# BA Mathematics Syllabus

## Year I

In the first year of your degree, the BA Mathematics syllabus covers all the fundamental topics that will give a basic idea as well as the techniques that form the backbone of your study. Popular topics include Linear Algebra, Differentiation, Integration, Statistics, Probability, Optimisation, Multivariable Calculus, Dynamics and Geometry, etc. In the first year, students gain specialist knowledge of mathematical theories, methods, tools and practices.

- Algebra
- Analysis
- Probability and Statistics
- Geometry and Dynamics
- Multivariate Calculus and Mathematical Models

## Year II

The BA Mathematics syllabus in the second year allows students to choose their subject of specialisation. Usually, you are allowed to take around 3 short options from topics like number theory, graph theory, special relativity and geometric relativity, etc. and 5 to 6 long options in the entire course in institutions like the University of Oxford. The long options that one may consider are quantum theory, probability topology and numerical analysis.

Certain colleges give students free hand to design their courses allowing them to focus on Applied or Pure Mathematics. Besides this, the course includes some elective courses like Number theory, Geometry, Fluid dynamics, Applied Analysis, Topology, Probability, Statistics, Numerical Analysis, Graph Theory, Special Relativity, Quantum Theory, etc.

- Algebra
- Complex Analysis
- Metric Spaces
- Differential Equations

## Year III

Coming to the end of the degree, the BA Mathematics syllabus can offer you broad choices with around 50 papers available and one has to choose a combination of 8 papers or so. The 3rd year gives you the opportunity to explore your mathematical interests in detail, offering a wide choice for you in fields like Cryptography, Algebraic Topology, Cosmology, General Relativity, Mathematical Biology, etc. During your final year, you can move to more advanced study and

choose any of the popular courses like Complex Analysis, Discrete Mathematics, Mechanics, Measure Theory, etc.

- Algebra
- Algebraic and Analytic Topology
- Algebraic and Differential Geometry
- Logic and Set Theory
- Number Theory
- Mathematical Physics
- Mathematical Biology
- Mathematical Geoscience
- Mathematical Philosophy
- Computer Science options
- Theoretical and Statistical Mechanics
- Applied and Numerical Analysis
- History of Mathematics
- Actuarial Mathematics