

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
5	UCAS/Programme Code	GL11, 1138U
6	Programme Accreditation	None
7	QAA Subject Benchmark(s)	Mathematics, Statistics and Operational Research; Economics
8	FHEQ Level	6
9	Date written/revised	July 2021

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 lectures 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 weighting, for each module, are set out in the module specification in the Module Catalogues.

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.

Lectures 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 Python 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 Python). Python and R will be met in a Stage 2 mathematical computing module for Major/Minor and Joint Honours students

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.

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).

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. Students are given 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](#)

[1138U Mathematics and Economics with Placement Year](#)

13 Support for Student Learning

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

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

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

Accreditation reports

Additional mechanisms

15 Regulation of assessment

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

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.