

PROGRAMME SPECIFICATION

1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	BSc (Hons)
4	Programme Title	Mathematics and Economics Mathematics and Economics with Placement Year Economics and Mathematics Economics and Mathematics with Placement Year
5	UCAS/Programme Code	GL11, 1138U, 1438U, 1435U
6	Programme Accreditation	None
7	QAA Subject Benchmark(s)	Mathematics, Statistics and Operational Research; Economics
8	FHEQ Level	6
9	Date written/revised	April 2018

10 Programme Aims

In respect of Mathematics and Statistics:

- 1 To provide an integrated but flexible degree structure, enabling each student to choose either broad or more specialist study in the final year.
- 2 To produce graduates who have a sound, broad knowledge of the fundamental aspects of mathematics and statistics, complemented by knowledge of specialist areas, and an awareness of applications of these subjects.
- 3 To allow 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.

In respect of Economics:

- 4 To provide education in the principles of economics and their application.
- 5 To enable students to apply the knowledge and understanding they have acquired to address theoretical and applied problems in economics.
- 6 To equip students with a range of skills which will be of value in employment, and provide them with the knowledge and opportunity to acquire skills to pursue further study in economics.

For students on the Placement Year programme:

- 7 Provide students with the experience of seeking and securing a position with an employer.
- 8 Facilitate independent self-management and proactive interaction in a non-university setting.
- 9 Provide a period of practical work experience that will benefit current academic study and longer term career plans.
- 10 Enable students to ethically apply their knowledge and skills in the work place, reflect upon their development and effectively evidence and articulate their learning in relevant future settings.

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 references to the benchmark statements for Mathematics and Statistics, and Economics.

Knowledge and Understanding

On successful completion of the programme students should have:

In respect of Mathematics and Statistics:

- 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 and as reflected in the degree title awarded.

In respect of Economics:

- A4 Knowledge and coherent understanding of the theoretical concepts and analytical tools of economics and associated empirical methods.
- A5 Awareness of the economic issues that confront the modern globalised society where different national economies are linked internationally.
- A6 Awareness of the policy implications of economic analysis so that appropriate normative recommendations can be made based on welfare considerations.
- A7 An opportunity to develop in-depth, specialist knowledge in specific areas within economics through optional modules.

For students on the Placement Year programme, an ability to:

- A8 Apply personal and professional development strategies to prioritise, plan, and manage their own skills development and learning.
- A9 Research, select and apply relevant knowledge aimed at enhancing their own skills and effectiveness in specific duties at their placement.
- A10 Demonstrate an understanding of a work environment, how it functions and their contribution to it.
- A11 Relate their work based learning to other areas of personal development, including academic performance.

Teaching and Learning Methods

Lectures are the principal means to impart knowledge and understanding and to present the essential material for each module. In Mathematics and Statistics, 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; in Stage 1, there is a module that includes regular seminars where students present solutions to mathematical problems. In economics, student learning and understanding are enhanced and tested in seminars (mainly discussion classes), workshops (mainly numerical/technical classes) private study (recommended reading and electronic sources).

Assessment Strategy

The standard assessment format, used for nearly all Mathematics and Statistics modules, is based on an unseen written examination (counting for at least 70% of the assessment), together with an appropriate mixture of in-course assignments, in-course tests and mini-projects. These methods enable assessment of the Learning Outcomes A1-A3. 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 Module Catalogue.

In Stages 2 and 3, the MAS modules use a standard format for examination papers in which there is a Section A, consisting of short, straightforward questions which cover the whole module, and a Section B with questions designed to test a greater depth of understanding. In Stage 1, there are 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.

Unseen examinations are the principal means to test knowledge and understanding in Economics. Assessed coursework (essays, projects, numerical examples) is also used.

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.
 - B6 To apply subject-specific concepts and methods of analysis to address economic issues.
 - B7 To conceptualise and handle economic issues in an abstract fashion.
 - B8 To use the analytical skills needed to present and defend economic arguments.
 - B9 To interpret and critically evaluate the results of empirical research in economics.

