

BSc Mathematics and Economics
For students entering Part 1 in 2010/1

UCAS code: GL11

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	Mathematics, Statistics and Operational Research, and Economics
Faculty:	Science Faculty
Programme length:	3 years
Date of specification:	27/Apr/2012
Programme Director:	Dr Karen Ayres
Programme Advisor:	Dr Karen Ayres Dr Simon Burke
Board of Studies:	School of Mathematical and Physical Sciences
Undergraduate	
Accreditation:	Not applicable

Summary of programme aims

The course aims to impart a broadly based training in both subjects, a good preparation for work in quantitative economics and competence to use mathematical methods to create and study models of economic behaviour. In addition, it aims to provide a range of appropriate subject-specific and transferable skills.

Transferable skills

During the course of their studies at Reading, all students will be expected to enhance their academic and personal transferable skills in line with the University's Strategy for Learning and Teaching. In following this programme, students will have had the opportunity to develop such skills, in particular relating to communication (both written and oral), information handling, numeracy, team working, use of IT and problem-solving and will have been encouraged to further develop and enhance the full set of skills through a variety of opportunities available outside their curriculum.

By the end of the programme students are expected to have gained experience and show competence in the following transferable skills: IT (word-processing, using mathematics, econometric and standard software), scientific writing, oral presentation, team-working, problem-solving, use of library resources, time-management, and career management and planning.

Programme content

The profile which follows states which modules must be taken (the compulsory part), together with one or more lists of modules from which the student must make a selection (the optional modules). Students must choose such additional modules as they wish, in consultation with their programme adviser, to make 120 credits in each Part.

Part 1 (three terms)

Compulsory modules

<i>Code</i>	<i>Module title</i>	<i>Credits</i>	<i>Level</i>
EC101	Principles of Microeconomics	20	4
EC102	Principles of Macroeconomics	20	4
EC105	Introductory Quantitative Techniques	20	4
MA1AN1	Introduction to Analysis	20	4
MA1CAL	Calculus Methods	20	4
MA1VM	Vectors and Matrices	10	4
MA1OD1	Ordinary Differential Equations I	10	4

Part 2 (three terms)

Compulsory modules

<i>Code</i>	<i>Module title</i>	<i>Credits</i>	<i>Level</i>
MA2AN2	Analysis II	20	5
MA2OD2	Ordinary Differential Equations II	10	5
MA2PD1	Partial Differential Equations I	20	5

MA2GS	General Skills	10	5
EC201	Intermediate Microeconomics	20	5
EC202	Intermediate Macroeconomics	20	5
<i>And either</i>			
EC221	Economic Theory	20	5
<i>or</i>			
EC225	Introductory Econometrics (BSc)	20	5

Part 3 (three terms)

Compulsory modules

<i>Code</i>	<i>Module title</i>	<i>Credits</i>	<i>Level</i>
MA3CA1	Complex Analysis I	10	6
MA3NA1	Numerical Analysis I	10	6
MA3VC	Vector Calculus	10	6
EC301	Advanced Microeconomics	20	6
EC302	Advanced Macroeconomics	20	6

Optional modules

Chose one of the options below

EITHER

Option 1

EC3DIS	Dissertation	20	6
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and 30 credits from:

MA3IBP	Initial and Boundary-Value Problems	10	6
MA3W7	Control Systems	10	6
MA3DS	Dynamical Systems	10	6
MA3ASP	Applied Stochastic Processes	10	7
MA3DY	Dynamics	10	6
MA3MB	Mathematical Biology	10	6
MA3MDE	Mathematics for the Digital Economy	10	6
MA3AM1	Asymptotic Methods I	10	7
MA3ASV	Analysis in Several Variables	10	6
MA3CA2	Complex Analysis II	10	6
MA3CV	Calculus of Variations	10	6
AS3D	Operational Research Techniques	20	6

OR

Option 2

MA3PR	Part 3 Project	10	6
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and 20 credits from:

MA3IBP	Initial and Boundary-Value Problems	10	6
MA3W7	Control Systems	10	6
MA3DS	Dynamical Systems	10	6
MA3ASP	Applied Stochastic Processes	10	7
MA3DY	Dynamics	10	6
MA3MB	Mathematical Biology	10	6
MA3MDE	Mathematics for the Digital Economy	10	6
MA3AM1	Asymptotic Methods I	10	7

MA3ASV	Analysis in Several Variables	10	6
MA3CA2	Complex Analysis II	10	6
MA3CV	Calculus of Variations	10	6
AS3D	Operational Research Techniques	20	6

and 20 credits from:

EC225	Introductory Econometrics (BSc)	20	5
EC303	Applied Econometrics	20	6
EC308	Business Economics	20	6
EC311	International Economics	20	6
EC313	Business and Financial Forecasting	20	6
EC314	Public Economics	20	6
EC316	European Economic Integration	20	6
EC318	Econometric Methods	20	6
EC320	Money and Banking	20	6
EC324	European Urban and Regional Economics	20	6
EC328	Economics of Land, Development and Planning	20	6
EC337	Processes of Long Term Political and Economic Change	20	6
EC340	Corporate Social Responsibility	20	6
EC342	Macroeconomics for Developing Countries	20	6
EC344	Banking in Emerging Economies	20	6
EC345	Business & Management in Emerging Markets	20	6

Progression requirements

To gain a threshold performance at Part 1 and qualify for the CertHE a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 1, where all the credits are at 4 level or above, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1 and obtain an average of at least 40% in the Part 1 Mathematics modules taken together, and in the Part 1 Economics modules taken together, and have no module mark below 30%.

To gain a threshold performance at Part 2 and qualify for the DipHE a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 2, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 2 to Part 3, a student shall normally be required to achieve a threshold performance at Part 2.

