

## ***Department of Mathematical Sciences***

Loughborough University is firmly established as one of the leading universities in research and teaching innovation and achievement. The Department of Mathematical Sciences contributes strongly to this reputation in all respects.

The Department is one of the largest in the University and has more than 30 members of academic staff, about 600 undergraduate students studying on programmes where mathematics is a major component and about 40 further students on postgraduate programmes. In addition there are typically 10 Research Fellows working with members of staff on a wide range of research problems in various areas of both pure and applied mathematics.

Mathematics, famed as the Queen of the Sciences, is essentially the gateway to opportunity. It provides a most respected general education and develops highly valued analytical capabilities within its graduates. It opens more doors to subsequent employment and further study than any other subject. Study it at Loughborough in an excellent and established Department with experienced enthusiastic teachers, internationally renowned researchers, and a lively and happy student community.

### **Teaching**

The Department has a long held interest in the development of teaching in regard to both the relevance of the material and the quality of its delivery. Thus, for example, its first year undergraduate modules are designed to ease the transition between school and university mathematics, and a small-group tutorial scheme facilitates this transition. The curriculum content of certain programmes satisfies the entry requirements of a number of professional bodies and the quality of the education provided by the Department has been independently assessed as excellent in the recent External Review carried out by the Quality Assurance Agency for Higher Education.

### **Research**

The vibrant research activity of the department impinges on undergraduate students in a number of ways. In particular, student projects frequently arise as offshoots of current work while final year optional modules can be presented in the light of up-to-date research results. Indeed the research and consultancy interests of staff are often closely related to the subjects they teach at both undergraduate and postgraduate levels. The main research areas are as follows:

- *Dynamical Systems*
- *Geometry and Mathematical Physics*
- *Mathematical Biology*
- *Global Analysis and PDE's*
- *Linear and Nonlinear Waves*
- *Stochastic Analysis*

## ***Mathematics at Loughborough***

The mainline mathematics programmes offered together with the relevant UCAS codes are:

- G103 MMath in Mathematics (4 years)
- G104 MMath in Mathematics (5 years)
- G100 BSc in Mathematics (3 years)
- G101 BSc in Mathematics (4 years)

These programmes provide a sound education across a broad mathematical spectrum. In addition G103/G104 MMath provides opportunity for deeper study in advanced research-oriented project work and is the career grade qualification for Mathematicians. G101/G104 incorporates a one-year placement into the academic degree. This can be conducted at a research, commercial or industrial establishment or by spending one year studying at a University in another European country.

The Department also offers a wide range of programmes combining Mathematics with another subject:

- G1L1 and G1LC: BSc Mathematics with Economics
- G1N2 and G1NF: BSc Mathematics and Management
- G1N4 and G1NK: BSc Mathematics and Accounting and Financial Management
- GN13 and GNC3: BSc Financial Mathematics
- G1X3 and G1XH: BSc Mathematics with Mathematics Education
- CG61 and GC16: BSc Mathematics and Sports Science
- GG13 and GG1H: BSc Mathematics with Statistics

Each of these programmes can be followed in a 3-year model (first UCAS code) or in a 4-year model (second UCAS code) by including a one-year placement in a research, commercial or industrial establishment or one year of study in a European University.

As well as being administratively responsible for the above undergraduate programmes, the Department of Mathematical Sciences participates in joint honours degree programmes in conjunction with:

- The Department of Computer Sciences
- The Department of Physics

The University has a nationally renowned, well-equipped, Mathematics Learning Support Centre to help undergraduates through any mathematical difficulties.

Employability of graduates from all programmes is excellent, with the External Subject Review commenting that the “achievement of graduates in securing employment is impressive” and that “commendably high proportions of first appointments are in mathematical, financial, computing and engineering occupations”.

# ***Admissions & Entry***

## **UK Students**

For admissions to the Department's programmes the following are normally required:

AAB-AAA, including A in Maths.

Applications from individuals offering either Further Maths A Level, Further Maths AS Level at grade A, Merit in AEA (Advanced Extension Award), or grade 2 in STEP (Sixth Term Examination Paper) in Maths are viewed favourably.

However other applications, for example from mature candidates with industrial or commercial experience and/or qualifications other than those above, are welcomed. For students with Scottish qualifications, grade A in Advanced Higher Mathematics is required, together with good grades in other Advanced Higher and/or Higher level subjects.

The majority of applicants are made an offer of a place on the basis of the information given on their UCAS form. Candidates to whom offers are made are invited to visit the University and the Department, usually during Term. Visits incorporate special interest lectures and/or demonstrations of mathematical interest, tours of the campus and individual discussions with staff. Parents are also welcome to attend on such occasions, and separate programmes of activities are organised by the Department.

## **International Students**

We welcome applications from international students and currently have international students studying on most of our degree programmes. Qualification requirements are discussed on an individual basis but, as an example, a good grade on an international foundation course which contains a high mathematical content, plus an English language qualification equivalent to IELTS 6.5, would be suitable. A full list of suitable English language qualifications is given in the website: <http://www.lboro.ac.uk/international/englang/ug/index.htm>.

Loughborough University has a thriving community of International students, and they have their own students' association. For details of all the help and advice available for international students, please see the website: <http://www.lboro.ac.uk/international>.

## **Some things to Know about Your Programme**

Each student studies the equivalent of 12 modules in each academic year. Six modules are normally taken in each semester (half-year). Successful completion is determined by the overall performance across all modules. Modules are examined by a suitable blend of examinations, class tests and coursework.

The first year mathematics modules are designed to provide a smooth transition from previous studies to University level work and to develop mathematical fluency. For example, the core modules Calculus and Linear Algebra will revise and extend basic material that will be familiar to many students. The modules within the Pure Mathematics area develop sound mathematical thinking and lay the mathematical framework for modules studied in later years. The setting up and solving of simple mathematical models in a variety of application areas is strongly emphasised in introductory Applied Mathematics modules. Introductory modules in Probability and Statistics are also studied. Modern University level mathematics is often computer based and certain computing modules (which assume no prior knowledge) will enable students to use standard spreadsheets, databases, computer algebra packages and mathematical modelling and simulation packages, as well as learning how to write computer programs.

