Nottingham Trent University Course Specification

	Basic Course Information	
1.	Awarding Institution:	Nottingham Trent University
2.	School/Campus:	Science & Technology/Clifton Campus
3.	Final Award, Course Title and Modes of Study:	BSc (Hons) Mathematics FT BSc (Hons) Mathematics SW
4.	Normal Duration:	Full Time 3 years, Sandwich 4 years
5.	UCAS Code:	G100

6. Overview and general educational aims of the course

The BSc (Hons) Mathematics degree is designed to equip you with a broad based knowledge of mathematics and its applications. The emphasis of the course is on the understanding and proper application of mathematical and statistical techniques. Your acquisition of this knowledge and understanding will be supported by the use of professional mathematical and statistical software.

The knowledge and understanding you will gain of mathematics and its applications will equip you for a career as a specialist mathematician or statistician in a variety of sectors. In addition to developing a wide knowledge of mathematics, the degree will provide you with general transferable skills, which will make you suitable for general graduate employment in a changing job market.

A placement year, usually salaried, is an important feature of the course. It is optional, but it can give you a distinct advantage in the job market on graduating. We have an experienced Placements Office to provide support in finding a placement that is right for you.

The BSc (Hons) Mathematics course is accredited by the Institute of Mathematics and its Applications; that is, the course will meet the educational requirements of the Chartered Mathematician (CMath) designation, awarded by the Institute of Mathematics and its applications, when it is followed by subsequent training and experience in employment to obtain equivalent competencies to those specified by the Quality Assurance Agency (QAA) for taught maters degrees.

In summary, the course aims to:

- Develop a broad based knowledge of mathematics and the skills to apply this knowledge.
- Equip you with the knowledge and skills necessary for a wide range of careers in industry, commerce, teaching, and research.
- Provide you with sufficient specialised knowledge and skills to enable you to pursue further study and research.
- Equip you with analytic problem solving skills and other transferable skills to prepare you for more general graduate employment.

The first two years of BSc (Hons) Mathematics and MMath (Hons) Mathematics are the same, enabling transfers between these two courses to take place as late as the end of Year Two.

7. Course outcomes

Course outcomes describe what you should know and be able to do by the end of your course if you take advantage of the opportunities for learning that we provide.

Knowledge and understanding

By the end of the course you should be able to:

K1. Demonstrate knowledge and understanding of a broad range of mathematics and statistics (M).

K2. Demonstrate an understanding that mathematics and statistics are developing subjects with widespread applications.

K3. Construct and analyse mathematical and statistical models of real-world phenomena, and assess their utility (M).

K4. Demonstrate an understanding of the need for rigour within mathematics (M).

K5. Demonstrate an appreciation of the need for a theoretical underpinning to support statistical applications (M).

K6. Evaluate, select, and implement appropriate numerical techniques for a range of problems (M).

Skills, qualities and attributes

By the end of the course you should be able to:

S1. Select, adapt and apply appropriate mathematical and statistical techniques to problems, and critically evaluate and interpret the results (M).

S2. Use professional statistical and mathematical software packages, and apply them to a range of problems.

S3. Construct mathematical arguments, identifying assumptions and conclusions (M).

S4. Formulate, analyse and present numerical information (M).

S5. Present arguments and conclusions accurately and clearly (M).

S6. Communicate effectively by report and presentation.

S7. Demonstrate a high level of IT competency and numeracy (M).

S8. Work effectively as part of a team, and work and learn independently (M).

(M) indicates that the outcome has been mapped to the Mathematics, Statistics and Operational Research benchmark standards. The Mathematics, Statistics and Operational Research benchmark standards provide a national framework for describing the content and standards of a Bachelor's degree with honours in mathematics based disciplines.

8. Teaching and Learning Methods

The teaching and learning strategies for BSc (Hons) Mathematics have been developed to support your acquisition of knowledge, understanding, and skills in this specialised area, and have evolved over a number of years based on feedback, review and reflection. Autonomous learning is encouraged and motivated within the course by use of the following practices:

- Interaction with other students through small group based work.
- Presentation of ideas and findings to fellow students and tutors. This helps you to organise your thoughts, and reflect on your understanding.
- Discussion of ideas with tutors. Self- and staff-directed investigation is important to the development of learning autonomy. This culminates in the final year Project

where you will work on a topic chosen in consultation with your Project Supervisor, who will guide you in your work on the Project.

- The application of knowledge learned or taught within modules. The progression in the course from level to level ensures that earlier knowledge and skills are built on and developed.

The delivery of material is supported by strategies to encourage your consolidation and application of knowledge. To realise the course aims, the following practices will be adopted:

- Lectures to introduce and develop concepts and to explore the application of these concepts.
- Directed learning to supplement the development of concepts.
- Computer Workshops to develop skills and to underpin the lecture material with concrete learning experiences.
- Seminars to support the lecture course and the consolidation and application phase of your learning process.
- Supervised project work to develop a deeper understanding of concepts and applications and to promote the development of personal skills.

