

Mathematics

Qualification	Length	UCAS code
MMath (Hons)	4 years full-time	G103
MMath (Hons) DPS	5 years full-time sandwich	G104
BSc (Hons)	3 years full-time	G100
BSc (Hons) DPS	4 years full-time sandwich	G101

Mathematics has been referred to as “the Queen of the Sciences”, so integral is it to all branches of science, technology and engineering. It is also a vital, but often unseen, part of our everyday lives with a vast range of applications in the modern world. As such, the study of mathematics open doors to the most diverse choice of careers and opportunities for further study. Mathematics encourages clear-thinking, problem solving and analytical skills – abilities that are highly valued within all kinds of organisations. Our Mathematics degree course provides a broad study of the important areas of this stimulating and challenging subject.

Degree Structure

Part A

Semester 1	Analysis 1	Linear Algebra 1	Mathematical Thinking	Mathematical Methods 1	Introductory Probability & Statistics	Computing and Numerical Methods
	Analysis 2	Linear Algebra 2	Geometry & Groups	Mathematical Methods 2	Mechanics	

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Part B

Semester 1	Analysis 3	Rings and Polynomials	Mathematical Methods 3	Introduction to Differential Geometry	Probability Theory	Option
Semester 2	Complex Analysis	Communicating Mathematics	ODEs & Calculus of Variations	Elements of Topology	Analytical Dynamics	Option

Current options:

Semester 1

- Applied Statistics
- Advanced Numerical Methods
- Introduction to Mathematics Education
- Appropriate level Language module

Semester 2

- Statistical Modelling
- Galois Theory
- Appropriate level Language module

Part I Industrial Placement Sandwich Year (Optional)

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Part C

Mathematics Project Pathway

Semester 1	Mathematics Project	Option	Option	Option	Option	Option
Semester 2	Mathematics Project	Option	Option	Option	Option	Option

Mathematics Report Pathway

Semester 1	Option	Option	Option	Option	Option	Option
Semester 2	Mathematics Report	Option	Option	Option	Option	Option

Current options:

Semester 1

- Formal Languages and Theory of Computation
- Introduction to Algebraic Geometry
- Number Theory
- Introduction to Dynamical Systems
- Asymptotic Methods
- Operational Research
- Graph Theory
- Stochastic Methods in Finance
- Functional Analysis
- Bayesian Statistics and Markov Chain Monte Carlo Methods
- Appropriate level language module
- In addition to the list above, you may take another Part C module from the University Catalogue subject to approval by Programme Director

Semester 2

- Galois Theory
- Medical Statistics
- Statistics for Large Data
- Studies in Science and Mathematics Education
- Advanced Complex Analysis
- Representation Theory
- Linear Differential Equations
- Vibrations and Waves
- Elliptic Curves
- Game Theory
- Computational Methods in Finance
- Mathematical Biology
- Appropriate level language module
- In addition to the list above, you may take another Part C module from the University Catalogue subject to approval by Programme Director

Part I Industrial Placement Sandwich Year (MMath optional)

Modules listed should be treated as indicative and may be subject to change over time
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Part D (MMath)

Semester 1	MMath Mathematics Project	Option	Option	Option
Semester 2		Option	Option	Option

Current options:

Semester 1

- Lie Groups and Lie Algebras
- Geometric Structures on Manifolds
- Functional Analysis
- Programming and Numerical Methods
- Measure Theory
- Mathematical Modelling I
- Stochastic Methods in Finance
- Fluid Mechanics

Semester 2

- Spectral Theory
- Nonlinear Waves
- Statistics for Large Data
- Theory of PDEs
- Static and Dynamic Optimisation
- Computational Methods in Finance
- Stochastic Calculus and Theory of Pricing
- Mathematical Modelling II

Financial Mathematics

Qualification	Length	UCAS code
BSc (Hons)	3 years full-time	GN13
BSc (Hons) DPS	4 years full-time sandwich	GNC3

Mathematics plays an important role in the financial services industry and, as such, there is a growing demand for the graduates with understanding of both financial matters and the relevant underpinning mathematics – the rewarding careers open to those with high level of knowledge. Finance, investment and insurance companies require people with the mathematical skills needed to quantify and manage risk effectively. This course provides thorough training through a wide range of modules in economics, finance and mathematics, including specialist modules that deal directly with the applications of mathematics in finance.

