STUDENTS' GUIDE TO MATHEMATICS DEGREES
SESSION 2017 – 2018

Department of Mathematics
School of Mathematical and Computer Sciences

KEEP FOR FUTURE REFERENCE

Contents

1. Introduction

1.1 This Guide

These notes have been prepared for the guidance of students in the Department of Mathematics, part of the School of Mathematical and Computer Sciences (MACS). The Department is located in the **Colin Maclaurin (CM)** building.

The guide provides an outline of the programmes and courses taught by the Department and gives a summary of University and Departmental regulations. While we try to make this guide as accurate as possible, you should note that the detailed University and Department regulations take precedence over this guide.

1.2 Departmental Aims

The Department of Mathematics has a very broad mission in the University, comprising undergraduate education for mathematics students, service mathematics education, research and graduate education, and various outreach programmes. Each year, over one thousand students study a course taught by the Mathematics Department. For our mathematics students, the aim of the curriculum is to ensure that our graduates have a sound knowledge of mathematics so that they can successfully pursue careers in industry, commerce, education and scientific research. Recent graduate-level employment statistics place us very high in UK rankings.

The goals of the Department of Mathematics are to deliver the highest quality teaching of mathematics to all students who take classes in mathematics, and, through its research, to contribute to the advancement of mathematics and its applications. Our research work is combined with that of our colleagues at the University of Edinburgh through the Maxwell Institute for Mathematical Sciences, and together we were rated in the top group in the UK Research Assessment Exercise for both Pure and Applied Mathematics.

1.3 Mathematics Degree Types

We offer a range of degrees at Ordinary (or General) BSc level, Honours BSc and MMath (Master of Mathematics) level. These usually take 3, 4 and 5 years of study respectively. The University has a policy of Accreditation of Prior Learning so that suitably qualified candidates may be accepted for direct entry onto the second or later years of a degree programme. Such candidates will be credited, on entry, with the equivalent course passes towards their degree based on their previous attainment.

Many students study "Mathematics with X" degrees, where X=another subject (e.g. physics, or finance). Students on "with" degrees normally spend 75% of their time on maths courses and 25% on the other subject.

After the final exams, honours degrees and the MMath are classified into first class, upper second (2.1), lower second (2.2) and third class. An ordinary degree may be awarded at the end of the fourth year of the honours degree if the average mark is below 40%. The general structure of each of the degree programmes we run can be found starting from http://www.macs.hw.ac.uk/students/maths/

1.4 Heriot-Watt Graduate Attributes

The University will provide you with opportunities to develop skills, qualities, and academic abilities that are summarised in the Heriot-Watt Graduate Attributes, under the headings Specialist, Professional, Creative, and Global. All your courses will contribute towards your personal development of these Attributes, and in your Mathematics programmes you will find the following specific features

Specialist: all our courses are designed to impart specialist mathematical skills and knowledge across a range of areas in modern mathematics.

Professional: we have a stream of courses covering all years of our programmes - Maths in Context, Problem Solving, Mathematics Workshop, Project Preparation, Projects - which develop the professional skills required for a wide range of careers. These include communication skills like technical writing and presenting, IT skills, team working and career planning.

Creative: problem solving is an essential part of mathematics, and by its nature is a creative process. All our courses provide opportunities for problem solving, but this is particularly emphasised in the courses Maths in Context, Problem Solving, and Mathematics Workshop, where problem solving tasks - done individually or in teams - are central to your learning.

Global: Mathematics is a universal language. By training as a mathematician you are joining a global community of scientists who are able to communicate effectively and to work together, unhindered by any differences in language and culture.

1.5 Other Sources of Information

Information about mathematics courses and programme structures is available from the Department's web site at http://www.macs.hw.ac.uk/students/maths/ and on VISION, the University-wide Virtual Learning Environment. You can find the log-in to VISION at http://vision.hw.ac.uk/ and your User ID is the same as your User ID for the University Desktop Service, and your password is the same as your password for the University e-mail system.

Further information concerning University regulations and policies is available from the Academic Registry (http://www.hw.ac.uk/registry/) and in the School of Mathematical and Computer Sciences Undergraduate Course Handbook.

2. General Information

2.1 Lectures, Tutorials and Feedback

Classes in mathematics are either lectures or tutorials. A lecture consists mainly of listening, understanding and making notes of the topics being taught. Tutorials will give you an opportunity to get feedback on the work you are doing - "Am I doing this right?", "I've gone wrong some place, can you put me right please?" etc. - to ask questions about material which you have not understood, and to find out how to solve problems which you were unable to do on the examples sheets which are given out in lectures. Feedback is a two way process. Feedback is provided to students in a variety of ways in order to help you to reflect on and to

evaluate your progress and to assist you to take steps to improve before the next relevant assessment. For most courses, students can expect feedback on assessed coursework within three teaching weeks of the coursework due date.

Classes begin at 9.20 a.m., 10.20 a.m. etc. and finish at 10 past the hour. They are scheduled so that students can change rooms if necessary for the start of the next class.

If you have problems after reading your notes and attempting the tutorial examples, please ask for help. You should do this at the tutorial classes or by going to see the lecturer teaching the course. To avoid fruitless searches you can make an appointment at the end of a lecture or a tutorial. Lecturers can also be contacted via the secretaries in the School Office, room 1.25 in the Earl Mountbatten Building, adjacent to the Colin Maclaurin Building, or by e-mail (see the department and course web pages for addresses).

2.2 Teaching, Revision and Exam Weeks

The academic year consists of 30 weeks divided into 2 semesters. Each semester students study four courses. In Semester 1 maths classes there will normally be 12 weeks of teaching (including 1 or 2 weeks of revision at the end) and then 2 weeks of exams. In Semester 2 there are 12 weeks of teaching (including 1 or 2 weeks of revision), followed by a 3 week break and then 4 weeks of exams. Exams for 3rd, 4th and 5th year are usually in the first part of this exam period and those for 1st and 2nd year are in the later part.

The University registry is responsible for the scheduling and organisation of examinations. Examination timetables are posted at http://www.hw.ac.uk/registry/examinations/timetable.htm

2.3 Personal tutors

Every student has a member of academic staff allocated to them as a personal tutor who will be a key source of advice, guidance and support throughout your degree. Your personal tutor is your first point of contact if you need advice on any issue, both academic and non-academic. Personal tutors can also advise you of other support sources as appropriate and provide a clear point of contact for you throughout your degree. If you are unsure who your personal tutor is you can find out this information from the MACS School Office (EM1.25). The personal tutor /student relationship serves various functions.

- It is important that we have up-to-date records for each student and so your personal tutor should be informed of any changes to your chosen programme or in your personal information such as your term and home addresses and telephone numbers.
- Your personal tutor is usually the person in the department who knows you and your work best and so is well placed to provide job (and other) references when the time comes.
- If you have personal problems the personal tutor can often help with a sympathetic chat or by putting you in touch with the appropriate University support service (Medical Centre, Accommodation and Welfare, Students Association or Chaplaincy).

2.4 Attendance (You are expected to come to classes!)

Please tell us as soon as possible if there are problems that stop you attending. If there are things that we or the University services can do to help then we will try our best to do that.

Formally, in order to satisfy the programme requirements in each course, a satisfactory record of attendance at lectures and tutorials is required and coursework must be handed in by the stipulated dates. Students who, in the opinion of the Head of Department, fail to satisfy these requirements without good cause for any of the courses for which they are registered may, after due warning, be disallowed from presenting themselves for examination in those courses. In this case they will be deemed to have failed those courses. Please get in touch long before things get to that stage!

