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**Department of Statistics**

**College of administration and Economics**

**University of Salahaddin-Hawler**

**Subject: Set Theory**

**Course Book – 2nd Year**

**Lecturer's name: Hunar Adam Hamza-(MSc)**

**Academic Year: 2023/2024**

**Course Book**

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| **1. Course name** | **Time Series**  |
| **2. Lecturer in charge** | **Hunar Adam Hamza** |
| **3. Department/ College** | **Statistics and informatics/Administration and Economics** |
| **4. Contact** | **E-mail: Hunar.Hamza@su.edu.krd** |
| **5. Time (in hours) per week**  | **Theory: 3****Practical: N/A**  |
| **6. Office hours** | **Sunday: 11:30-2:30 & Tuesday: 9:30-12:30** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **My professional journey commenced as an assistant researcher in the Department of Statistics at the University of Salahaddin's College of Administration and Economics, where I held this position from 2007 to 2011. During this tenure, I concurrently embarked on a Master of Applied Statistics, which I successfully completed at Swinburne University of Technology in Australia in 2014. My teaching experience encompasses a diverse range of courses, including Principles of Statistics, Visual Basic, SPSS, Time Series, Set Theory, and Probability.** |
| **9. Keywords** | **Set Theory, Probability & Distribution, Principle of Statistics, Central Tendency, Correlation, Regression, SPSS, SEM, R, Python and SAS.** |
| **10. Course overview:** Set theory is the study of sets, which are collections of objects. It is a fundamental branch of mathematics with applications in many other fields, including computer science, logic, and linguistics. This course will provide an introduction to the basic concepts of set theory, including sets, operations on sets, Venn diagrams, cardinality, and set relations. We will also discuss some of the applications of set theory in other fields. |
| **11. Course objective:*** Understand the fundamental concepts of set theory, including sets, operations on sets, Venn diagrams, cardinality, and set relations.
* Apply set theory principles to solve problems in various domains, such as mathematics, computer science, and logic.
* Develop problem-solving skills and the ability to think logically and rigorously using set theory concepts.
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| **12. Students obligation in the classroom:*** Punctuality: Arrive on time for each class session.
* Preparedness: Bring your lecture notes to every class.
* Quiz Attendance: Missing a quiz will result in a zero score.
* Timely Submissions: Submit your homework assignments on time.
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| **13. Forms of teaching**The course employs a variety of teaching approaches, incorporating PowerPoint slides to emphasize essential points and whiteboards to facilitate interactive learning. Students are actively involved in discussions, sharing their perspectives with their peers. To enhance comprehension, students are provided with lecture handouts at the beginning of each session, ensuring they are well-versed in the upcoming material. |
| **14. Assessment scheme**Midterm exam: 30 % marks.Class assignments & quizzes: there will be weekly class assignments and quizzes(10 % marks).There will be extra assignments, which give the students extra marks.Final exam: 60 % marks.The examination schedule will be announced by the exam board of the department of statistics. |
| **15. Student learning outcome:**Students should be able to:* Define and describe sets, including empty sets, finite sets, infinite sets, and power sets.
* Identify and apply operations on sets, such as union, intersection, difference, and complement.
* Construct and interpret Venn diagrams to represent relationships between sets.
* Understand and apply the concept of cardinality, including countable and uncountable sets.
* Differentiate between various types of set relations, such as equality, subset, and proper subset.
* Understand and apply permutation and Combination
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| **16. Course Reading List and References‌:**1- Seymour, Lipschutz., Theory and problems of Probability (Schaum's Outline), McGraw-Hill Inc.1974.2- Tebbs, Joshua M., Introductory probability and statistics I, 1st ed.,2004.3- Bluman, Allan G., Elementary Statistics (A step by step approach), McGraw-Hill Pub., 8th ed.,2012.4- Gupta, Parmanand., Business Statistics, 3rd ed., 2008.5- Mejlbro, Lief., Introduction to Probability (Probability Examples c-1), Ventus publishing APS.,2009.6- Brink , David., Essentials of Statistics (Exercises),Ventus publishing APS.,2009. |
| **17. The Topics:** | **Lecturer's name** |
| Set OperationsFinite and Infinite setsCartesian Product.Tree Diagrams.Permutations.Combinations.Binomial Coefficients and theorem.Sample space and Events.Type of Events, Theorem.Sample space and Events.Type of Events.Theorem.Classical Probability. | **Hunar Adam Hamza** |
| **18. Practical Topics (If there is any)** |  |
| **Q1**// In how many ways can a committee consisting of 3 men and 2 women be chosen from 7men and 5 women?**Q2**// Find the product set (A\*B\*C) by using tree diagram where A= {1,2}, B= {a, b, c}, C= {3, 4}**Q3**// From the following set: Sample Space(U) = {1,2, . . .,8,9}, A = {1,2,3,4}, B = {2,4,6,8} and C = {3,4,5,6}. Find:1. AC = { } 2. A ⋂ C = { } 3. (A ⋂ C) C = { } 4. AC ⋃ B = { }5. (A ⋂ C) ⋃ B = { }6. A\C = { }7. (A ⋂ C) \ B = { } |
| **20. Extra notes:**The college's exam board will decide the structure and content of the final exam. Please be aware that the syllabus is subject to modifications, and the actual time required to complete the course may vary. |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**   |