Faculty of Engineering and Physical Sciences

- SCHOOL OF MATHEMATICS
- UNDERGRADUATE STUDENT HANDBOOK
- SESSION 2014 - 2015
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USING THIS HANDBOOK

This Handbook is intended for students following a degree programme offered by the School of Mathematics in the academic year 2014-2015. You should read the Handbook carefully at the start of the academic year and then refer to it at various times during the year.

The contents of this Handbook are correct at the time of writing. However, some changes may be unavoidable and so, if necessary, you will be notified of any corrections by e-mail. **It is very important that you check your university e-mail regularly, as information and reminders are often sent to your university e-mail address. (Note that university e-mail is normally sent to your university e-mail address, not to any personal e-mail addresses you might have.)** Information about individual lecture courses (for example, about the nature of the coursework or the dates of coursework tests) will be announced during lectures.

If you have any questions not covered in the following pages, then do see your Academic Advisor or Programme Director. If you require any further information, please call in and discuss it with the Senior Tutor of the School of Mathematics (Dr. Ruth Thomas, Room 1.108, Alan Turing Building).

Up-to-date information about the **University of Manchester** and its Schools and facilities can be found on the World Wide Web at:

http://www.manchester.ac.uk.

**My Manchester** provides quick and easy access to various University services, including your e-mail, your personal file storage space (your P-drive), University news and calendars, **Blackboard** (the University’s virtual learning environment) and the Crucial Guide (see below). You will need your University username and password to log into **My Manchester**. It can be found at the website:

https://my.manchester.ac.uk.

The **Crucial Guide** contains essential advice, information and guidance for students at the University of Manchester. It can be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/

You can also obtain the **Crucial Guide** by logging into **My Manchester**.

The **Student Charter**, developed jointly by the University and the Students’ Union, is an important part of how the University establishes and maintains clear mutual expectations for the experience of all students. It sets out what we can expect from each other as partners in a learning community. It can be found at the website:

http://www.studentnet.manchester.ac.uk/enhancing-my-experience/charter

Up-to-date information about the **School of Mathematics** can be found at the School of Mathematics Home Page:

http://www.maths.manchester.ac.uk
Essential information about your degree programme can be found at:
http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/

For example, this site contains course unit descriptions (syllabuses) for all Mathematics course units (lecture courses) offered by the School of Mathematics, as well as timetables, the electronic version of this Handbook and lots of other information about your degree programme.
1. GENERAL INFORMATION

1.1 THE SCHOOL OF MATHEMATICS

On 1 October 2004, UMIST and the Victoria University of Manchester (VUM) came together to form a single university, known as The University of Manchester. The UMIST Department of Mathematics merged with the VUM Department of Mathematics to form the School of Mathematics within the Faculty of Engineering and Physical Sciences (EPS).

The School of Mathematics has over 80 members of academic staff, all of whom are engaged in research ranging from pure to highly applicable Mathematics. The School with its strong national and international research reputation has a very broad base to cover all areas of modern teaching which is done by staff engaged in active research. The School thus provides a wide range of specialisations within the various degree programmes offered here. We work in close co-operation with other schools to provide our joint honours degree programmes and service teaching.

During the summer of 2007, the School of Mathematics moved to a new building, the Alan Turing Building, on Upper Brook Street, between Booth Street East and Brunswick Street. The Alan Turing Building contains excellent facilities for undergraduates. The building consists of three ‘fingers’. Two of these fingers are joined together by several bridges and between them is an atrium. The School of Mathematics occupies the bottom three floors of this part of the building and the atrium provides a common space for all of us as we move around the School. A single bridge at third floor level leads to the third finger and this bridge crosses Wilton Street.

The only way into and out of the building is by the entrance at the Upper Brook Street end of Wilton Street (on the southern side of finger 2, at the east end of the building). All the other doors leading out of the building, including the doors at the ends of the atrium, are fire doors and should only be used in case of emergency. The building is normally open on weekdays between 8.30 am and 5.30 pm. The opening hours may be extended during examination periods and the revised opening hours will be advertised nearer the time if appropriate.

The lifts may be found just inside the main entrance to the building. There are stairs at the east end of finger 2 and at the west end of finger 1. The toilets are located on every floor, at the east end of finger 2 and at the west end of finger 1.

The numbering system for rooms in the Alan Turing Building is of the form w.xyz, where w = G, 1 or 2 denotes the floor, x = 1 or 2 denotes the northern or central finger of the building, respectively, and yz is the room. For example, Room 1.108 is on the first floor of the northern finger (finger 1), while Room 1.209 is on the first floor of the central finger (finger 2). On the north side of the atrium, the room numbers run from west to east while on the south side of the atrium, the numbers run from east to west. Offices for academic staff and postgraduate students of the School of Mathematics are on the north
side of the atrium on the first floor and both sides of the atrium on the second floor.

All the facilities for undergraduates are on the ground floor of the Alan Turing Building. Most of the areas which are specifically for use by students of the School of Mathematics are at the west end of the atrium. At the far end (the west end) of the atrium is the **Mathematics Undergraduate Common Room** (Room G.001). Off to the left through the Undergraduate Common Room is the **Undergraduate Work Room** (G.211). Students often like to work together and we see the Work Room as the natural place where students can gather to do Mathematics. Notice boards providing course information are positioned in this room. In the Work Room, there are two areas where groups can work round a blackboard and these areas are used for some First Year feedback supervisions. When they are not in use for supervisions, they can be used as additional work space. When these areas are in use for supervisions, students are requested to work quietly in the Work Room so that they do not disturb the supervisions.

Off to the right through the Undergraduate Common Room is the **Undergraduate Quiet Study Room** (G.101). This is intended as a quiet area where students who wish to work on their own can do so without interruption. In this room, there is a collection of undergraduate text books which are available for reference. Please do not remove these text books from this room.

There are several **lecture rooms** and **seminar rooms** in the School, including

- Max Newman Lecture Room (G.107)
- Lighthill Lecture Room (G.205)
- Richardson Lecture Room (G.207)
- Mordell Lecture Room (G.209)
- Frank Adams Seminar Room 1 (large) and Frank Adams Seminar Room 2 (small after division) in 1.212
- Maurice Priestley Lecture Room (G.108)
- Small teaching rooms in G.109, G.110, G.113 and G.114.

The named rooms (like the building itself) are named after distinguished former members of the UMIST and Manchester Departments of Mathematics. There are no large teaching rooms in the Alan Turing Building and so many lectures and other classes particularly for first and second year students take place in other buildings.

The main **computing cluster** for undergraduate students in the School of Mathematics is located in Room G.105. This is on the right (north side) of the atrium, just before the Undergraduate Common Room, and is available for use by students on Mathematics programmes when the building is open, except when a class is being held in the room.

The **Teaching and Learning Office** is located in **Room G.202/G.204**. After the School website, this is the main source of information about undergraduate programmes in the School for current students. The entrance to this office is immediately to the right of the Reception. In the first instance, you should report to the Reception of the Alan Turing Building, which is just inside the main entrance to the building, rather than going directly to the Teaching and Learning Office. The staff in the Teaching and Learning Office can
answer many of the questions that students have, particularly about registration and examinations. Hard copies of documentation for undergraduates can be obtained from the Teaching and Learning Office (via the Reception), while coursework can be handed in at the Reception.

Members of the administrative staff of the School of Mathematics are also housed in the Admissions and External Affairs Office in Room 1.209 and in the Research Office in Room 1.135.

The students run an undergraduate society known as MATHSOC and this is housed in Room G.116. This office has a hatch in the atrium, opposite the main entrance to the Alan Turing Building. This counter is used by MATHSOC from time to time for the distribution of information about events and sometimes for booking for these events.

The remainder of the atrium is not part of the School of Mathematics but houses a café (Pi in the Sky) managed by the University catering department.

The Atrium Bridge above the Undergraduate Common Room is the common room for staff and postgraduate students. On occasions, academic staff may invite a student there to discuss some matter, but this area is not normally open to undergraduates. The research arm of the School is housed on the south side of the atrium at first floor level. Undergraduate students do not normally use these facilities and are not expected to use the corridor on the south side of the atrium at first floor level.

The Alan Turing Building does not only house the School of Mathematics. It also houses the Jodrell Bank Centre for Astrophysics on the top floor of the building above the School of Mathematics, and the Photon Science Institute in the third finger of the building across Wilton Street.

The School of Mathematics is managed by the Head of School on a three-to-five year term of office. The Head of School is

Prof. Peter W. Duck (Room 1.205a, Alan Turing Building).
Direct Tel: 0161 275 5831.
E-mail: Peter.Duck@manchester.ac.uk

The Head of School can be seen by making an appointment with his Personal Assistant, Mrs. Sue Tizini, Room 1.205, Alan Turing Building, Tel.: 0161 275 5881.

A student who needs help, advice or clarification on any academic or personal matter should seek help straight away. You can seek help from one of the following:

- Your Lecturers and Supervisors for problems related to their course units.
- Your Academic Advisor, who is the first point of contact for academic and personal matters.
- The Senior Tutor (Dr. Ruth M. Thomas, Room 1.108, Alan Turing Building) for further advice on academic and personal matters.
• Your **Programme Director** for advice on academic matters related to your degree programme. (A list of Programme Directors is given in Section 5.4 of this Handbook.)

• The **Director of Undergraduate Studies** (Dr. Louise A. Walker, Room 2.243, Alan Turing Building) and the **Director of Teaching** (Dr. Mark D. Coleman, Room 1.109, Alan Turing Building) for further advice on academic matters.

You can also approach the student support staff in the School’s **Teaching and Learning Office** (Room G.202/G.204, via the Reception in the Alan Turing Building).

An explanation of the roles of the Director of Undergraduate Studies, Director of Teaching, Senior Tutor, Programme Directors, Academic Advisors and administrative staff can be found in Section 5 of this Handbook. Full contact details for all members of staff of the School of Mathematics may be found in Appendix A of this Handbook.

### 1.2 DATES OF SEMESTERS FOR ACADEMIC YEAR 2014-2015

The academic year is divided into two Semesters, as follows.

**First Semester**  
15 September 2014 to 25 January 2015

Registration will take place during Welcome Week (the week beginning 15 September 2014).

Formal teaching in the School of Mathematics will normally begin on 22 September, although First Year students will have some special lectures (including a lecture on study skills) and computing classes on Wednesday, 17 September, Thursday, 18 September and Friday, 19 September. There will also be a meeting for all Second Year students during this week.

It is expected that teaching in the Manchester Business School and the School of Physics and Astronomy will also begin on 22 September. Other schools may adopt different arrangements.

The Christmas vacation will last from 13 December 2014 to 11 January 2015.

The revision/examination period will last from 12 January to 23 January 2015.

**Second Semester**  
26 January to 5 June 2015.

The Easter vacation will last from 21 March to 12 April 2015.

The revision/examination period will last from 14 May to 3 June
2015.

There are no classes or examinations on Bank Holidays (4 and 25 May).

**Mid-Semester Study Period** (First Semester)

There will be a Mid-Semester Study Period (Reading Week) in Week 6 (the week beginning 27 October 2014) and no Mathematics lectures will be held during this week. First and Second Year students will have coursework tests during this week, however.

It is expected that the Manchester Business School and the School of Physics and Astronomy will also have a Mid-Semester Study Period in Week 6 of Semester 1. Other schools may continue to lecture as normal during Week 6 of Semester 1. Students taking course units offered by these schools are expected to attend lectures in all twelve weeks of the Semester.

The Mid-Semester Study Period is not intended to be a holiday. Instead, it allows students to consolidate the material that has been covered during the first half of the Semester. First and Second Year students in the School of Mathematics will have coursework tests during the Mid-Semester Study Period and during the week(s) immediately following the Mid-Semester Study Period. Third and Fourth Year students in the School of Mathematics will either be set coursework assignments during the Mid-Semester Study Period or will have coursework tests during the week(s) immediately following the Mid-Semester Study Period.

**Revision Week** (Second Semester)

No lectures for course units offered by the School of Mathematics will be held in Week 12 of Semester 2 (the week beginning 4 May 2015). Some revision classes will be held during this week, but lecturers are asked not to introduce any new material during this week. The Manchester Business School also holds some revision lectures in Week 12 of Semester 2. Other schools may continue to lecture as normal during Week 12 of Semester 2. Students taking course units offered by these schools are expected to attend lectures in all twelve weeks of the Semester.

Further information about dates of semesters may be found at the website:

[http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/keydates/](http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/keydates/)

1.3 **SCHOOL COMMUNICATION**

The main Reception Area in the Alan Turing Building is just inside the main entrance to the building. It is open on Monday to Friday from 9am to 5pm. Students can leave messages for staff and postgraduate students at Reception, and can collect documentation and hand in coursework there. Information about office hours for individual members of staff can also be obtained from Reception.
You can also contact individual members of staff by e-mail. E-mail addresses for members of staff are given in Appendix A of this Handbook. Note, however, that members of staff are not in every day, as their research commitments frequently take them out of Manchester.

The School provides a single point telephone number 0161 275 5800 and a single point e-mail address mathematics@manchester.ac.uk for all enquiries. Staff from the School’s Teaching and Learning Office (including Reception) will contact students from the mathematics@manchester.ac.uk e-mail address in the first instance. We normally contact students via their University e-mail address or their preferred telephone number on My Manchester. Further information about the Teaching and Learning Office can be found in Section 5 of this Handbook.

School Newsletters are e-mailed to students fortnightly and important messages are displayed on the OneLan Screen in the foyer of the Alan Turing Building.

There are student notice boards in the Alan Turing Building on the walls inside the Mathematics Undergraduate Work Room (Room G.211). Information relevant to your studies is also displayed on the wall in the foyer of the Alan Turing Building.

1.4 HEALTH AND SAFETY INFORMATION

Primary medical care of students is provided by the National Health Service through individual registration of students with a local general practice of their choice.

The Student Counselling Service provides confidential, individual counselling for all work related difficulties, exam anxiety, stress and other personal problems. The service is located on the fifth floor of Crawford House, and can be contacted by dialling 0161 275 2864. The e-mail address is counselling.service@manchester.ac.uk. Further information can be found at the following website: http://www.studentnet.manchester.ac.uk/counselling

First Year students and other new entrants are required to complete a Health and Safety Induction Course. This course will be delivered online (through Blackboard, the University’s virtual learning environment) and will take students about 1 hour to complete. By completing this course, students become familiar with the Health and Safety Regulations. Moreover, the document is available for browsing throughout your degree programme. The Health and Safety Induction Course is part of the Induction Module MATHS0000.

The University’s Health and Safety web address is:

http://www.healthandsafety.manchester.ac.uk/

The University’s Health and Safety Policy is available via the website:
You should ensure that you are acquainted with the various Safety Regulations and, in particular, the correct procedure in the event of a fire.

**Fire Safety**

Fire is a ubiquitous hazard that affects everybody in the University. In general, the risk of a fire starting in an office environment where there is a no smoking policy is very low. However, everyone should make every effort to prevent it from occurring, for example, by reporting electrical defects, accumulations of combustible materials, or evidence of covert smoking.

The School procedure in the event of a fire or other emergency is that everybody is to leave the building promptly using the stairs and the nearest exit, and assemble at the fire alarm assembly area, which is near the George Kenyon Building. For those coming down a staircase, there is a fire door immediately at the bottom of the staircase. For those in the atrium, or in a room off the atrium, the fire doors are the glass doors at either end of the atrium. Following an evacuation, do not re-enter the building unless instructed it is safe to do so by Fire Service personnel or University security staff.

The alarm system is tested every Monday afternoon at about 13.50. There is no need to evacuate the building on these occasions, although reports of alarms that are too faint, or where the meaning of the alarm is not clear, should be made immediately to the School Safety Advisor (SSA).

Anybody who has difficulties responding in an emergency evacuation situation should discuss this with the SSA.

**Fire Information**

If the fire alarm sounds continuously, then the building must be evacuated immediately by the nearest exit. Lifts must **not** be used. The fire alarm system will cause all lifts to travel to the ground floor where the doors will open to allow any occupants to exit. The doors will then close and will remain in that state until overridden by the fire brigade, or until the system is reset.

Pulsed sounders mean there is no need to evacuate, but be prepared to evacuate should the sounders change to continuous. (Pulsed sounders are not a signal to evacuate, but serve as an indication of a fire alarm in the adjacent building.)

Anybody who would have difficulty leaving the building via the staircases during an evacuation should make their way to one of the landing areas in the stairwells, where there are marked refuge areas. An intercom station is located there that communicates with a station situated in the reception area. This will enable the location to be
established and assistance provided to exit the building. Please inform the SSA if you may need this type of assistance.

**Disabled Toilet Alarms**

All alarms are activated by a red pull-cord switch. This sounds a local alarm as well as illuminating a red light outside the cubicle. An alarm will also sound on a control panel in the reception area.

The alarm can be reset locally by pressing the RESET button in the cubicle.

**First Aid**

If you need to use the First Aid services listed below, please use the nearest one to where you are.

<table>
<thead>
<tr>
<th>Location</th>
<th>Arrangements</th>
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<tbody>
<tr>
<td>Oxford Road end of campus</td>
<td>From local first aiders (see table below).</td>
</tr>
<tr>
<td>In an emergency and outside working hours</td>
<td>Contact Security (telephone 69966)</td>
</tr>
</tbody>
</table>

**Health and Safety Staff (First Aiders)**

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>E-mail Address</th>
<th>External Number</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Safety Advisor (SSA)</td>
<td>Mr. Tony McDonald</td>
<td><a href="mailto:Tony.McDonald@manchester.ac.uk">Tony.McDonald@manchester.ac.uk</a></td>
<td>0161 275 6118</td>
<td>Kilburn, 2.93</td>
</tr>
<tr>
<td>First Aider</td>
<td>Mrs. Tracie McArthur</td>
<td><a href="mailto:Tracie.McArthur@manchester.ac.uk">Tracie.McArthur@manchester.ac.uk</a></td>
<td>0161 306 6415</td>
<td>Alan Turing, Teaching and Learning Office (G.202/G.204)</td>
</tr>
<tr>
<td>First Aider</td>
<td>Ms. Karen Morris</td>
<td><a href="mailto:Karen.Morris-2@manchester.ac.uk">Karen.Morris-2@manchester.ac.uk</a></td>
<td>0161 275 5797</td>
<td>Alan Turing, Teaching and Learning Office (G.202/G.204)</td>
</tr>
<tr>
<td>First Aider</td>
<td>Ms. Francesca Moss</td>
<td><a href="mailto:Francesca.Moss@manchester.ac.uk">Francesca.Moss@manchester.ac.uk</a></td>
<td>0161 275 5899</td>
<td>Alan Turing, Teaching and Learning Office (G.202/G.204)</td>
</tr>
<tr>
<td>First Aider</td>
<td>Mr. Sebastian Rees</td>
<td><a href="mailto:Sebastian.Rees@manchester.ac.uk">Sebastian.Rees@manchester.ac.uk</a></td>
<td>0161 275 5812</td>
<td>Alan Turing, 1.209</td>
</tr>
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First Aid boxes are situated at the Alan Turing Building Attendants’ Lodge.
Additional Occupational Health Services for Staff and Students are located at Waterloo Place, 182/184 Oxford Road (near the University Precinct Centre), Telephone 0161 275 2858. (First Aid is not provided here.)

If an ambulance is required, it can be summoned by dialling 999 from any telephone. Make sure you inform Security (69966) and the Building Attendants so that they can direct the medical personnel to the incident.

It should be noted that all university workplaces are designated as non-smoking.

Any damage to a building or other defects must be reported to the SSA immediately. If the SSA is not available, inform one of the Building Attendants.

Some students have disabilities which would hinder their escape from a building in case of emergency, while others may have hearing difficulties which impair their ability to notice emergency alarms. The School makes prior arrangements for the safety in emergency situations of any of its students with a disability and it is important that students know precisely what they should do, and with whose help in an emergency such as a fire evacuation. Students with disabilities should introduce themselves to the School Disability Coordinator (Mrs. Tracie McArthur, Room G.202/G.204, Alan Turing Building) and to the School Safety Advisor as soon as possible after arrival, and in any case within the first week, and confirm the arrangements that have been made for their safety.

If you have an accident when you are on University premises then you must inform the SSA or the staff in the Teaching and Learning Office (Room G.202/G.204, Alan Turing Building).
2. PROGRAMME OVERVIEW

2.1 UNDERGRADUATE DEGREE PROGRAMMES

Undergraduate students in the School of Mathematics take one of the following degree programmes:

- BSc in Mathematics (3 years)
- MMath in Mathematics (4 years)
- BSc in Mathematics and Statistics (3 years)
- MMath in Mathematics and Statistics (4 years)
- BSc in Mathematics with Financial Mathematics (3 years)
- MMath in Mathematics with Financial Mathematics (4 years)
- BSc in Actuarial Science and Mathematics (3 years)
- BSc in Mathematics with Business and Management (3 years)
- BSc in Mathematics with Finance (3 years)
- BSc in Mathematics with a Modern Language (4 years)
- BSc in Mathematics and Philosophy (3 years)

The first seven programmes listed above are single honours programmes, since they are based on course units within a single school (Mathematics). (Note that the BSc programme in Mathematics and Statistics also has a pathway in Finance in the second and third years.) The other programmes are joint honours programmes, based on study in two schools. In general, Mathematics and indicates an approximately equal balance, whereas Mathematics with indicates that Mathematics is the major subject. Each joint honours programme has a ‘home school’. The School of Mathematics is the home school for each of the joint honours programmes listed above.