The second and final year of all programmes involves a wide choice of mathematics modules across the spectrum of topics in Pure Mathematics, Applied Mathematics, Probability and Statistics and Numerical Computational Methods. Teaching is by means of lectures supplemented by problem classes and smaller tutorial group activities. Small group tutorials are a feature of the first year of the Department's programmes. These provide the opportunity for difficulties with academic topics to be speedily and efficiently resolved virtually on an individual basis. Each student is allocated a Personal Tutor and meetings are held at regular intervals. A designated Tutor is responsible for the smooth running of each programme. The Programme Tutors sit on the Staff/Student Committee, which provides an essential forum for general class problems to be aired and resolved. The Department, by such means, strives to maintain a supportive learning environment and ensure a happy student community.

## ***Undergraduate Programmes (further details)***

### **Mathematics**

- G103 MMath (4 year full time)
- G100 BSc (3 year full time)
- G104 MMath (5 year sandwich)
- G101 BSc (4 year sandwich)

These single subject Degree programmes provide a broad study of the important areas of mathematics.

The aim in the first two years of these programmes is to give students a thorough understanding of the fundamentals of mathematics through a balanced study of pure mathematics, applied mathematics, statistics and mathematical modelling. Since the great majority of mathematical models describing physical applications cannot be solved analytically, numerical methods of solution are introduced and implemented using the University's extensive computing facilities.

As the programmes progress the amount of module choice increases. In the final year, in particular, students can choose from a very wide range of optional modules and construct a programme that reflects their particular interests and career aspirations. Students have the opportunity to apply their mathematical expertise by undertaking a final year individual project.

A small number of places are available annually, on a competitive basis, for students to spend the first semester of their final year at the University of Minnesota, Duluth, USA. *See page 9 for details.*

The MMath programme is primarily designed for students to study certain mathematical topics to a rather deeper level, particularly topics which are related to research interests of members of staff.

Students admitted to the BSc programme and attaining a high enough standard may be invited to transfer to the MMath programme. Merit based scholarships are available for the single subject Mathematics Programmes.

### **Mathematics with Economics**

- G1L1 BSc (3 year full-time)
- G1LC BSc (4 year sandwich)

This programme aims to meet a demand which exists in industry, government and commerce for well-educated mathematicians with a substantial knowledge of the theory and application of economics. Specific careers available to graduates include actuarial work, economic model building and statistical work in industry, commerce or the Civil Service.

The first two years provide a basic foundation with two thirds of the programme consisting of mathematics modules, the remaining one third comprising a study of both macroeconomics and microeconomics. In the final year a wide variety of optional subjects are available from both the Department of Mathematical Sciences and the Economics department. In both mathematics and economics use is made of computers to carry out analysis of data.

## **Mathematics and Accounting and Financial Management**

- G1N4: BSc (3 year full-time)
- G1NK: BSc (4 year sandwich)

This programme is divided equally between Department of Mathematical Sciences modules and Business School modules. Although administered entirely by the Department, the programme benefits greatly from the very close cooperation with staff from the Business School.

Core topics in Mathematics and Accounting are covered by compulsory modules in the first year, while a range of optional modules in the second and final years allows a wide choice of topics in Pure and Applied Mathematics and in Accounting. Much work will be covered on statistics, stochastic methods in finance and a range of topics in Accounting and Business including auditing, company law, financial management, banking and entrepreneurship. The choice of optional subjects will allow students to study mathematics to a very high level by taking modules in number theory, in analysis and in chaos theory. Although the two subjects may not appear closely connected, mathematical analysis is increasingly used in the world of finance, for instance in statistical analysis of data, stock market theory and time series analysis.

There is considerable freedom for students to tailor the programme to their own interests.

Careers followed by graduates from the programme are in education, financial auditing, accountancy and in many areas of commerce and industry.

The programme is accredited to the following accountancy professional institutes:

- Chartered Institute of Management Accountants (CIMA)
- Chartered Institute of Public Finance and Accountancy (CIPFA)
- Association of Chartered Certified Accountants (ACCA)
- Institute of Chartered Accountants in England and Wales (ICAEW)

## **Mathematics and Management**

- G1N2 BSc (3 year full-time)
- G1NF BSc (4 year sandwich)

This programme is divided between Department of Mathematical Sciences modules and Business and Economics modules. Although administered entirely by the Department of Mathematical Sciences the programme benefits greatly from the very close cooperation with staff from Business and Economics department.

Core topics in Mathematics and Business are covered by compulsory modules in the first year, while a range of optional modules in the second and final years allows a wide choice of topics in Pure and Applied Mathematics and in Management. Much work will be covered on statistics and operations research and a range of topics in Business including financial reporting, decision making, international financial management, banking and entrepreneurship and innovation. The choice of optional subjects will allow students to study mathematics to a very high level by taking modules in analysis and complex analysis, number theory and chaos theory.

In the final year two thirds of the modules taken may be either in mathematics or in management so there is considerable freedom for students to tailor the programme to their own interests.

Careers followed by graduates from the programme are in education, accountancy and in many areas of commerce and industry.

## **Financial Mathematics**

- GN13: BSc (3 year full-time)
- GNC3: BSc (4 year sandwich)

Mathematics plays an important role in the financial services industry and there is growing demand for graduates with knowledge and understanding of both financial matters and the mathematics which underpins them. The first two years share a common theme with the Mathematics with Economics programme with compulsory modules in relevant statistics and probability. There is one compulsory module in the second year and subsequently two compulsory modules in the final year dealing directly with the application of mathematics to finance.

Mathematics accounts for two thirds of the programme. No previous knowledge of economics is necessary as the first two years provide a comprehensive introduction to both macroeconomics and microeconomics.

## **Mathematics with Mathematics Education**

- G1X3: BSc (3 year full time)
- G1XH BSc (4 year sandwich)

The programme benefits from close cooperation between mathematicians and mathematics educators. The mathematics education element is approximately 25% of the programme.

In the first year of this programme, students will take the same modules as those studying the single Mathematics Programme. These include core topics such as Calculus and Linear Algebra, as well as Introduction to Applied Mathematics, Probability & Statistics, and Computing.

In the second and final years there are several compulsory modules in mathematics education, together with a final-year project which will allow students to engage in original research in mathematics education. In mathematics, there are a few compulsory modules in the second year, together with a wide range of optional modules in the second and final years. There is considerable freedom for students to tailor the programme to their own interests.