- Students are responsible for finding out where and when their classes, assessments, exams, resit exams etc. take place and for making the necessary arrangements to attend them.
- For students with medical and similar problems which cause them to miss classes self-certification is required for periods of incapacity from work of four days or less provided there is no assessment during the period of absence. Self-certification forms should be collected from the School Office. For longer periods of absence or if the absence occurs during an examination or other assessment students should fill in a Mitigating Circumstances form and have supporting evidence such as a medical certificate (see section 4.3 below for more details of what constitutes Mitigating Circumstances.) Self Certificates, Mitigating Circumstances Forms and supporting evidence such as Doctor's Certificates should be submitted to the School Office, room EM1.25.

3. Communication

3.1 How We Will Contact You

When we contact you during term time we will mainly use your university e-mail address and sometimes the student mailboxes located in the School Office, EM1.25. These mailboxes are also used for mail delivered to students c/o the department. In some circumstances we will also use your term-time address. In emergencies we will use e-mail and/or telephone. Outside term time, we will write to your home address.

If you do not keep your contact addresses up to date and check your university e-mail and mail regularly, then you will miss important information. This might inconvenience you, cost you money, reduce your exam marks etc.

3.2 Your Responsibilities

It is very important that you
- read your university e-mail regularly (daily if possible)
- notify us immediately of any change of address by completing a 'Change of Address Notification' and handing it in to the School Office;
- notify your personal tutor immediately of any change of course or of elective (in fact your personal tutor must sign the appropriate form to authorize any such change);
- keep your personal tutor fully informed about any illnesses or other problems;
- check the mailbox regularly.

Forms can found outside the MACS School Office, EM1.25, and (when on campus) at
http://www.macs.hw.ac.uk/students/forms/

3.3 How to Contact Us

Details of how to contact us by are given here.

- Photographs of staff are displayed outside EM125. This will help you identify people if you forget their names!
- **Telephone & Fax:** All staff, 0131-451-3420 (0131-451-3249 fax).
- **e-mail:** This is probably the best way to contact most staff. You will get e-mail addresses from Course pages starting from http://www.macs.hw.ac.uk/students/maths/
- **Post:** Department of Mathematics, School of Mathematical and Computer Sciences, Heriot-Watt University, Edinburgh, EH14 4AS.
- **In Person**: Staff can be contacted in their offices or make an appointment via the School Office (EM1.25).

4. Department and University Support for Students

4.1 Meetings with Your Personal Tutor

It is important that you see your personal tutor regularly. We have a Departmental requirement that students should see their personal tutor twice in each academic year, but more frequent meetings take place in first year. These meetings serve two purposes. They enable the Department to keep an eye on how you are doing and, just as importantly, they allow the personal side of the personal tutor/student relationship to develop. These meetings are particularly important in first year. The personal tutor is there to help you - do not hesitate to contact them if you need help. If you have any difficulty contacting your personal tutor, staff in the School Office, EM1.25, will be pleased to arrange an appointment.

4.2 Year Directors of Study

For each year of study the department has appointed a Year Director of Studies who has the responsibility of ensuring the overall smooth functioning of that year. The Directors of Study will take an overview of all the material taught to the year, should be aware of any difficulties which are occurring in any of the courses, will ensure that continuous assessment is carried out in an appropriate manner and will deal with the collation of examination marks. They also deal with progression decisions and transfer requests.

4.3 Tell us About Things That Impact on Your Studies and Examinations

It is **very important** that you notify your Year Director of Studies or Personal Tutor **as soon as possible** of any mitigating circumstances, such as illness, or the death of a close relative, which could adversely affect your examination performance. We may be able to take this into account in the final examination assessment decisions, to discuss various options for advancing your studies or simply to help put you in contact with appropriate University support specialists.

There is a university-wide rule that Examiners can take illness into account *only* if a medical certificate is supplied. We are also required to ask for documentary evidence of other circumstances. You will also need to complete and submit a Mitigating Circumstances Application form. Note, the School abides by the University's Mitigating Circumstances policy. The form and the policy document can be found online at
https://www.hw.ac.uk/students/studies/examinations/mitigating-circumstances.htm

Events or circumstances that would normally be recognised as grounds for consideration of mitigating circumstances might include:

- Illness or accident affecting the student
- Bereavement – death of a close relative or significant other
- Significant adverse personal or family circumstances
- Other significant exceptional factors that are outside the student's control (e.g. Jury Service, although student assessments would normally be a reason for a student to be permitted to stand down), or for which there is evidence of stress caused

Events or circumstances that would not normally be considered grounds for consideration of mitigating circumstances include:

- Holidays or other events that were planned or could reasonably have been expected
- Assessments that are scheduled close together or on the same day, or that clash due to incorrect registration by the student
- Misreading the timetable for examinations or otherwise misunderstanding the requirements for assessment
- Inadequate planning or time management
- Last-minute or careless travel arrangements
- Consequences of paid employment
- Exam stress or panic attacks not supported by medical evidence

We are good at keeping confidential information confidential (it is only seen by a handful of people and not broadcast round the department) so do not be afraid to tell us something. The Examiners will always take such circumstances into account where appropriate, but the later the notification, the less scope there is to do so. In particular, notification should be before the examination diet concerned, and certainly no later than the Examiners' Meeting (usually at the end of the semester, or mid-August in the case of re-sits). It is particularly important that you present all information to the department before the final degree award examiners' meeting, since it takes some time to change a degree award decision after it is made (you have to make a formal appeal) and you will certainly miss the summer graduation.

4.4 Staff-Student Committee

The Staff-Student Committee is a forum for notification and discussion of various issues affecting undergraduate courses and provides valuable feedback to the Department. Typical issues raised include organisational problems encountered by students (e.g. too many tutors in some tutorials and not enough in others) and discussion of proposed changes in programme structures. It is composed of **two student and one staff representatives** for each year of the mathematics programme together with **the Maths School Officer**. Directors of Studies represent the staff, and the class elects the student representatives. You will be asked to select representatives for this committee early in the first semester. The committee meets once each semester. Details of the discussion at this Committee are posted on VISION. Feedback is sought from students via Student-Staff Liaison Committees and various surveys so that the School can continue to enhance the student learning experience. Your feedback is valued by the School, so please be sure to provide feedback whenever it is sought.

4.5 The Head of Department

We hope that all your problems, both personal and academic, can be resolved with the help of personal tutors, year Directors of Study and the staff-student committee. If, however, for any reason you find that you cannot resolve a difficulty by these means you should consult with the Head of Department, Professor Bernd Schroers (till 31 Dec 2017) and Prof Andy White (from 1 Jan 2018).

4.6 Student Support and Accommodation Office

You can also discuss any personal problems including counselling, disability and financial difficulties with the staff in the Student Support (and Accommodation) Office (www.hw.ac.uk/support, or email studentsupport@hw.ac.uk).