In addition to the programmes listed above, we offer the following joint honours degree programmes, for which the other school is the home school and fulfils some of the functions described in this Handbook, such as producing examination results. However, much of the information contained in this Handbook is useful for students on these joint honours programmes too.

- BSc in Computer Science and Mathematics (3 years)
- BSc in Computer Science and Mathematics with Industrial Experience (4 years)
- BSc in Mathematics and Physics (3 years)
- MMath&Phys in Mathematics and Physics (4 years)
## 2.2 FIRST YEAR PROGRAMME STRUCTURE

The School of Mathematics will offer the following Level 1 (First Year) Course Units in 2014-2015:

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>CREDITS</th>
<th>SEMESTER</th>
<th>LECTURER(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH10001</td>
<td>Mathematical Workshop</td>
<td>10</td>
<td>First</td>
<td>Dr. Dean</td>
</tr>
<tr>
<td>MATH10101</td>
<td>Sets, Numbers and Functions A(^{(1)})</td>
<td>20</td>
<td>First</td>
<td>Prof. Ray and Dr. Coleman</td>
</tr>
<tr>
<td>MATH10111</td>
<td>Sets, Numbers and Functions B(^{(1)})</td>
<td>15</td>
<td>First</td>
<td>Dr. Eaton</td>
</tr>
<tr>
<td>MATH10121</td>
<td>Calculus and Vectors A(^{(1)})</td>
<td>20</td>
<td>First</td>
<td>Prof. Jensen</td>
</tr>
<tr>
<td>MATH10131</td>
<td>Calculus and Vectors B(^{(1)})</td>
<td>15</td>
<td>First</td>
<td>Prof. Fedotov</td>
</tr>
<tr>
<td>MATH10141</td>
<td>Probability 1</td>
<td>10</td>
<td>First</td>
<td>Dr. Bagley</td>
</tr>
<tr>
<td>MATH10951</td>
<td>Financial Mathematics for Actuarial Science 1(^{(1)})</td>
<td>10</td>
<td>First</td>
<td>Dr. Dean</td>
</tr>
<tr>
<td>MATH10202</td>
<td>Linear Algebra A(^{(1)})</td>
<td>20</td>
<td>Second</td>
<td>Prof. Rowley and Dr. Walker</td>
</tr>
<tr>
<td>MATH10212</td>
<td>Linear Algebra B(^{(1)})</td>
<td>15</td>
<td>Second</td>
<td>Prof. Borovik</td>
</tr>
<tr>
<td>MATH10222</td>
<td>Calculus and Applications A(^{(1)})</td>
<td>20</td>
<td>Second</td>
<td>Prof. Heil and Dr. Hewitt</td>
</tr>
<tr>
<td>MATH11222</td>
<td>Calculus and Applications C (first half of MATH10222(^{(2)}))</td>
<td>10</td>
<td>Second</td>
<td>Prof. Heil</td>
</tr>
<tr>
<td>MATH10232</td>
<td>Calculus and Applications B(^{(2)})</td>
<td>15</td>
<td>Second</td>
<td>Dr. Daou</td>
</tr>
<tr>
<td>MATH10242</td>
<td>Sequences and Series</td>
<td>10</td>
<td>Second</td>
<td>Prof. Stafford</td>
</tr>
<tr>
<td>MATH10282</td>
<td>Introduction to Statistics</td>
<td>10</td>
<td>Second</td>
<td>Dr. Foster</td>
</tr>
</tbody>
</table>

\(^{(1)}\) The course units MATH10101, MATH10111, MATH10121, MATH10131, MATH10202, MATH10212, MATH10222 and MATH10232 are not compensatable. This means that students have to achieve a mark of at least 40% for these course units.

\(^{(2)}\) The course unit MATH11222 (Calculus and Applications C) is only offered to students on the Mathematics and Physics degree programme.

\(^{(1)}\) The course unit MATH10951 (Financial Mathematics for Actuarial Science 1) is compulsory for the Actuarial Science and Mathematics degree programme. It is **not** offered to students on any other degree programme.
They will not be able to carry these course units in the Second Year. Further details are given in Section 3.3 of this Handbook.

Syllabuses (course unit descriptions) for each of the course units listed above may be found at the following website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/course-units-offered/

The timetable for Mathematics course units may be found at the following website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/timetables/

In the First Year, all Mathematics course units are compulsory. The following table shows which course units are offered to each degree programme.

<table>
<thead>
<tr>
<th>PROGRAMME</th>
<th>SEMESTER 1</th>
<th>SEMESTER 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMath/BSc in Mathematics</td>
<td>MATH10001, MATH10101, MATH10121, MATH10141</td>
<td>MATH10202, MATH10222, MATH10242, MATH10282</td>
</tr>
<tr>
<td>MMath/BSc in Mathematics and Statistics</td>
<td>MATH10001, MATH10101, MATH10121, MATH10141</td>
<td>MATH10202, MATH10222, MATH10242, MATH10282</td>
</tr>
<tr>
<td>MMath/BSc in Mathematics with Financial Maths</td>
<td>MATH10001, MATH10101, MATH10121, MATH10141</td>
<td>MATH10202, MATH10222, MATH10242, MATH10282</td>
</tr>
<tr>
<td>BSc in Actuarial Science and Mathematics 1,2</td>
<td>MATH10111, MATH10131, MATH10141, MATH10951 and either Microeconomic</td>
<td>MATH10212, MATH10232, MATH10242, MATH10282 and either Macroeconomic</td>
</tr>
<tr>
<td></td>
<td>Principles (ECON10041, 10 credits) for those without A-Level Economics or</td>
<td>Principles (ECON10042, 10 credits) for those without A-Level Economics or</td>
</tr>
<tr>
<td></td>
<td>The UK Economy – Microeconomics (ECON10081, 10 credits) for those with</td>
<td>The UK Economy – Macroeconomics (ECON10082, 10 credits) for those with</td>
</tr>
<tr>
<td></td>
<td>A-Level Economics</td>
<td>A-Level Economics</td>
</tr>
<tr>
<td>BSc in Mathematics with Business and</td>
<td>MATH10111, MATH10131, MATH10141, Fundamentals of Management (BMAN10011,</td>
<td>MATH10212, MATH10232, MATH10242, MATH10282 and either Fundamentals of</td>
</tr>
<tr>
<td>Management 3,4</td>
<td>10 credits), Transferable Management and Study Skills (BMAN10721, 10</td>
<td>Finance (BMAN10552, 10 credits) or Business Economics (BMAN10612, 10</td>
</tr>
<tr>
<td></td>
<td>credits)</td>
<td>credits)</td>
</tr>
<tr>
<td>PROGRAMME</td>
<td>SEMESTER 1</td>
<td>SEMESTER 2</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>BSc in Mathematics with Finance ³</td>
<td>MATH10001, MATH10111, MATH10131, MATH10141, Fundamentals of Financial</td>
<td>MATH10212, MATH10232, MATH10242, MATH10282, Financial Decision Making</td>
</tr>
<tr>
<td></td>
<td>Reporting (BMAN10621(B), 10 credits)</td>
<td>(BMAN10522, 10 credits)</td>
</tr>
<tr>
<td>BSc in Mathematics with a Modern Language ⁵</td>
<td>MATH10111, MATH10131, MATH10141,</td>
<td>MATH10212, MATH10232, MATH10282,</td>
</tr>
<tr>
<td></td>
<td>a 10-credit Level 1 course unit in your chosen language, and a 10-credit</td>
<td>a 10-credit Level 1 course unit in your chosen language, and a 10-credit</td>
</tr>
<tr>
<td></td>
<td>language option</td>
<td>language option</td>
</tr>
<tr>
<td>BSc in Mathematics and Philosophy ¹</td>
<td>MATH10111, MATH10131, Values We Live By (PHIL10021, 20 credits)</td>
<td>MATH10212, MATH10232, Discovering Reality (PHIL10622, 20 credits)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mind and World (PHIL10632, 20 credits)</td>
</tr>
<tr>
<td>BSc in Computer Science and Mathematics (with or without Industrial Experience) ⁶</td>
<td>MATH10111, MATH10131</td>
<td>MATH10212, MATH10232</td>
</tr>
<tr>
<td>(Mathematics course units only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMath&amp;Phys/BSc in Mathematics and Physics ⁶</td>
<td>MATH10111, MATH10121</td>
<td>MATH10212, MATH11222</td>
</tr>
<tr>
<td>(Mathematics course units only)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Syllabuses (course unit descriptions) of Economics and Philosophy course units offered by the School of Social Sciences are available on the Faculty of Humanities’ Course Unit Database, which can be found at the website:

http://courses.humanities.manchester.ac.uk/undergraduate

² If an Actuarial Science and Mathematics student has an uncompensatable fail in any of MATH10951, ECON10041 or ECON10081, and ECON10042 or ECON10082, then they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Second Year. They will not be able to carry these course units in the Second Year. (See Section 3.3 for further details.)
3 Syllabuses (course unit descriptions) for course units offered by the Manchester Business School may be found at the website:

http://courses.humanities.manchester.ac.uk/undergraduate

Note that students normally need to achieve a mark of at least 40% in the pre-requisites for Level 2 and Level 3 BMAN course units. This means, for example, that Mathematics with Finance students who do not achieve a mark of at least 40% in BMAN10522 will have to transfer to an appropriate Single Honours Mathematics degree programme for the Second Year.

4 BMAN10552 is a pre-requisite for two second year options, namely BMAN21011 and BMAN23000(A). Students need to achieve a mark of at least 60% at the first attempt in BMAN10552 if they are to take either BMAN21011 or BMAN23000(A) in the Second Year.

5 Full information about the language course units that are offered may be obtained from your Programme Director. Syllabuses (course unit descriptions) of language course units offered by the School of Arts, Languages and Cultures may be found at the website:

http://courses.humanities.manchester.ac.uk/undergraduate

Students with an A-level in their chosen language take language course units worth a total of 20 credits in each semester. Students who have not studied their chosen language previously take language course units worth a total of 30 credits in each semester. To make this possible, the Mathematics content of Year 1 is reduced to 60 credits by omitting both MATH10141 and MATH10282.

Students must satisfy the language requirement. In general, this means that students have to achieve a mark of at least 40% in the compulsory Level 1 language course unit(s). Otherwise, they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Second Year.

6 Only the Mathematics course units are specified here. Full details of your programme structure will be given to you by your home school.

2.3 SECOND YEAR PROGRAMME STRUCTURE

In the Second Year, students on an Honours Degree Programme take course units worth 120 credits in total. Honours degree students are recommended to take 60 credits in each semester. Each degree programme has some compulsory course units and full details of these are given later in this section. Details of the options which are offered to each degree programme are also given later in this section.
Some Second Semester course units have pre-requisites from the First Semester and so students who have not taken the full range of First Semester course units must take this into account when choosing their Second Semester options.

When choosing your options, it is important to consider the pre-requisites for course units you may want to take in subsequent years of your programme and ensure that the options you choose in the Second Year will give you a wide choice of options in subsequent years. Section 2.4 of this Handbook lists the Level 3 and Level 4 course units that will be offered by the School of Mathematics in 2014-2015. The course units offered in 2015-2016 and 2016-2017 are likely to be similar to those offered in 2014-2015. Syllabuses (course unit descriptions) for these course units, giving their pre-requisites, are available on the School website:

[http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/course-units-offered/](http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/course-units-offered/)

When choosing your options, you must ensure that there are no timetable clashes.

The School of Mathematics will offer the following Level 2 (Second Year) Course Units in 2014-2015.

**TABLE 2.3.1. LEVEL 2 COURSE UNITS FOR 2014-2015**

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>CREDITS</th>
<th>SEMESTER</th>
<th>LECTURER(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH20101</td>
<td>Real and Complex Analysis(*)</td>
<td>20</td>
<td>First</td>
<td>Dr. Coleman and Dr. Walkden</td>
</tr>
<tr>
<td>MATH20111</td>
<td>Real Analysis(**)</td>
<td>10</td>
<td>First</td>
<td>Dr. Tressl</td>
</tr>
<tr>
<td>MATH20201</td>
<td>Algebraic Structures 1</td>
<td>10</td>
<td>First</td>
<td>Prof. Stöhr</td>
</tr>
<tr>
<td>MATH20401</td>
<td>Partial Differential Equations and Vector Calculus A(†)</td>
<td>20</td>
<td>First</td>
<td>Dr. Assier and Dr. Cotter</td>
</tr>
<tr>
<td>MATH20411</td>
<td>Partial Differential Equations and Vector Calculus B(†)</td>
<td>10</td>
<td>First</td>
<td>Dr. Powell</td>
</tr>
<tr>
<td>MATH20701</td>
<td>Probability 2 (#)</td>
<td>10</td>
<td>First</td>
<td>Dr. Denisov</td>
</tr>
<tr>
<td>MATH20951</td>
<td>Financial Mathematics for Actuarial Science 2 (##)</td>
<td>10</td>
<td>First</td>
<td>Prof. Glendinning</td>
</tr>
<tr>
<td>MATH20122</td>
<td>Metric Spaces</td>
<td>10</td>
<td>Second</td>
<td>Prof. Ray</td>
</tr>
<tr>
<td>MATH20132</td>
<td>Calculus of Several Variables</td>
<td>10</td>
<td>Second</td>
<td>Prof. Eccles</td>
</tr>
<tr>
<td>MATH20142</td>
<td>Complex Analysis(**)</td>
<td>10</td>
<td>Second</td>
<td>Dr. Sidorov</td>
</tr>
<tr>
<td>CODE</td>
<td>TITLE</td>
<td>CREDITS</td>
<td>SEMESTER</td>
<td>LECTURER(S)</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------</td>
<td>---------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>MATH20212</td>
<td>Algebraic Structures 2</td>
<td>10</td>
<td>Second</td>
<td>Dr. Walker</td>
</tr>
<tr>
<td>MATH20222</td>
<td>Introduction to Geometry</td>
<td>10</td>
<td>Second</td>
<td>Dr. Khudaverdyan</td>
</tr>
<tr>
<td>MATH20302</td>
<td>Propositional Logic</td>
<td>10</td>
<td>Second</td>
<td>Prof. Prest</td>
</tr>
<tr>
<td>MATH20502</td>
<td>Fluid Mechanics</td>
<td>10</td>
<td>Second</td>
<td>Dr. Simon</td>
</tr>
<tr>
<td>MATH20512</td>
<td>Classical Mechanics</td>
<td>10</td>
<td>Second</td>
<td>Dr. Montaldi</td>
</tr>
<tr>
<td>MATH20522</td>
<td>Principles of Mathematical Modelling(*)</td>
<td>10</td>
<td>Second</td>
<td>Dr. Evatt</td>
</tr>
<tr>
<td>MATH20602</td>
<td>Numerical Analysis 1</td>
<td>10</td>
<td>Second</td>
<td>Dr. Lotz</td>
</tr>
<tr>
<td>MATH20622</td>
<td>Programming with Python (††)</td>
<td>10</td>
<td>Second</td>
<td>Dr. Sego</td>
</tr>
<tr>
<td>MATH20712</td>
<td>Random Models</td>
<td>10</td>
<td>Second</td>
<td>Dr. Jin</td>
</tr>
<tr>
<td>MATH20722</td>
<td>Foundations of Modern Probability</td>
<td>10</td>
<td>Second</td>
<td>Dr. Bagley</td>
</tr>
<tr>
<td>MATH20802</td>
<td>Statistical Methods</td>
<td>10</td>
<td>Second</td>
<td>Dr. Nadarajah</td>
</tr>
<tr>
<td>MATH20812</td>
<td>Practical Statistics</td>
<td>10</td>
<td>Second</td>
<td>Dr. Boshnakov</td>
</tr>
<tr>
<td>MATH20902</td>
<td>Discrete Mathematics</td>
<td>10</td>
<td>Second</td>
<td>Dr. Muldoon</td>
</tr>
<tr>
<td>MATH20912</td>
<td>Introduction to Financial Mathematics</td>
<td>10</td>
<td>Second</td>
<td>Dr. P. Johnson</td>
</tr>
<tr>
<td>MATH20962</td>
<td>Contingencies 1 (##)</td>
<td>10</td>
<td>Second</td>
<td>Mr. Ferns</td>
</tr>
<tr>
<td>MATH20972</td>
<td>Actuarial Insurance (###)</td>
<td>10</td>
<td>Second</td>
<td>Prof. Peskir</td>
</tr>
</tbody>
</table>

(*) The course unit MATH20101 (Real and Complex Analysis) is only offered to students who took MATH10242 (Sequences and Series) in the First Year, since MATH10242 is a pre-requisite for MATH20101.

(**) The course units MATH20111 (Real Analysis) and MATH20142 (Complex Analysis) are not offered to students who take MATH20101 (Real and Complex Analysis) in Semester 1.

(†) The course unit MATH20411 (Partial Differential Equations and Vector Calculus B) is not offered to students who take MATH20401 (Partial Differential Equations and Vector Calculus A).
There is an upper limit on the number of students who can take MATH20522 (Principles of Mathematical Modelling) and MATH20622 (Programming with Python), because of the size of the computer cluster in the Alan Turing Building.

With the approval of the Senior Tutor, students who did not take MATH10141 (Probability 1) in the First Year may still be able to take MATH20701 (Probability 2) in the Second Year, provided they took at least two Statistics units at A-Level (or other qualifications to an equivalent level). However, such students may find that MATH20701 involves some extra work. Instead, with the approval of the Senior Tutor, they may be able to take MATH10141 (Probability 1) in the Second Year, provided there is not a timetable clash.

The course units MATH20951 (Financial Mathematics for Actuarial Science 2), MATH20962 (Contingencies 1) and MATH20972 (Actuarial Insurance) are compulsory for the Actuarial Science and Mathematics degree programme. They are not offered to students on any other degree programme.

Syllabuses (course unit descriptions) for each of the course units listed above may be found at the following website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/course-units-offered/

There are restrictions on certain combinations of Second Semester course units because of timetable constraints. Full details are given in the following table. Course units in each group (A, B, C etc.) are likely to be timetabled together, and so only one course unit from each group can be selected. We try to ensure (if possible) that course units in different groups do not clash. However, the School of Mathematics cannot guarantee that these will be the only timetable clashes. In particular, it is likely that not all course units will be available for Joint Honours students because of timetable constraints.

<table>
<thead>
<tr>
<th></th>
<th>Metric Spaces (MATH20122)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Algebraic Structures 2 (MATH20212)</td>
</tr>
<tr>
<td>C</td>
<td>Fluid Mechanics (MATH20502)</td>
</tr>
<tr>
<td>D</td>
<td>Complex Analysis&lt;sup&gt;(*)&lt;/sup&gt; (MATH20142)</td>
</tr>
<tr>
<td>E</td>
<td>Numerical Analysis 1 (MATH20602)</td>
</tr>
<tr>
<td>F</td>
<td>Random Models (MATH20712)</td>
</tr>
<tr>
<td>G</td>
<td>Calculus of Several Variables (MATH20132)</td>
</tr>
<tr>
<td>H</td>
<td>Introduction to Financial Mathematics (MATH20912)</td>
</tr>
<tr>
<td>I</td>
<td>Discrete Mathematics (MATH20902)</td>
</tr>
<tr>
<td>J</td>
<td>Classical Mechanics (MATH20512)</td>
</tr>
<tr>
<td>K</td>
<td>Statistical Methods (MATH20802)</td>
</tr>
</tbody>
</table>

<sup>(††)</sup>
The course unit MATH20142 (Complex Analysis) is only offered to students who have **not** taken MATH20101 (Real and Complex Analysis) in Semester 1.

The course units MATH20962 (Contingencies 1) and MATH20972 (Actuarial Insurance) are compulsory for the Actuarial Science and Mathematics degree programme. They are **not** offered to students on any other degree programme. They have not been included in the above table but, according to the provisional timetable, MATH20962 may clash with MATH20222, MATH20302, MATH20602 and MATH20712, while MATH20972 may clash with MATH20212.