Teaching and Learning Methods

In addition to lectures and problem classes, 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.

Lecturers provide the principal means to impart subject specific skills B6 – B9. Student learning and ability are then enhanced and tested in seminars (mainly discussion classes), workshops (mainly numerical/technical classes) private study (recommended reading and electronic sources).

Assessment Strategy

In Mathematics and Statistics, in-course tests and coursework assignments are designed to allow students to test and develop these intellectual skills. Typically there are three or four assessments in a 10 credit module: a combination of in-course tests, written assignments, mini-project and computer based assessments (CBAs), as appropriate to the module. Stage 1 modules usually have five assessments. Model solutions to all written assignments 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 assessments 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 give students practise in problem solving under exam-like conditions (B3). All forms of in-course assessment contribute to both formative and summative assessment.

In Economics, unseen examinations are the principal means to test cognitive skills B6 – B9. Assessed coursework is also used.

Practical Skills

- On completing the programme students should be able to:
- C1 Use the mathematical programme Matlab/Maple to solve mathematical problems.
 - C2 Use the statistical programme language R to solve various statistical problems.
 - C3 Understand and employ economic terminology to explain and convey technical information.
 - C4 Demonstrate skills of problem solving and numeracy by applying the appropriate techniques and interpreting or critically evaluating the results within an economic context.
 - C5 Identify, locate and retrieve relevant economic materials.
 - C6 Apply knowledge to practical situations.

Teaching and Learning Methods

Practical classes, held in a computer teaching laboratory, introduce students to the use of computer packages (R and either Matlab or Maple).
 For students in Stage 1 prior to 2015/16, Stage 1 Mathematics modules have classes involving the computer algebra package Maple (C1) and in Stage 1 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.
 For students starting in Stage 1 in 2015/16 or later, Matlab and R will be met in a Stage 2 mathematical computing module for Major/minor and Joint Honours students.

Lectures provide the principal means to impart practical skills (C3 to C6). Seminars (mainly discussion classes), workshops (mainly numerical/technical classes) and private study (recommended reading and electronic sources) enhance students' practical skills.

Assessment Strategy

Computing skills are assessed through tests and mini projects or through questions in coursework assignments. (C1-C2)

Unseen examinations are the principal means to test subject specific skills in Economics. Assessed coursework is also used, particularly when it can test skills not easily tested in an exam (such as information and data gathering.)

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.
- D5 Use appropriate verbal and written communication skills to convey information.
- D6 Work in a team, contributing appropriately and effectively towards the team-based activity.
- D7 Use a variety of information technology skills, including word-processing, use of spreadsheets and databases, statistical software and online information services.

For students on the Placement Year programme:

- D8 Reflect on and manage own learning and development within the workplace.
- D9 Use existing and new knowledge to enhance personal performance in a workplace environment, evaluate the impact and communicate this process.
- D10 Use graduate skills in a professional manner in a workplace environment, evaluate the impact and communicate the personal development that has taken place.

Teaching and Learning Methods

In Mathematics and Statistics, students learning is supported by regular exercises (D2 and D3). Project work is normally started within Practical sessions (D1 and D3). Further support is given in drop-in sessions (D2). Short presentations in a core module at Stage 1 introduce presentation skills (D5). For students starting Stage 1 in 2015/16, the computing and problem solving module in Stage 2 will involve presentational skills and group work (D5, D6).

General study skills are introduced during student induction week. Oral presentation skills (D5) are practised in seminars, while written skills (also D5) are enhanced through formative feedback. Team work (D6) is practiced in a number of modules. Workshops are the principal means of teaching D7 skills. These skills are then developed throughout the programme by students having to prepare coursework and communicate their results. Time management skills (D4) are first taught in induction week; thereafter, the students learn to manage their own time, work independently and organise their work schedule such that they are able to prepare for seminars/exams and meet deadlines as well.

