Week	Theory Contents/Topics	Sections	CLO	Tools
1	**Descriptive statistics:** Basic definition , Types of variables ,Mean, Median, Mode, Variance, Standard Deviation, Quartiles, Deciles, Percentiles, IQ Range	WP [1.1, 1.3, 1.4, 1.6] & NW [2.1 – 2.4, 3.1 – 3.4]	1	A1, M1, F
2	**Graphical representation of data:** Construction of bar chart , histograms, Stem-leaf plots, box plot, ogive, frequency curve, Skewness and Kurtosis.	WP [1.3, 1.6] & NW [2.2 – 2.4]	1	
3	**Sample Space and Event:** Sample point, tree diagram, set theory , Venn diagram	WP [2.1 – 2.3]	1	
4	Counting techniques, Probability of an event, Additive rules	WP [2.4 – 2.5]	1	
5	**Axioms of Probability:** Conditional Probability, Independence and Multiplicative rules. Bayes' Rules	WP [2.6 – 2.7]	2	
6	**1st Mid Term Exam**			
7	**Random Variables & Probability Distributions:** Concept of random variable, **Discrete Probability Distribution**, PMF, CDF, joint probability distribution, marginal distribution	WP [3.1-3.2, 3.4]	1, 2	A2, M2, F
8	**Continuous Probability Distributions** PDF and CDF Joint Probability Distribution, marginal distribution	WP [3.3, 3.4]	2	
9	**Mathematical Expectations:** Mean & Variance of a Random Variable, Covariance, and Correlation	WP [4.1, 4.2]	2	
10	Binomial, Poisson, Multinomial, Geometric, hypergeometric, Uniform, Normal and standard normal distributions and applications	WP [5.1, 5.2, 5.5, 6.2 – 6.4]	2	
11	**2nd Mid Term Exam**			
12	**Estimation & Hypothesis Testing:** Introduction, confidence interval estimation using z & t distributions for single mean and difference between two means, Testing of hypothesis for single mean and difference between two means using z-test p-value method	WP [9.1 – 9.5, 9.8, 10.1 – 10.5]	2, 3	A3, F
12	**Independent & Dependent sample tests:** One-sample t-test, independent and dependent sample t-tests, confidence intervals	WP [9.1 – 9.5, 9.8, 10.1 – 10.5]	3	
14	**Regression & Correlation:** Scattered diagram. Introduction to linear regression. The simple linear regression model Simple Correlation coefficient of determination	WP [11.1 – 11.3. 11.12]	2, 3	
15	**Multiple linear Regression:** Multiple regression and correlation, coefficient of determination, assumptions	WP [12.1 – 12.2]	2, 3	

16	**Analysis of variance:** ANOVA	WP [13.1, 13.2]	3	
17	**Final Exam**			