

Pathway Specification (Undergraduate)

Created: 17.09.2015. Last amended: 28/03/2019 For students entering in 2018/19

# 1. Pathway Title(s) and UCAS code(s):

Major in Mathematics; UCAS code – G111

## 2. Awarding body or institution:

University of Leicester

# 3. a) Mode of study

Full-time

## b) Type of study

Campus-based

# 4. Registration periods:

The normal period of registration is three years

The maximum period of registration is *five years* 

## 5. Typical entry requirements:

AAB at A level with A in Mathematics

## 6. Accreditation of Prior Learning:

No APL accepted

### 7. Programme aims:

### The Major in Mathematics aims to

- •foster confidence, convey knowledge and develop expertise in mathematics, including an appreciation of the usefulness of mathematics;
- •provide an education and training in mathematics which includes fundamental concepts and gives an indication of the breadth of mathematics;
- •develop an appreciation of the necessity for rigorous justification of assertions and the need for logical arguments;
- develop the ability to model the world using mathematics, and to be able to produce relevant and robust solutions to real world problems;
- enable students to develop self-confidence gained through the provision of careful guidance in the first level, with increasing independence later;
- improve students' team working skills;
- stimulate intellectual development and develop powers of critical analysis, problem solving, written communication skills and improve presentational skills;
- develop the ability to communicate solutions to problems and mathematical concepts in general using language appropriate to the target audience;
- develop competence in IT, in particular the use of mathematical related programmes;
- enhance practical computing skills by learning software in common use;

# 8. Reference points used to inform the programme specification:

- QAA subject review [www/qaa.org/],
- Quinquennial Review [www.le.ac.uk/].

- First destinations [www.le.ac.uk/].
- Graduate survey, end of year questionnaire, external examiner reports.
- QAA Framework for Higher Education Qualifications
- QAA Subject Benchmark Statement for mathematics
- University Leicester Learning and Teaching Strategy

## 9. Programme Outcomes:

Intended Learning Outcomes      Teaching and Learning Methods      How Demonstrated?        (a) Discipline specific knowledge and competencies      (i) Mastery of an appropriate body of knowledge        Knowledge of basic theory, basic techniques of analysis, algebra, applied      Lectures, specified reading, problem classes, surgeries, poster presentations. In addition, elements of e-Learning are incorporated.      Written examinations, assessed written and computational problems. Assessed oral and poster presentations. In addition, elements of e-Learning are incorporated.      Assessed oral and poster presentations.        Knowledge of basic techniques, and model problems.      Computer practical classes.      Assessed practical classes.        Knowledge of basic techniques, Applications of basic knowledge. Exposition of logical structure. Ability to generalise and specialise.      Lectures, tutorials, problem classes, marked assignments.      Written examinations, assessed problems, project report.        Ability to apply theorems to solution of a standard problems.      Lectures, tutorials, problem classes, marked assignments.      Written examinations, assessed problems.        Mathematical modelling. Application of computer algorithms for solving finance problems.      Computer practical classes.      Written examinations, assessed problems.        Mathematical modelling. Application of computer algorithms for solving finance problems.      Computer practical classes.      Assessed practical classes.        Mathematical modelling. Application of computer alsolution s	Major in Mathematics		
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(iv) Clean and consist procentation of material			
(iv) Clear and concise presentation of material			

Major in Mathematics		
Intended Learning	Teaching and Learning	How Demonstrated?
Outcomes	Methods	
Presentation of results	Tutorials, Group workshops,	Group presentations. Project
(both informal and to a	Presentation workshops, project	presentations.
variety of audiences),	supervision. Feedback on	•
participation in scientific	assessed written pieces.	
discussion.		Assessed essays. Project presentation.
	Guidance from project supervisor.	
Ability to write coherent reports.		
Software presentation.	al approival of ovidence with appro	nviete incidet
	al appraisal of evidence with appro	
Project design.	Project supervision	Project reports.
-	vi) Other discipline specific compete	
Knowledge of mathematical software such as MATLAB and	Lab classes, and purpose designed handbooks.	Assessed problems, projects
MAPLE.	nanubooks.	Project reports. Written examinations
	Group projects. Project and lectures,	and presentations.
Mathematical modelling skills.	eLearning.	
Language of finance.		
	(b) Transferable skills	
	(i) Oral communication	
Present technical information in	Tutorials, workshops.	Presentation assessment.
an appropriate form, and deliver		
presentations to non-		
mathematical audiences	Project supervision, presentation	
	workshops.	
Respond to questions on		
presentations		
Project and poster presentation		
· · ·	(ii) Written communication	
Report writing.	Project supervisions.	Assessed reports.
Mathematical communication	Tutorials.	Assessed questions.
	(iii) Information technology	
Use of Windows. Use of	Induction. Laboratories.	Marked project work. Project reports.
specialist packages. Office		
software.	<i>(</i> , )	
	(iv) Numeracy	
Use of analytical and graphical	Induction. Computer labs.	Written examinations, project
methods	Throughout programme.	reports.
Colontific discussion	(v) Team working	
Scientific discussion. Organization, time management	Group problem solving. Group	Group assessment (including peer assessment).
	vi) Problem solving	
Analysis, breakdown, synthesis,	Lectures, problem workshops, group	Marked problems, group work
critical examination.	work, projects.	assessment, project assessment
Mathematical modelling skills.		
	(vii) Information handling	l
Conduct background	Project supervision.	Individual and group project reports.
research and literature		
surveys. Summarise		
content from information		
sources.		
	Blackboard stored e-learning	Some assessed material only provided
Ability to learn from e-learning	resources.	through e-learning resources.
resources.		