The timetable for Mathematics course units may be found at the following website:

[http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/timetables/](http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/timetables/)

**Outside Course Units**

Students on a Single Honours Mathematics degree programme with a particular interest in a subject other than Mathematics may wish to consider (in consultation with their Academic Advisor) taking course units in another School (up to a maximum of 20 credits) in place of Mathematics course units. These are known as outside course units. Indeed, students on the Mathematics with Financial Mathematics degree programme are required to take outside course units. (Students on the Mathematics with Financial Mathematics degree programme may not take any outside course units other than the ones that they are required to take. The only exception to this rule is UCOL20022/UCOL20032 (Leadership in Action), as discussed below.) Further details are given separately for each degree programme below. **Note that Second Year students on a Single Honours Mathematics degree programme must take at least 100 credits of Level 2 Mathematics (MATH) course units.**

If you wish to take a 20-credit, full-year outside course unit (or a pair of 10-credit outside course units, one in each semester), then this can be made possible either by taking course units worth 70 credits in Semester 1 and 50 credits in Semester 2, or (exceptionally) by delaying one of the 10-credit core course units (either MATH20201 or MATH20701) until the Third Year. Note that this requires permission from the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building).

Single Honours students who wish to take a 20-credit, full year, Level 1 course unit in, for example, a language, and who may wish to continue taking the subject at Level 2 in the Third Year, should take course units worth a total of 70 credits in the First Semester of the Second Year (all the compulsory Mathematics course units, plus the outside course unit) and then take course units worth 50 credits in the Second Semester (including the outside course unit), as it is not possible to take more than 20 credits at Level 2 in the Third Year.

The University Language Centre offers course units at various levels in a wide range of foreign languages such as French, German, Spanish, Japanese and Chinese. Further
information can be found at the website:

http://www.ulc.manchester.ac.uk/languages/leap/

The following course units are also approved outside course units. They are particularly appropriate for students on Mathematics programmes.

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>CREDITS</th>
<th>SEMESTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMAN10552</td>
<td>Fundamentals of Finance</td>
<td>10</td>
<td>Second</td>
</tr>
<tr>
<td>BMAN10621(B)</td>
<td>Fundamentals of Financial Reporting</td>
<td>10</td>
<td>First</td>
</tr>
<tr>
<td>BMAN10632</td>
<td>Fundamentals of Management Accounting</td>
<td>10</td>
<td>Second</td>
</tr>
<tr>
<td>CARS20042</td>
<td>Career Management Skills</td>
<td>10</td>
<td>Second</td>
</tr>
<tr>
<td>EART20002</td>
<td>Manchester Sustainable Cities Project</td>
<td>10</td>
<td>Second</td>
</tr>
<tr>
<td>ECON10041</td>
<td>Microeconomic Principles</td>
<td>10</td>
<td>First</td>
</tr>
<tr>
<td>ECON10042</td>
<td>Macroeconomic Principles</td>
<td>10</td>
<td>Second</td>
</tr>
<tr>
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<td>The Information Age</td>
<td>10</td>
<td>Second</td>
</tr>
<tr>
<td>PHYS20101</td>
<td>Introduction to Quantum Mechanics</td>
<td>10</td>
<td>First</td>
</tr>
<tr>
<td>UCOL20020</td>
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</tr>
<tr>
<td>UCOL20022</td>
<td>Leadership in Action</td>
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<td>Second</td>
</tr>
<tr>
<td>UCOL20032</td>
<td>Leadership in Action (Online Unit)</td>
<td>10</td>
<td>Second</td>
</tr>
</tbody>
</table>

Other outside course units require the approval of the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building). You must complete the appropriate form available from the Senior Tutor or from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/undergraduateforms/

and then submit the form in person to the Senior Tutor.

Information about outside course units should be obtained from the outside School (via their website in the first instance). Websites for the approved outside course units listed in the table above are given at the end of this section. Students normally need to register with the School concerned.

The University College for Interdisciplinary Learning offers some outside course units. Full details may be found at the website:

http://www.college.manchester.ac.uk/courses

Note that the University College course units are not approved outside course units unless they are also listed in the table above. If you want to take a University College course unit that is not listed in the above table, then you need the approval of the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building).

If you wish to select an outside course unit from the Manchester Business School, you
can only choose BMAN course units that have no programme restrictions, such as the
course units that are listed under Business and Management for all Programmes (BMaP)
at the following web address:

http://courses.humanities.manchester.ac.uk/undergraduate/modulelist.html?department=56

You will not be able to take any other BMAN course unit unless it is specifically listed as
part of your programme structure. (Note that BMAN course units which are not listed in
the above table need the approval of the Senior Tutor, Dr. R. M. Thomas, Room 1.108,
Alan Turing Building.)

It is not normally possible for Joint Honours students to substitute outside course units
for Mathematics course units. However, the course unit UCOL20022/UCOL20032
(Leadership in Action) may be selected in place of a Mathematics option by Second Year
students on Mathematics with programmes. This includes students on the Mathematics
with Financial Mathematics degree programme. The 20-credit version of Leadership in
Action, UCOL20020, may only be taken by those Single Honours students who are
allowed to take outside course units.

Students on Mathematics with programmes may be allowed to select one course unit
offered by the University College in place of a Mathematics option (but not in addition to
UCOL20022/UCOL20032). However, this needs the approval of the Senior Tutor (Dr.

Single Honours Mathematics Programmes

MMath/BSc in Mathematics

In Semester 1, MATH20101, MATH20201, MATH20401 and MATH20701 are
compulsory. In Semester 2, students take Level 2 Mathematics options worth a total of
60 credits, chosen from Table 2.3.1, giving a total of 120 credits. You may take outside
course units up to a maximum of 20 credits in place of Mathematics course units. If you
wish to take a 20-credit, full-year outside course unit (or a pair of 10-credit outside course
units, one in each semester), then this can be made possible either by taking course units
worth 70 credits in Semester 1 and 50 credits in Semester 2, or by delaying one of the 10-
credit core course units (either MATH20201 or MATH20701) until the Third Year. Note
that this requires permission from the Senior Tutor.

MMath/BSc in Mathematics and Statistics

In Semester 1, MATH20101, MATH20201, MATH20401 and MATH20701 are
compulsory while in Semester 2, MATH20712, MATH20802 and MATH20812 are
compulsory. In Semester 2, students also take Level 2 Mathematics options worth a total
of 30 credits, chosen from Table 2.3.1, giving a total of 120 credits. You may take
outside course units up to a maximum of 20 credits in place of Mathematics course units.
If you wish to take a 20-credit, full-year outside course unit (or a pair of 10-credit outside
course units, one in each semester), then this can be made possible either by taking course units worth 70 credits in Semester 1 and 50 credits in Semester 2, or by delaying the 10-credit core course unit MATH20201 until the Third Year. **Note** that this requires permission from the Senior Tutor.

**BSc in Mathematics and Statistics (with a pathway in Finance)**

In Semester 1, MATH20101, MATH20201, MATH20401 and MATH20701 are compulsory while in Semester 2, MATH20712, MATH20802 and MATH20912 are compulsory. In Semester 2, students also take Level 2 Mathematics options worth a total of 30 credits, chosen from Table 2.3.1, giving a total of 120 credits. You may take outside course units up to a maximum of 20 credits in place of Mathematics course units. If you wish to take a 20-credit, full-year outside course unit (or a pair of 10-credit outside course units, one in each semester), then this can be made possible either by taking course units worth 70 credits in Semester 1 and 50 credits in Semester 2, or by delaying the 10-credit core course unit MATH20201 until the Third Year. **Note** that this requires permission from the Senior Tutor.

The outside course units BMAN10552 (Fundamentals of Finance, a 10-credit course unit in Semester 2), BMAN10621(B) (Fundamentals of Financial Reporting, a 10-credit course unit in Semester 1) and BMAN10632 (Fundamentals of Management Accounting, a 10-credit course unit in Semester 2) are particularly appropriate options for this pathway. (Note that you can take at most 20 credits of outside course units, however.) BMAN10621(B) is a pre-requisite for BMAN10632. If you choose to take BMAN10621(B), you are strongly advised to take MATH20201 in Semester 1 of Year 2, even though it means taking course units worth a total of 70 credits in Semester 1 and 50 credits in Semester 2. Otherwise, you will need to take MATH20201 in Year 3 and then you will not be able to do any of the 20-credit Finance course units in the Third Year (BMAN21020, BMAN21040 and BMAN23000).

Note that students need to achieve at least 60% at the first attempt in BMAN10552 or at least 40% at the first attempt in either BMAN10621(B) or BMAN10632 if they are to take those Finance course units in the Third Year for which BMAN10552 or BMAN10621(B) or BMAN10632 are pre-requisites.

**MMath/BSc in Mathematics with Financial Mathematics**

In Semester 1, MATH20101, MATH20401, MATH20701 and BMAN10621(B) (Fundamentals of Financial Reporting, a 10-credit course unit) are compulsory while in Semester 2, MATH20912 and BMAN10632 (Fundamentals of Management Accounting, a 10-credit course unit) are compulsory. Students also take Level 2 Mathematics options worth a total of 40 credits, chosen from Table 2.3.1, giving a total of 120 credits.

You are strongly advised to take MATH20201 in Semester 1 of Year 2, even though it means taking course units worth a total of 70 credits in Semester 1 and 50 credits in Semester 2. Otherwise, you will need to take MATH20201 in Year 3 and then you will not be able to do either of the 20-credit Finance course units in the Third Year.
Note that students need to achieve at least 40% in either BMAN10621(B) or BMAN10632 if they are to take those Finance course units in the Third Year for which BMAN10621(B) or BMAN10632 are pre-requisites.

Students are not allowed to take any other outside course units apart from BMAN10621 and BMAN10632, which are compulsory. The only exception to this rule is that the course unit UCOL20022/UCOL20032 (Leadership in Action) may be selected in place of a Mathematics option in Semester 2.

**BSc in Actuarial Science and Mathematics**

In Semester 1, MATH20101, MATH20411, MATH20701 and MATH20951 are compulsory while in Semester 2, MATH20802, MATH20962 and MATH20972 are compulsory. Students also take an optional course unit worth 10 credits in Semester 1 and optional course units worth 30 credits in Semester 2. Students can take outside course units worth at most 20 credits.

Particularly appropriate options may be MATH20201, MATH20812, MATH20912, BMAN10621(B) (Fundamentals of Financial Reporting, a 10-credit course unit in Semester 1), BMAN20242 (Introduction to Corporate Finance and Financial Instruments, a 10-credit course unit in Semester 2), UCOL20021 (Leadership in Action, a 10-credit course unit in Semester 1) and UCOL20022 (Leadership in Action, a 10-credit course unit in Semester 2).

Note that BMAN10621(B) is a pre-requisite for BMAN20242. Students need to achieve at least 40% at the first attempt in BMAN10621(B) if they are to take BMAN20242.

Note also that BMAN10621(B) and BMAN20242 are linked to one of the Core Technical subjects (CT2). If students choose to take these two course units, then the marks will be included in the Actuarial Average and if this is satisfactory they will be recommended for exemption from seven CT units. Full details of the exemption arrangements are given in Section 2.6 of this Handbook.

Note that students need to achieve at least 40% at the first attempt in BMAN20242 if they are to take those Finance course units in the Third Year for which BMAN20242 is a pre-requisite.

**Note that BMAN10621(B), BMAN20242, UCOL20021 and UCOL20022 are all outside course units. You may choose at most two of these course units in the second year.**

If an Actuarial Science and Mathematics student has an uncompensatable fail in any of MATH20951, MATH20802, MATH20962 and MATH20972, then they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Third Year. They will not be able to carry these course units in the Third Year. (See Section 3.3 for further details.)
**Joint Honours Mathematics Programmes**

**BSc in Mathematics with Business and Management**

In Semester 1, MATH20101, MATH20201, MATH20411 and MATH20701 are compulsory while in Semester 2, MATH20902 is compulsory. In Semester 2, students also take Level 2 Mathematics options worth a total of 30 credits, chosen from Table 2.3.1. In addition, students take Business and Management options worth a total of 30 credits, giving a total of 120 credits for the year. The following Business and Management course units are offered as options:

**Semester 1**

Each of the following course units is worth 10 credits:

- BMAN10621(B) Fundamentals of Financial Reporting
- BMAN20821 New Product Development and Innovation
- BMAN21011 Financial Markets and Institutions (*)

**Semester 2**

Each of the following course units is worth 10 credits:

- BMAN20802 Science, Technology and Society
- BMAN20822 Decision Modelling for Resource Management
- BMAN20842 Organisations and Employment
- BMAN21012 Global Contexts of Business and Management

**Full Year**

The following course unit is worth 20 credits:

- BMAN23000(A) Foundations of Finance (*)

(*) BMAN10552 is a pre-requisite for BMAN21011 and BMAN23000(A). Students must have achieved a mark of at least 60% at the first attempt in BMAN10552 if they are to take either BMAN21011 or BMAN23000(A) in the Second Year.

Note that the course unit UCOL20022/UCOL20032 (Leadership in Action) may be selected in place of a Mathematics option.

**BSc in Mathematics with Finance**

In Semester 1, MATH20101, MATH20201, MATH20411 and MATH20701 are compulsory while in Semester 2, MATH20802, MATH20912 and BMAN20072 (Investment Analysis, a 10-credit course unit) are compulsory, together with either MATH20712 or MATH20722. A full-year course unit BMAN23000(A) (Foundations
of Finance, worth 20 credits) is also compulsory. In Semester 2, students also take a Level 2 Mathematics option worth 10 credits, chosen from Table 2.3.1, giving a total of 120 credits. Note that students need to achieve a mark of at least 40% in BMAN23000(A) if they are to take those Finance course units in the Third Year for which BMAN23000(A) is a pre-requisite. Otherwise, they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Third Year.

Note that the course unit UCOL20022/UCOL20032 (Leadership in Action) may be selected in place of a Mathematics option.

**BSc in Mathematics with a Modern Language**

In Semester 1, MATH20111, MATH20201, MATH20411 and MATH20701(?) are compulsory while in Semester 2, MATH20142 is compulsory. In Semester 2, students also take Level 2 Mathematics options worth a total of 30 credits, chosen from Table 2.3.1, giving a total of 80 credits in Mathematics. In addition, students take compulsory Level 2 course units worth 20 credits in their chosen language, and 20 credits of Level 2 language options. Full information about the language course units that are offered may be obtained from the Programme Director.

To progress to the Third Year of this degree programme, students need to satisfy the language requirement. In general, this means that students have to obtain at least 40% in the compulsory Level 2 language course unit(s). Otherwise, they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Third Year.

(?)Note that students who did not take MATH10141 in Year 1 may be able to take it in Year 2 in place of MATH20701, with the approval of the Senior Tutor. Alternatively, they may still be able to take MATH20701 in the Second Year, again with the approval of the Senior Tutor, provided they took at least two Statistics units at A-Level (or other qualifications to an equivalent level), although such students may find that MATH20701 involves some extra work.

Note that the course unit UCOL20022/UCOL20032 (Leadership in Action) may be selected in place of a Mathematics option.

**BSc in Mathematics and Philosophy**

In Semester 1, MATH20111 is compulsory while in Semester 2, MATH20142 and MATH20302 are compulsory. Students also take Mathematics options worth a total of 30 credits, chosen from MATH10141, MATH20201, MATH20411, MATH20122, MATH20132, MATH20212, MATH20222, MATH20902 and MATH20912, giving a total of 60 credits in Mathematics. In addition, students take Level 2 (or Level 1 with the approval of the Senior Tutor) course units in Philosophy worth a total of 60 credits. These must include at least one of the following:

- PHIL20211  Locke, Berkeley and Hume (20 credits, Semester 1)
- PHIL20242  Twentieth Century Analytical Philosophy (20 credits, Semester 2)
PHIL20892 Philosophical Methods (20 credits, Semester 2)
PHIL20951 Aesthetics (20 credits, Semester 1)

(The Philosophy course units are all worth 20 credits in a single semester.)

Students must not take PHIL20042 (Formal Logic) because there is too much overlap with the compulsory course unit MATH20302.

**BSc in Computer Science and Mathematics (with or without Industrial Experience)**

In Semester 1, MATH20111 and MATH20201 are compulsory while in Semester 2, MATH20142 is compulsory. Students also take Level 2 Mathematics options worth a total of 30 credits, chosen from MATH10141(\(^\#\)), MATH20411, MATH20122, MATH20212, MATH20302, MATH20602, MATH20902 and MATH20912, giving a total of 60 credits in Mathematics. Students normally take MATH20411 in Semester 1, although it is possible to replace this with MATH10141(\(^\#\)). Students must take at least one of MATH20411 and MATH10141(\(^\#\)). In addition, students take course units in Computer Science worth a total of 60 credits.

Although students normally take 60 credits of Mathematics course units and 60 credits of Computer Science course units, it is possible to vary the Mathematics/Computer Science credit split by 10 credits in either direction, with the approval of the Programme Director. Moreover, students can take one outside course unit in either the Second Year or the Third Year, in place of a 10 credit Mathematics course unit or a 10 credit Computer Science course unit. The only outside course unit that is offered to you is Leadership in Action (UCOL20021, UCOL20022, UCOL20031 or UCOL20032). Note however that you must take at least 50 credits of Level 2 Mathematics course units and at least 50 credits of Level 2 Computer Science course units. Full details of your programme structure will be given to you by your home school.

(\(^\#\))Note that students may be able to take MATH20701 in Year 2 in place of MATH10141, with the approval of the Senior Tutor, provided they took at least two Statistics units at A-Level (or other qualifications to an equivalent level). Such students may find that MATH20701 involves some extra work, however.

**MMath&Phys/BSc in Mathematics and Physics**

In Semester 1, MATH20111 and MATH20401 are compulsory while in Semester 2, MATH20142 is compulsory. In Semester 2, students also take Level 2 Mathematics options worth a total of 20 credits, chosen from Table 2.3.1, giving a total of 60 credits in Mathematics. In addition, students take course units in Physics worth a total of 60 credits. Full details of your programme structure will be given to you by your home school.

Syllabuses (course unit descriptions) for course units offered by other schools may be found on the web. For example, syllabuses for course units in Management, Finance, Accounting, Economics, Modern Languages and Philosophy may be found at the website...
Syllabuses for Level 2 Physics course units may be found at [http://bluebook.physics.manchester.ac.uk/10_syllabuses/physics_level2/](http://bluebook.physics.manchester.ac.uk/10_syllabuses/physics_level2/)

The syllabus for *Career Management Skills* (CARS20042) may be found at [http://www.careers.manchester.ac.uk/experience/modules/maths/](http://www.careers.manchester.ac.uk/experience/modules/maths/)

The syllabus for the *Manchester Sustainable Cities Project* (EART20002) may be found at [http://www.seaes.manchester.ac.uk/study/undergraduate/undergraduate-courses/environmental-science-bsc/course-unit-spec/?unitcode=EART20002](http://www.seaes.manchester.ac.uk/study/undergraduate/undergraduate-courses/environmental-science-bsc/course-unit-spec/?unitcode=EART20002)

Syllabuses for course units offered by the Centre for the History of Science, Technology and Medicine may be found at [http://www.chstm.manchester.ac.uk/undergraduate/courses/](http://www.chstm.manchester.ac.uk/undergraduate/courses/)

When choosing your options, it is important to check the syllabuses to ensure that you have taken the pre-requisites for the options you choose in your Second Year. It is also important to ensure that you take in the Second Year the pre-requisites for course units you may want to take in subsequent year(s) of your programme and ensure that the options you choose in the Second Year will give you a wide choice of options in subsequent year(s).

You are strongly advised to discuss your choice of options with your Academic Advisor. Students are also strongly advised to take course units worth 60 credits in each Semester. However, with the prior approval of both your Academic Advisor and the Senior Tutor, you may be allowed to divide your course units unequally between the two semesters.

### 2.4 THIRD AND FOURTH YEARS PROGRAMME STRUCTURE

In the Third Year, students take course units worth 120 credits in total, **with at least 100 credits at Level 3 or above.** Students are recommended to take 60 credits in each semester. Some degree programmes have some compulsory course units and full details of these are given later in this section. Details of the options which are offered to each degree programme are also given later in this section.

The difference between the Level 3 course units and the Level 4 course units is that most Level 4 course units study material in greater depth or on a narrower front, and with a greater degree of mathematical sophistication. However, whereas some of these units are more suitable for the Fourth Year of the MMath programme, several may readily be taken in the Third Year and are quite suitable for inclusion in a BSc programme, especially since they include some topics that are not available at Level 3. MMath students should
consider taking up to two enhanced Level 4 options in their Third Year as this will increase choice and give flexibility in the Fourth Year. **Please note that it is not possible to take both a Level 3 course unit and its enhanced Level 4 version.**

To take a Level 4 course unit in the Third Year, either students must have achieved a second year average of at least 55% or they must seek permission from the lecturer of the course unit. Without this permission, they will be unable to enrol on the course unit.

If you are thinking of taking a Level 4 course unit in the Third Year, you must be very careful to ensure that you have done all the pre-requisites. Level 4 course units are rated at 15 credits and so, if these are included in the Third Year, it may be necessary to take 65 credits in one semester (and possibly 55 in the other). In determining the overall average mark for the year, course units are weighted by their credit rating.

