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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
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| **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
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| **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%
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 **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 TendenciesThe 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 techniquesSample Space. |  |
| 6 |  | Algebra of Events and Types of events |  | Introduction to ProbabilityLaws 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 |  |  |  |