

BCA 210: Engineering Mathematics

Teaching Scheme

Lectures: 1 hr/Week

Tutorials: 1 hr/Week

Credits: 2

Examination Scheme

Class Test -6 Marks

Teachers Assessment – 3 Marks

Attendance – 6 Marks

End Semester Exam – 35 marks

Course Objectives:

1. Recognize that mathematics permeates the world around us
2. Appreciate the usefulness, power and beauty of mathematics
3. Enjoy mathematics and develop patience and persistence when solving problems
4. Understand and be able to use the language, symbols and notation of mathematics
5. Develop mathematical curiosity and use inductive and deductive reasoning when solving problems
6. Become confident in using mathematics to analyze and solve problems both in university and in real-life situations
7. Develop the knowledge, skills and attitudes necessary to pursue further studies in mathematics

Detailed Syllabus

Unit-1

Limit and Continuity Differentiability: Limit, Continuity, Differentiability of one variable for real numbers systems. Algebra of continuous functions, Continuity of composite functions. Continuity for open and closed intervals.

Unit-2

Sequences: Sequence of real number systems, Convergent, Divergent, Oscillatory sequences, Bounded sequences and theorems, Monotonic sequence, Subsequence, Limit Superior and Inferior.

Unit-3

Statistics- Mean, Median and Mode, Weighted Average, Geometric Mean, Harmonic Mean, Relative merits of Mean, Median and Mode in a distribution, Mean of two or more means.

Unit-4

Measures of Dispersion, Range, Co-efficient of Range, Quartiles, Inter-Quartile Range and Quartile Deviation, Coefficient of Quartile Deviation, Mean Deviation, Coefficient of Mean Deviation, Standard Deviation, Coefficient of Variation, The Lorentz Curve, Skewness and Kurtosis; Measures of Skewness: Absolute and Relative; Co-efficient of Skewness: Karl Pearson's, Moments and Moments based measures of Measures of Dispersion, Skewness and Kurtosis

Unit-5

Matrices: Elementary Row and Column transformation, Rank of matrix. Linear independence.

Unit-6

Consistency of linear system: for equations and their solutions, Characteristics equation, Cayley-Hamilton theorem. Eigen values and Eigen vectors.

Text and Reference Books

1. A textbook of Mathematics for XI-XII Students, NCERT Publication Vol. I-IV. (Module I&II),
2. Loney, S.L "Plane Trigonometry" AITBS Publishers. (Module III)
3. Loney, S.L "The elements of coordinate geometry" AITBS Publishers. (Module II), Narayan Shanti, Integral calculus, Sultan Chand & Co. (Module I & II), Prasad Gorakh Text book on differential calculus, Pothishala Pvt. Ltd., Allahabad. (Module II) Jack Levin, James Alan Fox, Elementary Statistics in Social Research, Pearson Education., S.P. Gupta, Statistical Methods, S. Chand Publication.

Course Outcomes:

After completing the course, students will be able to:

1: Students will simplify and evaluate the concept and problems of limit and continuity.

2: Students will form and solve real analysis problems also their real-world implementation

3: Students will understand the concepts of statistics and their real-world applications.

4: Students will form and graph of statistics also their advancement in application

5: Students will form use of matrices also the concept of rank, equation solving etc.

6: Students will form and graph linear equations in two variables.


Head

Department of Computer Applications
Faculty of Computer Applications


Dean Academics