When choosing their options, it is important for MMath students to consider the pre-requisites for course units they may want to take in the final year of their programme and ensure that the options they choose in the Third Year will give them a wide choice of options in the Fourth Year. The Level 3 and Level 4 course units offered in 2015-2016 are likely to be similar to those offered in 2014-2015. Note that, in the Fourth Year, MMath students take the Fourth Year project, worth 30 credits, plus course units worth 90 credits. **Moreover, in the Third and Fourth Years combined, MMath students must take Level 4 course units worth a total of at least 90 credits (in addition to the Fourth Year project), and Level 3 (or above) course units worth at least 100 credits. The total number of credits to be taken in Years 3 and 4 is 240, with at least 220 credits at Level 3 or above.**

**Note that Third and Fourth Year students cannot take Level 1 course units while Fourth Year MMath students cannot take Level 2 course units.**

The codes for Level 3 and Level 4 Mathematics course units begin with the letters MATH, followed by 5 digits.

Digit 1 indicates the level.

Digit 2 indicates the subject area, according to the following scheme:

- 0 General
- 1 Pure (analysis)
- 2 Pure (algebra)
- 3 Logic
- 4 Advanced Calculus
- 5 Physical Applied
- 6 Numerical Analysis
- 7 Probability
- 8 Statistics
- 9 Discrete/Financial
Digits 2, 3 and 4 uniquely specify the course unit at Level 3 or Level 4. These digits are the same for two course units if and only if one is an enhanced version of the other.

Digit 5 indicates the semester (0 for full-year course units).

The School of Mathematics offers the following Level 3 and Level 4 Course Units. Note that course units may be cancelled unless at least fifteen students enrol and numbers for some course units may be restricted.

**TABLE 2.4.1. LEVEL 3 COURSE UNITS FOR 2014-2015**

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<th>LECTURER(S)</th>
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<td>MATH30000</td>
<td>Project</td>
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<td>MATH30011</td>
<td>Project</td>
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<td>First</td>
<td>Mr. Tso</td>
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<tr>
<td>MATH31011(*)</td>
<td>Fourier Analysis and Lebesgue Integration</td>
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<td>First</td>
<td>Prof. Wilkie</td>
</tr>
<tr>
<td>MATH31051(*)</td>
<td>Introduction to Topology</td>
<td>10</td>
<td>First</td>
<td>Prof. Eccles</td>
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<tr>
<td>MATH31061(*)</td>
<td>Differentiable Manifolds</td>
<td>10</td>
<td>First</td>
<td>Dr. Voronov</td>
</tr>
<tr>
<td>MATH32001(*)</td>
<td>Group Theory</td>
<td>10</td>
<td>First</td>
<td>Prof. Rowley</td>
</tr>
<tr>
<td>MATH32031</td>
<td>Coding Theory</td>
<td>10</td>
<td>First</td>
<td>Dr. Bazlov</td>
</tr>
<tr>
<td>MATH32051(*)</td>
<td>Differentiable Manifolds</td>
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<td>First</td>
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<tr>
<td>MATH32071(*)</td>
<td>Hyperbolic Geometry</td>
<td>10</td>
<td>First</td>
<td>Dr. M. Johnson</td>
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<td>Predicate Logic</td>
<td>10</td>
<td>First</td>
<td>Dr. Tressl</td>
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<tr>
<td>MATH34001</td>
<td>Applied Complex Analysis</td>
<td>10</td>
<td>First</td>
<td>Dr. Simon</td>
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<tr>
<td>MATH34011</td>
<td>Asymptotic Expansions and Perturbation Methods</td>
<td>10</td>
<td>First</td>
<td>Prof. Gajjar</td>
</tr>
<tr>
<td>MATH35001</td>
<td>Viscous Fluid Flow</td>
<td>10</td>
<td>First</td>
<td>Prof. Heil</td>
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<td>MATH35021</td>
<td>Elasticity</td>
<td>10</td>
<td>First</td>
<td>Dr. Hazel</td>
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<td>MATH36001</td>
<td>Matrix Analysis</td>
<td>10</td>
<td>First</td>
<td>Dr. Güttel</td>
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<td>MATH36041</td>
<td>Essential Partial Differential Equations</td>
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<td>First</td>
<td>Dr. Holman</td>
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<td>MATH37001</td>
<td>Martingales with Applications to Finance</td>
<td>10</td>
<td>First</td>
<td>Dr. Jin</td>
</tr>
<tr>
<td>MATH38001(*)</td>
<td>Statistical Inference</td>
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<td>First</td>
<td>Dr. McHale</td>
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<td>MATH39001</td>
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<td>MATH34032</td>
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<td>Problem Solving by Computer</td>
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<td>MATH37012</td>
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<td>10</td>
<td>Second</td>
<td>Dr. Bagley</td>
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<tr>
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<td>Time Series Analysis</td>
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<td>Second</td>
<td>Dr. Boshnakov</td>
</tr>
<tr>
<td>MATH38052(*)</td>
<td>Generalised Linear Models</td>
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<td>Second</td>
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<td>Dr. Koskinen</td>
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<tr>
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<tr>
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<td>Prof. Duck</td>
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<tr>
<td>MATH39522(*)</td>
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<tr>
<td>MATH39542(*)</td>
<td>Risk Theory</td>
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<td>Second</td>
<td>Dr. Van Schaik</td>
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</table>

(*) These course units are also available in an enhanced Level 4 version. It is NOT possible to take both course units.

(*) Students cannot take both MATH38141 (Regression Analysis) and MATH48011 (Linear Models with Nonparametric Regression) because there is too much overlap. Moreover, students cannot take MATH38141 if they have already taken MATH38011 (Linear Models).

(#) The course units MATH39511 (Actuarial Models), MATH39522 (Contingencies 2) and MATH39542 (Risk Theory) are compulsory for the Actuarial Science and Mathematics degree programme. They are not offered to students on any other degree
programme.

**TABLE 2.4.2. LEVEL 4 COURSE UNITS FOR 2014-2015**

<table>
<thead>
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<td>Project</td>
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<td>MATH41011(*)</td>
<td>Fourier Analysis and Lebesgue Integration</td>
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<td>Prof. Wilkie</td>
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<tr>
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<td>Introduction to Topology</td>
<td>15</td>
<td>First</td>
<td>Prof. Eccles</td>
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<tr>
<td>MATH41061(*)</td>
<td>Differentiable Manifolds</td>
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<tr>
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<td>Prof. Rowley</td>
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<tr>
<td>MATH42041</td>
<td>Noncommutative Algebra</td>
<td>15</td>
<td>First</td>
<td>Prof. Stafford</td>
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<tr>
<td>MATH42051(*)</td>
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<td>First</td>
<td>Dr. Walkden</td>
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<tr>
<td>MATH42061</td>
<td>Representation Theory</td>
<td>15</td>
<td>First</td>
<td>Prof. Symonds</td>
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<tr>
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<tr>
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<td>Dr. Tressl</td>
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<td>MATH43051</td>
<td>Model Theory</td>
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<tr>
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<td>15</td>
<td>First</td>
<td>Prof. Glendinning</td>
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<td>MATH45051</td>
<td>Singularity, Bifurcations and Catastrophes</td>
<td>15</td>
<td>First</td>
<td>Dr. Montaldi</td>
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<td>MATH45061</td>
<td>Continuum Mechanics</td>
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<td>Dr. Hazel</td>
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<tr>
<td>MATH46101</td>
<td>Numerical Linear Algebra</td>
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<tr>
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<td>Stochastic Calculus</td>
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<tr>
<td>MATH48001(*)</td>
<td>Statistical Inference</td>
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<td>MATH48011(*)</td>
<td>Linear Models with Nonparametric Regression</td>
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<td>Multivariate Statistics</td>
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<td>First</td>
<td>Mr. Tso</td>
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<td>Dr. Foster</td>
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<td>MATH48181(*)</td>
<td>Extreme Values and Financial Risk</td>
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<tr>
<td>MATH41002(†)</td>
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<td>15</td>
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<td>Dr. Sidorov</td>
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<tr>
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<td>15</td>
<td>Second</td>
<td>Dr. Coleman</td>
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<tr>
<td>MATH41072(†)</td>
<td>Algebraic Topology</td>
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<td>Second</td>
<td>Prof. Eccles</td>
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<tr>
<td>MATH41082(†)</td>
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<td>Ergodic Theory (a reading course)</td>
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<tr>
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<td>Prof. Premet</td>
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<tr>
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<td>Galois Theory</td>
<td>15</td>
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<td>Prof. Stöhr</td>
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<tr>
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<td>15</td>
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<td>Approximation Theory and Finite Element Analysis</td>
<td>15</td>
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<td>Numerical Optimisation and Inverse Problems</td>
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<tr>
<td>MATH48032(†)</td>
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<tr>
<td>MATH49102</td>
<td>Stochastic Modelling in Finance</td>
<td>15</td>
<td>Second</td>
<td>Prof. Zhang</td>
</tr>
</tbody>
</table>

(*) These course units are enhanced versions of Level 3 course units. It is NOT possible to take both course units.

(†) Students cannot take both MATH38141 (Regression Analysis) and MATH48011 (Linear Models with Nonparametric Regression) because there is too much overlap. Moreover, students cannot take MATH48011 if they have already taken MATH38011 (Linear Models).
MATH49111 (Scientific Computing) is not open to undergraduates at the time of writing. Spaces on this course unit may become available early in the First Semester.

Syllabuses (course unit descriptions) for each of the course units listed above, including full details of the pre-requisites for the course unit, may be found at the following website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/course-units-offered/

You must check the syllabuses to ensure that you have taken all the pre-requisites for the options you are thinking of choosing.

There are restrictions on certain combinations of course units because of timetable constraints. Full details are given in the following table. Course units in each group (A, B, C etc.) in each semester are likely to be timetabled together, and so only one course unit from each group can be selected. We try to ensure (if possible) that course units in different groups do not clash. However, the School of Mathematics cannot guarantee that these will be the only timetable clashes. In particular, it is likely that not all course units will be available for Joint Honours students because of timetable constraints.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>SEMESTER 1 LEVEL 3</th>
<th>SEMESTER 1 LEVEL 4</th>
<th>SEMESTER 2 LEVEL 3</th>
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 | MATH38091          |                    | MATH38052          |                    |
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| MATH35021          |                    |                    | MATH48132          |
| C     | MATH32001          | MATH42001          | MATH31022          | MATH41022          |
| MATH34011          | MATH48181          | MATH34032          |                    |
| MATH38181          |                    | MATH38032          |                    |
| D     | MATH32031          | MATH42041          | MATH32112          | MATH42112          |
| MATH38191          | MATH48191          | MATH39012          | MATH47112          |
| E     | MATH32051          | MATH42051          | MATH37012          | MATH43012          |
| MATH34001          | MATH48001          |                    | MATH46132          |
| MATH38001          |                    |                    |                    |
| F     | MATH31011          | MATH41011          | MATH32062          |                    |
| MATH46101          | MATH47101          | MATH35032          |                    |
| MATH47101          |                    |                    |                    |
| G     | MATH32071          | MATH42071          | MATH39032          | MATH43042          |
| MATH38141          | MATH45051          |                    |                    |
|                    | MATH48011          |                    |                    |</p>
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<td>MATH36022</td>
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</table>

The timetable for Mathematics course units may be found at the following website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/timetables/

You should check the final timetable each semester to make sure that the options you want to take do not clash.

When choosing your options, you must ensure that there are no timetable clashes.

**Level 4 Mathematics Course Units and MSc Degree Programmes**

Third Year students who are thinking of taking one of the MSc Degree Programmes offered by the School of Mathematics at the University of Manchester must bear in mind that the University does not allow students to take the same course unit twice in two different degree programmes. Therefore, if you want to take any Level 4 MATH course units in your Third Year, then you need to make sure that this course unit is not also a compulsory Level 6 course unit for the MSc programme that you intend to take. If in doubt, you should consult the relevant MSc Admissions Tutor or MSc Programme Director.

**Level 2 Mathematics Course Units and Outside Course Units**

Subject to approval by the School of Mathematics, Third Year students (and Fourth Year Mathematics with a Modern Language students) may include Level 2 Mathematics options in their programme (up to a maximum of 20 credits, depending on their degree programme). Further details are given separately for each programme below.

Students on a Single Honours Mathematics degree programme with a particular
interest in a subject other than Mathematics may wish to consider (in consultation with their Academic Advisor) taking course units in another School (up to a maximum of 40 credits, depending on their degree programme) in place of Mathematics course units.

Outside course units should be at Level 2, at least, and are often the continuation of outside course units studied in the Second Year.

Further details are given separately for each degree programme below.

Information about outside course units should be obtained from the outside School (via their website in the first instance). Websites for the approved outside course units listed in the table below are given at the end of this section. Students normally need to register with the School concerned.

The **University Language Centre** offers course units at various levels in a wide range of foreign languages such as French, German, Spanish, Japanese and Chinese. Further information can be found at the website:

[http://www.ulc.manchester.ac.uk/languages/leap/](http://www.ulc.manchester.ac.uk/languages/leap/)

The following course units are also particularly appropriate for students on Mathematics programmes. Other course units require the approval of the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building). You must complete the appropriate form available from the Senior Tutor or from the School’s website

[http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/undergraduateforms/](http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/undergraduateforms/)

and then submit the form in person to the Senior Tutor.

<table>
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<td>CARS20042</td>
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<td>COMP39112</td>
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<td>MCEL30011(‡)</td>
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<td>MCEL30012(‡)</td>
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<td>PHIL30041(†)</td>
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<td>PHYS30101</td>
<td>Applications of Quantum Physics</td>
<td>10</td>
<td>First</td>
</tr>
<tr>
<td>PHYS30201</td>
<td>Mathematical Fundamentals of Quantum Mechanics</td>
<td>10</td>
<td>First</td>
</tr>
<tr>
<td>PHYS40202</td>
<td>Advanced Quantum Mechanics</td>
<td>10</td>
<td>Second</td>
</tr>
<tr>
<td>UCOL20020</td>
<td>Leadership in Action</td>
<td>20</td>
<td>Both</td>
</tr>
<tr>
<td>UCOL20021</td>
<td>Leadership in Action</td>
<td>10</td>
<td>First</td>
</tr>
<tr>
<td>UCOL20022</td>
<td>Leadership in Action</td>
<td>10</td>
<td>Second</td>
</tr>
</tbody>
</table>
Students **may not** take both MCEL30011 (Advanced Technology Enterprise) and MCEL30012 (Advanced Technology Enterprise).

(*) The pre-requisite for PHIL30041 and PHIL30721 is 40 credits of Level 2 Philosophy course units. This requirement may be waived at the discretion of the course convener. Students who are interested in taking PHIL30041 or PHIL30721 should contact the course convener.

The **University College for Interdisciplinary Learning** offers some outside course units. Full details may be found at the website

http://www.college.manchester.ac.uk/courses

Note that the University College course units are **not** approved outside course units unless they are also listed in the table above. If you want to take a University College course unit that is not listed in the above table, then you need the approval of the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building).

If you wish to select an outside course unit from the Manchester Business School, you can only choose BMAN course units that have no programme restrictions, such as the course units that are listed under Business and Management for all Programmes (BMaP) at the following web address:

http://courses.humanities.manchester.ac.uk/undergraduate/modulelist.html?department=56

You will not be able to take any other BMAN course unit unless it is specifically listed as part of your programme structure. (Note that BMAN course units which are not listed in the above table need the approval of the Senior Tutor, Dr. R. M. Thomas, Room 1.108, Alan Turing Building.)

It is essential that all Third Year students take at least 100 credits at Level 3 or above, so it is only possible to take more than 20 credits of outside course units if some are at Level 3.

Single Honours students who took in the Second Year a 20-credit, full year, Level 1 course unit in, for example, a language, may wish to continue taking the subject at Level 2 in the Third Year. If they delayed taking MATH20201 (Algebraic Structures 1) or MATH20701 (Probability and Statistics) until the Third Year, then the requirement to take at least 100 credits at Level 3 or above means that they can only take a 20-credit, Level 2 outside course unit by taking course units worth a total of 130 credits in the Third Year. (The average mark for the Third Year will then be taken over all 130 credits.) This
will require the special approval of the Senior Tutor and will only be given to students whose performance in the Second Year indicates that they will cope with the extra work.

It is not normally possible for **Joint Honours** students to substitute outside course units for Mathematics course units. However, one of the 10-credit course units UCOL20021/UCOL20022/UCOL20031/UCOL20032 (Leadership in Action) or MCEL30022 (Interdisciplinary Sustainable Development) may be selected in place of a Mathematics option by Third Year students on **Mathematics with** programmes. Moreover, students on the **Mathematics and Philosophy** programme can take one of the 10-credit course units UCOL20021/UCOL20022/UCOL20031/UCOL20032 (Leadership in Action) or MCEL30022 (Interdisciplinary Sustainable Development) in the Third Year as long as they take at least 50 credits in each discipline and, in Mathematics, normally take at least 50 credits of lecture courses. (That is, the 50 credits must not normally include a project.) Note that Mathematics and Philosophy students must take at least 40 credits of Level 3 (or 4) MATH course units in the Third Year. Note that all students must take course units worth a total of 120 credits in the year. Joint Honours students cannot take both UCOL20021/UCOL20022/UCOL20031/UCOL20032 and MCEL30022.

Students on Joint Honours programmes may be allowed to select one course unit offered by the University College in place of a Mathematics option (but not in addition to UCOL20021/UCOL20022/UCOL20031/UCOL20032 or MCEL30022). However, this needs the approval of the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building).

**Single Honours Mathematics Programmes**

**MMath in Mathematics**

During the final two years, students must take 240 credits of Level 3 or 4 Mathematics course units. Their programme must include at least 90 credits of Level 4 Mathematics course units, in addition to 30 credits of project work in the Fourth Year.

In the **Third Year**, up to 20 credits of Level 3 course units may be replaced by Level 2 Mathematics course units or Level 2 (or above) outside course units (with the approval of the Senior Tutor). **Note that students must take at least 100 credits of Level 3 (or above) Mathematics course units.** This means that you may take at most 20 credits at Level 2.

Students should consider taking up to two enhanced Level 4 options in their Third Year as this will increase choice and give flexibility in the Fourth Year.

In the **Fourth Year**, up to 20 credits of Level 3 MATH course units may be replaced by Level 3 (or above) outside course units (with the approval of the Senior Tutor). Note that if you want to take outside course units in the Fourth Year, you will need to take some Level 4 MATH course units in the Third Year. Fourth Year MMath students **cannot** take Level 2 course units.
**MMath in Mathematics and Statistics**

The requirements are the same as for the MMath in Mathematics, with the following additions. The choice of course units in the Third and Fourth Years combined must include at least 80 credits of Level 3 or 4 Probability and Statistics course units. (These course units begin with the codes MATH37, MATH38, MATH47 and MATH48.) Moreover, the Fourth Year project must be in Probability or Statistics. **Note that students must take at least 100 credits of Level 3 (or above) Mathematics course units in the Third Year.** This means that you may take at most 20 credits at Level 2.

**MMath in Mathematics with Financial Mathematics**

The requirements are the same as for the MMath in Mathematics, with the following additions. The choice of course units in the Third and Fourth Years combined must include at least 50 credits of course units in Financial Mathematics (MATH37001, MATH38032, MATH38181, MATH38191, MATH39032, MATH47101, MATH47112, MATH48032, MATH48181, MATH48191 and MATH49102) or in Accounting and Finance.

Suitable course units in Accounting and Finance are BMAN21020 (Financial Reporting and Accountability, a full-year course unit worth 20 credits), BMAN21040 (Intermediate Management Accounting, a full-year course unit worth 20 credits), BMAN30030 (Contemporary Issues in Financial Reporting and Regulation, a full-year course unit worth 20 credits), BMAN30211 (Corporate Governance in Context, a 10-credit course unit in Semester 1) and BMAN31040 (Advanced Management Accounting, a full-year course unit worth 20 credits).

Moreover, the Fourth Year project must be in Financial Mathematics.

Note that BMAN21020 is a pre-requisite for BMAN30030 and BMAN30211, while BMAN21040 is a pre-requisite for BMAN31040. This means that BMAN30030, BMAN30211 and BMAN31040 can only be taken in the Fourth Year and this would only be possible if some Level 4 Mathematics course units had been taken in the Third Year since the programme as a whole has to include 120 credits of Level 4 Mathematics.

Note also that for the Accounting and Finance course units, students must have obtained at least 40% in the pre-requisites, as shown below.

- BMAN21020: At least 40% in BMAN10621
- BMAN21040: At least 40% in BMAN10632
- BMAN30030: At least 40% at the first attempt in BMAN21020
- BMAN30211: At least 40% at the first attempt in BMAN21020
- BMAN31040: At least 40% at the first attempt in BMAN21040

**Note that students must take at least 100 credits of Level 3 (or above) Mathematics course units in the Third Year.** This means that you may take at most 20 credits at
Level 2.

MATH20201 MUST be taken in the Third Year unless it has been taken already.

BSc in Mathematics

Students must take course units worth a total of 120 credits. Students must take at least 80 credits of Level 3 (or Level 4) Mathematics course units. You may take at most 40 credits of outside course units (with the approval of the Senior Tutor) or Level 2 Mathematics course units. You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4). Thus, it is only possible to take more than 20 credits of outside course units if some are at Level 3.