Assessment Strategy

Many statistics modules and some mathematical modules have a project element (D1 and D3). Most modules involve exercises which improve numeracy (D2). A short presentation is assessed in one of the Stage 1 core modules. All modules have exercises/projects with strict deadlines (D4). In Economics, oral presentation (D5) is tested in a number of modules, while written communication (also D5) is assessed through unseen exams and assessed coursework (essays and projects). The ability to work in a team (D6) is tested in a number of modules, through a team presentation or report. D7 is assessed directly in exams and coursework, and also indirectly, through coursework. Time management skills and the ability to work independently (D4) are tested indirectly through the need to prepare material and meet rigid deadlines.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

In respect of Mathematics and Statistics:

In **Stage 1**, the first aim is to consolidate and reinforce the students' knowledge on entry, and to provide a sound body of introductory material in mathematical methods and in the subject areas of Mathematics and Statistics. This provides the foundation for subsequent study in these areas. Students also take 'methods' modules that reinforce work in other modules and one of these provides an opportunity to give a short presentation. All modules in Stage 1 are Core and Compulsory.

In **Stage 2**, students undertake further compulsory modules in each of Applied Mathematics and Statistics. These modules develop relevant knowledge and experience of more theoretical concepts and further analytical techniques.

In **Stage 3**, a wide choice of modules is provided. This allows students either to specialise or to continue to study a broad curriculum.

In respect of Economics:

Stage 1 introduces students to the fundamental concepts, analytical, mathematical and statistical techniques which are essential to an understanding of modern economics. A series of key modules give students an awareness and understanding of the main economic problems and issues which affect the British economy. At this stage students are introduced to a variety of information technology skills which will be of use both during and after their degree studies. Basic study and communication skills are also developed at this Stage.

Stage 2 develops the knowledge and skills acquired at Stage 1, in order to provide an understanding of economics at an intermediate level, which will enable students to progress to the more advanced undergraduate material at Stage 3. Compulsory methods of analysing the workings of the modern economy.

Stage 3 – the final Stage aims to give students a training that covers the depth and breadth of economics at an advanced undergraduate level. It uses and develops the knowledge and skills acquired at previous stages. Optional modules in microeconomics and macroeconomics give students an understanding of the topics and methods of analysis in these areas at an advanced undergraduate level, including a thorough grounding in game theoretic concepts and economics of information. This enables the students to follow some more recent developments in the field. A large number of other options enable the students to study those areas of economics which are of greatest interest to them.

Student on the Placement Year programme will be on placement year between Stage 2 and 3 of their programme.

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

In respect of Mathematics and Statistics:

The programme is structured to ensure that students receive a broad mathematical and statistical education throughout the first two years. This allows them to choose either to continue studying a broad range of subjects in Stage 3, or to specialise in Stage 3 (largely in Applied Mathematics or Statistics).

In respect of Economics:

The broad range of core subjects as well as optional modules. The rigorous and extensive analytical content of all modules.

Programme regulations (link to on-line version)

[GL11 Mathematics and Economics BSc Honours, 1138U Mathematics and Economics with Placement Year BSc Honours, 1438U Economics and Mathematics BSc Honours with Joint Honours and 1435U Economics and Mathematics with Placement Year BSc Honours with Joint Honours programme regulations](#)

13 Support for Student Learning

The Student Services portal provides links to key services and other information and is available at: <https://my.ncl.ac.uk/students/>

Induction

During the first week of the first semester students attend an induction programme. New students will be given a general introduction to University life and the University's principal support services and general information about the School and their programme, as described in the Degree Programme Handbook. New and continuing students will be given detailed programme information and the timetable of lectures/practicals/problem classes, etc. The International Office offers an additional induction programme for overseas students. Revision sessions on key material taught the previous year are provided for returning students.

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.

Help with academic writing is available from the Writing Development Centre (further information is available from the University Library).