Degree Structure

Part A

Semester 1	Analysis 1	Linear Algebra 1	Mathematical Methods 1	Introductory Probability & Statistics	Introduction to Macroeconomics
Semester 2	Analysis 2	Linear Algebra 2	Mathematical Methods 2	Mechanics	Introduction to Microeconomics

Part B

Semester 1	Analysis 3	Mathematical Methods 3	Probability Theory	Intermediate Macroeconomics	Intermediate Microeconomics	Introduction to Financial Economics
Semester 2	ODEs and Calculus of Variations	Statistical Modelling	Geometry and Groups			

Part I Industrial Placement Sandwich Year (Optional)

Modules listed should be treated as indicative and may be subject to change over time
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Part C

Semester 1	Stochastic Methods in Finance	Financial Economics & Asset Pricing		Option	Option	Option
	Corporate Finance & Derivatives		Linear Differential Equations	Computational Methods in Finance	Complex Analysis	Option

Current options:

Semester 1

Mathematics Optional Modules

- Rings and Polynomials
- Applied Statistics
- Introduction to Differential Geometry
- Number Theory
- Introduction to Dynamical Systems
- Asymptotic Methods
- Operational Research
- Graph Theory
- Bayesian Statistics and Markov Chain Monte Carlo Methods
- Appropriate level Language module

Economics Optional Modules

- Developments in Microeconomics
- Developments in Macroeconomics
- Economics of the Financial System (both semesters)

Semester 2

Mathematics Optional Modules

- Galois Theory
- ODEs & Calculus of Variations
- Analytical Dynamics
- Elements of Topology
- Medical Statistics
- Statistics for Large Data
- Studies in Science and Mathematics Education
- Representation Theory
- Vibrations and Waves
- Game Theory
- Mathematical Biology
- Appropriate level Language module

Economics Optional Modules

- Industrial Economics
- Central Banking and Financial Crises
- Economics of the Financial System (both semesters)

Mathematics and Accounting and Financial Management

Qualification	Length	UCAS code
BSc (Hons)	3 years full-time	G1N4
BSc (Hons) DPS	4 years full-time sandwich	G1NK

This degree course is designed for students who wish to study mathematics while building knowledge of corporate finance, accounting and financial management and the related areas of management, economics and law. The Mathematics modules give students powerful scientific tools for working in the financial sector. Mathematics is essential for analysis and modelling of financial systems and the mathematics learnt on this course is useful for anyone wanting to work in the accounting and financial professions.

Accreditation has been obtained for the course from several of the professional institutes in accountancy. Successful completion of the course permits exemption from some parts of the professional examinations for graduates entering the accountancy profession.

Degree Structure

Part A

Semester 1	Linear Algebra 1	Mathematical Methods 1	Introductory Probability & Statistics	Financial Accounting Fundamentals	Microeconomics for Financial Studies	Introduction to Law
Semester 2	Linear Algebra 2	Mathematical Methods 2	Mechanics		Macroeconomics for Financial Studies	Principles of Finance

Part B

Semester 1	Analysis 1	Mathematical Methods 3	Probability Theory	Management Accounting	Financial Reporting	Option
Semester 2	Analysis 2	Geometry and Groups	Audit and Assurance		Financial Markets and Derivatives Fundamentals	Company Law

Current Options:

- Mathematical Thinking
- Applied Statistics

Part I Industrial Placement Sandwich Year (Optional)

Part C

Semester 1	Financial Reporting: Theory & Practice	Management Accounting and Control Systems	Option	Option	Option	Option
Semester 2	Strategic Management Accounting & Performance	Option	Option	Option	Option	Option

Current options:

Semester 1

Mathematics Modules

- Analysis 3
- Rings and Polynomials
- Applied Statistics
- Introduction to Differential Geometry
- Number Theory
- Introduction to Dynamical Systems
- Asymptotic Systems
- Operational Research
- Graph Theory
- Stochastic Methods in Finance
- Bayesian Statistics and Markov Chain Monte Carlo Methods

Business Modules

- Corporate Finance
- Financial Risk Management
- Business Systems
- Entrepreneurship & Innovation
- Appropriate level Language module

Semester 2

Mathematics Modules

- Complex Analysis
- Galois Theory
- ODEs and Calculus of Variations
- Analytical Dynamics
- Statistical Modelling
- Elements of Topology
- Medical Statistics
- Statistics for Large Data
- Studies in Science & Mathematics Education
- Representation Theory
- Linear Differential Equations
- Vibrations and Waves
- Game Theory
- Computational Methods in Finance
- Mathematical Biology

Business Modules

- Behavioural Finance
- Multinational Financial Management
- Appropriate level Language module