BSc in Mathematics and Statistics

Students must take course units worth a total of 120 credits. Students must take at least 80 credits of Level 3 (or Level 4) Mathematics course units. The choice of course units must include at least 60 credits of Level 3 or 4 Probability and Statistics course units. (These consist of either course units that begin with the codes MATH37, MATH38, MATH47, MATH48, or a project in Probability or Statistics.)

You may take at most 40 credits of outside course units (with the approval of the Senior Tutor) or Level 2 Mathematics course units. You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4). Thus, it is only possible to take more than 20 credits of outside course units if some are at Level 3.

BSc in Mathematics and Statistics (with a pathway in Finance)

Students must take course units worth a total of 120 credits. Students must take at least 80 credits of Level 3 (or Level 4) Mathematics course units. You must take MATH39032 and either MATH37001 or MATH38191 (or both). The choice of optional course units must include a further 40 credits of Level 3 or 4 Probability and Statistics course units. (These consist of either course units that begin with the codes MATH37, MATH38, MATH47, MATH48, or a project in Probability or Statistics.)

You may take at most 40 credits of outside course units (with the approval of the Senior Tutor) or Level 2 Mathematics course units. You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4). Thus, it is only possible to take more than 20 credits of outside course units if some are at Level 3.

The outside course units BMAN21020 (Financial Reporting and Accountability, a full-year course unit worth 20 credits), BMAN21040 (Intermediate Management Accounting, a full-year course unit worth 20 credits) and BMAN23000(A) (Foundations of Finance, a full-year course unit worth 20 credits) are particularly appropriate options for this
pathway. A student taking one of these BMAN course units needs only take 30 of the optional 40 credits in Probability and Statistics. Note that for BMAN21020 and BMAN21040, students must have obtained at least 40% at the first attempt in the pre-requisites, as shown below.

- BMAN21020: At least 40% in BMAN10621
- BMAN21040: At least 40% in BMAN10632

For BMAN23000(A), students must have obtained at least 60% at the first attempt in the pre-requisite, BMAN10552.

**BSc in Mathematics with Financial Mathematics**

Students must take course units worth a total of 120 credits. **Students must take at least 80 credits of Level 3 (or Level 4) Mathematics course units.** The choice of course units must include at least 30 credits of course units in Financial Mathematics (MATH37001, MATH38032, MATH38181, MATH38191, MATH39032, MATH47101, MATH47112, MATH48032, MATH48181, MATH48191, MATH49102 or a project in Financial Mathematics) or in Accounting and Finance.

Suitable course units in Accounting and Finance are BMAN21020 (Financial Reporting and Accountability, a full-year course unit worth 20 credits) and BMAN21040 (Intermediate Management Accounting, a full-year course unit worth 20 credits).

Note that for the Accounting and Finance course units, students must have obtained at least 40% in the pre-requisites, as shown below.

- BMAN21020: At least 40% in BMAN10621
- BMAN21040: At least 40% in BMAN10632

You may take at most 40 credits of outside course units (with the approval of the Senior Tutor) or Level 2 Mathematics course units. **You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4).** Thus, it is only possible to take more than 20 credits of outside course units if some are at Level 3.

**MATH20201 MUST be taken in the Third Year unless it has been taken already.**

**BSc in Actuarial Science and Mathematics**

Students must take course units worth a total of 120 credits. **Students must take at least 80 credits of Level 3 (or Level 4) Mathematics course units.** In Semester 1, MATH38001, MATH38141 and MATH39511 are compulsory while in Semester 2, MATH38032, MATH38052, MATH39522 and MATH39542 are compulsory. Students also take optional course units worth a total of 30 credits in Semester 1 and optional course units worth 20 credits in Semester 2.
You may take at most 40 credits of outside course units (with the approval of the Senior Tutor) or Level 2 Mathematics course units. **You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4).** Thus, it is only possible to take more than 20 credits of outside course units if some are at Level 3.

Particularly appropriate **Mathematics options** are MATH37001 and MATH39032 while particularly appropriate **outside course units** are BMAN30091 (Financial Derivatives, a 10-credit course unit in Semester 1), BMAN30242 (Financial Engineering, a 10-credit course unit in Semester 2), UCOL20020/21/22/31/32 (Leadership in Action), MCEL30001/2 (Tools and Techniques for Enterprise), MCEL30022 (Interdisciplinary Sustainable Development) and EART20002 (Manchester Sustainable Cities Project).

It is strongly recommended that students wishing to take BMAN30242 in Semester 2 take BMAN30091 in Semester 1. Note that BMAN20242 is a pre-requisite for BMAN30091 and BMAN30242. Students wishing to take BMAN30091 or BMAN30242 must have obtained at least 40% at the first attempt in BMAN20242 (but a mark of at least 50% is preferred for BMAN30091).

**Joint Honours Mathematics Programmes**

Students on Joint Honours programmes take a reduced Mathematics programme together with course units from another School, making up 120 credits in all (240 credits for MMath&Phys). Further information about the other component is provided by the other School.

**BSc in Mathematics with Business and Management**

Students must take 60 credits of Mathematics options chosen from the Level 3 (or Level 4) Mathematics course units given in Tables 2.4.1 and 2.4.2. Up to 20 credits may be replaced by Level 2 Mathematics course units. In addition, students take Business and Management options worth a total of 60 credits, giving a total of 120 credits for the year. The following Business and Management course units are offered as options:

**Semester 1**

Each of the following course units is worth 10 credits:

- BMAN30021 Marketing
- BMAN30071 Share Prices and Accounting Information(*)
- BMAN30091 Financial Derivatives(*)
- BMAN31031 People Management and Change
- BMAN31201 Technology, Strategy and Innovation 2
**Semester 2**

Each of the following course units is worth 10 credits:

- BMAN30022  Strategy
- BMAN30042  Human Resource Management
- BMAN30242  Financial Engineering (*)
- BMAN30702  Corporate Contracting and Managerial Behaviour (*)
- BMAN31152  Decision Analysis for Business and Management
- BMAN31212  Investment Economics and Innovation

**Full Year**

The following course unit is worth 20 credits:

- BMAN30010  Management, Technology and Innovation

(*) BMAN23000 is a pre-requisite for BMAN30071, BMAN30091, BMAN30242 and BMAN30702. Students must have achieved a mark of at least 40% at the first attempt in BMAN23000 if they are to take one of these course units in the third year (but a mark of at least 50% is preferred for BMAN30091 and a mark of at least 60% is preferred for BMAN30702). It is strongly recommended that students wishing to take BMAN30242 in Semester 2 take BMAN30091 in Semester 1.

*You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4).*

**BSc in Mathematics with Finance**

Students must take **MATH37001** (Martingales with Applications to Finance), **MATH39032** (Mathematical Modelling in Finance), **BMAN30091** (Financial Derivatives, a 10-credit course unit in Semester 1) and **BMAN30111** (Advanced Corporate Finance, a 10-credit course unit in Semester 1), together with a further 80 credits of Mathematics or Accounting and Finance course units. **At least 10 credits and not more than 30 credits of Accounting and Finance options must be taken.**

Suitable Accounting and Finance options include BMAN20081 (Financial Statement Analysis, a 10-credit course unit in Semester 1), BMAN30071 (Share Prices and Accounting Information, a 10-credit course unit in Semester 1), BMAN30242 (Financial Engineering, a 10-credit course unit in Semester 2), BMAN30702 (Corporate Contracting and Managerial Behaviour, a 10-credit course unit in Semester 2) and BMAN30060 (International Finance, a full-year course unit worth 20 credits).

Note that for the Accounting and Finance course units, students must have obtained a mark of at least 40% in the pre-requisites, namely BMAN10621 and BMAN10522 for BMAN20081, and BMAN23000 for all the other BMAN course units (but a mark of at
least 50% in BMAN23000 is preferred for BMAN30091 and a mark of at least 60% is preferred for BMAN30702).

Students who did not achieve at least 40% for BMAN23000 will have to transfer to a Single Honours degree programme in Mathematics and must contact the Senior Tutor to arrange this.

You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4).

BSc in Mathematics with a Modern Language

The Third Year of the programme is spent abroad. In the Fourth Year, students take 80 credits of Mathematics options, with 40 credits of Language course units. Full information about the Language course units that are offered may be obtained from the Programme Director. You may take at most 20 credits at Level 2 in the Fourth Year and the programme must include at least 100 credits at Level 3 (or Level 4).

BSc in Mathematics and Philosophy

Students take 60 credits of Mathematics options (at most 20 credits at Level 2), together with the Third Year Philosophy Dissertation (PHIL30000), worth 20 credits, and 40 credits of Level 3 Philosophy course units. Full information about the Philosophy course units that are offered may be obtained from the Programme Director. However, the following course units may be particularly attractive:

- PHIL30012 Special Author: Russell (20 credits, Semester 2)
- PHIL30041 Philosophical Logic (20 credits, Semester 1)
- PHIL30212 Metaphysics (20 credits, Semester 2)
- PHIL30721 Philosophy of Mathematics (20 credits, Semester 1)
- PHIL30842 Metaethics (20 credits, Semester 2)

(The Philosophy course units are all worth 20 credits in a single semester.)

You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4). Note also that students must take at least 40 credits of Level 3 (or above) Mathematics course units.

BSc in Computer Science and Mathematics (with or without Industrial Experience)

Students take 60 credits of Mathematics options (at most 20 credits at Level 2), together with COMP30030 (a Project, worth 30 credits) and 30 credits of Computer Science course units. (It is possible to change this to 50 or 70 credits of Mathematics, with a corresponding change in Computer Science credits, with the approval of the Programme Director.) Moreover, students can take one outside course unit in either the Second Year or the Third Year, in place of a 10 credit Mathematics course unit or a 10 credit Computer Science course unit. The only outside course units that are offered to you are
UCOL20021, UCOL20022, UCOL20031 and UCOL20032 (*Leadership in Action*). Note however that you must take at least 50 credits of Mathematics course units (with at least 40 credits at Level 3 or above) and at least 50 credits of Level 3 Computer Science course units. Full information about your programme structure may be obtained from your home school.

**You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4). Note also that students must take at least 40 credits of Level 3 (or above) Mathematics course units.**

**MMath&Phys in Mathematics and Physics**

Full information about your programme structure may be obtained from your home school. Only details of the Mathematics programme structure will be given here.

During the final two years, students normally take 120 credits of Level 3 or 4 Mathematics course units, normally 30 in each semester, together with 120 credits of Physics. In these two years, their programme must include a total of at least 120 credits of Level 4 course units.

In the Third Year, a 10 credit, Level 3 Mathematics course unit may be replaced by a Level 2 Mathematics course unit (with the approval of the Programme Director).

At least 50 credits in Physics and 50 credits in Mathematics must be taken in the Fourth Year. Under certain circumstances, up to 20 credits of outside course units may be taken in the Fourth Year with the approval of the Programme Director. In the Fourth Year, it is possible to take 50 or 70 credits of Mathematics with a corresponding change in Physics credits (with the approval of the Programme Director).

In Mathematics in the Fourth Year, students must take a Mathematics Project course unit (MATH40011 or MATH40022).

Students may not take PHYS30672 (Mathematical Methods for Physics).

**BSc in Mathematics and Physics**

Full information about your programme structure may be obtained from your home school. Only details of the Mathematics programme structure will be given here.

Students normally take 60 credits of Mathematics course units (at most 10 credits at Level 2). Students must include a project course unit (MATH30022 or PHYS30880). It is possible to take 50 or 70 credits of Mathematics with a corresponding change in Physics credits (with the approval of the Programme Director). Students who take only 50 credits of Mathematics course units cannot take a Mathematics project (MATH30022) as one of their Mathematics course units.

Syllabuses (course unit descriptions) for course units offered by other schools may be
found on the web. For example, syllabuses for course units in Management, Finance, Accounting, Modern Languages and Philosophy may be found at the website

http://courses.humanities.manchester.ac.uk/undergraduate

Syllabuses for Physics course units may be found at

http://bluebook.physics.manchester.ac.uk/10_syllabuses/

Syllabuses for Computer Science course units may be found at

http://www.cs.manchester.ac.uk/study/undergraduate/course-information/course-units/

The syllabus for *Career Management Skills* (CARS20042) may be found at

http://www.careers.manchester.ac.uk/experience/modules/maths/

Syllabuses for course units offered by the Manchester Enterprise Centre may be found at

https://mec.portals.mbs.ac.uk/StudyEnterpriseWithUs/Undergraduateunits.aspx

When choosing your options, it is important to check the syllabuses to ensure that you have taken the pre-requisites for the options you choose in your Third (or Fourth) Year. It is also important to ensure that you take in the Third Year the pre-requisites for course units you may want to take in the Fourth Year of your programme and ensure that the options you choose in the Third Year will give you a wide choice of options in the Fourth Year.

You are strongly advised to discuss your choice of options with your Academic Advisor. Students who are registered for the *Honours Degree Programme* are also strongly advised to take course units worth 60 credits in each Semester. However, with the prior approval of both your Academic Advisor and the Senior Tutor, you may be allowed to divide your course units unequally between the two semesters.

### 2.5 HOW TO CHOOSE YOUR OPTIONS

Students must enrol for classes by the end of Welcome Week (that is, by Friday, 19 September 2014). You should select options for the whole year at this stage. You can change your options for each semester up until the end of Week 2. (That is, you have until **Friday, 3 October 2014** to change your options for Semester 1 and until **Friday, 6 February 2015** to change your options for Semester 2.) Some course units are very popular and fill up very quickly. For this reason, you are strongly advised to enrol early for the course units you want to take.

After the end of Week 2 of each semester, you cannot change your options yourself.
They can only be changed by staff in the Teaching and Learning Office in the School (Room G.202/G.204, Alan Turing Building) and changes will only be made after the end of Week 2 in exceptional circumstances. No changes at all can be made after the end of the teaching semester (12 December 2014 for full year and First Semester course units, and 8 May 2015 for Second Semester course units). The staff in the Teaching and Learning Office will not change your choice of options on My Manchester unless you have permission in writing from the Senior Tutor. You will need to complete a Change of Options Form, available from the Teaching and Learning Office or from the Senior Tutor or from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/undergraduateforms/

Students are responsible for ensuring that they are enrolled for the correct course units. They will automatically be entered for any examination relating to a course unit for which they are enrolled. Failure to attend the examination will lead to a mark of zero for the examination. Students must ensure that they are eligible for all the course units for which they are enrolled. (For example, students must check that the course unit they want to do is offered to students on their degree programme, it is at the correct level and it does not lead to a barred combination of course units. They should also check that they have the pre-requisites for it and there are no timetable clashes.)

Students select their options online, by logging into My Manchester at

https://my.manchester.ac.uk.

Click Student Center.

Then click Enroll.

You will need your University username and password to log into My Manchester. If you have forgotten your password or you cannot log in for some other reason, you will be prompted to contact the IT Service Helpdesk. Alternatively you can contact them at the website:

http://www.it.services.manchester.ac.uk/contacts

A comprehensive guide on how to use Campus Solutions (the online student system) to select your course units is available at

http://www.maths.manchester.ac.uk/media/eps/schoolofmathematics/study/undergraduate/informationforcurrentstudents/Guide-to-Course-Unit-Selection-(MATHS).pdf
2.6  BSc HONOURS DEGREE PROGRAMME IN ACTUARIAL SCIENCE AND MATHEMATICS: EXEMPTION ARRANGEMENTS

The accreditation agreement between the Faculty of Actuaries and Institute of Actuaries and the School of Mathematics includes the following provisions.

Students who graduate from this programme will be recommended to the Faculty of Actuaries and Institute of Actuaries for exemption from six or seven of the nine Core Technical (CT) subjects in the series of professional actuarial examinations as long as they achieve an Actuarial Average of 65% or more and achieve a pass mark of 40% or more (possibly after resits) in each of the associated course units. The Actuarial Average is the average of the marks for the fourteen or sixteen (or possibly fifteen) course units associated with the CT subjects as follows (see Note 1 below).

| CT1  | Financial Mathematics | MATH10951 | Financial Mathematics for Actuarial Science 1 |
|      |                       | MATH20951 | Financial Mathematics for Actuarial Science 2 |

| CT2  | Finance and Financial Reporting (see Note 1) | BMAN10621(B) | Fundamentals of Financial Reporting |
|      |                                          | BMAN20242 | Introduction to Corporate Finance and Financial Instruments |

| CT3  | Probability and Mathematical Statistics | MATH20701 | Probability 2 |
|      |                                          | MATH20802 | Statistical Methods |
|      |                                          | MATH38141 | Regression Analysis, or |
|      |                                          | MATH48011 | Linear Models with Nonparametric Regression |

| CT4  | Models | MATH39511 | Actuarial Models |
|      |        | MATH39511 |                |

| CT5  | Contingencies | MATH20962 | Contingencies 1 |
|      |               | MATH39522 | Contingencies 2 |

| CT6  | Statistical Methods | MATH20972 | Actuarial Insurance |
|      |                      | MATH38032 | Time Series Analysis |
|      |                      | MATH38052 | Generalised Linear Models |
|      |                      | MATH39542 | Risk Theory |

| CT7  | Economics | ECON10041 | Microeconomic Principles, or |
|      |           | ECON10081 | The UK Economy - Microeconomics |
|      |           | ECON10042 | Macroeconomic Principles, or |
|      |           | ECON10082 | The UK Economy - Macroeconomics |

**Note 1.** The two course units linked to CT2 are second year options. If students choose to take these course units then these marks will be included in the Actuarial Average and if this is satisfactory they will be recommended for exemption from seven CT units. If students do not take either of these course units, they will be considered for exemption from six CT units on the basis of the Actuarial Average of fourteen course units. If
students take BMAN10621(B) but do not take BMAN20242, the mark for BMAN10621 will still be included in the Actuarial Average (but it will not be possible to earn exemption for CT2). Such students will be considered for exemption from six CT units on the basis of the Actuarial Average of fifteen course units.

**Note 2.** A student who fails one of the above Level 1 or Level 2 course units with a mark less than 40% may resit the examination the following August (whether or not they are required to do so by the degree regulations) but, in the absence of approved mitigating circumstances, the maximum resit mark which can count towards accreditation is 40%. (For the purposes of the University degree classification and on a University transcript, the mark from the resit is capped at 30% for course units for which the mark from the first attempt is less than 30%. Otherwise the mark from the first attempt is the one which is used.) Rather than taking an optional resit the following August, a student who is not required to take the resit by the degree regulations may resit the examination in the next academic year.

**Note 3.** A student who graduates from this programme but does not achieve an Actuarial Average of 65% (or more) will be recommended for exemptions from individual CT subjects for which their marks in the associated course units reach the standard agreed by the Independent Examiner appointed by the Faculty of Actuaries and Institute of Actuaries.

**Note 4.** Under the accreditation agreement, the recommendations for exemptions will be honoured immediately the graduate becomes a member of either the Faculty of Actuaries or the Institute of Actuaries.

**Note 5.** The other CT subjects are CT8 (Financial Economics) and CT9 (Business Awareness). MATH37001 and MATH39032 contain material relevant to CT8, while UCOL20020/21/22/31/32 (Leadership in Action) and MCEL30001/2 (Tools and Techniques for Enterprise) contain material relevant to CT9.

### 2.7 ROYAL STATISTICAL SOCIETY ACCREDITATION

The following undergraduate degree programmes at the University of Manchester were accredited by the Royal Statistical Society (RSS) in November 2010.

- MMath/BSc in Mathematics
- MMath/BSc in Mathematics and Statistics
- MMath/BSc in Mathematics with Financial Mathematics
- BSc in Mathematics with Business and Management
- BSc in Mathematics with Finance
- BSc in Mathematics with a Modern Language

These programmes are accredited on a transcript basis. This means that graduates from the programmes who wish to apply for Graduate Statistician status with the Society must
produce a transcript to show that a combination of course units satisfactory to the Society has been taken. A requirement is that graduates must have achieved Lower Second Class Honours or better.

The Society will automatically accept for Graduate Statistician status graduates from the MMath/BSc degree programme in Mathematics and Statistics whose transcripts include Level 3 and Level 4 Probability and Statistics course units worth at least 60 credits including

(a) MATH38001 or MATH48001  Statistical Inference, and either
(b) MATH38011  Linear Models, or
(c) MATH48011  Linear Models with Nonparametric Regression, or
(d) MATH38141  Regression Analysis

Graduates who have not taken these options will be looked at on an individual basis.

For the remaining MMath/BSc degree programmes, the Society will automatically accept for Graduate Statistician status graduates who have taken Level 3 and Level 4 Probability and Statistics course units worth at least 60 credits, including MATH38001/MATH48001 and either MATH38011/MATH48011 or MATH38141. Other cases will be looked at on an individual basis. (Level 3 and Level 4 Probability and Statistics course units begin with the codes MATH37, MATH38, MATH47 and MATH48.)

