

MATHEMATICS

Math11 HCC-I: Calculus, Geometry and Differential Equation

Course Objective

1. Introduction of differentiation and its applications in in different curves, in business and in Economics.
2. Introduction of integration and its application through reduction formula in finding length of a curve, area of different geometric shapes and volumes of conics.
3. Finding the equation of conics in coordinate axes and its polar equations. Introductions of more complicated geometric objects, like spheres, cylinders, ellipsoidetc.
4. Introduction to differentia equation and its mathematical models.

Course Outcome

The students are expected to learn.....

1. Differentiation and its applications in different curves, in business and in Economics.
2. Integration and its application through reduction formula in finding length of a curve, area of different geometric shapes and volumes of conics.
3. To find the equation of conics in coordinate axes and its polar equations. Introductions of more complicated geometric objects, like spheres, cylinders, ellipsoid etc.
4. Differentia equation and its mathematical models.

Math11 HCC-II: Algebra

Course Objective

1. Introduction of complex numbers in polar form, theory of equations and certain inequalities.
2. Introduction of basic relations, functions and some mathematical principles in algebra.
3. Introduction to linear equation, matrix equation and its applications.
4. Introduction to linear transformation and its application in matrices.

Course Outcome

The students are expected to learn.....

1. Complex numbers in polar form, theory of equations and certain inequalities.
2. Basic relations, functions and some mathematical principles in algebra.
3. Linear equation, matrix equation and its applications.
4. Linear transformation and its application in matrices.

Math21 HCC-III: Real Analysis

Course Objective

1. Introduction to Real number and its properties.
2. Introduction to sequences with its properties and convergence of sequences.
3. Introduction to series its convergence and divergence through different tests.

Course Outcome

The students are expected to learn.....

1. Real number and its properties.
2. Sequences with its properties and convergence of sequences.
3. Series its convergence and divergence through different tests.

Math21 HCC-IV: Differential Equations and Vector Calculus

Course Objective

1. Finding solutions to homogeneous equations of second order, its properties and applications.
2. Introduction to power series solutions of differential equations.
3. Introduction to systems of linear differential equations, differential operators.

Course Outcome

The students are expected to learn.....

1. To Find solutions to homogeneous equations of second order, its properties and applications.
2. To find power series solutions of differential equations.
3. Systems of linear differential equations, differential operators.
4. Vector functions and applications of limits to vector functions, differentiation and integration of vector functions.

Math31 HCC-V: THEORY OF REAL FUNCTIONS AND INTRODUCTION TO METRIC SPACE

Course Objective

1. Introduce the main mathematical concept of calculus through critical analysis.
2. To provide a logical progression from fundamental to more advanced concepts, connections between theory and applications in the field of calculus.
3. Introduce the concept of a limit or limiting process, essential to the understanding of calculus.
4. To apply calculus in calculating velocity and changes in velocity and acceleration etc.
5. To introduce the Mean Value Theorems and their implications.
6. To introduce the concept of Metric Space.

Course Outcome

1. The students are expected to learn the basic concept of calculus its development.
2. They were expected to understand the advanced concepts of calculus and its applications.
3. They are expected to learn and understand limit and its uses in calculus
4. They are expected to learn the use of calculus to calculate velocity and related topics.
5. To make them familiar with the Mean value theorems and its applications in different areas of mathematics.
6. They are expected to be familiar with the concept of metric space and related results.

Math31 HCC-VI: Group Theory 1

Course Objective

1. Introduction to Group theory and its basic properties.
2. Deeper studies on the properties of Group.
3. Introduction to cyclic groups and their properties.
4. Introduction to operations on groups.
5. Introduction to Group Homomorphism and their properties.

Course Outcome

The students are expected to learn.....

1. Group theory and its basic properties.
2. Rudimentary properties of Group.
3. Cyclic groups and their properties.
4. How to do operations on Groups.
5. Group Homomorphism and their properties

Math31 HCC-VII: Riemann Integration and Series of Functions

Course Objective

1. Introduction to Improper Integrals.
2. Introduction to sequence of functions, series of functions and continuity and derivability of the same.
3. Introduction to Fourier Series and their properties.
4. Introduction to power series and their convergences.

Course Outcome

The students are expected to learn.....

1. Basics of Improper Integrals.
2. Sequence of functions, series of functions and continuity and derivability of the same.
3. Fourier Series and their properties.
4. Power series and their convergences

MATP11 DSC, Paper-1: Calculus and Geometry

Course Objective

1. Introduction to Higher order Derivatives and its applications using Leibnitz rule.
2. Introduction to Reduction formulae and its applications
3. Study of Conics and their properties.

Course Outcome

The students are expected to learn.....

1. Higher order Derivatives and its applications using Leibnitz rule.
2. Reduction formulae and its applications
3. Conics and their properties.

MATP24 DSC, Paper-2: Algebra

Course Objective

1. Introduction to Polar representation of Complex numbers, Theory of Equations.
2. Introduction to Different types of relations in sets and their applications.
3. Introduction to Linear transformation and its applications in matrices.

Course Outcome

The students are expected to learn.....

1. Polar representation of Complex numbers, Theory of Equations.
2. Different types of relations in sets and their applications.
3. Linear transformation and its applications in matrices.

MATP31 DSC, Paper-3: Real Analysis

Course Objective

1. Introduction to Real number system and rudimentary studies on its properties.
2. Introduction to Sequences and their convergences by different tests.
3. Introduction to Series and their convergences by different tests.

Course Outcome

The students are expected to learn.....

1. Real number system and rudimentary studies on its properties.
2. Sequences and their convergences by different tests.
3. Series and their convergences by different tests.