**SEMESTER 2**

| S. No. | Course Code | Course Name | Course Type | Cd | L | T | P | Marks | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Sessional | Final Exam | Total |
| 1 | BSC-201 | Engineering Mathematics-II | BSC | 5 | 3 | 2 | 0 | 50 | 100 | 150 |

**Course Outcomes:**

| At the end of the course the student will be able to | |
|---|---|
| CO1 | Understand probability and random variables and various discrete and continuous probability distributions and their properties |
| CO2 | Calculate probabilities, and derive the marginal and conditional distributions of bivariate random Variables |
| CO3 | Analyze statistical data using measures of central tendency, dispersion and location |
| CO4 | Understand and discuss the issues surrounding sampling and significance |
| CO5 | Develop analytical skills in structuring and interpreting the business problems statistically |

**Detailed Syllabus**

**Section-A**

**Unit 1**: Probability spaces, conditional probability, independence; Discrete random variables, Independent random variables, the multinomial distribution, Poisson approximation to the binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables; Expectation of Discrete Random Variables, Moments, Variance of a sum, Correlation coefficient, Chebyshev's Inequality

(**9 Hrs)**

**Unit 2:** Continuous random variables and their properties, distribution functions and densities, normal, exponential and gamma densities. Bivariate distributions and their properties, distribution of sums and quotients, conditional densities, Bayes' rule**.**

**(12 Hrs)**

**Unit 3:** Measures of Central tendency: Moments, skewness and Kurtosis - Probability distributions. Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions, Correlation and regression – Rank correlation

**(10 Hrs)**

**Section-B**

**Unit 4**: Hypothesis – Introduction, Format and Types; Procedure of Hypothesis Testing; Errors in Hypothesis; Two-tail and One-tail Test of Hypothesis; Tests of Significance for Attributes; Tests of Significance for Variables; Tests of Significance for Small Samples; t-distribution and its application

**(11 Hrs)**

**Unit 5**: Difference of means and correlation coefficients, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes **(10 Hrs)**

**Text Books**

| S. No. | Name of the Books | Author | Publisher | Edition (Pub. Yr.) |
|---|---|---|---|---|
| 1 | Advanced Engineering Mathematics | Erwin Kreyszig | Wiley | 10th (2015) |
| 2 | A First Course in Probability | S. Ross | Pearson Education India | 6th (2002) |
| 3 | "Introduction to Probability and Statistics for Engineers and Scientists | Sheldon M. Ross | Academic Press | 5th (2009) |

**Reference Books**

| S. No. | Name of the Books | Author | Publisher | Edition (Pub. Yr.) |
|---|---|---|---|---|
| 1 | Advanced Engineering Mathematics | R.K. Jain, S. R. K. Iyenger | Narosa Publishing House Pvt. Ltd. | 5th (2016) |
| 2 | Higher Engineering Mathematics | Dr. B. S. Grewal | Khanna Publications | 43rd (2017) |
| 3 | Engineering Mathematics | N.P Bali | Laxmi publications | 13th (2009) |