Modules listed should be treated as indicative and may be subject to change over time
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Mathematics with Economics

Qualification	Length	UCAS code
BSc (Hons)	3 years full-time	G1L1
BSc (Hons) DPS	4 years full-time sandwich	G1LC

Economics is a fascinating area of study that looks at how the world – governments, businesses, and people – functions. Economic activities and decisions impact on every facet of society and on our daily lives. This degree course provides a solid grounding in Mathematics together with an understanding of economics is therefore excellent career preparation for any number of roles. As such, this course is aimed at students wishing to enter commerce, industry or government in such areas as actuarial work, business forecasting, statistics and economic model building. It develops mathematicians with a substantial knowledge of the theory and application of economics.

Degree Structure

Part A

Semester 1	Analysis 1	Linear Algebra 1	Mathematical Methods 1	Introductory Probability & Statistics	Introduction to Macroeconomics
Semester 2	Analysis 2	Linear Algebra 2	Mathematical Methods 2	Mechanics	Introduction to Microeconomics

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Part B

Semester 1	Probability Theory	Mathematical Methods 3	Option	Option	Option	Option
Semester 2	Statistical Modelling	Complex Analysis	Geometry and Groups	Option	Option	Option

Current Options:

Semester 1

Mathematics Optional Modules

- Computing and Numerical Methods (runs whole year)
- Analysis 3
- Applied Statistics
- Mathematical Thinking

Economics Optional Modules

- Intermediate Macroeconomics (runs whole year)
- Intermediate Microeconomics (runs whole year)
- Introduction to Econometrics (runs whole year)
- Introduction to Financial Economics (runs whole year)

Semester 2

Mathematics Optional Modules

- ODEs & Calculus of Variations
- Analytical Dynamics
- Elements of Topology
- Computing and Numerical Methods (runs whole year)

Economics Optional Modules

- Intermediate Macroeconomics (runs whole year)
- Intermediate Microeconomics (runs whole year)
- Introduction to Econometrics (runs whole year)
- Introduction to Financial Economics (runs whole year)

Part I Industrial Placement Sandwich Year (Optional)

Part C

Semester 1	Option	Option	Option	Option	Option	Option
Semester 2	Option	Option	Option	Option	Option	Option

Current options:

Semester 1

Mathematics Optional Modules

- Rings and Polynomials
- Introduction to Differential Geometry
- Advanced Numerical Methods
- Introduction to Algebraic Geometry
- Number Theory
- Introduction to Dynamical Systems
- Asymptotic Methods
- Operational Research
- Graph Theory
- Stochastic Methods in Finance
- Functional Analysis
- Bayesian Statistics and Markov Chain Monte Carlo Methods

Economics Optional Modules

- Applied Econometrics (runs whole year)
- Developments in Macroeconomics
- Developments in Microeconomics
- Financial Economics and Asset Pricing
- Appropriate level Language module
- International Economic Relations (runs full year)
- Economics of the Financial System (runs full year)

Semester 2

Mathematics Optional Modules

- Galois Theory
- ODEs & Calculus of Variations (unless taken in Part B)
- Elements of Topology
- Medical Statistics
- Statistics for Large Data
- Studies in Science and Mathematics Education
- Advanced Complex Analysis
- Representation Theory
- Linear Differential Equations
- Vibrations and Waves
- Elliptic Curves
- Game Theory
- Computational Methods in Finance
- Mathematical Biology

Economics Optional Modules

- Central Banking and Financial crises
- Industrial Economics
- Corporate Finance & Derivatives
- Appropriate level Language module
- Applied Econometrics (runs whole year)
- International Economic Relations (runs full year)
- Economics of the Financial System (runs full year)

Mathematics and Sport Science

Qualification	Length	UCAS code
BSc (Hons)	3 years full-time	CG61
BSc (Hons) DPS	4 years full-time sandwich	GC16

This course is divided equally into mathematical and sport science topics and is run in collaboration with the School of Sport, Exercise and Health Sciences. The option choices allow for specialisation in a wide variety of directions, so that degrees may be tailored to the individual career choice of the graduate. The course provides a great opportunity to combine two fields of interest.

