

COURSE OUTCOMES

B.Sc. (HONOURS), Sub: MATHEMATICS

Session: 2023-2024

SEMESTER I

MATH111 (Major): Calculus, Geometry and Vector Calculus

This course will enable the students to:

- Learn about hyperbolic functions, higher order derivatives using Leibnitz Rule and its applications.
- Trace curves in Cartesian and polar coordinates.
- Develop Reduction formulae for different combination of functions.
- Compute arc length and area of surfaces of revolution by integration.
- Sketch conics in a plane using its mathematical properties in the different coordinate systems of reference.
- Learn concepts in two-dimensional and three-dimensional geometry.
- Classification of conics namely, ellipse, parabola and hyperbola and polar equation of conics.
- Learn about three-dimensional objects such as spheres, cylinders, conicoids, generating lines and classification of quadrics.
- Gain knowledge about vector valued functions and vector calculus.
- Apply calculus on vector valued functions.
- Find gradient of scalar functions, divergence and curl of vector valued functions.

MATH121(Minor) : Calculus, Geometry and Vector Calculus

This course will enable the students to:

- Learn about hyperbolic functions, higher order derivatives using Leibnitz Rule and its applications.
- Trace curves in Cartesian and polar coordinates.
- Develop Reduction formulae for different combination of functions.
- Compute arc length and area of surfaces of revolution by integration.
- Sketch conics in a plane using its mathematical properties in the different coordinate systems of reference.
- Learn concepts in two-dimensional and three-dimensional geometry.
- Classification of conics namely, ellipse, parabola and hyperbola and polar equation of conics.
- Learn about three-dimensional objects such as spheres, cylinders, conicoids, generating lines and classification of quadrics.

- Gain knowledge about vector valued functions and vector calculus.
- Apply calculus on vector valued functions.
- Find gradient of scalar functions, divergence and curl of vector valued functions.

MATH131 (MD/ID) : Trigonometric Functions and Coordinate geometry.

This course will enable the students to :

- Gain general idea of trigonometric functions, straight lines, conic sections and introduction to three dimensional geometry.
- Solve the problem of trigonometric functions.
- Solve the problems of straight lines.
- Solve the problems of conic sections.
- Solve the problems of three dimensional geometry.

MATH151 (SEC) : Graph theory

The course will enable the students to:

- Able to define the basic concepts of graphs, directed graphs and weighted graphs.
- Able to define the properties of bipartite graphs, particularly in trees.
- Able to understand Eulerian and Hamiltonian graphs.
- Efficiency in solving colouring problems.

SEMESTER II

MATH211 (Major): Introductory Algebra and Number Theory

This course will enable the students to:

- Gain knowledge about number theory which has wide applicability in advanced mathematics and in various practical field.
- Know about complex numbers and its properties.
- Motivate themselves for future research after getting the glimpse of gateway of modern algebra from classical algebra and number theory and relate use of group, ring, and field in different field of science.
- Understand basic knowledge of group, ring and field.
- Expertise in solving many tricky problems in number theory, complex numbers.

MATH221 (Minor) : Introductory Algebra and Number Theory

This course will enable the students to:

- Gain knowledge about number theory which has wide applicability in advanced mathematics and in various practical field.
- Know about complex numbers and its properties.
- Motivate themselves for future research after getting the glimpse of gateway of modern algebra from classical algebra and number theory and relate use of group, ring, and field in different field of science.
- Understand basic knowledge of group, ring and field.
- Expertise in solving many tricky problems in number theory, complex numbers.

MATH231 (MD/ID) : Algebra

This course will enable the students to :

- Gain knowledge about principle of mathematical induction, complex numbers, permutation and combinations, binomial theorem, sequence and series and matrices.
- Solve the problems by using principle of mathematical induction.
- Solve the problems of complex numbers and quadratic equations.
- Solve linear inequality, permutation and combinations.
- Calculate binomial theorem, sequence and series.
- Calculate matrices and determinant.

MATH251 (SEC) : Programming in C

This course will enable the students to :

- Gain general idea about the writing of different C programmes using branching and looping statements, arrays, functions, structures and pointers.
- Learn the key words, identifiers, different types of operators with precedence and associativity.
- Use branching and looping statements for decision making.
- Learn the concept of array, string handling arrays.
- Use library and user defined functions along with string handling functions.
- Write programme using structures and pointers.