Careers open to graduates from the programme are in education, and in many areas of commerce and industry. The course is especially valuable for those who wish to go on to a PGCE in mathematics teaching. The educational elements of the course contribute well to careers that involve collaborative working, decision making, analytical skills and approaches to research.

## **Mathematics and Sports Science**

- CG61: BSc (3 year full-time)
- GC16: BSc (4 year sandwich)

This programme is divided equally between Mathematics and Sports Science topics. It is run in collaboration with the internationally renowned School of Sport, Exercise and Health Sciences. Although the two subjects may not appear closely connected, mathematical analysis is used in sporting applications such as devising strategies for winning, statistical analysis of results, and the mechanics of the human body.

Core topics in Mathematics are covered by compulsory modules in the first two years, while a range of optional modules in the second and final years allows a wide choice of topics in Pure and Applied Mathematics and Statistics. In Sports Science, students choose from a wide range of options covering psychological, biomechanical, physiological, sociological and pedagogical aspects of sport, and so can tailor their course to their own interests.

Careers followed by graduates from the programme are in education, sports organisations and many areas of commerce and industry.

## **Mathematics with Statistics**

- GG13: BSc (3 year full time)
- GG1H: BSc (4 year sandwich)

This programme is administered entirely within the Department of Mathematical Sciences, and includes modules in both mathematics and statistics. The statistics element is approximately a third of the programme. There are two paths in this programme: Path A focuses on applied statistics and Path B focuses on stochastic analysis.

In the first year of this programme, students in both paths will take the same modules as those studying the single Mathematics programme. These include core modules such as Calculus and Linear Algebra, as well as Introductory Probability & Statistics, Introduction to Applied Mathematics, and Computer Applications in Mathematics.

In the second and final years there are several compulsory modules in statistics, depending on the choice of path. In mathematics, there are a few compulsory modules in the second year, together with a wide range of optional modules in the second and final years. In the final year, students will undertake a project which will allow them to either explore more advanced topics in statistical theory or to investigate a research question using statistical methods. There is considerable freedom for students to tailor the programme to their own interests.

Careers open to graduates from the programme range across many areas of commerce, industry and education. The course could also be a stepping stone on the route to further study in statistics, perhaps especially in medical statistics.

## ***Sandwich Programmes and Placements***

All programmes in the Department are available as either sandwich programmes of four years duration (or five years for MMath) or full-time programmes of three years duration (four years for MMath). It is unnecessary to apply for both the sandwich and non-sandwich version of the same programme on your UCAS form, as transfer to a sandwich version of a programme is possible at any time within the first 12 months of the starting date and transfer from a sandwich version is possible at any time within the first 2 years. An additional qualification of DPS (Diploma in Professional Studies) is awarded to students successfully completing a placement year.

The placement year is a valuable complement to the academic part of a programme and provides an experience which can seriously enhance your c.v. Sandwich placements have led to permanent positions after graduation and, in some cases, to financial sponsorship for the final year at University.

The School has a well-developed scheme in Year 2 of a programme, headed by a Placement Training Tutor, to help students find suitable training locations. Over the years good contacts have been established with many companies due to the success of previous students on placement.

Some of the companies to have provided most recent placements for students are:

3M, Bracknell	BAe Systems, Farnborough
Balfour Beatty, Derby	Bank of England, London
BMRB International, Ealing, London	Boots, Nottingham
British Airways, Uxbridge	BT, Hemel Hempstead
Caterpillar, Peterborough	DASA, Portsmouth
DERA, Sevenoaks	Derby Primary Care Trust
DfT, St Leonards	Endsleigh Insurance, Cheltenham
Ernst & Young, London	ESPO, Leicester
Esso, Leatherhead	ESSO Petroleum Ltd, Southampton
Experian Ltd, Nottingham	Fidelity Investments Ltd, Tadworth
Fujitsu, Basingstoke	Hamworth UK Ltd, London
Hewlett Packard, Bracknell	IBM, Portsmouth
ICI, Runcorn	Knox Cropper, London
Lloyds/TSB Bank, Centre for Operations, London	Marks & Spencer, London
MBNA, Chester	Medisence, Witney
Met Police consultancy, London	Michelin Tyre plc, Watford
National Air Traffic Services, London	Nationwide, Swindon
Nestles UK Ltd, Croydon	Office for National Statistics, Newport
Post Office, Chesterfield	PowerGen, Nottingham
PriceWaterhouseCoopers, Liverpool	Pritchard Wood, Derby
Rank Group, Holidays Division, Hemel Hempstead	Reeves & Neylan, Rochester & Canterbury
Residential Organisation, Loughborough University	Riber Hall Hotel, Matlock
Severn Trent Water Ltd, Shrewsbury	Tarmac Precast Concrete Ltd, Stamford
Tenon Accountants Ltd, Nottingham	The Post Office, London
Travel Inn, Ipswich	University Hosp., Coventry & Warwickshire
Vauxhall, Luton	Vesuvius UK Ltd, Derby
Whitbread, Dunstable	Wolanski, London
WS Atkins Management Consultants, Epsom	Xerox, Birmingham

## Study Abroad

The School of Mathematics has a number of links with universities abroad both in Europe and the USA. Through the European Union's Erasmus exchange programme, students have the opportunity to study in different EU countries. No extra fees are involved in these exchange programmes.



Left: Students enjoying a summer day near the library at UMD.

Below: Lake Superior near Duluth



Our most popular exchange programme however is with the University of Minnesota, Duluth (UMD) in the United States which is located 150 miles north of the twin cities of Minneapolis and St Paul on Lake Superior. Students from Loughborough spend the first semester of their third year in Duluth and students from Duluth spend the second semester of year two in Loughborough.