The MMath/BSc degree programme in Mathematics and Statistics and the specific pathways within the remaining MMath/BSc degree programmes (as described above) are accredited by the RSS as being of the appropriate breadth and depth to provide a foundation for a career as a professional statistician. Success on these programmes or successful completion of these pathways (achieving Second Class Honours or better) automatically qualifies you for the RSS Graduate Statistician (GradStat) award. This award is a stepping stone to full professional membership of the RSS and the Chartered Statistician (CStat) award. More details can be found at the website:

http://www.rss.org.uk/professionalmembership

2.8 DEGREES OF BSc IN MATHEMATICS AND STATISTICS AND MSc IN STATISTICS (WITH APPLICATION TO FINANCE)

The School of Mathematics has agreements with some overseas universities that enable students to enter the Second Year of the BSc Honours degree programme in Mathematics and Statistics, complete the BSc Degree in two years and then take the MSc degree programme in Statistics. Their programme of study in the Second and Third Years of the BSc degree programme is as follows.

Year 2

In Semester 1, MATH20101, MATH20201, MATH20401 and MATH20701 are
compulsory while in Semester 2, MATH20712, MATH20802, MATH20812 and MATH20912 are compulsory. In Semester 2, students also take Level 2 Mathematics options worth a total of 20 credits, chosen from Table 2.3.1, giving a total of 120 credits. If you wish, you may take outside course units up to a maximum of 20 credits in place of Mathematics options.

**Year 3**

In Semester 1, MATH37001, MATH48001 and MATH48011 are compulsory while in Semester 2, MATH39032, MATH48052 and MATH48082 are compulsory. In each semester, students also take Level 3 (or Level 4) Mathematics options worth a total of 20 credits, chosen from Tables 2.4.1 and 2.4.2, giving a total of 120 credits. The following course units are not offered to these students in the Third Year of the BSc degree programme because an enhanced version of each of them is compulsory for the MSc degree programme: MATH38061/MATH48061, MATH38091/MATH48091, MATH38032/MATH48032, MATH48122, MATH48132 and MATH49102.

Students must take course units worth a total of 120 credits. **Students must take at least 80 credits of Level 3 (or Level 4) Mathematics course units.** You may take at most 40 credits of outside course units (with the approval of the Senior Tutor) or Level 2 Mathematics course units. **You may take at most 20 credits at Level 2 in the Third Year and the programme must include at least 100 credits at Level 3 (or Level 4).** Thus, it is only possible to take more than 20 credits of outside course units if some are at Level 3.

**2.9 STUDY ABROAD**

We offer the opportunity for MMath students to study abroad for a semester or for a whole year during their degree programme. MMath students can apply to spend the whole of the Third Year abroad, or they can apply to study abroad for a single semester of the Third Year. The preferred option is for the student to spend the whole year abroad, when the marks for the examinations taken overseas can be converted and used in the calculation of the degree classification. It is also possible for students to spend the First Semester of the Third Year abroad. Going abroad for the Second Semester of the Third Year is difficult because students cannot take the First Semester examinations in Manchester in January, unless they choose to go to Australia.

Note that, under the University Regulations, all students must be in attendance at Manchester for the whole of their final year of study.

If you have the misfortune to be affected by illness or other mitigating circumstances while you are abroad, you should inform the School of Mathematics at the University of Manchester in the usual way. (See Sections 3.1 and 5.8 of this Handbook for more information about this.) Your application for mitigating circumstances will be considered in Manchester, not by the overseas institution.
The International Programmes Office, located in the Atrium on the first floor of University Place, provides information and support on a wide range of international opportunities for undergraduate students, including study abroad.

Further information can be obtained from the Study Abroad Advisor in the School of Mathematics (Dr. Carolyn Dean, Room 2.208, Alan Turing Building) and from the Study Abroad website:

http://www.studyabroad.manchester.ac.uk/

### 2.10 MODES OF STUDY

(a) **Course Units and Credits**

Each course unit (or lecture course) is worth a certain number of credits (usually 10, 15 or 20). To obtain the MMath or BSc Honours Degree, students normally need to take course units worth 120 credits in total per year. The number of credits allocated to an individual course unit indicates the weighting of that course unit relative to the whole year's work.

Codes for Mathematics course units consist of the letters MATH followed by five digits. The first indicates the **level** of the course unit. In general, a level of 1 corresponds to a First Year course unit, a level of 2 corresponds to a Second Year course unit, and so on. The fifth digit denotes the semester in which the course unit is offered: 1 indicates a First Semester course unit, 2 indicates a Second Semester course unit and 0 indicates a full-year course unit.

The following table shows the number of lectures and support classes per week for each of the First Year course units and whether the course unit is supported by feedback supervisions or feedback tutorials or workshops.

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>TEACHING METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH10001</td>
<td>Mathematical Workshop</td>
<td>1 lecture and one two-hour workshop</td>
</tr>
<tr>
<td>MATH10101</td>
<td>Sets, Numbers and Functions A</td>
<td>4 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>MATH10111</td>
<td>Sets, Numbers and Functions B</td>
<td>3 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>MATH10121</td>
<td>Calculus and Vectors A</td>
<td>4 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>MATH10131</td>
<td>Calculus and Vectors B</td>
<td>3 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>MATH10141</td>
<td>Probability 1</td>
<td>2 lectures and 1 feedback tutorial</td>
</tr>
<tr>
<td>MATH10951</td>
<td>Financial Mathematics for Actuarial Science 1</td>
<td>2 lectures and 1 feedback tutorial</td>
</tr>
<tr>
<td>MATH10202</td>
<td>Linear Algebra A</td>
<td>4 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>MATH10212</td>
<td>Linear Algebra B</td>
<td>3 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>MATH10222</td>
<td>Calculus and Applications A</td>
<td>4 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>CODE</td>
<td>TITLE</td>
<td>TEACHING METHOD</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MATH11222</td>
<td>Calculus and Applications C</td>
<td>4 lectures and 1 feedback supervision per week for the first 6 weeks of Semester 2</td>
</tr>
<tr>
<td>MATH10232</td>
<td>Calculus and Applications B</td>
<td>3 lectures and 1 feedback supervision</td>
</tr>
<tr>
<td>MATH10242</td>
<td>Sequences and Series</td>
<td>2 lectures and 1 feedback tutorial</td>
</tr>
<tr>
<td>MATH10282</td>
<td>Introduction to Statistics</td>
<td>2 lectures and 1 feedback tutorial (or 1 computing workshop) per week. There will be 4 computing workshops and 7 feedback tutorials.</td>
</tr>
</tbody>
</table>

At Levels 2 and 3, a course unit worth 20 credits normally consists of 4 lectures and 1 or 2 feedback tutorials per week, while a course unit worth 10 credits normally consists of 2 lectures and 1 feedback tutorial per week. At Level 4, a course unit worth 15 credits usually consists of 2 or 3 lectures per week and 1 or 2 feedback tutorials per fortnight, although at this level some material may be taught as a reading course, rather than by lectures.

(b) Lectures

The main method of teaching used by the School of Mathematics is the formal lecture. Lectures usually start on the hour and are of 50 minutes duration. In a lecture, the lecturer presents the subject orally and usually writes notes on the blackboard or gives a power-point presentation or makes use of a visualiser. You will need to listen, think and take notes.

Your ability to take concise notes is dependent on your ability to listen. Listening needs to be more analytical than is often realised. You need to think at the same time as you listen, so that you develop the ability to recognise what is likely to be important and what is not.

You must make sure that you write down at least everything that the lecturer writes on the board. However, what the lecturer is saying is heard only once; you do not have much time to decide what part of it to write down. A balance must be achieved between taking no notes of the spoken word and trying to make a word-for-word transcript.

When you don't understand the lecturer, don't panic. Keep taking notes and seek help as soon as possible from the lecturer, your tutor or supervisor, and other students. Don't be afraid to ask questions during or at the end of the lecture. Usually other students don't understand either and will admire your courage. Like everybody else, lecturers often make mistakes, so do point these out as soon as you spot them. Remember, too, that you can only master concepts if you keep working at them, by reading textbooks and doing problems.

Aim to make a set of neatly set out, coherent notes during the lecture. Some people prefer to make rough notes during the lecture and rewrite them afterwards.
but very few can keep this up for long. Moreover, the time after the lecture can be spent more profitably.

Notes should be well spaced so that you can read them through and amplify them as a result of further work. You will need to use your notes for revision later in the year, so it is well worth spending a little time after each lecture making sure that your notes are legible and that you can understand them. It is very important that you have a complete set of notes for each course unit.

When reading and amplifying your lecture notes, you should identify the key material (for example, concepts, theorems, applications of theorems, counter examples, techniques), be clear about their role and the way they are used. Look for examples in your notes, textbooks, examples sheets and past examination papers, and add these references to your notes. The syllabus (course unit description) will often clarify the structure of the course unit.

If you are having difficulty with the lecture content, do go to see your lecturer. Do this as soon as possible. Otherwise you will fall behind and will have several poorly understood lectures to sort out. It will be easier for your lecturer to help if you can be precise about your difficulty. Take your notes with you and mark the relevant places, with a concise note of your exact difficulty. Sometimes a change of topic in lectures will give you a fresh start, but don't put off sorting out your difficulties.

If you need help from a lecturer (perhaps because you are having difficulty with the lecture content), try to seek help in an examples class (feedback tutorial), whenever possible. Otherwise, you should speak to the lecturer at the end of a lecture, or contact him or her by e-mail or telephone to arrange a meeting. Contact details for lecturers are given in Appendix A of this Handbook.

If you find that a course unit causes considerable difficulties not only to you but also to many other students, then you should first approach the lecturer concerned (either individually or collectively) and discuss the problem with him/her. If the problem persists then you should approach your Academic Advisor, who will discuss the problem with the lecturer concerned and other members of staff. If you are still unhappy at the outcome you can seek advice from your Programme Director, or the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building), or the Director of Teaching (Dr. M. D. Coleman, Room 1.109, Alan Turing Building), or the Director of Undergraduate Studies (Dr. L. A. Walker, Room 2.243, Alan Turing Building) or you can ask your student representative to raise the issue at the next meeting of the Staff-Student Liaison Committee. (See Section 6.1 of this Handbook for further information about the Staff-Student Liaison Committee.)

In lectures, students are asked to behave with courtesy and consideration for other students and for the lecturer. Please do not chat to your neighbour during lectures, as this will disturb the concentration of other students and may even
distract the lecturer. Students who disrupt lectures persistently will be reported to the Head of School.

Syllabuses (course unit descriptions) for all Mathematics course units may be found at the website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/course-units-offered/

Each course unit has some online course material associated with it. The nature of the online course material varies from course unit to course unit, but it may include lecture notes, examples sheets and solutions, and past examination papers. For some course units, the syllabus page on the web contains a link to the online course material. For all course units, however, the online course material can be accessed via the Blackboard Learning System. Blackboard is a web-based system that complements and builds upon traditional learning methods used at the University of Manchester. By using the Blackboard system, you can view course materials and learning resources. The software also provides tools for communicating with your lecturer or other students about the course unit, using discussions, chat or e-mail. You can find more information about Blackboard at the website:

http://www.studentnet.manchester.ac.uk/blackboard/

You can access Blackboard by logging into My Manchester at

https://my.manchester.ac.uk

Then select the My Blackboard tab.

(c) Feedback Tutorials (Examples Classes)

Each course unit normally has a number of feedback tutorials (or examples classes) associated with it. Feedback tutorials are usually of 50 minutes duration and start on the hour. Lecturers provide examples sheets for students (usually online) on a regular basis. In a feedback tutorial, the lecturer goes round the class, helping students individually with any problems they may be having with the questions on the examples sheets or with the lecture material. The lecturer may also work through some of the questions on the blackboard or whiteboard.

It is important that you attempt as many questions as possible from the examples sheet before the feedback tutorial. This will enable you to find out what your difficulties are, so that you can make optimum use of the time in the feedback tutorial to ask questions and get help. Discussions with peers will also be helpful in such matters.

Make sure you take all relevant notes, paper and pen to the feedback tutorial.
Don't be afraid to ask questions, no matter how trivial they may seem. If you are really shy about asking questions yourself, try to form a group and appoint a spokesman.

When model solutions to questions on the examples sheets are provided by the lecturer, do make use of them. Compare your solutions with those given. Sometimes you may learn more from a model solution to a problem for which you have found a correct solution than you will from solutions to problems which have baffled you.

**Students are expected to attend all lectures and feedback tutorials.** A record of attendance at feedback tutorials is taken at Levels 1 and 2. Students who miss classes will be contacted in the first instance by staff in the Teaching and Learning Office. Full details of attendance requirements and the action that will be taken against students who persistently miss classes are given in Section 4.1 of this Handbook.

(d) **Feedback Supervisions**

Some First Year course units are supported by feedback supervisions, rather than feedback tutorials. In a feedback supervision, a small group of about ten students meets with a member of staff each week to discuss the lecture material and examples sheets for the course unit. You will be asked to submit your solutions to the questions on the examples sheets to your Supervisor each week so that he or she may mark them, comment on them and try to help you over any difficulties.

**Attendance at feedback supervisions is compulsory.** We monitor your work and attendance at feedback supervisions. Students whose work and attendance is unsatisfactory will receive a warning letter. If their work and attendance does not improve, they will be interviewed by a senior member of staff. Ultimately, students whose work and attendance at feedback supervisions is unsatisfactory can be excluded from the university. Further information about attendance requirements is given in Section 4.1 of this Handbook. **Note that feedback supervisions begin in the first week of each semester.**

For First Year course units with feedback supervisions, 10% of the marks are given for submission of the weekly coursework and participation in the feedback supervision. Each week, you will receive one mark if you attend the supervision and a mark of 0, 1 or 2 depending on the quality of your written work and your participation in the feedback supervision. This participation may involve, for example, answering questions, joining in discussions and writing solutions on the blackboard. The weekly marks will be used to determine your overall mark out of 10. The assessed coursework for the course unit normally contributes 15% to the marks for the course unit, with 75% coming from the examination. Two exceptions to this rule are MATH10121 and MATH10222, for which the assessed coursework contributes 10% to the marks for the course unit, with 80% coming
from the examination.

Should you be unable to attend a feedback supervision as a result of illness or any other acceptable cause, you should see your Supervisor as soon as possible to explain the reasons. You should also submit electronically a School of Mathematics Mitigating Circumstances Form, obtainable from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

Further information on sickness and absence is given in Section 5.8 of this Handbook.

(e) Coursework

Most Mathematics course units have a coursework element, which counts towards the assessment of the course unit. Typically, the coursework counts for about 20% of the total marks available for the course unit, but some course units are assessed entirely by coursework while others are assessed entirely by examination. The coursework can take various forms. It can consist of a short test during the Semester, it may take the form of an assessed computer practical or a project or you may be asked to work through a question sheet in your own time and hand in your solutions. Full details will be provided by the lecturers for the course units.

Handing in work is most important, whether for assessed or unassessed coursework. It is the only way you will find out whether your ideas are right, whether you have understood the problem correctly and whether your solutions are correct (even if the final answers look right). You should also pay close attention to comments on your work.

When coursework or project work is asked for by a given date, this must be adhered to. **For the School of Mathematics, unless there are mitigating circumstances, students will lose 20% of the marks awarded to them for the coursework for each weekday late that the work was submitted. Thus, work submitted one week late will receive no marks. For the project course units (MATH30000, MATH30011, MATH30022, MATH40000, MATH40011 and MATH40022), students will lose 10% of the marks awarded to them for the project for each weekday late that the work was submitted.** Students may be given permission to submit work late if there are special circumstances but this would need to be authorised in due course by the Mitigating Circumstances Panel. You should apply for an extension by submitting electronically a School of Mathematics Mitigating Circumstances Form and you should apply before the deadline whenever possible. Applications submitted after the deadline must have a good reason for not being submitted before the deadline. Should you be unable to submit coursework (or project work) as a result of illness or any other acceptable cause, you should see the lecturer or supervisor concerned and your
Academic Advisor. You should also obtain a doctor's note (whenever possible) and submit electronically a School of Mathematics Mitigating Circumstances Form, obtainable from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

Further information on sickness and absence is given in Section 5.8 of this Handbook.

Sometimes the lecturers will ask you to hand in your coursework to the School’s Teaching and Learning Office (Room G.202/G.204, Alan Turing Building) via Reception in the Alan Turing Building. Before handing in your work, you should complete a Coursework Cover Sheet (available from Reception) and attach it to your coursework. You should make sure that all pages of your coursework are fastened together securely with a staple. You will be given a receipt which you should keep safely, in case you are asked to produce it later.

If you miss a coursework test, then you must obtain a doctor’s note (whenever possible) and submit electronically a School of Mathematics Mitigating Circumstances Form, obtainable from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

Your case will then be considered by the appropriate Mitigating Circumstances Panel, which will decide what action to take (if any). In the interests of fairness, it is not normally possible for lecturers to make alternative arrangements for individual students to sit the test at a different time or to submit a different type of coursework.

(f) Private Study

As a rough guide you should be spending approximately twice the number of instruction hours in private study, mainly working through the examples sheets and reading your lecture notes and the recommended text books.

You may study for several hours at a time, or make use of short periods of time. It is easy to fritter away twenty-minute or half-hour periods but over a week they can amount to several hours lost, so try not to waste those valuable twenty-minute periods. The odd hours between lectures and feedback tutorials are particularly valuable, as resources (such as members of staff, the library and other students) are available for consultation.

The transition from school to university can be traumatic. Not only are there inevitable and substantial changes in your social and personal circumstances, but you will also find major changes in the teaching/learning process. At school, your
work was probably directed by a teacher who was in close contact with you and able to give you continual encouragement and feedback on your progress. Although the pace of work is much greater at university, it is left much more to you to decide your own level and direction of study. You will have to find ways of monitoring yourself and checking on your progress.

A common problem is feeling overwhelmed by the vast amount of work that has to be done, leading to a reluctance to get started. Try spending a few minutes planning your proposed work before actually starting on it, breaking down the work into manageable amounts.

Your learning is mainly your responsibility and is an independent process, in that nobody can learn on your behalf, although the teaching staff will do all they can to help you. Students who have the greatest success on their degree programmes tend to plan their study time and study in an environment free from distractions such as television or radio. In planning your studies, it is important to determine your priorities and allocate the time that you intend to spend on a particular aspect of study. This may need to be modified in the light of experience, but you can learn from these modifications to allow more, or less, time for a similar task in the future, and thus improve the planning process.

Attempt to keep to the plan and periodically check the time and effort spent on your various activities. If, after a few weeks, the time you spend studying has decreased, ask yourself whether this is because you find your studies less arduous than you expected, or because you have been neglecting them, or because you find them uninteresting. If you have increased the time spent studying, is it because your original expectations of the time required for study were too low, or are you finding the work difficult, or are you so interested in the work that you are spending more time studying? Changes to your study plan can easily be made, if necessary, but if you are finding the work very difficult, then do go and talk to your Academic Advisor, or to your lecturers. Difficulties in studying are quite common, but it is important that you seek help and don’t let small problems develop into big ones.

Although many people find the pressure of deadlines for the completion of an assignment helpful to motivation and concentration, it is essential to allow yourself enough time so that the work you submit does you justice. For computing assignments in particular, the earlier you start the better. Your programs have to work, and achieving this usually takes longer than you expect.

Where you carry out your private study is a matter of personal preference. You can, for example, use the Quiet Study Room (Room G.101, Alan Turing Building) or the Work Room (Room G.211, Alan Turing Building) or the Alan Gilbert Learning Commons (see Section 7.2 of this Handbook) or the University of Manchester Library (see Section 7.1 of this Handbook) which has plenty of space for students to study, as well as storing a large selection of journals and books, covering all aspects of the subjects studied in the University
Solving Mathematical Problems

Solving mathematical problems usually requires some insight and creative use of the mathematics involved. You may find that you are unable to do all of them, and some of them you cannot even start. There are no hard and fast rules for how to go about solving problems, but here are some suggestions that other students have found useful.

1. Have your lecture notes and relevant textbooks at hand for reference.
2. Read the entire question carefully and identify the mathematics likely to be involved. Re-read the relevant sections of your lecture notes, if necessary. Look for similar problems, either in your lecture notes or in your textbooks.
3. If possible, draw a picture or diagram.
4. If the problem is a general one, look at special cases or solve a simpler problem first.
5. If the problem is abstract, look at concrete examples first. For example, put numbers in place of letters, take specific examples of sequences or sets, and so on.
6. Use a computer package such as Matlab to solve specific problems of the same type (perhaps with numbers instead of letters) or plot graphs of the functions involved, to help you to gain insight.
7. Although the final solution should be logically ordered, you may find it helpful in developing it to work backwards from the result to be obtained (if you are given it) as well as forwards from the data of the problem.
8. Discussion with fellow students often produces new insights. Explaining ideas to others will help to clarify your own thinking. Don't be afraid to share ideas. You will find that others share your difficulties, but each contributes new ideas or understanding. At the same time, try to develop your own thinking. There is little value in simply copying someone else's work. Any work to be handed in for assessment should be your own, of course.
9. Don't be afraid to ask your lecturer or supervisor for help.
10. Once you have solved the problem, you will need to write out the final solution. When doing so, be sure you state what the symbols represent and pay careful attention to the logical flow of the argument. Read it back to yourself to make sure that it makes sense. Keep the question and your solution filed for future reference at revision time.