Part 2 contributes one third of the final assessment and Part 3 the remaining two thirds.

Summary of Teaching and Assessment

Teaching is organised in modules that typically involve both lectures and problems. The assessment is carried out within the University's degree classification scheme, details of which are in the programme handbooks. The pass mark in each module is 40%. Modules in Part 1 and 2 are assessed by a mixture of coursework and formal examination, either wholly by coursework, wholly by examination or by a combination of examination and coursework; the details are given in the module descriptions.

Admission requirements

Entrants to this programme are normally required to have obtained:

Grade C or better in English GCSE; and achieved

UCAS Tariff: A-level: 320 points including grade B in A-level Mathematics; or

International Baccalaureat: 30 points including 6 in Higher Mathematics; or

Advanced GNVQ: Merit in one of the following subject areas: Engineering, Information Technology or Science, accompanied by A-level Mathematics grade B; or

Scottish Highers: Grade A in Mathematics and three Bs and a C in two other subjects.

Irish Leaving Certificate: Grade A in Mathematics and three Bs and a C in four other subjects

Two AS grades are acceptable in place of one A-level, except in Mathematics.

Admissions Tutor: Dr Graham Williams

Support for students and their learning

University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, the Student Employment, Experience and Careers Centre (SEEC), In-session English Support Programme, the Study Advice and Mathematics Support Centre teams, IT Services and the Student Access to Independent Learning (S@il) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and advisers in the Student Services Centre. The Student Services Centre is housed in the Carrington Building and offers advice on accommodation, careers, disability, finance, and wellbeing. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions and runs workshops and seminars on a range of topics. For more information see www.reading.ac.uk/student

Within the Mathematics & Statistics Department, additional support is given through practical classes in Part 1. The development of problem-solving skills is assisted by extensive provision of model solutions to problems, where appropriate. The School of Economics provides class support for all its modules. These are used to discuss problem sets and other forms of specific work that students complete prior to meetings. There is a Programme Adviser to offer advice on the choice of modules within the programme.

Career prospects

In recent years, students who have followed this programme have gone into jobs as actuarial trainee, trainee chartered accountant, teaching, business analyst and postgraduate study.

Opportunities for study abroad or for placements

Although there are no formal arrangements for the Mathematics and Economics programme, informal arrangements may be possible.

Programme Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:

Knowledge and Understanding

A. Knowledge and understanding of:

1. The fundamental concepts and techniques of calculus, analysis and numerical mathematics
2. The use of the basic techniques of mathematics in applicable areas of mathematics, such as differential equations and numerical analysis
3. The fundamental concepts at the core of economic knowledge, comprising microeconomics, macroeconomics and quantitative economics
4. Some central techniques in econometrics comprising model specification, estimation, hypothesis testing and evaluation
5. A selection of more specialist optional topics

Teaching/learning methods and strategies

The knowledge required for the basic topics is delineated in formal lectures, practical (including computer) and conventional classes, and supervisions supported by directed and assessed self-study. Feedback and guidance are an important part of the process for all three years of study. In the later parts of the course students are expected to work at additional problems on their own and seek help when required.

Assessment

Most knowledge is tested through a combination of coursework and unseen formal examinations. Essays also contribute in other parts of the programme.

Skills and other attributes

B. Intellectual skills - *able to*:

1. Think logically
2. Analyse and solve problems
3. Organise tasks into a structured form
4. Transfer appropriate knowledge and methods from one topic within the subject to another

Teaching/learning methods and strategies

Logic is an essential part of the understanding and construction of mathematical proofs and is embedded throughout the programme. The quality of a solution to a problem is substantially determined by the structure of that response;

5. Comprehend the evolving state of knowledge in the degree subject areas

analysis, synthesis, problem solving, integration of theory and application, and knowledge transfer from one topic to another are intrinsic to high-level performance in the programme.

On the economics side, substantive problems are illustrated in lectures and smaller groups. Essays, project work and problem sets provide related opportunities for problem solving. Lectures supported by essays and discussions provide the basis of ensuring the growing knowledge base becomes comprehensible.

Assessment

1-3 are assessed indirectly in most parts of the programme, while 4 contributes to the more successful work. Assessment in economics is through examination questions, essays, project work and problem sets.

C. Practical skills - able to:

1. Understand and construct mathematical proofs
2. Formulate and solve mathematical problems
3. Analyse numerical methods and respond to the issues of accuracy and stability
4. Use econometric software to analyse complex practical problems

Teaching/learning methods and strategies

Mathematical proof is taught in Part 1 lectures and reinforced in practical classes. Problem solving is introduced in lectures in Part 1 and forms a large part of subsequent Mathematics. Numerical analysis courses introduce and develop the ideas of accuracy and stability, illustrated by practical tasks.

Assessment

1 and 2 are tested both formatively in coursework and summatively in examinations. 3 is assessed practically through coursework and the principles through formal examination. 4 is practised via applied econometric exercises.

D. Transferable skills - able to:

1. Use IT (word processing, using standard data exchange, graphics, econometric and mathematical software)
2. Communicate scientific ideas
3. Give oral presentations
4. Work effectively as part of a team
5. Use library resources
6. Manage time
7. Plan their career

Teaching/learning methods and strategies

The use of IT is an integral part of the practical side of the economics component. It is encouraged through applications requiring economic and econometric analysis. Team work, communication skills and career planning are part of one Part 2 module. Time management is essential for the timely and effective completion of the programme. Use of Library resources contributes to the best performance throughout the programme.

Assessment

1 and 2 are assessed through coursework, and in addition to other aspects 1 is required to adequately complete numerical / statistical exercises in economics. The other skills are not directly assessed by their effective use will enhance performance in later modules.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to

modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.