4.7 Computing Facilities

All students are issued with accounts on the University Desktop Service network. E-mail, word-processing, specialist mathematics and statistics packages, and spreadsheet facilities are available on the University Desktop Service network.   Details of how to access the University Desktop Service and how to use e-mail are provided to new students. Help is also available via e-mail at ITHelp@.hw.ac.uk

Students are expected to use the computing facilities in an appropriate and considerate way. Abuse of the facilities is subject to various disciplinary measures, ranging from a ban on access to the facilities to, in extreme and flagrant cases, expulsion from the University. Examples of abuse include displaying, circulating or printing offensive material on or from the Internet, illegal file sharing, playing computer games and using relay chat. Further information on University policy regarding the abuse of computing facilities is given in the MACS Undergraduate Course Handbook and also from the University Computing Centre

4.8 Careers Advisory Service

The Careers Advisory Service provides high quality careers guidance, education and information services to Heriot-Watt students and graduates. It delivers these through class based group sessions, a dedicated web site http://www.hw.ac.uk/careers, a well-equipped information room, drop-in query sessions, and individual appointments.

The service facilitates the employment of Heriot-Watt students and graduates by advertising vacancies, arranging and publicising employer presentations and an annual Careers Fair.
In addition to providing comprehensive information on all aspects of careers, from part-time work to job seeking in the graduate labour market, they also run practical sessions that include *Producing an Effective CV*, *Preparing for Interview* and *Practice Aptitude Tests*.

Alan Smith is the Careers Adviser with responsibility for students in Mathematics. You can find the Careers Service on level 1 in the Scott Russell Building. The Service is open 10:00 – 17:00 Monday to Friday, telephone 0131 451 3391.

Career planning is a major part of the third year course F19GB1 Project Preparation and Skills which can help prepare you for possible summer work placements and future

employment. The Careers Advisory Service will also make presentations to 4th and 5th year students

5. Student Learning Code of Practice

5.1 What Staff Can Expect Of Students

Most importantly, we expect you to take charge of your own learning. This is your degree; to get the most of your time at the University you need to be independent, self-motivated and proactive in your studies. We understand that you may have other demands on your time, but your studies should come first. In addition, we expect:

- Preparation for classes as specified by your lecturers, including studying lecture notes, working on tutorial questions and participating in online activities. To do well in your studies you will need to undertake a significant amount of private study in addition to attending your timetabled classes
- Full engagement and attendance on time for lectures, laboratories, seminars and tutorials: during the semester it is your responsibility to be available to attend classes and, in particular, class tests
- Basic organisational skills, including coming to classes with pen and paper ready to take notes or with equipment for electronic note-taking, and using a calendar so that you don't forget deadlines and appointments
- Attention, courtesy and participation during classes; this includes asking and answering questions in lectures and tutorials
- Respecting deadlines for any assignments
- Taking responsibility for your work, whether completed individually or as part of a group
- Attendance at any scheduled meetings with a member of staff. If you can't make a scheduled meeting, please notify the member of staff in advance rather than just not attending
- Checking your University email, providing timely responses to emails from members of staff
- Provision of feedback on your courses and programme
- Commitment to your learning and a professional approach to your academic work
- Self-reflection on progress and willingness to learn from feedback on tutorial work, projects, exams, and trying to improve your work based on that feedback
- Determination and persistence; some topics and problems will be challenging and we expect you to make a sustained effort to master difficult topics. Lecturers are there to help if you need it
- To keep yourself informed about new and interesting developments in your discipline (beyond what is covered in your courses)
- Full referencing of all work *
- Adherence with regulations and requirements, including health and safety
- Politeness and respect for all members of the Heriot-Watt University community and for the facilities/ services provided. This includes switching off your phones and other social media during classes

* Guidance on referencing and the use of sources is available from your subject librarian and the Effective Learning Service (http://www.hw.ac.uk/is/skills-development/study-support.htm). Remember that plagiarism is an academic offence even if it is unintentional; you need to take care to avoid it.

5.2 Plagiarism and Cheating

Don't do this! Cheating in examinations and plagiarism (i.e. the presentation of another person's ideas or work as one's own) are very serious offences and are dealt with severely. They carry a range of penalties up to and including expulsion from the University. Students are responsible for familiarising themselves with the University policy on these matters

5.3 What Students Can Expect Of Staff

Teaching is one of the most important duties for members of staff. Although members of academic staff have research and administrative duties which also require attention, we aim to provide:

- Commitment to helping you learn, with support, encouragement and technical back-up to help you develop your skills
- Research informed teaching and high quality delivery of learning materials in accordance with the syllabus
- Advice and support on course content at tutorials, laboratories and through pre-arranged meetings
- Appropriate supervision of project/dissertation work
- Clear information and guidance on assessment requirements
- Availability for face-to-face meetings, either during scheduled office hours or at pre-arranged times
- Timely oral and written feedback
- Timely provision of marks/grades for coursework and exams
- A prompt response from your personal tutor
- A timely response to general email questions
- Guidance on specific regulations and requirements including those related to health and safety
- Politeness and respect

Sometimes members of staff are away on University business and are not able to respond as quickly as normal. If this happens, they will leave an "out-of-office" message and will advise you who to contact instead.

6. Subjects

6.1 The Course System

A credit-based course system is the common structure of degree programmes offered by the University. Normally students study 4 courses per semester giving a total of 8 courses per year. The assessment may be by written examination or by continuous assessment or by a mixture of the two methods. Further information on assessment methods can be found in the year sections in this booklet, and in the course outlines given by the lecturers. The Heriot-Watt course scheme is compliant with the Scottish Credit and Qualifications Framework (SCQF). Each Heriot-Watt course is regarded as requiring 150 hours of student effort and is worth 15 SCQF credits. Thus in each year of full-time study a student should accumulate 120 credits.

6.2 Transfer between Programmes and Subjects

If you want to change any of the subjects for which you are registered, you should consult either your Personal Tutor or your Year Director of Studies. Please collect the appropriate form from outside the School Office, room EM1.25, and take this for discussion, completion and signing by your Personal Tutor or Year Director of Studies.
Transfer between our various degree programmes is possible under certain circumstances; for example, at the beginning of the second and third years, students studying one of the joint degrees may switch to the BSc in Mathematics. At some stages in your programme it might also be possible to study a broader range of subjects by transferring to the BSc in Mathematical Studies.

6.3 Heriot Watt Assessment and Progression Systems (HAPS)

The University operates the Heriot Watt Assessment and Progression System (HAPS) which specifies minimum progression requirements. Schools have the option to apply progression requirements above the minimum University requirement, which are approved by the Studies Committees. Students should refer to the programme specific information on progression requirements. This information is given for each degree separately in the Programme Structures and Progression Rules section available from http://www.macs.hw.ac.uk/students/maths/ A brief summary of the progression rules are also are given in the information about the various years later in this guide but while we try to make this summary as accurate as possible, you should note that the detailed University and Department regulations take precedence over what is given in this guide.

In HAPS your exam result for each subject is presented in the form of a mark and a letter grade (A - F) where

A= approximately 70% - 100%
B = approximately 60% - 70%
C = approximately 50% - 60%
D = approximately 40% - 50%

An 'E' grade will indicate a mark of somewhat less than 40% and is awarded when you have done enough to be given credit points in the subject but you have not done enough to be allowed to study the same topic at a higher level. Every course is worth **15 credits** and you will get 15 credits for each subject in which you get grade E or above. An 'F' indicates a fail for which no credit points are given towards your degree.

If you obtain credit in all eight courses in a year of study you earn 120 credits. In order to obtain an Honours degree 480 credits are required and 360 credits are required for an Ordinary Degree. This means that in order to graduate you must normally obtain 120 credits from every year that you study. Final Examination Boards are allowed to award a student discretionary credits for up to two courses in which a student has failed to obtain credits at some point in their programme **provided all relevant examinations in the course have been attempted**. Hence you are allowed to fail to obtain passes in no more than two courses in your entire university career. In particular you will **not** be allowed to proceed to the next year of your programme if at any point you have failed to obtain passes in a total of more than two courses.