Learning Theorems

The appreciation of theorems and the construction of proofs are two of the most difficult things in learning mathematics. You need plenty of practice and experience, but you may find the following suggestions useful.
1. When tackling a new theorem, find out first what it is for and how to use it. Try to identify the main steps in the proof, to get a broad outline of how it works.

2. Use diagrams and pictures to explore the truth or falsity of statements through explicit illustration.

3. Study lecture notes and textbooks to identify the assumptions and the conclusions of theorems.

4. Try to understand the necessity of each assumption by finding a previous example where that assumption is used. Try to demonstrate the necessity of assumptions and hypotheses by means of counter examples.

5. Attempt proofs of similar theorems left as exercises in the lecture notes or text books.

6. Look for simple special cases. Familiarity with the simple makes complicated results easier.

7. Gain practice in the various methods of proof. Identify the ideas in proofs and note their reappearance.

(i) **Using Textbooks**

Textbooks are often recommended by the lecturers either to supplement or to replace lecture notes. Ideally, you should have your own copy so that you can annotate it and use it at revision time when the library copy is in heavy demand. Books vary widely in the notation they use and in their approach to a subject. During the early stages, you should stick to books recommended by the lecturer and books which use similar conventions and notation.

Read slowly and carefully and always with pen and paper to hand to do supplementary working. Be prepared to go over an argument several times. If there is a step you don't understand, note it for later consideration. Try to understand the overall structure of an argument as well as the detailed steps. Make notes and cross reference them with your other notes on the subject. Always indicate on these notes the books from which they were taken (with the page numbers) so that you can find the original again easily if necessary.

Problems in the textbooks often have hints (and even answers) at the end of the book. These may help you with work on examples sheets. Definitions and notation differ slightly from one book to another and from lecture notes. There may be an index of symbols and notation to help you.

(j) **Revision Techniques**

Your study plan for the year should include time for revising for the formal examinations, which are held at the end of each Semester. Revision is not a substitute for steady, hard work while course units are in progress. The revision period before examinations is a time for re-familiarising yourself with ideas which may have been crowded out by more recent work, rather than trying to understand new work. The best way to memorise mathematics is by familiarity.
through regular use. Some formulae, however, will be hard to remember and these you should be able to derive where necessary from more basic principles. Learn the basic steps in proofs, rather than try to commit the entire proof to memory.

You should allow yourself plenty of time to read through all your lecture notes and look back through (and, where necessary, complete) the examples sheets. Mathematics is best revised (as well as learned) by doing it. Try to answer questions from past examination papers. Practise doing examination questions under self-imposed examination conditions without the aid of your notes. Difficulties which you encounter when trying to do problems and examination questions will force you back to your lecture notes and textbooks for information on the topic you are revising. Make a list of the points you do not understand and the problems you cannot do and arrange to see the appropriate lecturer to go through your difficulties.

Try to avoid working all through the night before an examination, because you might then tire in the examination room. You are likely to do better in the examination if you are feeling wide awake. During your revision, remember to have some variety in your studies. Intersperse reading your lecture notes with working through problems from examples sheets and questions from past examination papers. Do not forget to make time for some relaxation during the revision period.

(k) Examination Technique

It is very important that you organise well the time you spend in the examination room. Before you start writing, you should read the instructions at the start of the paper and then read the whole paper carefully, before deciding which questions you are going to answer first. Try to answer the questions posed and avoid including in your answers things that are not relevant to the question that has been set. Attempt to answer the exact number of questions requested. It is usually easier to get the first 40% of the marks on any question rather than the last 20%. If you are short of time and have not attempted the number of questions specified in the rubric, it is better to spend the remaining time starting to answer another question rather than attempting to make a good answer better.

If you get stuck on a question, don't panic. You may find that you can't do one part of a question but, by assuming the result, you can continue with the rest. You may be able to complete the missing part later. If you are completely stuck, move on to the next question you intend to do. You can always go back later if you have time to spare or a fresh idea occurs to you. Sometimes, when you are working on one question, ideas will occur to you for solving another. Jot them down immediately for future reference so that you do not forget them.

You should aim to allow yourself time to read through your answers before the end of the examination. Never leave early. You may see something that you
missed first time, or get a useful new idea. On the other hand, if you are running out of time on your last question but know how you would have continued, give a brief description of your intended method.

[Much of the material in Section 2.10 is taken from the booklet ‘Study Skills for Mathematics’, edited by Pam Bishop and Laurence Nicholas and published by Sheffield Hallam University Press.]
3. TEACHING, LEARNING AND ASSESSMENT

3.1 EXAMINERS’ BOARDS

The Examiners’ Boards have the responsibility to operate the guidelines in a manner which is fair to students, taking into account all known circumstances. Each student is responsible for informing the Boards of any facts that he/she wishes to be considered. These facts may, for example, be concerned with personal difficulties or ill health (whenever possible obtain a medical certificate for ill health). You should always inform your Academic Advisor. You should also submit electronically a School of Mathematics Mitigating Circumstances Form, obtainable from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

Remember that if you want the Examiners’ Boards to take medical or other special circumstances into account, it is important that you provide independent documentary evidence (such as a Doctor’s Note or a letter from the Counselling Service) to support your case, whenever possible. (See Section 5.8 of this Handbook for further information about sickness and absence.)

For illnesses of up to seven days that affect an assessment worth no more than 20% of the total mark for that course unit, we will accept a Self-Certification Form obtainable from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

If you have missed a coursework test or coursework deadline, or your performance has been affected, you should submit your mitigating circumstances before the test or deadline or, exceptionally, within five working days.

If your problems are ongoing, or you feel that circumstances have affected your performance in examinations, or caused you to miss examinations, you should submit your Mitigating Circumstances Form by the following deadlines:

First Semester Examinations: FRIDAY, 30 JANUARY 2015.

Second Semester Examinations: FRIDAY, 5 JUNE 2015.

Resit Examinations: TUESDAY, 1 SEPTEMBER 2015.

However, you should submit information about mitigating circumstances as soon as the problem arises, rather than waiting for the deadline. Late requests for mitigation will not be accepted unless there is a very good reason why you could not submit the application earlier.
Only new information that has become available subsequent to the meeting of the Examiners’ Board may be used in appeals, other than where exceptional circumstances gave the student good reason to withhold information.

You should ensure that your contact address for the Summer Vacation given on My Manchester is correct, in case we need to contact you about your performance in the examinations. This is important if you are required to take some resit examinations in August, for example. Unless you tell us otherwise, we shall contact you at the home address given on My Manchester. You can log into My Manchester at

https://my.manchester.ac.uk.

Select the My Services tab.

Select the Personal Information portlet.

You will need your University username and password to log into My Manchester. If you have forgotten your password or you cannot log in for some other reason, you will be prompted to contact the IT Service Helpdesk. Alternatively you can contact them at the website:

http://www.itservices.manchester.ac.uk/contacts

Your examination results will be available on My Manchester as soon as possible after the meeting of the relevant Board of Examiners.

Note that we normally contact students via their University e-mail address in the first instance, so it is very important that you read your University e-mail regularly, even during the vacations.

3.2 ASSESSMENT

(i) Mathematics Examinations

It is widely recognised that no assessment system is ideal for all students. Some react badly to the pressure of exams, while others prefer the discipline of a regular exam timetable. Hence, on most Mathematics course units there is a mixture of assessed coursework which is handed in at various times throughout the year and formal end of semester exams in each subject. The two sets of marks are combined to make 100%. The proportion of coursework marks can vary. Full information about this will be given by the lecturers in charge of course units. Some general information about this may be found in Section 2.10 of this Handbook while details of the method of assessment for each course unit will be found in the syllabus on the web.

First Semester course units are normally examined in January, while Second Semester course units and full-year course units are normally examined in May/June.
Full information about the length of each examination paper, the number of questions on each paper and the number of questions you are expected to answer will be given to you by the lecturers in charge of course units. They will also give you examples of typical examination questions. Examination papers from previous years are available via the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/pastexaminationpapers/

If you answer more than the number of questions required in the rubric of an examination paper, examiners will normally mark all the questions you attempt and take the marks from the best ones. Examiners may adopt a different procedure but, if they do, the procedure to be adopted will be explicitly described in the rubric.

(ii) Examination Timetables

The examination timetables are posted well in advance of the examination periods on the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/

You must check the examination timetable in good time. Each student is allocated an individual seat number for each examination and you are required to sit in the seat which has been assigned to you. You can obtain your own individual copy of the timetable from My Manchester. You can log into My Manchester at the website:

https://my.manchester.ac.uk

Then select the My Course tab followed by the My Exams portlet. You will need your University username and password to log into My Manchester. If you have forgotten your password or you cannot log in for some other reason, you will be prompted to contact the IT Service Helpdesk. Alternatively you can contact them at the website:

http://www.itservices.manchester.ac.uk/contacts

Queries about the examination timetable should be addressed to the Student Services Centre. (See Section 5.12 of this Handbook for more information about the Student Services Centre.)

The University does not regard failure to read the timetable correctly as an acceptable reason for absence.

(iii) Examination Regulations

The examinations usually start at either 9.45 am or 2.00 pm (although there are some exceptions). You should be present at least 15 minutes in advance. Candidates are not
allowed to leave the examination room during the first half hour of an examination. Candidates arriving more than half an hour after the start of the examination will not be admitted. Any student who arrives more than half an hour late for an examination or realizes later that an examination has been missed should immediately contact the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building) or the staff in the Teaching and Learning Office (Room G.202/G.204, Alan Turing Building) via Reception in the Alan Turing Building.

You must take your Student Registration Card (Swipe Card) to all your examinations and display it on your desk. Invigilators use the card to confirm your identity.

You must write only in the answer-books provided (including any rough work) and you must not tear pages out of answer-books. Any work that you do not wish to submit for marking must be clearly crossed out, but must not be removed from the answer-books provided.

Students may use any calculator, provided that it does not have

- any means of inputting or storing text, alphabetical or other symbolic information, including mathematical expressions (except that hexadecimal keys a to f are allowed);
- any means of transmitting or receiving information, including (but not restricted to) infra-red, microwave and wireless ports and cable connections such as USB ports.

Calculators must be silent in operation and must have their own self-contained power supply. No recharging facilities will be available, and candidates must bring their own spare batteries.

Mobile telephones must not be taken into examinations.

Dictionaries are NOT allowed in examinations in general, except for Visiting Students (that is, students who are on exchange schemes).

Full details of the university’s examination regulations, including the university’s policy on the use of calculators and dictionaries, may be found on the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/conduct/

Students who need to take their examinations in a special room, or need extra time for their examinations, or need the help of a scribe or a reader because of a long-term or ongoing disability should see the School’s Disability Coordinator (Mrs. Tracie McArthur, Teaching and Learning Office, Room G.202/G.204, Alan Turing Building) as soon as possible, and certainly no later than FRIDAY, 3 OCTOBER 2014. Students with a short-term disability (for example, resulting from an injury or illness that occurs during the year) should see the School’s Disability Coordinator as soon as possible after the disability occurs. (See Section 5.7 of this Handbook for more information about the
School’s Disability Coordinator.)

When timetabling examinations, the University makes every effort to avoid holding examinations on religious days or festivals which occur during the official assessment periods, given in Section 1.2 of this Handbook. If you are unable to attend examinations on any date within these assessment periods, for strict religious reasons, then you should notify the School’s Examinations Administrator (Mrs. Tracie McArthur, Teaching and Learning Office, Room G.202/G.204, Alan Turing Building) by **FRIDAY, 3 OCTOBER 2014**. You should also complete the Examinations and Religious Observance Form, available from the website


and return it to the Student Services Centre by dates that are published annually for each examination period and that may be found at this website. The University cannot accept responsibility for students being timetabled for examinations when their religious requirements make it impossible for them to attend if you do not give notice in writing by this date. (See Section 5.12 of this Handbook for more information about the Student Services Centre.)

**It is a disciplinary offence to commit any act whereby you seek to obtain for yourself, or for another person, an unfair advantage with a view to achieving a higher mark or grade than you would otherwise secure.** This could, for example, consist of copying from the examination script of another candidate or allowing copying from your own script, or introducing (into an examination) books, notes or other unauthorised material (including material held in a calculator memory). If there is sufficient evidence, such cases will be reported to the University’s Student Discipline Committee. Penalties may range from a reprimand, awarding a mark of zero for the individual element or all elements of the examination/assessment in which the candidate has been found guilty, through to expulsion from the University.

Examination regulations are given in full at the following website:

[http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/conduct/](http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/conduct/)

(iv) Disclosure of Marks and Transcripts

Your examination results will be available on *My Manchester* as soon as possible after the meeting of the relevant Board of Examiners. Detailed information and advice on your progress and examination performance should always be obtained from your Academic Advisor (or the Senior Tutor, if your Academic Advisor is not available). Please note that examination results cannot be given out by e-mail or by telephone.

If, after graduating, you have need for an official list of such marks, you can obtain an online **Academic Transcript** or order a paper copy of an academic transcript by visiting
If you have any queries about examination issues, then you should contact the staff in the Teaching and Learning Office (Room G.202/G.204, Alan Turing Building) in the first instance. If necessary, they will refer you to the School’s Director of Examinations (Dr. James Montaldi, Room 2.113, Alan Turing Building), or the School’s Examinations Officer (Dr. G. Megyesi, Room 2.123, Alan Turing Building), or the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building), or the Director of Undergraduate Studies (Dr. L. A. Walker, Room 2.243, Alan Turing Building).

3.3 PROGRESSION RULES AND DEGREE CLASSIFICATION  
(First, Second and Third Year Students only)

All students commencing their studies from September 2012 will be subject to the Undergraduate Degree Regulations given in Appendix B of this Handbook. These rules are described briefly in Section 3.3 of this Handbook. In the academic year 2014-2015, they will apply to all First, Second and Third Year students in the School of Mathematics.

(i) Marking Scheme for Examined Course Units (Lecture Courses)

Examination papers and assessed coursework are graded by the examiners into categories which relate to those used for final degree classification i.e. 1st, 2.1, 2.2, 3rd. A notional guide to the standard required is that the average mark lies in the band stated below.

<table>
<thead>
<tr>
<th>% Range</th>
<th>Degree Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>70% and over</td>
<td>first class honours (1st)</td>
</tr>
<tr>
<td>60% - 69%</td>
<td>upper second class honours (2.1)</td>
</tr>
<tr>
<td>50% - 59%</td>
<td>lower second class honours (2.2)</td>
</tr>
<tr>
<td>40% - 49%</td>
<td>third class honours (3rd)</td>
</tr>
<tr>
<td>30% - 39%</td>
<td>compensatable fail</td>
</tr>
<tr>
<td>Less than 30%</td>
<td>non-compensatable fail</td>
</tr>
</tbody>
</table>

The examiners use their professional judgement to scale the raw marks achieved for each unit of assessment (usually an examination paper plus coursework; sometimes a unit of assessment consists of an examination paper only or coursework only).

The marks attained in the First Year do not count towards the final degree classification.

The overall mark for degree classification is a weighted average of the overall marks for each year of the programme with the following weights:

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http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/award-confirmation/transcripts/
For the MMath programmes:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 0.2 : 0.4 : 0.4.

For the three-year BSc programmes:

Year 1 : Year 2 : Year 3 = 0 : 0.33 : 0.67.

For the BSc programme in Mathematics with a Modern Language:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 0.33 : 0 : 0.67.

A Third Year BSc student or Fourth Year MMath student who obtains an overall mark in the range required for class 1, 2.1 or 2.2 and obtains at least two-thirds of the credits for the final year with a mark not less than 40.0% will be awarded that class of degree. *Special compensation* may be awarded for up to 60 credits at Level 3 (or 4) for any failed course unit, provided the student has passed at least 60 credits at the level of the award. However, there is a penalty applied because of the failure of more than 40 (but no more than 60) credits and the student will have the degree classification reduced to the classification below that which would have been awarded on the basis of the weighted average for the programme.

A student who obtains an overall mark in the range required for class 3 and obtains at least half of the credits for the final year with a mark not less than 40.0% will be awarded that class of degree.

Full details of the method used to determine your degree classification are given in the University’s Undergraduate Degree Regulations. An edited version of these Regulations is in Appendix B of this Handbook.

**(ii) Progression Rules**

The progression rules are given in more detail in Appendix B of this Handbook. A summary of these rules is given here.

Students normally take course units worth 120 credits in each year of their degree programme.

To progress to the Fourth Year of the MMath degree programme, students must achieve an overall Third Year mark of at least 55% and satisfy the requirements for at least a Lower Second Class BSc Honours Degree.

To progress to the Second or Third Year of their degree programme, students must satisfy the following rules:

- **Students must pass a minimum of 40 credits on the first attempt** in each of the First and Second Years in order to progress. (The pass mark is 40%.) When a
student fails to do this, they have failed the year.

- Students progress on the basis of credit accumulation in accordance with the programme requirements. Students can progress once they have achieved enough credit at each level of their programme.
- Students must achieve (after resits if necessary) an individual course unit mark of at least 40% in course units which total 80 credits or more in each of the First and Second Years.
- Students must achieve (after resits if necessary) an individual course unit mark of at least 30% in remaining course units.

In addition, to progress to the Third Year of the MMath degree programme, students must achieve an overall Second Year mark of at least 55%.

(iii) Compensation and Resits (First and Second Year Students only)

First and Second Year students who pass a minimum of 40 credits on the first attempt but fail to progress to the following year of their degree programme in June will be reassessed. The Board of Examiners will decide which course units have to be re-taken to achieve the credit to enable them to progress. This is known as a Referral. Students can be referred in up to 80 credits, but the authority to decide which units are retaken rests with the Board of Examiners.

Successful referrals are capped at 30% (for course units where the original mark was less than 30%). If the student fails a referred assessment for which the original mark was between 30% and 40%, then the original mark stands and the student has failed to achieve the required credit. If the student passes a referred assessment for which the original mark was between 30% and 40%, then the original mark stands and the student has achieved the required credit.

For most course units, it is likely that the reassessment will take the form of a resit examination in August.

Resit examinations for Level 1 and Level 2 Mathematics course units normally consist of an unseen examination paper.

Coursework does not count towards the resit mark.

The University does not normally allow resit examinations to be held abroad. Further information can be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/resits/resitting-abroad/

Students may occasionally be permitted to progress to Year 2 or Year 3 even if they have failed to achieve 120 credits in the preceding year, but they would need to study additional credits in the next year of the programme. (This is usually known as carrying course units or carrying credits.) Decisions on such cases will be made by the Board of
Examiners taking into account the overall performance and any other relevant information. Students should normally have achieved an average of at least 50% in the course units for which the credits have been awarded.

Students who are carrying credits are not normally required to complete the coursework for the additional course unit, but they have to pass the examination at the 40% level at the first attempt.

Students who miss an examination because of illness or other mitigating circumstances or whose performance in an examination is affected by illness or other mitigating circumstances may be allowed to take the resit examination as a first sit. This is known as a *Deferral*. In such cases, the coursework mark does count. The mark obtained in the first sit examination is used when calculating the mark for the year.

**The following course units are not compensatable:**

MATH10101/MATH10111  Sets, Numbers and Functions  
MATH10121/MATH10131  Calculus and Vectors  
MATH10202/MATH10212  Linear Algebra  
MATH10222/MATH10232  Calculus and Applications.

This means that students have to obtain a mark of at least 40% in these course units. If their mark at the first attempt is between 30% and 39%, then they will have to resit it and achieve a mark of at least 40% in the resit. They will not be able to carry these course units in the Second Year.

Additional requirements apply to some degree programmes, as follows:

**Actuarial Science and Mathematics.**

(1) If a First Year student has an uncompensatable fail in any of MATH10951, ECON10041 or ECON10081, and ECON10042 or ECON10082, then they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Second Year. They will not be able to carry these course units in the Second Year.

(2) If a Second Year student has an uncompensatable fail in any of MATH20951, MATH20802, MATH20962 and MATH20972, then they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Third Year. They will not be able to carry these course units in the Third Year.

**Mathematics with Finance.**

(1) First Year students who do not achieve a mark of at least 40% in BMAN10522 will have to transfer to an appropriate Single Honours Mathematics degree programme for the Second Year.

(2) Second Year students who do not achieve a mark of at least 40% in BMAN23000 will have to transfer to an appropriate Single Honours Mathematics degree
Mathematics with a Modern Language.

To progress to the Second (or Third) Year of the Mathematics with a Modern Language degree programme, students also need to satisfy the language requirement. In general, this means that students have to obtain at least 40% in the compulsory Level 1 (or Level 2) language course unit(s). Students who do not satisfy the language requirement will have to transfer to an appropriate Single Honours Mathematics degree programme for the following year, so long as they satisfy the Mathematics progression requirements.

Students who fail to proceed to the Second Year will not automatically be allowed to repeat the First Year. Each case will be judged on its merits and any extenuating circumstances will be taken into account.