The University runs an online resource to support teaching and learning, referred to as a Virtual Learning Environment and known as the NTU On-line Workspace (NOW). All modules are represented on NOW and most use it to provide you with learning material and news associated with the module or the course. The nature of the subject means that some of your learning can be directly computer-aided. To this end, NOW is a useful way of providing data-files, demonstrations, and macros/programs.

9. Assessment Methods

Modules are assessed either via coursework or exam, or a combination of both.

Coursework assessments can take many forms. You may be given a practical task to complete, which you then write up in a report. You may also have to demonstrate what you have done or give a presentation on what you have achieved. Some coursework assessments will involve working together in small groups. Coursework can also include the use of tests. Your final year Project will involve giving a presentation and writing a dissertation to demonstrate what you have achieved.

The range of assessment methods aims to give you a variety of ways in which to demonstrate achievement as well as encouraging the development of the time management and communication skills valued by employers.

10. Course structure and curriculum

The course is studied either Full Time over 3 years or over 4 years for the Sandwich mode. On the Sandwich route you will undertake a placement with a company between your second year and your final year. The placement will involve working for

9 months or more. In Full Time mode, you will go directly into the final year after your second year.

You will study a range of modules as indicated below. These develop your knowledge and skills along themes of: mathematical methods; statistics; algebra; and numerical methods. In addition to these themes, a further theme of the course, the problem solving theme, is designed to develop your analytic, investigation and problem solving skills. This theme also develops your professional and transferable skills. The problem solving theme culminates in the final year Project.

You need to obtain 360 cps (credit points), 120 cps per year, to gain the honours qualification. Your final degree classification will be based on your year 2 mark (weighting 25%) and your final year mark (weighting 75%). Students who do not obtain enough credit points may be eligible for one of the following awards: Certificate of Higher Education (120 cps); Diploma of Higher Education (240 cps); or Ordinary degree (300 cps).

Successful completion of the year of industrial experience is necessary for you to gain the Sandwich award. For this, you will write a report detailing and evaluating the work you undertook and your part in the overall company context. You will also receive a Diploma in Professional Practice.

Year 1

Mathematical Methods	20cps
Data Analysis	20cps
Introduction to Numerical Methods	20cps
Introduction to Abstract Algebra	20cps
Vector Algebra & Calculus	20cps
Foundations and Investigations in Mathematics	20cps

Year 2

Differential Equations & Transform Methods	20cps
Probability and Statistical Inference	20cps
Numerical Methods for Ordinary Differential Equations	20cps
Linear Algebra and its Applications	20cps
Advanced Calculus	20cps
Problem Solving	20cps

Year 3

Industrial Placement year for Sandwich students

Year 3/4

	Project in Mathematics	20 cps
Choose two of the following four modules:		
	Coding Theory & Cryptography*	20 cps
	Linear Systems	20 cps
	Statistical modelling	20 cps
	Topics in Mathematical Biology*	20 cps
Choose two of the following four modules:		
	Computational Statistics & Data Analysis*	20 cps
	Differential and Integral Equations	20 cps
	Numerical Analysis & Dynamical Systems	20 cps
	Stochastic Processes	20 cps
And choose one of the following four modules:		
	Applied Statistics	20 cps
	Topics in Applied Mathematics	20 cps
	Topics in Pure Mathematics	20 cps
	Professional Mathematics Skills	20 cps

You may only take at most one of the modules marked *, which are at Level 7. Students with a good second year profile would also be considered for transfer to the third year of the MMath (Hons) Mathematics course.

11. Admission to the course

The admissions policy for this course is administered in accordance with the University regulations including a commitment to widening participation and equal opportunities.

For entry on to the G100 BSc (H) Mathematics course you would normally be over 18 years of age and possess GCSE grade C or above in both Mathematics and English and 300 UCAS points at A2-level including grade B or above in Mathematics. It is preferred that your UCAS points come from a maximum of three A-levels or equivalent or a combination of two A-levels and two AS levels.

Equivalent UK and International qualifications are acceptable. The equivalence of these qualifications to the standard entry requirements are usually established with reference to the published UCAS Tariff (e.g. Irish leaving certificate, Scottish National Higher and International Baccalaureate), the information published by UCAS ("International Qualifications Guide" and "UCAS Admissions Guide and Decisions Processing Manual"), and the recommendations of UK Naric. OCN and Access HE qualifications may be acceptable if a sufficient number of level 3 units in Mathematics have been taken. Non-standard qualifications are referred to the admissions tutor for assessment.

If you wish to use Accreditation of Prior Experiential Learning (APEL) or Accreditation of Prior Certified Learning (APCL) for entry to this course, you will be assessed

according to the standard procedures of the School of Science and Technology.

If you wish to use APEL for entry to the start of the course, or exceptionally, for advanced entry, you will be required to provide a detailed curriculum vitae outlining relevant experience. You will be asked to complete an appropriate assignment to enable you to demonstrate your learning for which equivalence is being claimed.

If you request APCL, you will be required to produce a transcript and details of the units/modules you have studied at your former institution to assist with the curriculum mapping process. This institution may be contacted before a final offer is made to confirm your suitability for the course of study.