UMD Campus



## **Employment**

A selection of employment destinations of recent graduates:

<b>COMPANY</b>	<b>POSITION</b>
3M Healthcare	Business Analyst/Programmer
Advantica Technology	Software Engineer
Advantica Technology	Team Administrator
Alliance & Leicester	Marketing Analyst
Alternative Solutions	Website Designer
Anderson Consulting	Systems Analyst
AON Consulting	Trainee Actuary
Ashdens	Trainee Chartered Accountant
Aston University	MSc, Computer Science
AT&T Telecom	Software Designer
Attention to Detail	Games Programmer
Ballard Syree	Trainee Chartered Accountant
Barclays Bank	Business Leadership Programme
Barclaycall	Forecasting and Data Analysis
Berkeley Fund Managers	Administrator & Analyst
Bleasdale Computer Systems	Computer Systems Support
BMA Ltd	Senior Clerk, Scanning Operations
BMW Financial Services Alphabet	Sales Controller Administrator
BUNAC	Teaching in Africa
Cambridge University	PGCE, Mathematics
Canada Life	Trainee Actuary
Cellular Pathology	Medical Laboratory Assistant
Currys E-Commerce	Commercial Planner
David Lloyd Leisure	Accounts Payable Analyst
Dealerfield	Computer Programmer
Dell International	Software Engineer
Deutsche Bank	Analyst
Dove Naish	Trainee Chartered Accountant
EADS	Business Graduate
Hadleigh District Council	Data Input Assistant
Hamilton Insurance	Claims Assessor
Hatwell plc	Finance Admin Clerk
HFC Bank (Part of HSBC Group)	Business Analyst
House of Fraser Stores	Trainee Manager
IBM (UK) Ltd	Computer Programmer
Halifax plc	Systems Developer
ICL	Business Analyst
James Hay	Pensions Administrator
Loughborough University	PGCE, Mathematics
Marks & Spencer	Trainee Financial Manager
Metropolitan Police Service	Police Constable
Natwest	Customer Advisor
Prime Focus	Purchase ledger clerk
Uttleford District Council	Administration Assistant
Web Domain Brain	Network Manager

# **Mathematics Module Descriptions (Level A)**

## **MAA340 Calculus**

*Assessment: 60% exam, 40% coursework.*

Calculus is required in all scientific and engineering disciplines as well as being a foundation for many other topics in Mathematics. Underlying all topics in calculus is the concept of a limit. This module begins with an introduction to limits, then moves on to three central ideas: differentiation, integration and Taylor series. In semester one, the theory of those processes and their applications are studied in the context of functions of a single variable. In semester two, they are extended to functions of several variables.

## **MAA342 Linear Algebra**

*Assessment: 70% exam, 30% coursework.*

The purpose of this module is to introduce the techniques of matrix algebra and the basic concepts of vector spaces. Students learn how to manipulate matrices and solve linear systems of equations. The properties of these systems are reflected in the abstract theory of vector spaces and the linear maps between them. The course develops a range of ideas and techniques that are used in all branches of pure and applied mathematics.

## **MAA141 Geometry, Vectors & Complex Numbers**

*Assessment: 70% exam, 30% coursework.*

This module aims to increase students' geometrical intuition and understanding. Students are introduced to a variety of curves such as ellipses and hyperbolae and study the equations which describe them. Geometrical vectors in two and three dimensions are studied and their connection with complex numbers discussed. The manipulation and applications of complex numbers are investigated in detail.

## **MAA145 Mathematical Thinking**

*Assessment: 50% exam, 50% coursework*

This fundamental module introduces the most important concept in mathematics: proof. By means of examples, different types of proof are introduced, and the circumstances in which they are useful discussed. The skills needed for finding proofs are developed and practiced. Case studies are used to illustrate the art of coming up with conjectures and proving theorems. Logic is the vehicle for proving mathematical statements, and so one needs to be fluent in this 'language'. Along the way, elementary mathematical concepts such as sets, functions and relations are encountered.

## **MAA155 Introduction to Applied Mathematics**

*Assessment: 70% exam, 30% coursework*

Throughout its development, mathematics has been applied to a huge variety of real-world problems. This module aims to give an introduction to some of these areas and to develop the skills necessary for the successful application of mathematics. Particular emphasis is placed on the interpretation of mathematical expressions in terms of the real-world phenomenon they describe. The topics covered include Newton's law of motion, population dynamics, stationary and periodic behaviour, energy and stability.

### **MAA160 Computer Applications in Mathematics**

*Assessment: 100% coursework*

Computers are an essential ingredient of daily life. This module aims to improve your computer literacy and to reinforce some of your mathematical skills in order to give you confidence in using computers for problem solving and mathematical analysis. Firstly, you will learn how to use the email system and computer-based learning support facilities employed at Loughborough University. Secondly, you will learn how to use Excel, a powerful spreadsheet package, to analyse and present numerical information. Thirdly, you will learn how to use Maple, a very powerful computer algebra package, that can compute and manipulate symbols as well as numbers; a useful tool that can be used throughout your studies. Finally, you will learn basic computer programming skills using the Maple package.

### **MAA241 Sequences and Series**

*Assessment: 70% exam, 30% coursework*

In 'advanced' mathematics one of the most important phenomena is convergence. This module introduces this idea in its most basic setting: sequences. Convergence of sequences is seen in virtually all areas of application, especially in numerical analysis, so a good appreciation of it is vital. There is much confusion concerning convergence, as witnessed by many of the so-called paradoxes that inevitably end up claiming to prove that  $0=1$ . This is usually due to poor understanding of the concept of infinity. In this module we aim to clear up this confusion, and also to prepare the way for the future modules where convergence is met. In particular, in modules in analysis, where calculus is put on a firm footing, understanding convergence is crucial.

### **MAA245 Numbers**

*Assessment: 50% exam, 50% coursework*

We have all been using numbers from an early age, and we take their properties for granted; but not in this module! Starting from a few fundamental axioms for the Natural Numbers, we define and study the arithmetical and ordering properties of a succession of number systems, using the logical processes introduced in the Mathematical Thinking module. On the way, we examine the decimal and other systems for writing numbers. We find that Real Numbers, whose properties are assumed in Calculus, are surprisingly awkward to define, but contain a rich variety of number types: rational and irrational, algebraic and transcendental. This leads to the concept of countability, which defines how infinite certain sets of numbers are.

### **MAA255 Differential Equations**

*Assessment: 70% exam, 30% coursework.*

The study of differential equations is a key area in Applied Mathematics since so many real-world problems may be represented mathematically by them. To give an example, the differential equation  $dT/dt = k(T-T_0)$  is a model for the temperature  $T$  of a cooling body as a function of time  $t$ . In the module we study the properties of, and solution methods for, certain elementary types of differential equations and discuss some applications. We also look at the qualitative theory of differential equations.

