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| **LESSON PLAN FOR PROBABILITY AND STATISTICS** | | | | |
| **Chapter** | **Course contents/Topics** | **Lecture/hours** | **section** | **Problems from exercise (class/assignment)** |
| 1 | Sampling Procedures; Collection of Data | 1 | 2 | 1,2,4,8,11 |
| Measures of Location: The Sample Mean and Median | 1 | 3 |
| Measures of Variability, Discrete and Continuous Data | 1 | 4,5 |
| 2 | Sample Space, Events | 1 | 1, 2 | 3, 7, 11, 9, 14 |
| Probability of an Event, Additive Rule | 1 | 4, 5 | 72, 68, 50, 53, 58, 59, 65 |
| Conditional Probability, Independence, and the Product Rule | 1 | 6 | 75, 91, 94, 80, 74,77, 89 |
| Bayes’ Rule | 1 | 7 | 95-98, 104, 108 |
| 3 | Concept of a Random Variable, Discrete Probability Distributions | 1 | 1,2 | 7, 12, 35, 3, 4, 10, 11, 14, 29, 30 |
| Continuous Probability Distributions | 1 | 3 |
| Joint Probability Distributions | 2 | 4 | 38, 42, 44, 49, 50, 56, 60, 62, 66, 76 |
| 4 | Mean of a Random Variable | 1 | 1 | 4, 7, 10, 12, 15, 20,23, 26 |
| Variance and Covariance of Random Variables | 1 | 2 | 34,35,50 |
| Means and Variances of Linear Combinations of Random Variables, Chebyshev’s Theorem | 2 | 3,4 | 57,58,60,64,67, 74, 75, 77, 78 |
| 5 | Binomial and Multinomial Distributions | 2 | 2 | 9, 11, 15, 16, 19, 22 |
| Hypergeometric Distribution | 1 | 3 | 31,32, 43, 44, 47 |
| Negative Binomial and Geometric Distributions, Poisson Distribution and the Poisson Process | 2 | 4,5 | 49, 50, 51, 70, 60, 69 |
| 6 | Continuous Uniform Distribution  Normal Distribution  Areas under the Normal Curve  Applications of the Normal Distribution  Normal Approximation to the Binomial | 3 | 1  2  3  4  5 | 2, 4, 22, 7, 8, 10, 15 |
| 24, 26, 29, 34 |
| Gamma and Exponential Distributions | 1 | 6 | 41, 47, 54 |
| 7 | Transformations of Variables | 2 | 2 | 8, 10, 12, 2,3,4,5, 17,19, 20 |
| Moments and Moment-Generating Functions | 2 | 3 |
| 8 | Some Important Statistics  Sampling Distributions | 1 | 2 | 2,3, 10, 5, 7,12 |
| 3 | 19, 24, 30, 17,20,23,26 |
| Sampling Distribution of Means and the Central Limit  Theorem | 1 | 4 |
| Sampling Distribution of | 1 | 5 | 38,40, 46, 47, 37,41,45,49,50 |
| 9 | Statistical Inference | 1 | 2 | 5, 6, 12,2, 4, 7 |
| Classical Methods of Estimation | 1 | 3,4 |
| Maximum Likelihood Estimation (Optional) | 2 | 14 | 85,86, 82, 87 |
| 10 | Statistical Hypotheses: General Concepts  Testing a Statistical Hypothesis | 2 | 1,2 | 3, 12, 15, 2, 4, 9, 14, 17 |
| Single Sample: Tests Concerning a Single Mean  Two Samples: Tests on Two Means  Choice of Sample Size for testing Means | 3 | 4,5,6 | 21, 30, 20, 35, 23, 29, 42, 47 |
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| Two Samples: Tests on Two Proportions | 1 | 9 |
| One- and Two-Sample Tests Concerning Variances | 1 | 10 | 67, 68, 71, 73, 77 |
| Goodness-of-Fit Test | 1 | 11 | 80, 83, 87, 89, 93, 95 |
| Test for Independence (Categorical Data) | 1 | 12 |
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| 11 | Introduction to Linear Regression | 1 | 1 | 2, 5, 7, 12, 13 |
| The Simple Linear Regression (SLR) Model | 2 |
| Least Squares and the Fitted Model | 3 |
| Correlation | 1 | 12 | 43, 45, 47 |

**Examples related to each articles are compulsory**

**Red letters to be solved in the class and black letters to be given as homework.**

Book: Probability and Statistics, Ninth edition, Pearson Publication

Author: Walpole, Myers, Myers and Ye

Co-ordinator