Aston University

PROGRAMME SPECIFICATION
(2012-13)

Programme Title	Mathematics with Economics
UCAS/JACS Code	G1L1 JU
School/Subject Area	School of Engineering and Applied Science Mathematics
Final Award	BSc
Interim Awards	Certificate of Higher Education/Diploma of Higher Education
Mode(s) of Study	Sandwich
Normal Length of Program	4 years
Total Credits	480
Programme Accredited By	None
Dates Program Specification Written and Revised	July 2012

Education Aims of the Programme	• To provide a learning experience that is intellectually challenging, relevant, stimulating and enjoyable. • To provide a broad overview of three main strands of mathematics: pure, applied and statistics. • To provide an introduction to advanced and rigorous mathematics at the undergraduate level. • To prepare students for higher study or a career in a cross-disciplinary area. • To make students aware of the need for independent learning with an appreciation that their skills will need updating continuously through their professional life. • To fulfil the requirements for Associate Membership of the Institute of Mathematics and its Applications. • To produce high-quality graduates who are highly motivated, confident, mature and keenly sought by potential employers in a modern technological and commercial society. • To offer students the opportunity to obtain relevant industrial experience by providing the option of a placement year. • To develop a basic understanding of Economics and the ability to apply this to business issues • To provide students with an excellent learning experience that draws on the research and consultancy of Aston academic staff • To maintain and enhance the employability of graduates • To ensure relevance by maintaining and enhancing the Schools link with business, professional and public sector organisations

Relevent Subject Benchmark Statements and other External and Internal Reference Points used to inform programme outcomes	• QAA benchmark standard for Mathematics, Statistics and Operational Research • Expertise of members of staff • Industry • School Strategic Plan • Past external examiners for Mathematics • Industry • The Mission, Aims and Objectives of the ABS UG Programme • Aston Business School Advisory Panel • Framework for Higher Education Qualifications (FHEQ)

Programme Structures and Requirements: Levels, Modules and Credits Stage 1				
Module Title	**Credits**	**Level**	**Module Code**	**Core**
Calculus and Ordinary Differential Equations	20	4	AM10CO	YES
Computational Mathematics	10	4	AM10CP	YES
Introduction to Matlab	10	4	AM10IM	YES
Transition Mathematics	20	4	AM10TM	YES
Vector Algebra and Geometry	20	4	AM10VG	YES
Introduction to Business Analytics	10	4	BN1116	YES
IT for Business	10	4	BN1160	YES
Intro to Microeconomics	10	4	BS1163	YES
Intro to Macroeconomics	10	4	BS1164	YES
TOTAL	120			

Programme Structures and Requirements: Levels, Modules and Credits Stage 2				
Module Title	**Credits**	**Level**	**Module Code**	**Core**
Introduction to Analysis	10	4	AM10IA	YES
Statistics and Probability	10	4	AM10SP	YES
Computational Mathematics III	10	5	AM20CP	YES
Introduction to Numerical Methods	10	5	AM20IM	YES
Investigative Skills	10	5	AM20IS	YES
Linear Mathematics	10	5	AM20LM	YES
Multivariate Calculus	10	5	AM20MC	YES
Mathematical Methods	10	5	AM20MM	YES
Principles of Macroeconomics	10	5	BS2241	YES
Principles of Microeconomics	10	5	BS2242	YES
Industrial Organisation and Strategy	10	5	BS2243	YES
Intro to Econometrics 1	10	5	BS2247	YES
TOTAL	120			

Programme Structures and Requirements: Levels, Modules and Credits Stage P				
Module Title	**Credits**	**Level**	**Module Code**	**Core**
Industrial Placement	120	P	AMP001	YES
ABS Placement Module	120	P	BUP100	YES
TOTAL	120			

Programme Structures and Requirements: Levels, Modules and Credits Stage F				
Module Title	**Credits**	**Level**	**Module Code**	**Core**
Statistical Pattern Analysis	10	5	AM20PA	NO
Real Analysis	10	5	AM20RA	NO
Stochastic Processes	10	5	AM20SR	NO
Approximation Theory and Methods	10	6	AM30AT	NO
Chaos and Dynamical Systems	10	6	AM30CD	NO
Financial Mathematics	10	6	AM30FT	NO
Game Theory	10	6	AM30GT	NO
Classical Mechanics	10	6	AM30ME	NO
Mathematics Final Year Project	20	6	AM30MP	NO
Mathematics Report	10	6	AM30MR	NO
Option Theory	10	6	AM30OT	NO
Partial Differential Equations	20	6	AM30PD	NO
Probabilistic Modelling	10	6	AM30PM	NO
Portfolio Analysis	10	6	AM30PT	NO
Simulation Techniques	10	6	AM30ST	NO
Modern Time Series	10	6	AM30TS	NO
Economics of Multinational Enterprise	10	6	BS3332	NO
Applied Econometrics and Forecasting	10	6	BS3336	NO
Economics of Business Organisations	10	6	BS3340	NO
Economics of Innovation	10	6	BS3361	NO
Competition Policy and Economic Regulation	20	6	BS3362	NO
TOTAL	120			

