

PROGRAMME SPECIFICATION

1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	BSc (Hons)
4	Programme Title	Mathematics
5	UCAS/Programme Code	CG81 Mathematics and Psychology NG41 Accountancy and Mathematics GG41 Computing Science and Mathematics GL11 Economics and Mathematics GF18 Mathematics and Geography CG83 Psychology and Statistics NG43 Accountancy and Statistics GL31 Economics and Statistics GF38 Statistics and Geography
6	Programme Accreditation	N/A
7	QAA Subject Benchmark(s)	Mathematics, Statistics and Operational Research
8	FHEQ Level	Level 6
9	Date written/revised	February 2011

10 Programme Aims

The aims of these programmes are to enable the student to study an appropriate mix of mathematics and statistics in equal weighting to the other subject on the programme.

The mathematics and statistics half of the structure aims to produce graduates who have a sound, broad knowledge of the fundamental aspects of mathematics or statistics, complemented by a knowledge of specialist areas, and an awareness of applications of these subjects. The structure allows students to develop the ability to reason logically and their capacity for mathematical and statistical thinking, and to equip students with a range of subject-related key skills.

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have regard to the benchmark statements for Mathematics, Statistics and Operations Research.

Knowledge and Understanding

On completing the programme students should:

- A1 A broad understanding of fundamental concepts and methods of mathematics and statistics.
- A2 Further knowledge and experience of theoretical concepts and analytical techniques in mathematics and statistics.
- A3 Further broad knowledge of a number of topics in mathematics and statistics or a more specialist knowledge of particular areas within these subjects, as appropriate to the pathway chosen.

Teaching and Learning Methods
The School of Mathematics & Statistics uses a variety of methods for teaching and learning. Lectures are the principal vehicle for presenting the essential material which defines the module, and provide the key element towards achieving the learning outcomes A1-A3. Notes taken by students are often supplemented by handouts. Problem classes are used to support lecture and enhance students' understanding by providing an opportunity to clarify issues arising from lectures and work through additional examples.
Assessment Strategy
The standard assessment format, used for the majority of lecture courses, is based on a written examination (counting for at least 70% of the assessment), together with an appropriate mixture of course assignments, in-course tests and mini-projects. These methods all enable assessment of the Learning Outcomes A1-3. Assessment by unseen examinations is seen as a valid and reliable method of assessing both ability and knowledge. Details of the specific assessment modes and weightings, for each module, are set out in the module specification in the Degree Programme Handbooks. We use a standard format for examination papers in which there is a compulsory Section A, consisting of short, straightforward questions which cover the whole module, and a Section B, normally offering a choice of 2 out of 3 questions (10 credit modules), or 3 out of 4 questions (20 credit modules). These are longer and designed to test a greater depth of understanding. Our external examiners have commented favourably on the merits of this structure. In Stage 1, we set a variety of short and medium length questions enabling the students to demonstrate their knowledge of the subject unconstrained by the need to answer complete long questions.
Intellectual Skills
On completing the programme students should be able to: - B1 Formulate problems. - B2 Prove results by following a sequence of logical steps. - B3 Solve problems. - B4 Present data in an understandable way. - B5 Interpret data
Teaching and Learning Methods
Regular drop-in sessions are used in all stages to give students the opportunity to ask individual questions about exercises and to clarify issues arising from lectures. This helps with learning outcomes B1-B3 in most mathematics modules and with B4 and B5 in most statistics modules.
Assessment Strategy
Homework assignments are designed to allow students to test and develop these intellectual skills. The assignments are set weekly (20 credit modules) or fortnightly (10 credit modules) basis in Stage 2 and 3. In Stage 1, there are only two major assessments per Semester as greater use is made of computer based assessment (CBA). Model solutions to all homework exercises are made available to students when the marked work is returned, sometimes earlier if appropriate. Marked work is returned within two weeks of the submission date. Computer based assignments are used in Stage 1 and, to a lesser extent, in Stage 2 to help the students to develop their problem solving skills (B3). The students are given access to try questions in CBA practice mode and then a fixed period to attempt randomly generated questions in 'exam' mode. Having completed an assignment, they are given their marks and the full solutions. In-course tests are used in some Stage 2 and 3 modules to give students practise in problem solving under exam-like conditions (B3). All three forms of assessment contribute to both formative and summative assessment.