However since an E grade does not allow you to carry on studying a topic at a higher level for most subjects that you study you will have to get a grade D or above in most subjects in order to progress. If you hope to flourish in the later years of an Honours programme you should be aiming for as good marks as possible in all the courses. The much sought-after upper second and first class degrees equate to A's and B's rather than D's and E's.

6.4 End of Semester Examinations

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All end of semester and resit examinations are organised by the University Registry. Information about examinations including examination timetables can be found starting at http://www1.hw.ac.uk/registry/examinations.htm Full-time students in attendance at the University are entered automatically, without fee, for the end of semester examinations of courses in which they are registered. It is a student's responsibility to make sure that they attend all their examinations and obey all regulations for examination conduct. Dictionaries are only allowed to be taken into examinations by students with certain special needs. Examination results are now released online via Student Self Service. This is the official method of informing you of your final course results and any examiners' recommendation on progression or award. Provisional results will also be released when available. It is important that you check your online results promptly once released. For more information on Online Assessment Results, see http://www.hw.ac.uk/students/studies/examinations/results.htm

6.5 Resitting Courses

If you fail courses (or do not obtain a sufficient number of D passes) in years 1 and 2, then you will be required to resit them. In year 3 if you do not obtain enough credits to progress to the final year of Honours or to graduate with an Ordinary degree then you will have to resit for credit. **Resits in Year 3 exams do not count towards the classification of your Honours degree.** In this case the resit allows you to gain the credits required for the award of a degree, but the original exam mark is used to determine the degree classification.

You are normally entitled to one resit attempt for Year 1-3 exams. Students resitting an exam will be subject to an administration charge levied by the University Registry. The resit diet is

usually in August (it is your responsibility to check the details on the registry web pages). Should you be required to resit anything, you must be available to do so. **Do not book holidays or take on other commitments during the resit diet.** All resit examinations will be held on the campus on which you took the course (so for Mathematics students this will be at Riccarton). Further information on this policy can be found at
http://www.hw.ac.uk/students/studies/examinations/re-assessment.htm

7. Mathematics Programme Information

For detailed information concerning the various mathematics programmes, including course structures and progression rules, please see http://www.ma.hw.ac.uk/maths/courseinfo/index.php

7.1 Mathematics Programme and Year Directors of Studies

Year Directors of Study

Year	Director of Studies	Room Number
Year 1	Prof M. Lawson	CM G12
Year 2	Dr A. Konechny	CM T09
Year 3	Dr M. Youngson	CM S03
Year 4 (till 31 Dec 2017)	Prof A. White	CM T11
Year 4 (from 1 Jan 2018)	Prof K. Painter	CM T08
Year 5 (till 31 Dec 2017)	Prof A. White	CM T11
Year 5 (from 1 Jan 2018)	Prof K. Painter	CM T08

Programme Directors of Study

Programme Name	Code	Director of Studies	Room Number
BSc Mathematics with Physics	F141	Dr R. Weston	CM T16
BSc Mathematics with Computer Science	F181	Prof M. Lawson	CM G12
BSc Mathematics and Computer Science	F1G1	Prof M. Lawson	CM G12
BSc Mathematics with a European Language	F191	Dr M. Youngson	CM S03
BSc Mathematics with Statistics	F1A1	Dr M. Youngson	CM S03
BSc Mathematics with Finance	F1B1	Dr K. Painter	CM T08
BSc Mathematics with Finance with Diploma in Industrial Training	F1K1	Dr K. Painter	CM T08
BSc Mathematical, Statistical and Actuarial Sciences	F1F1	Dr M. Youngson	CM S03
BSc Mathematical, Statistical and Actuarial Sciences with Diploma in Industrial Training	F1J1	Dr M. Youngson	CMS03
BSc Mathematical Studies	F1I1	Dr M. Youngson	CM S03

Note: The exchange coordinator for students who go abroad in year 3 is Dr D Coutand and the year in industry coordinator for students on degrees with industrial placement is Dr D Breit

7.2 BSc Mathematical Studies

This is a very flexible degree programme and course choices must be approved by the Programme Director. This is to make sure that students have a balanced programme of study covering enough topics each year to allow progression to the next level of the programme, and also that the courses selected do not suffer from impossible timetable clashes.

- In the tables below, "MACS" means The School of Mathematical and Computer Sciences and "external" means not MACS.

- Note that many courses have prerequisite requirements (i.e. you must have studied and passed one or more courses at a lower level that lay the groundwork for the course of interest).

- Projects. Honours students must complete one of the project groupings F19GB1+F10GP2 (Mathematics project) or F79MA1+F79MB2 (Statistics project) during years 3 and 4.

- "Stage" and "Year" mean the same thing in the regulations below.

- 1st Year courses are usually at SCQF Level 7, 2nd year at level 8, 3rd year at level 9, 4th year at level 10.

Year/ Stage	Each Semester	Notes
1	At least 3 MACS courses Up to 1 external course	
2	At least 3 MACS courses with at least 2 at SCQF level 8 or above Up to 1 external course	At least 6 courses this year should be at SCQF level 8
3	At least 3 MACS courses with at least 2 at SCQF level 9 or above, and the remainder at SCQF level 8 or above Up to 1 external course	For honours, at least 6 MACS courses this year should be at SCQF level 9 See note above about Projects
4	At least 3 MACS courses chosen to satisfy the conditions in the notes Up to 1 external course	In Stages 3 and 4 at least 6 MACS courses shall be at level 9 and at least 6 MACS courses shall be at SCQF level 10 or above See note above about Projects

8. Information about First Year

8.1 General Information about First Year

Director of Studies: Professor M. V. Lawson, Room CMG.12

Each semester you study four subjects (making a total of 8 in the year), two of which will be on mathematics, one on statistics while the other one may be in a topic outside of mathematics.

8.2 First Year Mathematics and Statistics Subjects

Year 1 Semester 1	
Code	Title
F17CA1	Calculus A
F17CC1	Introduction to University Mathematics
F77SA1	Introduction to Statistical Science A

Year 1 Semester 2	
Code	Title
F17CB2	Calculus B
F17GA2	Problem Solving
F77SB2	Introduction to Statistical Science B

Notes

- For some degrees the other subject that you take are fixed. For example for the Mathematics with Physics degree, the other subject that you take each semester would be Physics.

- Other degrees such as the Mathematics degree allow students to choose from a number of *options*. Students who need to choose two optional subjects should pick them from the same group, for example, C27OA1 Economics and C37FF2 Finance. It may be possible to switch options at the end of the first semester but the choice then is likely to be restricted.

- Students on the Mathematical Studies degree should consult the previous section of this booklet on the choice of subjects and rules for their degree.

8.3 Summaries of First Year Mathematics and Statistics subjects

In mathematics a deeper study of two familiar areas of mathematics, namely algebra and calculus, both of which will be continued and extended in subsequent years is started. Problem solving provides the opportunity to work as a team, prepare reports and to use mathematics to tackle a variety of problems. In the first semester the concept of data handling is introduced in statistics, and in the second semester the study of probability and statistical inference is started.

A brief outline for each of the mathematics and statistics subjects is given below; a detailed syllabus together with information about textbooks you may wish to read or buy will be

handed out at the start of the semester in which the subject is taught, and can be found on VISION.

For students who are not on joint degrees there is also an additional maths course per semester that they can chose to take; Mathematics in Context in semester 1 and Discrete Mathematics in semester 2.