Programme Outcomes, Learning and Teaching and Assessment Strategies			
Knowledge and Understanding			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	The skills and attitudes on which pure mathematics is based through a solid foundation in algebra and analysis	• Lectures • Tutorials • Independant learning (reading, computer-based packages)	• Examinations • A wide range of written assignments • Presentations • Multiple choice tests
2	The need for rigour and proof in mathematics and be able to draw on this both in the modules studied and more widely.		
3	The principles and methods of mathematics to a range of physical and data based models		
4	A range of appropriate numerical\computational methods, balancing the practical applications with appropriate underpinning.		
5	A wide range of mathematical skills and techniques for problem formulation and solution.		
6	Critically discuss the main functions of management and specifically international business and economics		

Intellectual Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Apply important concepts in mathematics	• Lectures • Tutorials	• Examinations and tests (clsoed and open book) • Coursework and a vareity of written assignments • Presentations
2	Apply the principles and methods of mathematics		
3	Critically appraise different methods and techniques of problem-solving, assessing their effectiveness and applicability.		
4	Work independently by taking responsibility for the management of own study and learning.		
5	Critically reflect on management problems and how to solve them		
6	To be able to construct an argument which points to a firm conclusion in applying economic reasoning to policy issues or business cases.		

Professional Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Fulfil the requirements of Associate membership of the Institute of Mathematics and its Applications by holding a Joint Honours degree in mathematics.	• Lecture • Tutorials and case studies • Placement • Workshops/simulations	• Examinations • Coursework • Presentation • Placement Reports • Group work/business games
2	Demonstrate comprehension of the relevant modern industrial environment (if a Placement is undertaken).		
3	Solve problems using mathematical software		
4	Implement, test and evaluate a given technique on real data, using a computer if necessary		
5	Apply numerical algorithms to real-world applications		
6	Develop quantitative and qualitative skills required to make assessments of the economic environment of business		
7	Apply their key skills and competencies within a real work-based situation (via placement experience)		

Transferable Skills			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	**Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated**	
		Learning and Teaching Methods	**Assessment Methods**
1	Communication skills (oral and written)	• Lecture • Tutorials • Computer laboratory sessions • Industrial experience • Workshops	• Examinations • Coursework • Presentation • Placement Reports • Group work • Practical tests and portfolios
2	Presentational skills		
3	Analytical skills		
4	Ability to use appropriate mathematical software		
5	IT and computing skills		
6	Report writing skills		
7	Presentation skills		
8	Communication and team working skills		
9	Competency in understanding relevant statistical analyses		

Entry Requirements	**Typical A Level Offers:** BBC-BBB at GCE A level/AVCE Combination of 2 A level and 2 AS level subjects accepted Additional AS levels are taken into account when confirming places **SPECIFIC SUBJECT REQUIREMENTS:** GCE A level, Maths grade A/B **GENERAL STUDIES ACCEPTED?** Yes **IB:** 31-33 points **BTEC, IB, ACCESS, SCOTTISH/IRISH QUALIFICATIONS:** accepted
Programme Regulations	**Attendance requirements:** Students are normally required to attend the University for nine terms over a period c consecutive academic years. An integrated programme of professional training of at weeks duration, not including any periods of vacation, shall be undertaken at times a by the Associate Dean Undergraduate Programmes. **Specific assessment requirements for modules (if any, e.g. modules which may not be condoned):** Module *AM10TM Transition Mathematics* is fundamental to entire Mathematics subject and shall not be passed by condonement. The third stage the module AMP001 Professional Placement or ABS Placement Module BUP100, ea which carries 120 credits. The placement year mark will contribute 10% to the final degree classification. Stage contribute 15% and the final stage will contribute 75% to the final degree classificatic **Requirements for the Ordinary Degree** : The second stage comprises the modules designated as required for the Ordinary Degree, which total 100 credits. The final stage comprises modules selected by the student to a total of 100 credits.

This specification provides a concise summary of the main features of the programme and the threshold learning outcomes that a student might normally be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. **The individual modules included in the programme may differ from those included in this programme specification as our programmes are subject to continuous review**. Information on admissions requirements and career opportunities is available in the relevant prospectus. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the appropriate module guides and programme handbook(s) which are available to students on enrolment.