Practical Skills
On completing the programme students should be able to: C1 Use the mathematical program Maple to solve various mathematical problems. C2 Use the statistical programming language R to solve various statistical problems.
Teaching and Learning Methods
Practical classes, held in a computer teaching laboratory, introduce students to the use of computer packages (Maple and R). At Stage 1, Mathematics modules have classes involving the computer algebra package Maple (C1) and in Statistics modules students learn how to use R for data analysis and simulation studies (C2). In later stages, students are expected to use the computer network, as appropriate, for homework assignments or minor projects. Such work often starts in a practical session and is finished in the student's own time.
Assessment Strategy
Computing skills are assessed through mini projects or through questions in homework assignments. (C1, C2)
Transferable/Key Skills
On completing the programme students should be able to: D1 Write project reports using Word D2 Demonstrate a high level of numeracy D3 Demonstrate a high level of computer literacy D4 Manage time and prioritise tasks by working to strict deadlines.
Teaching and Learning Methods
Students' learning is supported by weekly or fortnightly exercises (D2 and D3). Project work is normally started within Practical sessions (D1 and D3). Further support is given in drop-in sessions (D2).
Assessment Strategy
Most statistics modules and some mathematical modules have a project element (D1 and D3). Most modules involve exercises which improve numeracy (D2).

12 Programme Curriculum, Structure and Features
Basic structure of the programme
Students registered for a BSc Joint Honours degree in two subjects normally study modules to the value of 60 credits in each subject in each of the three years. In Mathematics or Statistics, the JH component is a subset of the single Honours programme. It is in the nature of the subjects of Mathematics and Statistics that there is progression in the material taught. In Stage 1 of Joint Honours, the School aims first to consolidate and reinforce the students' knowledge on entry, and to provide a sound body of introductory material in mathematical methods, and in two of the three subject areas of Applied Mathematics, Pure Mathematics and Statistics (appropriate to the degree programme). This provides the foundation for subsequent study in these areas. In Stage 2, students undertake further core study; 20 credits in each of two of the three areas of Applied Mathematics, Pure Mathematics and Statistics (appropriate to the degree programme). These modules develop relevant knowledge and experience of more theoretical concepts and further analytical techniques. They also normally take Stage 2 versions of the modules in the area not studied in Stage 1.

In Stage 3, a wide choice of modules is provided, extending over the three subject areas. This allows students either to specialise or to continue to study a broad curriculum, timetable allowing.

Key features of the programme (including what makes the programme distinctive)

A distinctive feature of the School's curriculum is the flexible structure, operating within the University's modular system, in which Joint Honours students can choose pathways which allow them to complement the broad grounding with either:

a) further broad study in mathematics or statistics

or b) specialism in particular areas of mathematics or statistics of interest

Programme regulations (link to on-line version)

<http://www.ncl.ac.uk/regulations/>

13 Criteria for admission

Dealt with in the overarching Joint Honours Programme Specification.

14 Support for Student Learning

Induction

The first week of the first term/semester is an Induction Week with no formal teaching. During this period all students attend an induction programme in which they will be given detailed programme information and the timetable of lectures/problems classes/practicals etc. In particular all new students will be given general information about the School and their programme, as described in the Degree Programme Handbook.

Study skills support

Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification. Some of this material, e.g. time management is covered in the appropriate Induction Programme. Students are explicitly tutored on their approach to both group and individual projects.

Numeracy support is available through Maths Aid.

Help with academic writing is available from the Writing Centre.

Academic support

The initial point of contact for a student is with a lecturer or module leader, or their tutor (see below) for more generic issues. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Staff-Student Committee, and/or at the Board of Studies.

Pastoral support

All students are assigned a personal tutor whose responsibility is to monitor the academic performance and overall well-being of their tutees.

In addition the University offers a range of support services, including the Student Advice Centre, the Student Counselling Service, the Mature Student Support Service, and a Childcare Support Officer.

Support for students with disabilities

The University's Disability Support Service provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies.

Learning resources

The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which supports campus-wide computing facilities.

All new students whose first language is not English are required to take an English Language Proficiency Test. This is administered by INTO Newcastle University Centre on behalf of Newcastle University. Where appropriate, in-session language training can be provided. The INTO Newcastle University Centre houses a range of resources which may be particularly appropriate for those interested in an Erasmus exchange.

15 Methods for evaluating and improving the quality and standards of teaching and learning

Module reviews

All modules are subject to review by questionnaires which are considered by the Board of Studies. Changes to, or the introduction of new, modules are considered at the School Teaching and Learning Committee and at the Board of Studies. Student opinion is sought at the Staff-Student Committee and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Teaching and Learning Committee.

Programme reviews

The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Teaching and Learning Committee.

External Examiner reports

External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Teaching and Learning Committee. External Examiner reports are shared with institutional student representatives, through the Staff-Student Committee.