### **MAA270 Introductory Probability and Statistics**

*Assessment: 70% exam, 30% coursework*

Probability theory is a pivotal part of present day mathematics providing a mathematical framework to modelling random phenomena, and thereby offering concepts and tools applicable in natural and social sciences, engineering, and financial markets. The aim of this module is to give a solid introduction to basic ideas and methods of probability and statistics. We start with a systematic discussion of combinatorial counting rules (permutations, variations, combinations, pigeonhole principle, sieve method). Then we define probability measures and conditional probability, and discuss basic rules for operating with probabilities. After this we address discrete and continuous random variables, and derive and use the statistical parameters (means and variances) of several specific cases of random variables. Finally we discuss statistical parameter estimation, i.e., how to make reliable predictions on random variables based on empirical data.

## BSc Mathematics (3 year full-time/4 year sandwich) UCAS code: G100 – 3 year, G101 – 4 year

Year 1	Sem 1	MAA340 Calculus	MAA342 Linear Algebra	MAA141 Geometry, Vectors & Complex Numbers	MAA145 Mathematical Thinking	MAA155 Introduction to Applied Mathematics	MAA160 Computer Applications in Mathematics									
	Sem 2	MAA340 Calculus	MAA342 Linear Algebra	MAA241 Sequences & Series	MAA255 Differential Equations	MAA270 Introductory Probability & Statistics	MAA245 Numbers	Another Module from University catalogue								
Year 2	Sem 1	MAB120 Communicating Mathematics	MAB141 Analysis	MAB150 Vector Calculus	MAB130 An Introduction to Mathematics Education	MAB142 Vector Spaces	MAB156 Modelling with Differential Equations	MAB160 Numerical Methods 1	MAB170 Probability Theory	Another module from University catalogue						
	Sem 2	MAB240 Fourier Analysis & Partial Differential Equations	MAB241 Complex Analysis	MAB230 Understanding Mathematical Concepts	MAB242 Abstract Algebra	MAB250 ODEs & Calculus of Variations	MAB255 Analytical Dynamics	MAB260 Numerical Methods 2	MAB265 Scientific Programming	MAB270 Statistical Modelling	MAB280 Introduction to Stochastic Processes	Another module from University catalogue				
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies															
Year F	Sem 1	MAC300 BSc Mathematics Project	OR	MAC200 Mathematics Report	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC150 Inviscid Fluid Mechanics	MAC171 Statistical Methods	MAC175 Operational Research	MAC176 Graph Theory	MAC180 Discrete Stochastic Methods in Finance	MAC197 Introduction to Differential Geometry	PHC130 Fundamentals of Quantum Information	OR	Another module from University catalogue	
	Sem 2	MAC300 BSc Mathematics Project	OR	MAC200 Mathematics Report	MAC241 Applied Complex Analysis	MAC246 Metric Spaces	MAC249 Linear Differential Equations	MAC251 Vibrations & Waves	MAC272 Random Processes & Time Series Analysis	MAC297 Mathematica I Biology	MAC280 Continuous Stochastic Methods in Finance	MAC298 Elements of Topology	DSC023 Studies in Science & Mathematics Education	PHB230 Science of the Internet	OR	Another module from University catalogue

Orange  Indicates compulsory modules, tan  Indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 20% in all Year 2 and Year 3 modules.

**BSc Financial Mathematics (3 year full-time/4 year sandwich)**  
**UCAS code: GN13 – 3 year, GNC3 – 4 year**

Year 1	Sem 1	MAA340 Calculus	MAA342 Linear Algebra	MAA141 Geometry, Vectors & Complex Numbers	MAA160 Computer Applications in Mathematics	ECA001 Principles of Macroeconomics	ECA002 Principles of Microeconomics						
	Sem 2	MAA340 Calculus	MAA342 Linear Algebra	MAA241 Sequences & Series	MAA270 Introductory Probability & Statistics	ECA001 Principles of Macroeconomics	ECA002 Principles of Microeconomics						
Year 2	Sem 1	MAA155 Introduction to Applied Mathematics	MAB141 Analysis	MAB170 Probability Theory	ECB001 Intermediate Macroeconomics	ECB002 Intermediate Microeconomics	ECB004 Introduction to Finance						
	Sem 2	MAA255 Differential Equations	MAB270 Statistical Modelling	MAB280 Introduction to Stochastic Processes	ECB001 Intermediate Macroeconomics	ECB002 Intermediate Microeconomics	ECB004 Introduction to Finance						
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies												
Year F	Sem 1	MAC149 Mathematical Methods for Differential	MAC180 Discrete Stochastic Methods in Finance	ECC004 Financial Economics & Corporate Finance	ECC014 Economics of the Financial System	MAB160 Numerical Methods 1	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC171 Statistical Methods	MAC175 Operational Research	MAC176 Graph Theory	MAC197 Introduction to Differential Geometry	ECC003 International Money & Finance
	Sem 2	MAC249 Linear Differential Equations	MAC280 Continuous Stochastic Methods in Finance	ECC014 Economics of the Financial System	ECC141 Corporate Finance & Derivatives	MAC246 Metric Spaces	MAB250 ODEs & Calculus of Variations	MAB260 Numerical Methods 2	MAC272 Random Processes & Time Series Analysis	MAC297 Mathematical Biology	MAC298 Elements of Topology		

Orange  Indicates compulsory modules, tan  Indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 20% in all Year 2 and Year 3 modules.