Degree Structure*

Part A

Semester 1	Linear Algebra 1 (10)	Mathematical Methods 1 (10)	Introductory Probability and Statistics (10)	Introduction to Sport Biomechanics and Kinesiology (20)	Anatomy and Physiology 1 (20)	Foundations of Sport and Exercise Psychology (20)
Semester 2	Linear Algebra 2 (10)	Mathematical Methods 2 (10)	Mechanics (10)			

Part B

Semester 1	Analysis 1 (10)	Mathematical Methods 3 (10)	Option (10)	Biomechanics of Sport (20)	Physiology of Exercise and Training (20)	Expert Performance in Sport (20)
Semester 2	Analysis 2 (10)	Geometry and Groups (10)	Option (10)			

Current Options:

Semester 1

- Probability Theory
- Applied Statistics

Semester 2

- Complex Analysis
- ODEs and Calculus of Variations
- Analytical Dynamics
- Statistical Modelling

* Numbers in brackets indicate the number of credits. In each Part, they should add up to 120.

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Degree Structure continued*

Part I Industrial Placement Sandwich Year (Optional)

Part C

Semester 1	Option (10)	Option (10)	Option (10)	Advanced Sport Biomechanics (20)	Physiology of Sport, Exercise and Health (20)	Applied Psychology in Competitive Sport (20)
Semester 2	Option (10)	Option (10)	Option (10)			

Current options:

Semester 1

- Analysis 3
- Rings and Polynomials
- Introduction to Algebraic Geometry
- Number Theory
- Introduction to Dynamical Systems
- Asymptotic Methods
- Operational Research
- Graph Theory
- Stochastic Methods in Finance
- Bayesian Statistics and Markov Chain Monte Carlo Methods

Semester 2

- Galois Theory
- Elements of Topology
- Medical Statistics
- Statistics for Large Data
- Studies in Science and Mathematics Education
- Advanced Complex Analysis
- Representation Theory
- Linear Differential Equations
- Vibrations and Waves
- Elliptic Curves
- Game Theory
- Computational Methods in Finance
- Mathematical Biology

* Numbers in brackets indicate the number of credits. In each Part, they should add up to 120.

Modules listed should be treated as indicative and may be subject to change over time
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Mathematics with Statistics

Qualification	Length	UCAS code
BSc (Hons)	3 years full-time	GG13
BSc (Hons) DPS	4 years full-time sandwich	GG1H

Statistics is about collecting, analysing, interpreting and, most importantly, learning from data. It is also about the effective communication and presentation of results. Statistics has been described as the science of making conclusions in the presence of uncertainty. In today's so-called information society, skills in statistics are very much in demand across a broad range of organisations and could open doors to a wide variety of careers in many areas of commerce, industry and education. As a discipline, statistics has a strong foundation in mathematics. This degree course provides the necessary thorough grounding in mathematics, but with a very substantial statistics and probability component, right up to modern applications (such as medical statistics) and a major final year project which offers a connection to contemporary statistics research.

Degree Structure

Part A

Semester 1	Analysis 1	Linear Algebra 1	Mathematical Methods 1	Mathematical Thinking	Introductory Probability and Statistics	Computing and Numerical Methods
Semester 2	Analysis 2	Linear Algebra 2	Mathematical Methods 2	Geometry and Groups	Mechanics	

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Part B

Semester 1	Analysis 3	Probability Theory	Applied Statistics	Mathematical Methods 3	Option	Option
Semester 2	Complex Analysis	Statistical Modelling	ODEs and Calculus of Variations	Communicating Mathematics	Option	Option

Current Options:

Semester 1

- Advanced Numerical Methods
- Rings and Polynomials
- Introduction to Differential Geometry
- An Introduction to Mathematics Education
- Appropriate level Language module

Semester 2

- Galois Theory
- Elements of Topology
- Analytical Dynamics
- Appropriate level Language module

Part I Industrial Placement Sandwich Year (Optional)

Part C

Semester 1	Statistics Project*	Option	Option	Option	Option	Option
Semester 2	(30 credits)	Statistics for Large Data	Option	Option	Option	

* In addition to the Statistics Project, there should be 9 modules spread across 2 semesters.

Current options:

Semester 1

- Formal Languages and Theory of Computation
- Introduction to Algebraic Geometry
- Number Theory
- Introduction to Dynamical Systems
- Asymptotic Methods
- Operational Research
- Graph Theory
- Stochastic Methods in Finance
- Functional Analysis
- Bayesian Statistics and Markov Chain Monte Carlo Methods
- Appropriate level Language module

Semester 2

- Galois Theory
- Medical Statistics
- Studies in Science and Mathematical Education
- Advanced Complex Analysis
- Representation Theory
- Linear Differential Equations
- Vibrations and Waves
- Elliptic Curves
- Game Theory
- Mathematical Biology
- Computational Methods in Finance
- Appropriate level Language module