Student evaluations

All modules, and the degree programme, are subject to review by student questionnaires. Informal student evaluation is also obtained at the Staff-Student Committee, and the Board of Studies. The National Student Survey is sent out every year to final-year undergraduate students, and consists of a set of questions seeking the students' views on the quality of the learning and teaching in their HEIs. With reference to the outcomes of the NSS and institutional student satisfaction surveys actions are taken at all appropriate levels by the institution.

Mechanisms for gaining student feedback

Feedback is channelled via the Staff-Student Committee and the Board of Studies.

Faculty and University Review Mechanisms

The programme is subject to the University's Internal Subject Review process.

Accreditation reports

This programme is not accredited by any professional body.

Additional mechanisms

Board of Studies annual report
Peer observation of teaching in MATH
Annual module review
Annual review of progression rates
Joint Honours questionnaires
Joint Honours Staff Student Committee

Committees with responsibility for monitoring and evaluating quality and standards

Board of Studies in Mathematics & Statistics
Joint Honours Board of Studies
School Teaching and Learning Committee in Mathematics & Statistics
Examination Boards

16 Regulation of assessment

Pass mark

The pass mark is 40 (Undergraduate programmes)
The pass mark is 50 (Postgraduate programmes)

Course requirements

Progression is subject to the University's Undergraduate Progress Regulations and Undergraduate Examination Conventions. In summary, students must pass, or be deemed to have passed, 120 credits at each Stage. Limited compensation up to 40 credits and down to a mark of 35 is possible at each Stage and there are resit opportunities, with certain restrictions.

Weighting of stages

The marks from Stages 2 and 3 will contribute to the final classification of the degree
The weighting of marks contributing to the degree for Stages 2 and 3 is 1:1.

Common Marking Scheme

The University employs a common marking scheme, which is specified in the Undergraduate Examination Conventions, namely

	Honours	Non-honours
<40	Fail	Failing
40-49	Third Class	Basic
50-59	Second Class, Second Division	Good
60-69	Second Class, First Division	Very Good
70+	First Class	Excellent

Role of the External Examiner

An External Examiner, a distinguished member of the subject community, is appointed by Faculty Teaching and Learning Committee, after recommendation from the Board of Studies.

The External Examiner is expected to:

- See and approve examination papers
- Moderate examination and coursework marking
- Attend the Board of Examiners
- Report to the University on the standards of the programme

In addition, information relating to the programme is provided in:

The University Prospectus (see <http://www.ncl.ac.uk/undergraduate/>)

The School Brochure (contact enquiries@ncl.ac.uk)

The University Regulations (see <http://www.ncl.ac.uk/calendar/university.regs/>)

The Degree Programme Handbook

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Mapping of Intended Learning Outcomes onto Curriculum/Modules

Module	Type	Intended Learning Outcomes			
		A	B	C	D
	Core	1	1,3	1	2,4
		1	1,3	1	2,3,4
		1	1,2,3	1	2,4
		1	1,3,4,5	2	1,2,3,4
		1	1,3	1	2,3,4
		2	1,3		2,4
		2	1,3	1	2,4
		1	1,2,3	1	2,4
		2	2,3		2,4
		2	2,3		2,4
MAS2302		2	1,3,5	2	2,4
MAS2303		2	1,2,3		2,4
MAS2304		2	1,2,3	2	2,4
MAS2305		2	1,3,5	2	2,4
MAS3103		2	1,3		2,4
MAS3104		2	1,3		2,4
MAS3105		2	1,3	1	2,4
MAS3106		2	1,3		1,2,3,4
MAS3111		3	1,3		2,4
MAS3121		3	1,3		2,4
MAS3210		3	2		4
MAS3213		2	2,3		2,4
MAS3214		3	2		2,4
MAS3216		2	2,3	1	2,4
MAS3223		2	2,3		2,4
MAS3224		2	2,3		2,4
MAS3302		2	1,3,5	2	2,4
MAS3305		2	1,3,5	2	2,4
MAS3309		3	1,2,3,4,5	2	1,2,3,4
MAS3311		3	1,2,3,4,5	2	1,2,3,4
MAS3312		3	1,2,3		2,4
MAS3313		3	1,2,3,4,5	2	1,2,3,4
MAS3315		3	1,3,4,5	2	1,2,3,4

Modules to be added MAS1401, MAS1402, MAS1141, MAS1142, MAS1341, MAS134, MAS1241, MAS1242
 MAS2141, MAS2142, MAS2223, MAS2224, MAS2104, MAS2105, MAS2241, MAS2242
 MAS3319, MAS3314, MAS3315 MAS3001