## BSc Mathematics and Management (3 year full-time/4 year sandwich) UCAS code: G1L2 – 3 year, G1NF – 4 year

Year 1	Sem 1	MAA340 Calculus		MAA342 Linear Algebra		MAA141 Geometry, Vectors & Complex Numbers		MAA160 Computer Applications in Mathematics		BSA505 Organisational Behaviour		BSA525 Financial Reporting								
	Sem 2	MAA340 Calculus		MAA342 Linear Algebra		MAA241 Sequences & Series		MAA270 Introductory Probability & Statistics		BSA506 Management of Human Resources		BSA526 Accounting for Managers								
Year 2	Sem 1	MAA155 Introduction to Applied Mathematics		MAB170 Probability Theory		BSB555 Organisation Studies		BSB560 Principles of Marketing		BSB580 Operations Management		MAA145 Mathematical Thinking		MAB142 Vector Spaces		MAB160 Numerical Methods 1				
	Sem 2	MAA255 Differential Equations		MAB270 Statistical Modelling		BSB 550 Company Finance		BSB562 The Marketing Mix		BSB572 Management Science Methods		MAB241 Complex Variables		MAB242 Abstract Algebra		MAB260 Numerical Methods 2		MAB265 Scientific Programming		
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies																			
Year F	Sem 1	BSC570 Strategic Management		MAB141 Analysis	MAB150 Vector Calculus	MAB156 Modelling with Differential Equations	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC149 Mathematical Methods for Differential Equations		MAC171 Statistical Methods	MAC175 Operational Research	MAC176 Graph Theory	MAC197 Introduction to Differential Geometry	BSC015 Financial Management & Corporate Policy	BSC040 Sources of Funds/Financial Packages	BSC105 International Human Resource Management	BSC165 Business Forecasting	BSC520 Business Systems	BSC522 Entrepreneur- ship & Innovation
	Sem 2	MAC241 Applied Complex Analysis	MAC246 Metric Spaces	MAC249 Linear Differential Equations	MAC272 Random Processes & Time Series Analysis	MAC297 Mathematical Biology	MAC298 Elements of Topology	DSC023 Studies in Science & Mathematics Education	BSC018 Behavioural Finance	BSC027 International Financial Management	BSC042 Corporate & Wholesale Banking	BSC124 Marketing Communications	BSC140 Lean Operations	BSC524 Entrepreneurship & Small Business Planning	BSC575 Leadership & Interpersonal Skills					

■ Orange indicates compulsory modules, ■ tan indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 20% in all Year 2 and Year 3 modules.



# BSc Mathematics and Accounting and Financial Management (3 year full-time/4 year sandwich) UCAS code: G1N4 – 3 year, G1NK – 4 year

Year 1	Sem 1	MAA340 Calculus		MAA342 Linear Algebra		BSA017 Financial Accounting Fundamentals		MAA160 Computer Applications in Mathematics		BSA025 Introduction to Law		BSA020 Microeconomics for Financial Studies									
	Sem 2	MAA340 Calculus		MAA342 Linear Algebra		BSA017 Financial Accounting Fundamentals		MAA270 Introductory Probability & Statistics		BSA018 Introduction To Management Accounting		BSA022 Macroeconomics for Financial Studies									
Year 2	Sem 1	BSB005 Management Accounting		MAA141 Geometry, Vectors & Complex Numbers		MAA155 Introduction to Applied Mathematics		MAB170 Probability Theory		BSB007 Intermediate Financial Accounting		BSB022 Managerial Economics		BSA030 Marketing							
	Sem 2	BSB005 Management Accounting		MAA241 Sequences & Series		MAA255 Differential Equations		MAB270 Statistical Modelling		BSB025 Financial Management		MAB280 Introduction to Stochastic Processes		BSB015 Company Law							
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies																				
Year F	Sem 1	BSC005 Advanced Financial Accounting		BSC010 Management Accounting & Control		MAB141 Analysis	MAB142 Vector Spaces	MAB160 Numerical Methods 1	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC149 Mathematical Methods for Differential Equations	MAC171 Statistical Methods	MAC175 Operational Research	MAC176 Graph Theory	MAC180 Discrete Stochastic Methods in Finance	MAC197 Introduction to Differential Geometry	BSC015 Financial Management & Corporate Policy	BSC029 International Financial Reporting	BSC040 Sources of Funds/ Financial Packages	BSC520 Business Systems	BSC522 Entrepreneur- ship & Innovation
	Sem 2	BSC005 Advanced Financial Accounting		BSC010 Management Accounting & Control		MAC246 Metric Spaces	MAC249 Linear Differential Equations	MAC272 Random Processes & Time Series Analysis	MAC280 Continuous Stochastic Methods in Finance	MAC297 Mathematical Biology	MAC298 Elements of Topology	DSC023 Studies in Science & Mathematics Education	BSC012 Issues in Management Accounting	BSC016 Financial Risk Management	BSC018 Behavioural Finance	BSC025 Auditing	BSC027 International Financial Management	BSC042 Corporate & Wholesale Banking			

Orange  Indicates compulsory modules, tan  Indicates optional modules

Each complete bar represents a modular weight of 60

Boxed type indicates CORE modules – all candidates must achieve at least 40%

In Year 2, candidates must accumulate at least 40 credits from MA\*\*\* and 40 credits from BS\*\*\* modules.

In Year F, candidates must accumulate at least 30 credits from MA\*\*\* and 30 credits from BS\*\*\* modules.



## BSc Mathematics with Economics (3 year full-time/4 year sandwich)

UCAS code: G1L1 – 3 year, G1LC – 4 year

	Year 1														
Sem 1	MAA340 Calculus		MAA342 Linear Algebra			MAA141 Geometry, Vectors & Complex Numbers			MAA160 Computer Applications in Mathematics		ECA001 Principles of Macroeconomics		ECA002 Principles of Microeconomics		
Sem 2	MAA340 Calculus		MAA342 Linear Algebra			MAA241 Sequences & Series		MAA270 Introductory Probability & Statistics			ECA001 Principles of Macroeconomics		ECA002 Principles of Microeconomics		
Sem 1	MAA155 Introduction to Applied Mathematics		MAB170 Probability Theory		MAA145 Mathematical Thinking		MAB141 Analysis	MAB142 Vector Spaces	MAB160 Numerical Methods 1	ECB001 Intermediate Macroeconomics		ECB002 Intermediate Microeconomics		ECB003 Introduction to Econometrics	
Sem 2	MAA255 Differential Equations		MAB270 Statistical Modelling		MAB241 Complex Analysis		MAB242 Abstract Algebra	MAB260 Numerical Methods 2	MAB265 Scientific Programming	ECB001 Intermediate Macroeconomics		ECB002 Intermediate Macroeconomics		ECB003 Introduction to Econometrics	
Sem 1	Year 2														
Sem 2	Year 2														
Sem 1	Year 3														
Sem 2	Year 3														
Sem 1	Year F														
Sem 2	Year F														

■ Orange indicates compulsory modules, ■ tan indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 20% in all Year 2 and Year 3 modules