SEMESTER 1

Calculus A. *Functions, Limits, differential calculus, introduction to integration, sequences and series.*

An Introduction to University Mathematics. *An introduction to the nature of university mathematics with an emphasis on proofs. The course will also cover topics in combinatorics (counting), complex numbers and polynomials, matrices and vectors.*

Introduction to Statistical Science A. *Introduction to the concept of statistics, collecting data, describing and presenting data, drawing conclusions from the data (inference).*

SEMESTER 2

Calculus B. *Applications of differentiation, further integration, differential equations, mathematical modelling.*

Problem Solving. *Problems involving mathematics, group work on mathematical problems, report writing, computer assisted mathematics (Maple).*

Introduction to Statistical Science B. *Introduction to statistical inference, introduction to probability models, computer simulation and the investigation of probability models, estimation and confidence intervals.*

8.4 Teaching, Assessment and Exams

- In all mathematics subjects (except Mathematics in Context and Problem Solving) there are 11 weeks of teaching are followed by one week of revision, followed by a two week exam period. Other than for Mathematics in Context and Problem Solving all first year mathematics subjects have a two-hour examination at the end of the semester in which they are taught. Continuous assessment is used for Mathematics in Context and Problem Solving.

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8.5 Progression to Year 2

- The final decisions on progression are made by the Progression Boards. The information below is given for guidance only and should not be regarded as binding.

- Students on BSc Mathematics normally require 120 credits including 6 passes at 'D' or better to proceed to second year Honours. In addition students are required to obtain a 'D'

pass or better in an Introduction to University Mathematics, Calculus A, Calculus B and Problem Solving to satisfy the prerequisites for the subjects you study in year 2.

- Students on the MMath normally require 120 credits together with an overall average of 60% or better to proceed to second year Honours. In addition students are required to obtain at least 6 'D' passes or better, including in an Introduction to University Mathematics A, Calculus A, Calculus B and Problem Solving to satisfy the prerequisites for the subjects you study in year 2.

- Students on BSc Mathematics with Physics normally require 120 credits including 6 passes at 'D' or better to proceed to second year Honours. In addition students are required to obtain a 'D' pass or better in Calculus A, Calculus B, an Introduction to University Mathematics, Problem Solving, Mechanics and Waves and Waves and Matter to satisfy the prerequisites for the subjects you study in year 2.

- Students on BSc Mathematics with Computer Science normally require 120 credits including 6 passes at 'D' or better to proceed to second year Honours. In addition students are required to obtain a 'D' pass or better in Software Development 1 and Software Development 2 and at least 3 of Calculus A, Calculus B, an Introduction to University Mathematics and Problem Solving to satisfy the prerequisites for the subjects you study in year 2.

- Students on BSc Mathematics and Computer Science normally require 120 credits including 6 passes at 'D' or better to proceed to second year Honours. In addition students are required to obtain a 'D' pass or better in at least three of Software Development 1 Software Development 2, Interactive Systems and Introduction to Computer Systems and at least three of Calculus A, Calculus B, an Introduction to University Mathematics and Problem Solving to satisfy the prerequisites for the subjects you study in year 2.

- Students on BSc Mathematics with Languages normally require 120 credits including 6 passes at 'D' or better to proceed to second year Honours. In addition students are required to obtain a 'D' pass or better in Calculus A, Calculus B, an Introduction to University Mathematics, Problem Solving and both languages modules to satisfy the prerequisites for the subjects you study in year 2.

- Students on BSc Mathematics with Statistics normally require 120 credits including 6 passes at 'D' or better to proceed to second year Honours. In addition students are required to obtain a 'D' pass or better in Calculus A, Calculus B, an Introduction to University Mathematics, Problem Solving, Introduction to Statistical Science A and Introduction to Statistical Science B to satisfy the prerequisites for the subjects you study in year 2.

- Students on BSc Mathematics with Finance normally require 120 credits including 6 passes at 'D' or better to proceed to second year Honours. In addition students are required to obtain a 'D' pass or better in Calculus A, Calculus B, an Introduction to University Mathematics, Problem Solving and Finance and Financial Reporting to satisfy the prerequisites for the subjects you study in year 2.

- Students on the Mathematical, Statistical and Actuarial Sciences degree normally require 8 passes at 'D' or better in order to proceed to the second year.

- Students on BSc Mathematical Studies normally require 120 credits and an average mark over their MACS modules of at least 40% to proceed to second year Honours. In addition students must have the pre-requisites for at least six SCQF level 8 modules available in the degree.

- Students doing Ordinary degrees have less stringent progression requirements, and should consult the director of studies for specific information.

- If a student has <u>not</u> obtained at least an 'E' grade in a subject, it is very important that the student takes the resit examination in that subject. University Regulations allow Examination Boards to award any student up to two 'discretionary' passes in the course of their careers **but only if the student has attempted the resit examinations concerned**. However Discretionary Credits are not allocated for progression.

- Students who have not passed the required number of subjects will receive advice from the First Year Director of Studies.

9.   Information about Second Year

9.1 General Information about Second Year

Director of Studies: Dr A. Konechny, Room CMT.09

Each semester you study four subjects (making a total of 8 in the year). The choice of subjects depends on the degree you are taking as in first year.

9.2 Second Year Mathematics subjects

Year 2 Semester 1	
Code	Title
F18CD1	Multivariable Calculus and Real Analysis A
F18CF1	Linear Algebra
F18AA1	Applied Mathematics A

Year 2 Semester 2	
Code	Title
F18CE2	Multivariable Calculus and Real Analysis B
F18NA2	Numerical Analysis A
F18PA2	Pure Mathematics A

●   Students on most degrees will take all these subjects together with an optional or joint degree subject. The mathematics subjects Logic and Proof (F17LP1) and Mathematics Workshop (F18GW2) are available as optional subjects.

●   It is important that you take optional subjects seriously. Failure in them will lead to resit examinations in August/September, which must be passed before you are allowed into Honours Mathematics or MMath in Year 3.

●   Students on the Mathematical Studies degree should consult the section earlier in this booklet on the choice of subjects and rules for their degree.

9.3 Second Year Mathematics subjects information

More details of the above subjects including their syllabus and their learning outcomes and details of their method of assessment are given on http://www.macs.hw.ac.uk/students/maths/. A detailed syllabus for each subject together with information about textbooks you may wish to read or buy will be handed out at the start of the term in which the subject is taught.

9.4 Teaching, Assessment and Exams

- In all mathematics subjects there are 11 weeks of teaching are followed by one week of revision, followed by a two week exam period.

- All second year mathematics subjects have a two-hour examination at the end of the semester in which they are taught. Up to 30% of the final mark will come from continuously assessed work carried out during the semester. The final decisions on progression are made by the Progression Boards.

9.5 Progression to Year 3

- The final decisions on progression are made by the Progression Boards. The information below is given for guidance only and should not be regarded as binding.

- Students on BSc Mathematics normally require a total of 240 credits including 6 passes at 'D' or better to proceed to third year Honours. In addition students are required to obtain a 'D' pass or better in Linear Algebra, Multivariable Calculus and Real Analysis A and Multivariable Calculus and Real Analysis B to satisfy the prerequisites for the subjects you study in year 3.