Major in Mathematics		
Intended Learning	Teaching and Learning	How Demonstrated?
Outcomes	Methods	
(viii) Skills for lifelong learning		
Study skills.	Resource based learning. Study skills	Examinations, assessed problems,
	booklet.	project assessments. Meeting deadlines.
Independence and	Structured support	
time management.	decreasing through years.	
Careers and business	Guest speakers.	
awareness.	Induction library session. Study skills	
	handbook. Project supervision.	
Information retrieval.		

#### **10.** Excluded combinations and course transfers

- a) Excluded combinations
  Any other variance of Mathematics programme
  b) Course transform
- b) Course transfers Not applicable for the course transfers

#### 11. Criteria for award and classification

As defined in <u>Senate Regulation 5:</u> Regulations governing undergraduate programmes of study.

#### 12. Progression points:

As defined in Senate Regulation 5:

13. Key/extra features:

None

#### 14. Indications of programme quality

No differences

#### 15. Summary of programme/pathway delivery and assessment:

As per BSc Mathematics degree.

### Appendix 1: Programme structure (programme regulations) MAJOR IN MATHEMATICS

Students take 45cr in each semester.

### Year 1

SEMESTER ONE	SEMESTER TWO
CORE (60cr year long, sem1 15cr, sem2 15cr)	
MA1014 Calculus & Analysis (30cr)	
MA1114 Linear Algebra (30cr)	
OPTIONS (15cr)	OPTIONS (15cr)

MA1061 Probability (15cr)	MA1202 Introductory Statistics (15cr)
MA1257 Mathematics and its impact on society (15cr)	MA1254 Mathematics in Business (15cr)
MA1104 Elements of Number Theory (15cr)	MA1272 Plane Geometry (15cr)

## Year 2

SEMESTER ONE	SEMESTER TWO
CORE (30cr)	CORE (30cr)
MA2032 Vector Calculus (15cr)	MA2021 Differential Equations (15cr)
MA2132 Advanced Linear Algebra (15cr)	MA2133 Algebra (15cr)
OPTIONS (15cr)	OPTIONS (15cr)
MA2261 Linear Statistical Models (15cr)	MA2252 Introduction to Computing (15cr)
MA2510 Investigations in Mathematics (15cr)	MA2511 Business Applications of Mathematics
	(15cr)
MA2403 Statistical Distributions and Inference (15cr)	

### Year 3

YEAR LONG	
MA3518 M	Mathematics Major Project
SEMESTER ONE SEMESTER TWO	
OPTIONS (45cr)	OPTIONS (45cr)
MA3012 Scientific Computing (15cr)	MA3002 Equations of Mathematical Physics (15cr)
MA3071 Financial Mathematics (15cr)	MA3072 Mathematical Portfolio Theory (15cr)
MA3077 Operational Research (15cr)	MA3201 Generalised Linear Models (15cr)
MA3152 Curves and Surfaces (15cr)	MA3121 Complex Analysis (15cr)
MA3131 Groups and Symmetry (15cr)	MA3153 Number Theory (15cr)
	MA3013 Computational Partial Differential Equations with
	Finite Elements (15cr)
	MA3022 Data Mining and Neural Networks (15cr)

(Note MA3072 has MA3071 as prerequisite. Full details on module specifications.)

# Appendix 2: Module specifications

See module specification database <a href="http://www.le.ac.uk/sas/courses/documentation">http://www.le.ac.uk/sas/courses/documentation</a>

### Appendix 3: Skills matrix

As BSc Mathematics.