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| **logo University of Management & Technology**  School of Science  Department of Mathematics |

Probability and Statistics COURSE CODE: MA: 150

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| **Lecture Schedule** |  | **Semester** | Spring 2021 |
| **Credit Hours** | Three | **Pre-requisite** |  |
| **Course Coordinator** |  | **Contact** |  |
| **Teaching Assistant** |  | **Contact** |  |
| **Offices** |  | **Office Hours and Counseling Hours** |  |
| **Course Description** | * Understanding the application of Statistics in the different fields * Knowledge of Probability and Using Probability in the concerned field * Forecasting and Estimation of future events and targets * Analyzing the Sample Observations for testing & strengthening the system * Decision making for proper management | | |
| **Expected Outcomes** | * The student should be able to understand the basic concepts and terms of Statistics * Understanding the application of Statistics in different fields * Knowledge of Probability and Using Probability in the concerned field * Forecasting and Estimation of future events and targets * Analyzing the Sample Observations for testing & strengthening the system * Decision making for proper management | | |
| **Textbook:**  **Reference:** | Introduction to Statistical Theory by Prof. Sher Muhammad Chaudhry Prof. Dr. Shahid Kamal, Publisher: ILMI Kitab Khana  **1.** Lay L. Devore, Probability and statistics for engineering and the sciences, 2003, Duxbury Publishers.  **2.** G. Cowan, Statistical Data Analysis, 1998, Clarendon, Oxford.  **3.** Ronald Walpole, Myers, Myers, Ye, “Probability & Statistics for Engineers & Scientists”, 8th edition, 2008, **Prentice Hall** Publisher, | | |
| **Sessional exams** | At least five Quizzes, 1 project based assignment, four regular assignments and one Mid Term | **Final exam** | Will cover the whole course |
| **Attendance Policy** | Students missing more than 20% of the lectures will receive an “SA” grade in the course. | | |
| **Evaluation criterion** | * Assignments/Class Participation+Attendance+quiz: 30 % * Mid-Term: 30% * Exam final : 40% | | |

**Course Outline**

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| **Wk** | **Chapters** | **1st Lecture** | **Sections** | **2nd Lecture** | **Sections** |
| 1 |  | Introduction to Statistics,  Descriptive Statistics, |  | Presentation of data in tabular form |  |
| 2 |  | Graphical representation of Data, Stem-Leaf Plot, Box-Cox Plots |  | Measures of Central Tendencies  The Arithmetic Mean and their Properties, Change of Origin and Scale |  |
| 3 |  | The Geometric and  The Harmonic Mean |  | The Median, The Mode, Empirical Relation between Mean, Median and Mode |  |
| 4 |  | Problem solution related 1st to 3rd week. |  | Measures of Dispersion |  |
| 5 |  | Moments, Skewness and Kurtosis |  | Counting techniques  Sample Space. |  |
| 6 |  | Algebra of Events and Types of events |  | Introduction to Probability  Laws of Probability |  |
| 7 |  | Laws of Probability |  | Conditional probability |  |
| 8 |  | Baye’s theorem and its Application |  | Problem solution related 4th to 7th week. |  |
| 9 |  | **Mid Term Week** |  | **Mid Term Week** |  |
| 10 |  | Probability Distribution Function and its Properties |  | Binomial Probability Distribution |  |
| 11 |  | Geometric Probability Distributions |  | Negative-Binomial Probability Distributions |  |
| 12 |  | Problem solution related 10th to 11th week. |  | Poisson Probability Distribution |  |
| 13 |  | Exponential, Gamma distribution |  | Normal distribution |  |
| 14 |  | Normal distribution |  | Regression |  |
| 15 |  | Correlation |  |  |  |