- Students on MMath normally require a total of 240 credits and an overall average of at least 60% to proceed to third year Honours. In addition students are required to obtain at least 6 'D' passes or better, including in Linear Algebra, Multivariable Calculus and Real Analysis A and Multivariable Calculus and Real Analysis B, Numerical Analysis A, Applied Maths A and Pure Maths A, to satisfy the prerequisites for the subjects you study in year 3.

- Students on BSc Mathematics with Physics normally require a total of 240 credits including 6 passes at 'D' or better to proceed to third year Honours. In addition students are required to obtain a 'D' pass or better in Linear Algebra, Multivariable Calculus and Real Analysis A, Multivariable Calculus and Real Analysis B, Photonics and Quantum Mechanics and Thermal Physics and Relativity to satisfy the prerequisites for the subjects you study in year 3.

- Students on BSc Mathematics with Computer Science normally require a total of 240 credits including 6 passes at 'D' or better to proceed to third year Honours. In addition students are required to obtain a 'D' pass or better in Linear Algebra, Multivariable Calculus and Real Analysis A, Multivariable Calculus and Real Analysis B, Logic and Proof and Formal Specification to satisfy the prerequisites for the subjects you study in year 3.

- Students on BSc Mathematics and Computer Science normally require a total of 240 credits including 6 passes at 'D' or better to proceed to third year Honours. In addition students are required to obtain a 'D' pass or better in Linear Algebra, Multivariable Calculus and Real Analysis A and Multivariable Calculus and Real Analysis B, Programming Languages, Formal Specification and Software Design to satisfy the prerequisites for the subjects you study in year 3.

- Students on BSc Mathematics with Languages normally require a total of 240 credits including 6 passes at 'D' or better to proceed to third year. In addition students are required to obtain a 'D' pass or better in Linear Algebra, Multivariable Calculus and Real Analysis A and Multivariable Calculus and Real Analysis B and both languages modules

and an overall average mark of at least 70% in all mathematics subjects to satisfy the prerequisites for the subjects you study in year 3.

- Students on BSc Mathematics with Statistics normally require a total of 240 credits including 6 passes at 'D' or better to proceed to third year Honours. In addition students are required to obtain a 'D' pass or better in Linear Algebra, Multivariable Calculus and Real Analysis, Multivariable Calculus and Real Analysis B, Probability and Statistics A and Probability and Statistics B to satisfy the prerequisites for the subjects you study in year 3.

- Students on BSc Mathematics with Finance normally require a total of 240 credits including 6 passes at 'D' or better to proceed to third year Honours. In addition students are required to obtain a 'D' pass or better in Linear Algebra, Multivariable Calculus and Real Analysis, Multivariable Calculus and Real Analysis B, Finance Theory and Markets 1 and Finance Theory and Markets 2 to satisfy the prerequisites for the subjects you study in year 3.

- Students on the Mathematical, Statistical and Actuarial Sciences degree normally require 8 passes at 'D' or better in order to proceed to the third year.

- Students on BSc Mathematical Studies normally require a total of 240 credits, a minimum of 90 credits at SCQF level 8 and an average mark over their MACS modules of at least 40% to proceed to third year Honours. In addition students must have the pre-requisites for at least six SCQF level 9 or level 10 modules available in the degree.

- Students doing Ordinary degrees have less stringent progression requirements, and should consult the director of studies for specific information.

- If a student has not obtained at least an 'E' grade in a subject, it is very important that the student takes the resit examination in that subject. University Regulations allow Examination Boards to award any student up to two 'discretionary' passes in the course of their careers **but only if the student has attempted the resit examinations concerned**. However Discretionary Credits are not allocated for progression.

- Students who have not passed the required number of subjects will receive advice from the Second Year Director of Studies.

10. Information about Third Year

10.1 General Information about Third Year

Director of Studies: Dr M A Youngson, Room CMS.03

Each semester you study four subjects (making a total of 8 in the year). The choice of subjects depends on the degree you are taking as in the previous two years.
However it is important to note that the results from examinations in subjects at SCQF level 9 or 10 taken during the year count toward the classification of the final Honours or MMath degree.

10.2 Third Year Mathematics Subjects

Year 3 Semester 1	
Code	Title
F19GB1	Project Preparation
F19MV1	Vector Analysis
F19PB1	Pure Mathematics B
F19PL1	Abstract Algebra

Year 3 Semester 2	
Code	Title
F19AB2	Applied Mathematics B
F19MC2	Complex Analysis
F19MO2	Ordinary Differential Equations
F19NB2	Numerical Analysis B

10.3 Third Year Mathematics Subjects Information

More details of the above subjects including their syllabus and their learning outcomes and details of their method of assessment are given on the Mathematics departmental website. A detailed syllabus for each subject together with information about textbooks you may wish to read or buy will be handed out at the start of the term in which the subject is taught.

10.4 Teaching, Assessment and Exams

- In all mathematics subjects (apart from project preparation) there are 11 weeks of teaching are followed by one week of revision, followed by a two week exam period.

- All third year mathematics subjects (apart from project preparation) have a two-hour examination at the end of the semester in which they are taught.

- We review progress of honours degree students after the first semester exams, and may advise some students to change to the ordinary degree course then. However, failing a subject in December does not necessarily mean that you cannot get an Honours degree.

- **All the level 9 or 10 subjects taken during the third year count towards the degree assessment for BSc Honours degrees with a weighting of 40% on third year results and 60% on fourth year.** Students on the Mathematics with a European Language degree spend their third year studying abroad, and so there are special arrangements for them. There are also special arrangements for students on the Master of Mathematics degree and the Mathematical Studies degree. More details on this are given in *Sections 9.6, 9.7 and 10.4* in this guide.

10.5 Graduation with an Ordinary degree (apart from Mathematical Studies)

- The final decisions on graduation are made by the Progression/Award Boards. The information below is given for guidance only and should not be regarded as binding.

- Students are eligible for an Ordinary degree if they obtain at least 360 credits. University Regulations allow Examination Boards to award any student up to two 'discretionary' passes in the course of their careers **but only if the student has attempted the resit examinations concerned**..

- Students who reach the end of third year without 360 credits can resit subjects to gain enough passes to obtain an Ordinary degree.

- Students registered for an Honours degree may choose to leave with an Ordinary degree at the end of third year if they have obtained sufficiently many credits.

10.6 Graduation with an Ordinary degree (Mathematical Studies)

- The final decisions on graduation are made by the Progression/Award Boards. The information below is given for guidance only and should not be regarded as binding.

- Students must have gained a total of at least 360 credits (including, where appropriate, discretionary credits – see 8.5 above).

- Students must have gained a minimum of 60 credits at SCQF level 9

- Students must have gained a maximum of 300 credits from SCQF level 7 and SCQF level 8 (not more than 210 credits at SCQF level 7)

- Students must have the majority of their MACS subjects with codes which start with F1 or F7.

10.7 Progression to Year 4 (apart from Mathematical Studies)

- For Honours and MMath students, **all subjects taken at SCQF level 9 or 10 count**

towards their final degree assessment. These are called qualifying subjects (See Sections 9.6 and 10.4 on Classification of Degrees for more details.)

- The final decisions on progression are made by the Progression Boards. The information below is given for guidance only and should not be regarded as binding.

- You will be allowed to proceed to the final year of the Honours course if
  - you satisfy the prerequisites for all the subjects you will study in year 4
  - **and** you have accumulated at least 360 credits (and so qualify for an Ordinary degree)
  - **and** an average mark on qualifying subjects of at least 40% and (if you take Project Presentation F19GB1) an average mark of at least 40% in the seven qualifying subjects other than F19GB1.