If English is not your first language, you are expected to have a good command of spoken and written English. The minimum recommended requirement is the British Council IELTS grade 6.5 or CBTOEFL 213 or IBTOEFL 83 or TOEFL 550. Equivalent experience may include the successful completion of a non-UK degree in the English language or a significant period of residence/work placement in an English-speaking country, for which evidence should be provided. Where your ability to communicate in English is in doubt you may be asked to an interview.

Advanced entry would normally be into Year 2 of the course, for which you would possess an appropriate qualification in Mathematics or an equivalent subject. This will normally be the completion of the first year of a University degree course elsewhere in the UK. In order to ensure potential applicants have suitable experience to enable them to successfully progress on to BSc (H) Mathematics, it is likely that the Admissions Tutor will request information about previous learning, for example transcripts and course content. Advanced entry into the final year may be considered in exceptional circumstances (e.g., successful completion of a Bachelor's degree and relevant certified/experiential learning).

12. Support for Learning

There is an induction programme at the start of the first year. This gives an overview of the way the course runs and includes introductions to the IT and library resources. During induction you will receive a course handbook which contains the essential information about the course and the support we provide for your learning. You will also meet your Course Tutor and Year Tutor.

You are assigned a Course Tutor at the start of the course and regular meetings will take place throughout each year. Module Leaders, Year Tutors and a Course Manager oversee the smooth running of the course and they also serve as an additional source of support and advice for you.

Extensive online module information including learning materials is provided on the

University Virtual Learning Environment, NOW. This also includes course information such as the course handbook and module specification documents. We have excellent computing facilities with some 24 hour availability for IT labs.

The school has a Student Information Desk for assessment hand-in and return, queries about fees, and other general queries.

If you decide to opt for the Sandwich award, the Mathematics Placements and Employability Tutor will work with you to develop your CV and will help you to target your applications so that you get a placement that is right for you. You will be assigned a visiting tutor who will visit you at the company.

In addition to the above support, the University Student Support Services can give you extensive support and advice on a range of issues, e.g. financial problems, dyslexia and disability, and personal problems.

13. Graduate destinations / employability

Graduate employability is fundamental to the strategic aims of Nottingham Trent University, as reflected by the fact that NTU is consistently placed close to the top of the league table of all UK Universities for graduate employment. Indeed 94% of our graduates* from full-time undergraduate courses are employed or engaged in further study six months after leaving (*of those available for work, HESA survey 2009/10).

The Mathematics course will equip you with the knowledge and skills for employment in a broad range of mathematics and statistics related fields. There are opportunities for mathematicians and statisticians throughout industry, business, commerce, and the public sector. Careers followed by graduates from this course include: logistics, finance and actuarial work, market research, and software development. Some graduates from the course have taken up teaching as a career.

Graduates who choose to venture into other sectors will be equally successful in gaining employment because of the transferable skills developed on this course. Skills of numeracy and reasoning, together with the analytic approach to problem solving that you will acquire, are highly valued by employers.

As a graduate from this course, you will be equipped with the knowledge and skills needed to engage in further study, either whilst at your place of employment (for professional and personal development) or at university (for a higher degree).

In addition to the expertise available within the School, the University has a comprehensive careers service open to all students to assist in securing employment (http://www.ntu.ac.uk/careers/).

14. Course standards and quality

All aspects of quality management within the School are in accordance with the

University's Academic Standards and Quality Handbook. The Course Management Team, which includes the Course Manager and Module Leaders, oversees the operational arrangements for the Course. In addition, the Course Committee, central to which are the student representatives, meets regularly throughout the year to review, evaluate and develop the Course. Formal Course monitoring takes place at the end of each module through the administration of questionnaires offering closed and open ended questions, which is in addition to informal feedback received from students throughout the year.

Overarching responsibility for quality control lies with the School Academic Standards and Quality Committee whose remit is to provide guidance and support to academic Courses. External Examiners offer further quality control through monitoring academic standards, moderation of assessment tasks and processes. Feedback from the Course Committee and student evaluation at modular and course level inform the Course Standards and Quality Report (CSQR), which reviews and evaluates the student experience at course level. In turn the Course Standards and Quality Report informs the Schools Standards and Quality Report (SSQR) which is presented to the University as part of the institutions quality assurance and enhancement cycle.

The BSc (Hons) Mathematics course is accredited by the Institute of Mathematics and its Applications. The course requires renewal of accreditation every six years to ensure that standards have been maintained.

15. **Assessment regulations**

This course is subject to the University's Common Assessment Regulations (located in its Academic Standards and Quality Handbook). Any course specific assessment features are described below:

There are no course specific exceptions from the University regulations.

16. **Additional Information**

Collaborative partner(s):	N/A
Course referenced to national QAA Benchmark Statements:	Mathematics, Statistics and Operational Research.
Course recognised by:	The Institute of Mathematics and its Applications
Date implemented:	1st September 2015
Any additional information:	
Course specification updated:	February 2015