

BSc Maths Syllabus: Pdf

The syllabus may vary depending on the university

First Year

Semester 1

Calculus

- Derivatives for Graphing and Applications
- Sketching and Tracing of Curves
- Volume and Area of Surfaces
- Vector Calculus and its Applications

Algebra

- Theory of Equations and Complex Numbers
- Equivalence Relations and Functions
- Basic Number Theory
- Row Echelon Form of Matrices

Semester 2

Real Analysis

- Real Number System \mathbf{R}
- Properties of \mathbf{R}
- Infinite Series
- Sequences in \mathbf{R}

Differential Equations

- Population Growth Models
- Differential Equations and Mathematical Modeling
- Second and Higher-Order Differential Equations
- Analysis of Mathematical Models

Second Year

Semester 3

Theory of Real Functions

- Continuous Functions and their Properties
- Limits of Functions
- Taylor's Theorem and its Applications
- Derivability and its Applications

Group Theory- I

- Subgroups and Cyclic Groups
- Groups and their Elementary Properties
- Group Homomorphism
- Permutation Groups and Lagrange's Theorem

Multivariate Calculus

- Double and Triple Integrals
- Calculus of Functions of Several Variables
- Extrema of Functions of Two Variables and Properties of Vector Field
- Green's, Stoke's and Gauss's Divergence Theorem

Semester 4

Partial Differential Equations

- First-Order PDE and Method of Characteristics
- The Cauchy Problem and Wave Equations
- Mathematical Models and Classification of 2nd Order Linear PDE
- Method of Separation of Variables

Riemann Integration and Series of Functions

- Riemann Integration
- Improper Integral
- Sequence and Series of Functions
- Power Series

Ring Theory and Linear Algebra-I

- Introduction of Rings
- Ring Homomorphisms
- Introduction of Vector Spaces
- Linear Transformations

Third Year

Semester 5

Metric Spaces

- Topology and Metric Spaces
- Basic Concepts
- Connectedness and Compactness
- Continuity & Uniform Continuity in Metric Spaces

Group Theory- II

- Automorphism and Properties
- Group Action
- Sylow Theorems and Applications
- External and Internal Direct Products of Groups

Semester 6

Complex Analysis

- Complex Numbers
- Complex Functions
- Limits of Complex Functions
- Analytic Functions

Ring Theory and Linear Algebra-II