- You will be allowed to proceed to the 4th year of the MMath course if
  - you satisfy the prerequisites for all the subjects you will study in year 4
  - **and** you have accumulated 360 credits
  - **and** your overall average mark is 60% or better.

If you have a sufficiently good average overall but have failed some subjects and have an insufficient number of credits or you do not satisfy the prerequisites for all the subjects you will study in year 4, you may be asked to resit examinations to gain more credits or obtain the prerequisites before you can progress. **In this case the mark scored in your first attempt at the exam will be used in calculating your overall average for classifying Honours.** Discretionary Credits are not allocated for progression.

10.8   Progression to Year 4 (Mathematical Studies)

- For Mathematical Studies students, **the qualifying subjects taken at SCQF level 9 or 10 count towards their final degree assessment.** (See Sections 9.6, 9.7 and 10.4 on Classification of Degrees for more details.)

- The final decisions on progression are made by the Progression Boards. The information below is given for guidance only and should not be regarded as binding.

- To progress from Stage 3 to Stage 4 students must have gained a minimum of 90 credits at SCQF level 9 or above and must have the pre-requisites to enable them to have taken at least six qualifying subjects which are at SCQF level 9 and at least six qualifying subjects which are SCQF level 10 or 11 by the end of Stage 4.

- In order to progress from Stage 3 to Stage 4, students must normally have an average mark of 40% or better in their qualifying modules and have obtained 360 credits.

If you have a sufficiently good average overall but have failed some subjects and have an insufficient number of credits or you do not satisfy the prerequisites for all the subjects you will study in year 4, you may be asked to resit examinations to gain more credits or obtain the prerequisites before you can progress. **In this case the mark scored in your first attempt at the exam will be used in calculating your overall average for classifying Honours.** Discretionary Credits are not allocated for progression.

11.   Information about Fourth Year

11.1 General Information about Fourth Year

Director of Studies: Professor A. R. White, Room CMT.11 (till 31 Dec 2017)
Professor K. Painter, Room CMT.08 (from 1 Jan 2018)

Each semester you study four subjects (making a total of 8 in the year). The choice of subjects depends on the degree you are taking as in the previous three years.   Each subject runs during Semester 1 or Semester 2. Most students must take the Mathematics Project Dissertation (F10GP2) in Semester 2.

11.2 Fourth Year Mathematics Subjects

Year 4 Semester 1	
Code	Title
F10AC1	Applied Mathematics C
F10AM1	Mathematical Biology A
F10MF1	Functional Analysis
F10MM1	Optimisation
F10NC1	Numerical Analysis C
F10PC1	Pure Mathematics C

Year 4 Semester 2	
Code	Title
F10GP2	Mathematics Project
F10AN2	Mathematical Biology B
F10PG2	Geometry
F10MP2	Partial Differential Equations
F10ND2	Numerical Analysis D
F10PD2	Pure Mathematics D

11.3 Fourth Year Mathematics Subject Information

More details of the above subjects including their syllabus and their learning outcomes and details of their method of assessment are given on the Mathematics departmental website. A detailed syllabus for each subject together with information about textbooks you may wish to read or buy will be handed out at the start of the term in which the subject is taught.

11.4 Examinations

Each of the mathematics subjects (apart from the Mathematics Project) listed above will have a 2-hour examination paper in either December (for Semester 1 courses) or April/May (for Semester 2 courses).

11.5 Board of Examiners

A board of examiners is made up of the Head of Department, external examiners covering Pure Maths, Applied Maths and Numerical Analysis, and the lecturers who taught the courses. The external examiners ensure that degrees awarded are of comparable standard to those given by other universities. The examiners also make sure that a reasonable standard applies to the individual examinations and may occasionally normalise results (up or down) to achieve this outcome.

11.6 Classification of Honours Degrees (other than Mathematical Studies)

- For the BSc in Mathematics (F111), the Honours degree assessment is based on examinations held in both of the third and fourth years, weighted 60% on the fourth year results and 40% on the third year. For BSc degrees in mathematics with an external subject, the weighting may be slightly different and you should consult the appropriate programme guide at http://www.macs.hw.ac.uk/students/maths/ or the programme director for details.

- A student may not resit a Stage 4 subject.

- The assessment for the degree of Mathematics with a European Language is based entirely on courses taken in the fourth year together with an oral examination in your European Language which is taken in October of year 4. The courses taken in fourth year are equally weighted, irrespective of whether they are level 3 or level 4. The oral examination counts 20% towards the final degree classification. Thus the formula is final mark = (O+4F)/5 where O is the oral examination mark and F is the average mark over all courses taken in final year.

- The table below shows the average marks per paper used by the examiners *as a starting point* in the degree classification process.

Average Mark	Degree Classification
$\geq 70\%$	1
60-69%	2.1
50-59%	2.2
40-49%	3
Below 40%	Ordinary

- There is no quota system on the number of degrees of different classes awarded. It is not impossible (although highly unlikely) for everyone to get a 1st class degree, and similarly for everyone to get an Ordinary degree.

- MMath students will get a provisional Honours degree classification at the end of 4th year (using the rules above).

- MMath students will be allowed to proceed to the final (5th) year of the MMath programme if
    - you satisfy the prerequisites for all the subjects you will study in year 5
    - **and** you have accumulated at least 480 credits

- **and** your average mark is 60% or better.

11.7 Classification of Honours Degrees (Mathematical Studies)

- A student must have gained a total of at least 480 credits
- A student must have gained a minimum of 90 credits at SCQF level 10 and a minimum of 90 credits at SCQF level 9
- a student must have gained a maximum of 300 credits from SCQF level 7 and SCQF level 8 (not more than 210 credits at SCQF level 7)
- A student must have gained a minimum of 30 credits from Project subjects F19GB1+F10GP2 (Mathematics project) OR F79MA1+F79MB2 (Statistics project).
- The class of Honours shall be determined by performance in the 6 best MACS Stage 3 subjects and the 6 best MACS Stage 4 subjects taken, these are termed "the qualifying subjects". The classification shall be based on 40% of the average mark of the Stage 3 qualifying subjects and 60% of the average mark of the Stage 4 qualifying subjects.
- A student may resit failed Stage 3 subjects in order to gain the required credits, but the mark at the first sitting will be used in the calculation of the final mark used to classify their degree
- A student may not resit a Stage 4 subject.
- A student must have the majority of their MACS subjects with codes which start with F1 or F7. A student who satisfies all the above criteria for the award of an honours degree but fails to have the majority of their MACS subjects with codes starting with F1 or F7 shall be eligible to be considered for the degree of BSc in Computing Studies.

The table below shows the average marks per paper used by the examiners *as a starting point* in the degree classification process. The examination board is the same as that for the other mathematics honours degree and operates under the same conditions.

Average Mark	Degree Classification
>70%	1
60-69%	2.1
50-59%	2.2
40-49%	3
Below 40%	Ordinary

12.   Information about Fifth Year

12.1 General Information about Fifth Year (F1H1/MMath Degree Only)

Director of Studies: Professor A. R. White, Room CMT.11 (till 31 Dec 2017)
Professor K. Painter, Room CMT.08 (from 1 Jan 2018)

In the 5th year we offer a choice of subjects. In semester 1 students must take the Mathematics Project Dissertation Part II (F11GQ1) and choose three other subjects. In Semester 2 you choose 4 subjects..