Academic and Pastoral support

Each undergraduate and taught postgraduate student will be assigned a personal tutor.* A personal tutor is one part of a wider network of advice and guidance available to students to support their personal and general academic development. The module leader acts as the first point of contact for subject-specific academic advice. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Student-Staff Committee, and/or at the Board of Studies. Within the academic unit, students may also receive additional academic and pastoral advice from a range of other student-facing staff including degree programme directors, dissertation/project supervisors, and administrative support staff.

*Arrangements may vary for students taking special types of provision.

The University also offers a wide range of institutional services and support upon which students can call, such as the Writing Development Centre, Careers Service and Student Wellbeing Service. This includes one-to-one counselling and guidance or group sessions / workshops on a range of topics, such as emotional issues e.g. stress and anxiety, student finance and budgeting, disability matters etc. There is specialist support available for students with dyslexia and mental health issues. Furthermore, the Student Union operates a Student Advice Centre, which can provide advocacy and support to students on a range of topics including housing, debt, legal issues etc.

Placement support

During the placement year students will be supported by a placement tutor/supervisor and an employer- or industry-based supervisor as detailed in the School's Placement Handbook, as well as the Careers Service Placement Team.

Support for students with disabilities

The University's Disability Support team 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. The School has a designated disability support staff member.

Learning resources

The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and the University's IT Service (NUIT), 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.

14 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 Board of Studies. Student opinion is sought at the Student-Staff Committee and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Learning, Teaching and Student Experience Committee (FLTSEC).

Programme reviews

The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to FLTSEC. The FLTSEC takes an overview of all programmes within the Faculty and reports any Faculty or institutional issues to the Taught Programmes Sub-Committee.

External Examiner reports

External Examiner reports are considered by the Board of Studies. External Examiner reports and the response to the External Examiner from the Board of Studies are shared with institutional student representatives, through the Student-Staff Committee.

Student evaluations

All modules and stages* are subject to review through online questionnaires. Informal student evaluation is also obtained at the Student-Staff 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 students' views on the quality of the learning and teaching. The results from student surveys are considered as part of the Annual Monitoring and Review of the programme and any arising actions are captured at programme and School / institutional level and reported to the appropriate body.

*With the exception of intercalating years and the final stages of undergraduate programmes.

Mechanisms for gaining student feedback

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

Faculty and University Review Mechanisms

Every six years degree programmes in each subject area undergo Learning and Teaching Review. This involves both the detailed consideration of a range of documentation, and a review visit by a review team (normally one day in duration) which includes an external subject specialist and a student representative. Following the review a report is produced, which forms the basis for a decision by University Learning, Teaching and Student Experience Committee on whether the programmes reviewed should be re-approved for a further six year period.

Accreditation reports

None

Additional mechanisms

None

15 Regulation of assessment

Please refer to the Undergraduate Examination Conventions at <http://www.ncl.ac.uk/regulations/docs/2018.html>

Assessment of Placement Year

The placement year module is assessed on a pass/fail basis, and there is one re-assessment opportunity. Students who fail this module may still progress to the final year of studies, but will graduate from the standard (non-placement) version of this programme.

Role of the External Examiner

An External Examiner, a distinguished member of the subject community, is appointed by the University following recommendation from the Board of Studies. The External Examiner is required to:

- i. confirm whether the standards of the University's awards meet or exceed the academic standards specified in external reference points such as the Framework for Higher Education Qualifications, the UK Quality Code, subject benchmark statements, and, where appropriate, the requirements of professional, statutory and regulatory bodies;
- ii. confirm whether the academic standards of the University's awards are consistent with those of similar programmes in other UK higher education institutions;
- iii. report on whether the University's processes for assessment measure student achievement rigorously and fairly and are conducted in line with University policies and regulations;
- iv. identify, where appropriate, examples of exemplary practice and innovation in learning, teaching and assessment;
- v. comment on opportunities to enhance the quality of the learning experience provided to students.

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

The University Prospectus: <http://www.ncl.ac.uk/undergraduate/degrees/#subject>

Degree Programme and University Regulations: <http://www.ncl.ac.uk/regulations/docs/>

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.