## MMath Mathematics (4 year full-time/5 year sandwich) UCAS code: G103 – 4 year, G104 – 5 year

Year	Sem	Module	Module	Module	Module	Module	Module	Module	Module	Module	Module	Module
Year 1	Sem 1	MAA340 Calculus	MAA342 Linear Algebra	MAA141 Geometry, Vectors & Complex Numbers	MAA145 Mathematical Thinking	MAA155 Introduction to Applied Mathematics	MAA160 Computer Applications in Mathematics					
	Sem 2	MAA340 Calculus	MAA342 Linear Algebra	MAA241 Sequences & Series	MAA245 Differential Equations	MAA270 Introductory Probability & Statistics	MAA245 Numbers	Another Module from University Catalogue				
Year 2	Sem 1	MAB120 Communicating Mathematics	MAB141 Analysis	MAB150 Vector Calculus	MAB142 Vector Spaces	MAB130 An Introduction to Mathematics Education	MAB156 Modelling with Differential Equations	MAB160 Numerical Methods 1	MAB170 Probability Theory	Another Module from University Catalogue		
	Sem 2	MAB240 Fourier Analysis & Partial Differential Equations	MAB241 Complex Numbers	MAB242 Abstract Algebra	MAB250 ODEs & Calculus of Variations	MAB230 Understanding Mathematical Concepts	MAB255 Analytical Dynamics	MAB260 Numerical Methods 2	MAB265 Scientific Programming	MAB270 Statistical Modelling	MAB280 Introduction to Stochastic Processes	Another Module from University Catalogue
Year 3	Sem 1	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC150 Inviscid Fluid Mechanics	MAC171 Statistical Methods	MAC175 Operational Research	MAC176 Graph Theory	MAC180 Discrete Stochastic Methods in Finance	MAC197 Introduction to Differential Geometry	PHC130 Fundamentals of Quantum Information	OR	Another Module from University Catalogue
	Sem 2	MAC246 Metric Spaces	MAC249 Linear Differential Equations	MAC241 Applied Complex Analysis	MAC251 Vibrations & Waves	MAC272 Random Process & Time Series Analysis	MAC280 Continuous Stochastic Methods in Finance	MAC297 Mathematical Biology	MAC298 Elements of Topology	DSC023 Studies in Science & Mathematics Education	PHB230 Science of the Internet	OR
Year 4		<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies										
Year F	Sem 1	MAD300 MMath Mathematics Project	MAP111 Mathematical Modelling of Industrial Problems 1	MAD102 Regular & Chaotic Dynamics	MAD103 Lie Groups & Lie Algebras	MAP102 Programming & Numerical Methods	MAP104 Theory of Integration & Martingales	MAP114 Stochastic Models in Finance	TTP210 Advanced Reliability, Availability and Maintainability			
	Sem 2	MAD300 MMath Mathematics Project	MAD202 Nonlinear Waves	MAD203 Functional Analysis	MAP201 Elements of Partial Differential Equations	MAP202 Static & Dynamic Optimisation	MAP204 Stochastic Calculus & Theory of Stochastic Pricing	MAP211 Mathematical Modelling of Industrial Problems 2	MAP213 Fluid Mechanics			

Orange  Indicates compulsory modules, tan  Indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 40% in all other Year 1, Year 2 and Year 3 modules.



## BSc Mathematics and Sports Science (3 year full-time/4 year sandwich) UCAS code: CG61 – 3 year, GC16 – 4 year

Year 1	Sem 1	MAA340 Calculus		MAA342 Linear Algebra		PSA001 Teaching & Coaching 1		MAA160 Computer Applications in Mathematics		PSA020 Exercise Physiology		PSA028 Biomechanics of Sport		
	Sem 2	MAA340 Calculus		MAA342 Linear Algebra		PSA001 Teaching & Coaching 1		MAA270 Introductory Probability and Statistics		PSA002 Fitness & Training		PSA026 Foundations of Sport & Exercise Psychology		
Year 2	Sem 1	MAA141 Geometry Vectors & Complex Numbers			MAA155 Introduction to Applied Mathematics		MAB170 Probability Theory	PSB211 Exercise Physiology 2		PSB027 Acquiring Movement Skills		PSB029 Biomechanics of Sports Movements		PSB031 Psychological Issues & Strategies in Sport
	Sem 2	MAA241 Sequences & Series		MAA255 Differential Equations		PSB002 Structural Kinesiology	PSB211 Exercise Physiology 2		MAB242 Abstract Algebra	MAB265 Scientific Programming	MAB270 Statistical Modelling	PSB026 Psychological Factors in Competitive Sport		PSB028 Methods of Analysis in Sports Biomechanics
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies													
	Sem 1	MAB141 Analysis	MAB150 Vector Calculus	MAB156 Modelling with Differential Equations	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC149 Mathematical Methods for Differential Equations	MAC171 Statistical Methods	MAC175 Operational Research	MAC176 Graph Theory	PSC019 Applied Physiology of Sports Performance	PSC021 Physiology of Exercise & Health	PSC022 Sport & Exercise Medicine	PSC029 Mechanics of Sports Techniques
Year F	Sem 2	MAC246 Metric Spaces	MAC249 Linear Differential Equations		MAC272 Random Processes & Time Series Analysis		MAC297 Mathematical Biology	MAC298 Elements of Topology	DSC023 Studies in Science & Mathematics Education	PSC020 Sport Nutrition	PSC026 Exercise Psychology	PSC027 Motor Control of Sports Movement	PSC028 Advanced Methods of Analysis in Sports Biomechanics	

Orange  Indicates compulsory modules, tan  Indicates optional modules  
Boxed type indicates CORE modules – these must be passed.