12.2 Fifth year Subjects

Year 5 MMath Subjects	
Course Code	Title
F11AE1	Applied Mathematics E
F11AM1*	Mathematical Biology A*
F11MF1*	Functional Analysis*
F11MM1*	Optimisation*
F11NC1*	Numerical Analysis C*
F11PE1	Pure Mathematics E
F11MT1	Modelling and Tools
F11MS1	Modelling and Simulation in the Life Sciences
F11GS1	Project Part II
F11AN2*	Mathematical Biology B*
F11PG2*	Geometry*
F11MP2*	Partial Differential Equations*
F11ND2*	Numerical Analysis D*
F11PF2	Pure Mathematics F
F11AS2	Dynamical Systems
F11AL2	Applied Linear Algebra
F11SS2	Stochastic Simulation
F11DA2	Data Assimilation with Applications to Climate Change

Note: You cannot choose a course marked with a * in the above list if you have already taken its 4th year counterpart. In addition you cannot choose F11AL2 if you have previously taken F19NB2.

12.3 Fifth year Subject Information

More details of the above subjects including their syllabus and their learning outcomes and details of their method of assessment are given on the Mathematics departmental website. A detailed syllabus for each subject together with information about textbooks you may wish to read or buy will be handed out at the start of the term in which the subject is taught.

12.4 Classification of MMath Degree

The classification is based on examinations held in years 3, 4 and 5, weighted 25%, 37.5% and 37.5% respectively. The same external examiner system and examination board are used as for the Honours degrees, with the same lack of quotas on degree classifications etc.. MMath degrees are also classified like Honours degrees. The table below shows the average marks per paper using the 25%-37.5%-37.5% three year weighting used by the examiners *as a starting point* in the degree classification process.

Average Mark	Degree Classification
≥ 70%	1
60-69%	2.1
50-59%	2.2
40-49%	3
Below 40%	Honours Degree classification earned by the end of year 4

13.   Appendix

The Academic Registry is responsible for producing this Appendix to provide information and assistance on University policies and support services.

Please note that the following sections are standard sources of information provided to all students. Students are advised that the University will make changes to study programmes and progression requirements from time to time in accordance with strategic developments and it is therefore important to ensure that you check the most recent version of the handbook for up-to-date information.

Our Values

At Heriot-Watt, we have an established set of values that help up to nurture innovation and leadership and show our commitment to continuous development in all our activities. They are:

- Value and Respecting Everyone
- Pursuing Excellence
- Pride and Belonging
- Shaping the Future
- Outward Looking

Find out more about the Heriot-Watt values and what they mean to us.

Student Learning Code of Practice

The Student Learning Code of Practice outlines information about the University, its culture, policies, regulations and the expectation for students and staff. Please familiarise yourself with the relevant Code that is located within the Learning and Teaching Policy Bank.

University Policies and Support Services

Heriot-Watt University has a detailed set of rules that governs the operation and management of University business. These are referred to as Ordinances and these Ordinances are set by the Court, which is the governing body of the University. The Ordinances provide a regulatory framework for corporate governance. The University Ordinances are supported by University Regulations which provide a regulatory framework for the governance of academic-related matters which staff and student must adhere to for all academic matters. Wherever practicable, University policy is designed to include all members of the University's community, both within and outwith the main campus environments.

Read more about the University Policies, Ordinances and Regulations.

As part of your University enrolment, you signed the Student Declaration and agreed to abide by the regulations of the University and conform to its policies, procedures, ordinances and regulations that underpin the Ordinances and Regulations. During your time at Heriot-

Watt, the following policies, procedures, reference information and support services may be relevant and useful guidance for you.

Your Student Portal

The Student Portal brings together your services and relevant information in one place. Below is a summary of the services available to you via the portal:

- Office 365 suite: through single sign-on, all of your Office 365 services will be accessible through the Portal.
- Library: whether you want to search for books or view your loans & reservations, the Portal allows you to do this on your phone or desktop.
- Vision: your Portal will present you with announcements and tasks related to this course.
- Student Information: all university-level regulations and policies relating to your studies can be found on the Portal.
- Heriot-Watt PGR News: the Portal enables the University to promote events and experiences which will help you develop your skills.
- Personalised: You can hide, add and move tiles on your dashboard.

You can access your student portal here.

Quick Finder Guide to Academic and Support Services

The following provides an A-Z guide on the academic and support services available to you during your studies.

By clicking on the subject heading you will link to the relevant information in the student portal/website. Please ensure that you check the portal/web at the regular times throughout the year for the most up-to-date information:

A	• Academic Appeals
	• Academic Registry
	• Academic Skills Development
	• Accommodation Services:
	  ↓ Accommodation (Dubai Campus)
	  ↓ Accommodation (Edinburgh Campus)
	  ↓ Accommodation (Malaysia Campus)
	  ↓ Accommodation (Orkney Campus)
	  ↓ Accommodation (Scottish Borders Campus)
	• Alumni
	• Amendment to Enrolment
	• Assessment
	  ↓ Feedback on Assessment
	  ↓ Assessment Results
	• Assistive Software
	• Attendance & Absence

C	• Career Mentoring • Careers Service • Change of Address

	• Complaints • Counselling
D	• Data Protection (or email foi@hw.ac.uk) • Disability Support • Discipline • Discretionary Credits (please refer to the appropriate Regulation(s) for your level of study)

E	• Enrolment
	• Equality and Diversity Services
	• Erasmus+
	• Exchanges
	• Examinations & Examination Diets
	   ↳ Exam Diets
	   ↳ Exam Conduct and Identity Checks
	   ↳ Exams in Different Time Zones
	   ↳ Exam Timetables
	• Exit Awards
	• External Examiners Information

F	• Failing a Course
	• Faith and Belief:
	   ↳ Edinburgh Campus
	   ↳ Dubai Campus *(There are prayer rooms for students within the Dubai Campus)*
	   ↳ Malaysia Campus *(There are prayer rooms for students at the Malaysia Campus)*
	• Financial Services

G	• Go Global
	• Guide to Student Life/New Student Guide:
	   ↳ Edinburgh and Scottish Borders Campuses available here
	   ↳ Dubai Campus available here
	   ↳ Malaysia Campus available here
	• Graduate Attributes
	• Graduation

H	• Heriot-Watt Assessment & Progression System (HAPS) • Health and Wellbeing
I	• Ill Health & Mitigating Circumstances • Inter-Campus Transfer • Intermediate Awards • International Student Support • IT Skills & Resources
L	• Learning and Teaching Matters • Library Facilities

O	• Oriam (Scotland's Sport Performance Centre)
P	• People Finder • Periods of Study (please refer to the appropriate Regulation(s) for your level of study) • Personal Tutors • Plagiarism • Professional Development Planning
R	• Re-Assessment • Requirements for Awards (please refer to the appropriate Regulation(s) for your level of study) • Recognition of Prior Learning & Credit Transfer

S	• Sport and Exercise (Edinburgh campus)
	• Student Council (Dubai Campus)
	• Student Feedback
	• Student Fees & Charges
	• Student Policies and Guidance
	• Student Service Centre:
	   ↓ Dubai Campus (please contact dubaienquiries@hw.ac.uk)
	   ↓ Edinburgh Campus
	   ↓ Malaysia Campus
	• Student Services & Student Support Services
	• Study Spaces
	• Student Union (Edinburgh, Orkney and Scottish Borders Campuses)

T	• Teaching Timetables • Temporary Suspension of Studies • Thinking of Leaving
U	• Use of Calculators in Examinations • Use of Dictionaries in Examinations
V	• Visas & Immigration • Vision