. Announced and unannounced quizzes may be given. Various homework exercises (assignments), which are used in grading, are given weekly.</p>
<p>13. Forms of teaching: For this course, different forms of teaching methods such as the lecture method, multimedia presentations, group discussions, and spreadsheet assignments will be used throughout the course. Work will be done individually and/or in small groups. The primary focus of the teaching methodologies used will be to prepare the student to understand distribution function of random variables, order statistics, t-test and f-test; then introduce students to main concepts of statistical inference, which will help them apply the statistical tools learned to real life situations. Thus enough time will be devoted to interactive learning and problem solving. The readings will come from the required text books as well as additional references such as internet resources and other to be provided by the instructor. Lectures and tutorials will enable the instructor and students to expand on the material presented in the readings.</p>
<p>14. Assessment Scheme: For this course different assessment measures are considered such as quizzes, graded homework and exams, building up to a comprehensive final exam. The final grade is calculated as follows: Exams: 30% , Homework and interactive activities: 10% , Final Exam: 60%.</p>
<p>15. Student learning outcome: As a result of successfully completing this course, the student will possess a basic understanding of descriptive and inferential statistics to provide statistical background for sampling theory and combination and drawing inferences for the populations under study. Finally, the student will be capable of studying Random Sampling Distribution theory in the second semester to conduct basic hypothesis tests to assess assumptions. Moreover, it helps fourth year undergraduate students studying Applied Statistics and learns how to explore and handle data in a systematic manner.</p>
<p>16. Course Reading List and References: Hogg, R. and Graig, A. (1978), Introduction to Mathematical Statistics, Collier Macmillan 4th edition, New York. (Required) Larsen, R. and Max, M. (2012), Introduction to Mathematical Statistics and its Application, London, Pearson. (Optional) Wani, J. (1971), Probability & Statistical Inference, USA, Meredith Corporation. (Required) Note: For this course, other references such as books or internet links on mathematical statistics could be useful.</p>

<p>17. The Topics: The course topics, which will be Presented throughout this semester for the academic year, are outlined weekly as follows:</p>	<p>Lecturer's name</p>
<p>Week 1: Introduction to statistics and probability theory; (Review) Week 2 -4: Distribution for R.Vs, Transformation of variables with examples. Week 5 & 6 the t and F distributions, examples; Week 7 & 8: Moments and Moment Generating Function technique, examples and applications; Week 9 & 10: Order Statistics and their distributions with examples; Week 11 & 12: Application with examples Week 13 & 14: Sampling theory.</p>	<p>Khwazbeen Saida</p>
<p>18. Practical Topics (If there is any)</p>	
<p>19. Examinations:</p>	
<p>20. Extra notes: Absence Rate for Mathematical Statistics is explained in the table below.</p>	
<p>21. Peer review</p>	<p>پیداچوونہوہی ھاوہل</p>