## BSc Mathematics with Mathematics Education (3 year full-time/4 year sandwich) UCAS code: G1X3 – 3 year, G1XH – 4 year

Year 1	Sem 1	MAA340 Calculus	MAA342 Linear Algebra	MAA141 Geometry, Vectors & Complex Numbers	MAA145 Mathematical Thinking	MAA155 Introduction to Applied Mathematics	MAA160 Computer Applications in Mathematics							
	Sem 2	MAA340 Calculus	MAA342 Linear Algebra	MAA241 Sequences & Series	MAA255 Differential Equations	MAA270 Introductory Probability & Statistics	MAA245 Numbers	Another Module from University catalogue						
Year 2	Sem 1	MAB120 Communicating Mathematics	MAB130 An Introduction to Mathematics Education	MAB141 Analysis	MAB150 Vector Calculus	MAB142 Vector Spaces	MAB156 Modelling with Differential Equations	MAB160 Numerical Methods 1	MAB170 Probability Theory	Another module from University catalogue				
	Sem 2	MAB230 Understanding Mathematical Concepts	MAB240 Fourier Analysis & Partial Differential Equations	MAB241 Complex Analysis	MAB242 Abstract Algebra	MAB250 ODEs & Calculus of Variations	MAB255 Analytical Dynamics	MAB260 Numerical Methods 2	MAB270 Statistical Modelling	MAB280 Introduction to Stochastic Processes	Another module from University catalogue			
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies													
Year F	Sem 1	MAC330 BSc Mathematics Education Project	MAC130 Mathematics Cognition	MAC145 Linear Differential Equations	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC150 Inviscid Fluid Mechanics	MAC171 Statistical Methods	MAC175 Operational Research	MAC176 Graph Theory	MAC180 Discrete Stochastic Methods in Finance	MAC197 Introduction to Differential Geometry	OR	Another module from University catalogue
	Sem 2	MAC330 BSc Mathematics Education Project	MAC241 Applied Complex Analysis	MAC246 Metric Spaces	MAC249 Linear Differential Equations	MAC251 Vibrations & Waves	MAC272 Random Processes & Time Series Analysis	MAC280 Continuous Stochastic Methods in Finance	MAC297 Mathematical Biology	MAC298 Elements of Topology	PHB230 Science of the Internet	OR	Another module from University catalogue	

Orange  Indicates compulsory modules, tan  Indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 20% in all Year 2 and Year 3 modules.



## BSc Mathematics with Statistics (3 year full-time/4 year Sandwich) Degree Path A

Year 1	Sem 1	MAA340 Calculus	MAA342 Linear Algebra	MAA141 Geometry, Vectors & Complex Numbers	MAA145 Mathematical Thinking	MAA155 Introduction to Applied Mathematics	MAA160 Computer Applications in Mathematics				
	Sem 2	MAA340 Calculus	MAA342 Linear Algebra	MAA241 Sequences & Series	MAA255 Differential Equations	MAA270 Introductory Probability & Statistics	MAA245 Numbers Another Module from University catalogue				
Year 2	Sem 1	MAB120 Communicating Mathematics	MAB141 Analysis	MAB170 Probability Theory	MAB171 Applied Statistics	MAB130 Introduction to Mathematics Education	MAB142 Vector Spaces	MAB150 Vector Calculus	MAB156 Modelling with Differential Equations	MAB160 Numerical Methods 1	
	Sem 2	MAB240 Fourier Analysis & Partial Differential Equations	MAB241 Complex Variables	MAB270 Statistical Modelling	MAB230 Understanding Mathematical Concepts	MAB242 Abstract Algebra	MAB250 ODEs & Calculus of Variations	MAB255 Analytical Dynamics	MAB260 Numerical Methods 2	MAB280 Introduction to Stochastic Processes Another module from University catalogue	
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies										
Year F	Sem 1	MAC3** BSc Statistics Project	MAC170 Medical Statistics	MAC175 Operational Research	MAC130 Mathematical Cognition	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC150 Inviscid Fluid Mechanics	MAC180 Discrete Stochastic Methods in Finance	MAC197 Introduction to Differential Geometry	Another module from University catalogue
	Sem 2	MAC3** BSc Statistics Project	MAC272 Random Processes & Time Series Analysis	MAC241 Applied Complex Analysis	MAC246 Metric Spaces	MAC251 Vibrations & Waves	MAC280 Continuous Stochastic Methods in Finance	MAC297 Mathematical Biology	MAC298 Elements of Topology	Another module from University catalogue	

Orange  Indicates compulsory modules, tan  Indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 20% in all Year 2 and Year 3 modules.



## BSc Mathematics with Statistics (3 year full-time/4 year Sandwich) Degree Path B

Year 1	Sem 1	MAA340 Calculus	MAA342 Linear Algebra	MAA141 Geometry, Vectors & Complex Numbers	MAA145 Mathematical Thinking	MAA155 Introduction to Applied Mathematics	MAA160 Computer Applications in Mathematics				
	Sem 2	MAA340 Calculus	MAA342 Linear Algebra	MAA241 Sequences & Series	MAA255 Differential Equations	MAA270 Introductory Probability & Statistics	MAA245 Numbers Another Module from University catalogue				
Year 2	Sem 1	MAB120 Communicating Mathematics	MAB141 Analysis	MAB170 Probability Theory	MAB171 Applied Statistics	MAB130 Introduction to Mathematics Education	MAB142 Vector Spaces	MAB150 Vector Calculus	MAB156 Modelling with Differential Equations	MAB160 Numerical Methods 1	
	Sem 2	MAB240 Fourier Analysis & Partial Differential Equations	MAB241 Complex Variables	MAB270 Statistical Modelling	MAB280 Introduction to Stochastic Processes	MAB230 Understanding Mathematical Concepts	MAB242 Abstract Algebra	MAB250 ODEs & Calculus of Variations	MAB255 Analytical Dynamics	MAB260 Numerical Methods 2 Another module from University catalogue	
Year 3	<b>Sandwich Students only</b> Work placement or year at European University to pursue a Diploma in Professional Studies										
Year F	Sem 1	MAC3** BSc Statistics Project	MAC180 Discrete Stochastic Methods in Finance	MAC130 Mathematical Cognition	MAC147 Number Theory	MAC148 Introduction to Dynamical Systems	MAC150 Inviscid Fluid Mechanics	MAC170 Medical Statistics	MAC175 Operational Research	MAC197 Introduction to Differential Geometry	Another module from University catalogue
	Sem 2	MAC3** BSc Statistics Project	MAC280 Continuous Stochastic Methods in Finance	MAC241 Applied Complex Analysis	MAC246 Metric Spaces	MAC251 Vibrations & Waves	MAC272 Random Processes & Time Series Analysis	MAC297 Mathematical Biology	MAC298 Elements of Topology	Another module from University catalogue	

Orange  Indicates compulsory modules, tan  Indicates optional modules  
 Each complete bar represents a modular weight of 60  
 Boxed type indicates CORE modules – all candidates must achieve at least 40%  
 In addition, candidates must achieve at least 20% in all Year 2 and Year 3 modules.