Students are not normally permitted to repeat the Second Year, Third Year or Fourth Year.

Provisionally it is expected that resits will be held between MONDAY, 17 AUGUST and FRIDAY, 28 AUGUST 2015. (Note that resit examinations for both First and Second Semester course units are normally held in August.) The dates of examination periods can be found at the following website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/

Please note that a fee of about £75 will be payable for taking resit examinations. This fee currently covers all the resit examinations that you have to take in a particular resit examination period.

Note that there are no resits for Third and Fourth Year students.

The University does not normally offer a resit opportunity to students if they have not attempted the first sitting of the examination. If you miss an examination, then you should submit electronically a School of Mathematics Mitigating Circumstances Form, obtainable from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

You should also provide independent documentary evidence (such as a medical note) to support your case, whenever possible. (See Section 5.8 of this Handbook for further information about sickness and absence.) Further information about missing examinations can be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/missing-examinations/
3.4 DEGREE CLASSIFICATION (Fourth Year Students only)

All students who commenced their studies before September 2012 (and have not interrupted, repeated a year or transferred from a different School) will be subject to the Undergraduate Degree Regulations given in Appendix C of this Handbook. These rules are described briefly in Section 3.4 of this Handbook. In the academic year 2014-2015, they will only apply to Fourth Year students in the School of Mathematics.

Marking Scheme for Examined Course Units (Lecture Courses)

Examination papers and assessed coursework are graded by the examiners into categories which relate to those used for final degree classification i.e. 1st, 2.1, 2.2, 3rd. A notional guide to the standard required is that the average mark lies in the band stated below.

<table>
<thead>
<tr>
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<td>First class honours (1st)</td>
</tr>
<tr>
<td>60% - 69%</td>
<td>Upper second class honours (2.1)</td>
</tr>
<tr>
<td>50% - 59%</td>
<td>Lower second class honours (2.2)</td>
</tr>
<tr>
<td>40% - 49%</td>
<td>Third class honours (3rd)</td>
</tr>
<tr>
<td>30% - 39%</td>
<td>Compensatable fail</td>
</tr>
<tr>
<td>Less than 30%</td>
<td>Non-compensatable fail</td>
</tr>
</tbody>
</table>

The examiners use their professional judgement to scale the raw marks achieved for each unit of assessment (usually an examination paper plus coursework; sometimes a unit of assessment consists of an examination paper only or coursework only).

The marks attained in the First Year do not count towards the final degree classification.

The overall mark for degree classification is a weighted average of the overall marks for each year of the programme in the following proportions:

For the MMath programmes:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 1 : 2 : 2.

For the three-year BSc programmes:

Year 1 : Year 2 : Year 3 = 0 : 1 : 2.

For the BSc programme in Mathematics with a Modern Language:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 1 : 0 : 2.

A student who obtains an overall mark in the range required for class 1, 2.1 or 2.2 and obtains at least two-thirds of the credits for the final year with a mark not less than 40.0%
will be awarded that class of degree. A student who obtains an overall mark in the range required for class 3 and obtains at least half of the credits for the final year with a mark not less than 40.0% will be awarded that class of degree. Full details of the method used to determine your degree classification are given in Paragraphs 32 to 40 of the Regulations for Undergraduate Awards, reproduced in Appendix C of this Handbook. (With reference to Paragraph 37 of Appendix C, note that the School of Mathematics uses Method B.)

Students are not normally permitted to repeat the Fourth Year.

Note that there are no resits for Fourth Year students.

If you miss an examination, then you should submit electronically a School of Mathematics Mitigating Circumstances Form, obtainable from the School’s website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

You should also provide independent documentary evidence (such as a medical note) to support your case, whenever possible. (See Section 5.8 of this Handbook for further information about sickness and absence.) Further information about missing examinations can be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/exams/missing-examinations/

3.5 ACADEMIC MALPRACTICE
(PLAGIARISM, COLLUSION AND FABRICATION)

Introduction

1. As a student, you are expected to cooperate in the learning process throughout your programme of study by completing assignments of various kinds that are the product of your own study or research. For most students this does not present a problem, but occasionally, whether unwittingly or otherwise, a student may commit what is known as plagiarism or some other form of academic malpractice when carrying out an assignment. This may come about because students have been used to different conventions in their prior educational experience or through general ignorance of what is expected of them.

2. This guidance is designed to help you understand what we regard as academic malpractice and hence to help you to avoid committing it. You should read it carefully, because academic malpractice is regarded as a serious offence and students found to have committed it will be penalized. At the very least a mark of only 30% would be awarded for the piece of work in question, but it could be worse; you could be awarded zero (with or without loss of credits), fail the whole unit, be demoted to a lower class of degree, or be excluded from the programme.
3. Academic malpractice includes plagiarism, collusion, fabrication or falsification of results and anything else intended by those committing it to achieve credit that they do not properly deserve. You should note that work you submit may be screened electronically to check against other material on the web and in other submitted work. In particular, the Third and Fourth Year projects will be checked by anti-plagiarism software.

**Plagiarism**

4. Plagiarism is presenting the ideas, work or words of other people without proper, clear and unambiguous acknowledgement. This includes the unattributed use of parts of books or articles, passing it off as your own. It also includes ‘self-plagiarism’ (which occurs where, for example, you submit work that you have presented for assessment on a previous occasion), and the submission of material from ‘essay banks’ (even if the authors of such material appear to be giving you permission to use it in this way). Obviously, the most blatant example of plagiarism would be to copy another student’s work. Hence it is essential to make clear in your assignments the distinction between:

- the ideas and work of other people that you may have quite legitimately exploited and developed, and
- the ideas or material that you have personally contributed.

5. To assist you, here are a few important do’s and don’ts:

- **Do** get lots of background information on subjects you are writing about to help you form your own view of the subject. The information could be from electronic journals, technical reports, unpublished dissertations, etc. Make a note of the source of every piece of information at the time you record it, even if it is just one sentence.

- **Don’t** construct a piece of work by cutting and pasting or copying material written by other people, or by you for any other purpose, into something you are submitting as your own work. Sometimes you may need to quote someone else’s exact form of words in order to analyse or criticise them, in which case the quotation must be enclosed in quotation marks to show that it is a direct quote, and it must have the source properly acknowledged at that point. Any omissions from a quotation must be indicated by an ellipsis (...) and any additions for clarity must be enclosed in square brackets, e.g. “[These] results suggest… that the hypothesis is correct.” It may also be appropriate to reproduce a diagram from someone else’s work, but again the source must be explicitly and fully acknowledged there. However, constructing large chunks of documents from a string of quotes, even if they are acknowledged, is unlikely to be worth any marks.

- **Do** attribute all ideas to their original authors. Written ‘ideas’ are the product that authors produce. You would not appreciate it if other people passed off your ideas as their own, and that is what plagiarism rules are intended to prevent. A good rule of thumb is that each idea or statement that you write should be attributed to a source unless it is your personal
idea or it is common knowledge. (If you are unsure if something is common knowledge, ask other students: if they don’t know what you are talking about, then it is not common knowledge!)

6. As you can see, it is most important that you understand what is expected of you when you prepare and produce assignments and that you always observe proper academic conventions for referencing and acknowledgement, whether working by yourself or as part of a team. In practice, there are a number of acceptable styles of referencing depending, for example, on the particular discipline you are studying, so if you are not certain what is appropriate, ask your Academic Advisor or the lecturer for the relevant course unit for advice! This should ensure that you do not lay yourself open to a charge of plagiarism inadvertently, or through ignorance of what is expected. It is also important to remember that you do not absolve yourself from a charge of plagiarism simply by including a reference to a source in a bibliography that you have included with your assignment; you should always be scrupulous about indicating precisely where and to what extent you have made use of such a source.

7. So far, plagiarism has been described as using the words or work of someone else (without proper attribution), but it could also include a close paraphrase of their words, or a minimally adapted version of a computer program, a diagram, a graph, an illustration, etc. taken from a variety of sources without proper acknowledgement. These could be lectures, printed material, the Internet or other electronic/AV sources.

8. Remember: no matter what pressure you may be under to complete an assignment, you should never succumb to the temptation to take a ‘short cut’ and198(55,532),(961,810)use someone else’s material inappropriately. No amount of mitigating circumstances will get you off the hook, and if you persuade other students to let you copy their work, they risk being disciplined as well (see below).

Collusion

9. Collusion is any agreement to hide someone else’s individual input to collaborative work with the intention of securing a mark higher than either you or another student might deserve. Where proved, it will be subject to penalties similar to those for plagiarism. Similarly, it is also collusion to allow someone to copy your work when you know that they intend to submit it as though it were their own and that will lay both you and the other student open to a charge of academic malpractice.

10. This imposes significant responsibilities on students to ensure the integrity of their own work. Students should ensure that

- They do not leave work on printers
- They do not give passwords to other students
- They do not allow other students to use their home computers without
taking adequate precautions

- They do not show their coursework to other students

These issues are very important. There have been a number of cases in recent years where a student has lent his/her coursework to another student in order to help the other student understand the exercise. After submission the originator has found that the other student has copied his/her coursework. In other cases, a student who has shared his/her home computer with other students has found that other students have submitted his/her coursework.

If a student believes that another student has gained access to his/her coursework, he/she should inform the lecturer for the relevant course unit as soon as possible.

It is vitally important that when a student discusses coursework with others he/she does so in very general terms. He/she might talk about the general approach to a problem, but discussions should not be so specific that it leads to the same piece of coursework being submitted.

11. Collaboration is a perfectly legitimate academic activity in which students are required to work in groups as part of their programme of research or in the preparation of projects and similar assignments. If you are asked to carry out such group work and to collaborate in specified activities, it will always be made clear how your individual input to the joint work is to be assessed and graded. Sometimes, for example, all members of a team may receive the same mark for a joint piece of work, whereas on other occasions team members will receive individual marks that reflect their individual input. If it is not clear on what basis your work is to be assessed, to avoid any risk of unwitting collusion you should always ask for clarification before submitting any assignment.

Fabrication or falsification of results

12. For many students, a major part of their studies involves laboratory or other forms of practical work, and they often find themselves undertaking such activity without close academic supervision. If you are in this situation, you are expected to behave in a responsible manner, as in other aspects of your academic life, and to show proper integrity in the reporting of results or other data. Hence you should ensure that you always document clearly and fully any research programme or survey that you undertake, whether working by yourself or as part of a group. Results or data that you (or your group) submit must be capable of verification, so that those assessing the work can follow the processes by which you obtained them. Under no circumstances should you seek to present results or data that were not properly obtained and documented as part of your practical learning experience. Otherwise, you lay yourself open to the charge of fabrication or falsification of results.

For example, a student may be asked to develop a computer program that computes some results, and then write a report stating the results. A student who fails to get his/her program working but submits a report saying he/she has
obtained a set of results is in breach of this regulation.

Finally…

13. If you commit any form of academic malpractice, teaching staff will not be able to assess your individual abilities objectively or accurately. Any short-term gain you might have hoped to achieve will be cancelled out by the loss of proper feedback you might have received, and in the long run such behaviour is likely to damage your overall intellectual development, to say nothing of your self-esteem. You are the one who loses.

Further information is given in Regulation XVII (Conduct and Discipline of Students), which is downloadable from the following website, along with the University’s guidance on the handling of cases:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/formal-procedures/conduct-and-discipline/

First Year students are required to complete an Academic Malpractice in Mathematics Course. This course will be delivered online (through Blackboard, the University’s virtual learning environment). The Academic Malpractice in Mathematics Course is part of the Induction Module MATHS0000. The Academic Malpractice in Mathematics Course will also be offered to Second, Third and Fourth Year students.

School of Mathematics: Academic Malpractice Policy

In Class Tests

Examiners and invigilators should be vigilant during tests, actively looking for students who may be colluding or in possession of unauthorised material.

Unauthorised Material

If a student is found with unauthorised material this should be removed from them immediately. The invigilator should then mark on the script the time of the incident and allow the student to continue, preferably completing remaining work in a different coloured pen.

At the end of the test the students should be advised that their scripts will be investigated and that they will receive further information from the Teaching and Learning Administrator in due course.

If there is sufficient evidence to instigate disciplinary action, the examiner should provide the following information to the Teaching and Learning Administrator:

- Original copies of the scripts, which should be marked as usual, irrespective of any suspected malpractice.
- A copy of the test, or advise if this is available online.
- The unauthorised material found.
Collusion (copying)

If a student is suspected of colluding or copying, invigilators are asked to keep a close eye on all students involved. At the end of the test, suspected scripts should be collected and kept together for marking. Students should be advised that their scripts will be investigated and that they will receive further information from the Teaching and Learning Administrator in due course.

If there is sufficient evidence to instigate disciplinary action, the examiner should provide the following information to the Teaching and Learning Administrator:

- Original copies of the scripts, which should be marked as usual, irrespective of any suspected malpractice.
- A copy of the test, or advise if this is available online.
- A brief report outlining the reason for the initial suspicion (that is, what was observed during the test) followed by any similarities of any answers with those of another student.

Written (Take Home) Coursework

During the marking process, if an examiner suspects either plagiarism or collusion, they should in the first instance contact the School Quality Officer (Professor Peter Symonds) before returning the work to the class. If there is sufficient evidence to instigate disciplinary action, the examiner should provide the following information to the Teaching and Learning Administrator:

- Original copies of the work, which should be marked as usual, irrespective of any suspected malpractice.
- A copy of the assignment instructions, or advise if this is available online.
- A brief report outlining the similarities of the coursework with another student’s or other source.
- Copies of any original sources if plagiarism is suspected.

An e-mail will be sent from the Teaching and Learning Administrator to inform students that their work is under investigation for academic malpractice.

Undergraduate Projects

All project supervisors and second markers will be provided with access to the electronic submissions on Blackboard. Each project is automatically scanned by Turnitin which generates an Originality Report. (Turnitin is software that is used by the University to
help to identify plagiarised work.) It is the responsibility of supervisors to ensure that these reports are checked for any indication of plagiarism or collusion. Each report will highlight where similarities have been found online or in the repository of student work, with links to original sources.

If an examiner suspects either plagiarism or collusion, they should in the first instance contact the School Quality Officer (Professor Peter Symonds). If there is sufficient evidence to instigate disciplinary action, the examiner should provide the following information to the Teaching and Learning Administrator:

- Original copies of the work, which should be marked as usual, irrespective of any suspected malpractice.
- A brief report outlining the accusation making reference to the Originality Report.

An e-mail will be sent from the Teaching and Learning Administrator to inform students that their work is under investigation for academic malpractice.

All cases will be dealt with in accordance with the University Guideline for Academic Malpractice, as follows:

1. First and Second Year students (first offence): The case will be handled at School level.
2. Third and Fourth Year students (first offence): The case will be handled at Faculty level.
3. First and Second Year students (subsequent offence): The case will be handled at Faculty level.
4. Third and Fourth Year students (subsequent offence): Inform Faculty. The case will be handled at University level.
5. For particularly serious offences, Faculty should be consulted to determine whether the case should be handled at University level. This applies to students of all years, even for a first offence.

3.6 APPEALS

Undergraduate students may appeal against the decision of an Examiners' Board.

Students are strongly advised to hold informal discussions with the School of Mathematics about their case for appeal, and the appeal procedures, prior to submission of an appeal.

The School allows students to see their marked Mathematics examination scripts. Scripts can only be viewed by appointment and the viewing opportunity will last about 30 minutes. You will receive further information by e-mail before each viewing period.

The School does not re-mark examination scripts. Students can ask the School to check that all parts of their script have been marked, their marks have been added up correctly and their coursework marks have been included correctly. For the First Semester examinations, students must view their scripts first, before asking for the marking to be
checked. All such requests from students are collated and passed to the Director of Teaching, who arranges for the scripts to be checked and the results communicated to the students.

Full information about the formal appeals procedure is given in Regulation XIX (Academic Appeals), which is downloadable from the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/formal-procedures/academic-appeals/

However, you should note that the purpose of this Regulation is to safeguard the interests of all students. It may be used only when there are adequate grounds for doing so (as specified in the Regulation) and may not be used simply because a student is dissatisfied with the outcome of his or her assessment or other decision concerning their academic position or progress.

3.7 COMPLAINTS

The University of Manchester recognises that students may have legitimate reasons for complaining about their course, the facilities or services provided, or other students or staff. It is hoped that most complaints can be resolved by a student taking up the matter directly with the staff concerned, or with the Head of School. However, it is recognised that this is not always possible and the University’s Student Complaint Procedure is designed to provide students with a fair procedure for resolving complaints that cannot be dealt with by informal means. Further information about the formal complaints procedure is given in Regulation XVIII, which is downloadable from the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/formal-procedures/complaints/

3.8 EXTERNAL EXAMINERS FOR UNDERGRADUATE PROGRAMMES

External Examiners are individuals from another institution or organisation who monitor the assessment processes of the University to ensure fairness and academic standards. They ensure that assessment and examination procedures have been fairly and properly implemented and that decisions have been made after appropriate deliberation. They also ensure that standards of awards and levels of student performance are at least comparable with those in equivalent higher education institutions.

External Examiners’ reports relating to Mathematics degree programmes will be shared with student representatives at the Staff-Student Liaison Committee and at the Teaching Committee. Details of any actions carried out by the School in response to the External Examiners’ comments will be discussed at these meetings. Students should contact their student representatives if they require any further information about External Examiners’ reports or the process for considering them.
In the academic year 2014-2015, the External Examiners for Undergraduate Degree Programmes offered by the School of Mathematics are:

**Pure Mathematics**
Dr. Alex Clark (Reader)
University of Leicester

**Pure Mathematics**
Professor Bryan Rynne
Head of Mathematics
Herriot-Watt University

**Pure Mathematics (Logic)**
Professor Mirna Dzamonja
University of East Anglia

**Applied Mathematics**
To be confirmed

**Statistics**
Professor Richard Chandler
University College London

**Statistics**
Dr. Ian Davies (Reader)
University of Swansea

**Numerical Analysis**
Dr Alison Ramage (Reader)
University of Strathclyde

**Mathematical Finance**
To be confirmed

**Actuarial Science**
Dr. John Millett
Senior Lecturer in Actuarial Science, Head of the Actuarial Science Group
University of Kent

**External examiner appointed by the Faculty of Actuaries and Institute of Actuaries**
Dr. George Streftaris (Senior Lecturer)
Heriot-Watt University

Please note that it is inappropriate for students to make direct contact with External Examiners under any circumstances. It is particularly inappropriate to make contact about a student’s individual performance in assessments. Other appropriate mechanisms are available for students, including the University’s appeals or complaints procedures and the Students’ Union Advice Service. (See Section 3.6 of this Handbook
for information about the University’s appeals procedure, Section 3.7 of this Handbook for information about the University’s complaints procedure and Section 5.12 of this Handbook for information about the Students’ Union Advice Service.) In cases where a student does contact an External Examiner directly, External Examiners have been requested not to respond to direct queries. Instead, External Examiners should report the matter to their School contact who will then contact the student to remind them of the other methods available for students. If students have any queries concerning this, they should contact the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building) or the staff in the Teaching and Learning Office in the School (Room G.202/G.204, Alan Turing Building).
4. ATTENDANCE AND CHANGING YOUR DEGREE PROGRAMME

4.1 ATTENDANCE REQUIREMENTS

Undergraduates of the School of Mathematics are normally required to attend all lectures, feedback tutorials, feedback supervisions, workshops, seminars and computing laboratories held in connection with the undergraduate programme on which they are registered. Any absence from classes which is supported by medical or other appropriate information will not normally be counted towards the assessment of unsatisfactory attendance.

Undergraduates of the School of Mathematics are also expected to sit all examinations and coursework tests for their degree programme and to submit all coursework assignments by the deadlines specified.

If you are unable to attend classes or examinations, or meet the coursework deadlines, because of illness or other good cause, you should submit electronically a School of Mathematics Mitigating Circumstances Form and provide (whenever possible) supporting independent documentary evidence such as a Doctor’s Note or a letter from the Counselling Service. (See Sections 3.1 and 5.8 of this Handbook for further information about sickness and absence.)

For First and Second Year students, attendance monitoring will take place during all feedback supervisions and feedback tutorials. Students who miss more than two of these sessions will receive informal warning letters from staff in the School’s Teaching and Learning Office in weeks 4, 7 and 10 of the semester.

For Third and Fourth Year students, attendance will be monitored at random weekly lectures. Students with unsatisfactory attendance will receive informal warning letters in weeks 4, 7 and 10 of the semester.

The following courses of action will be taken in the case of persistent unsatisfactory attendance or unsatisfactory progress on the degree programme:

- First formal warning letter stating the actions the student is required to take in order to improve their attendance.
- Second formal warning letter stating that unless the student complies with the actions specified, a decision may be taken to refuse the student permission to take examinations or assessments, with the consequence that the student may be excluded from the programme.
- Compulsory interview by a senior member of academic staff or a senior member of the Teaching and Learning Office staff.
- Final warning letter stating that unless the student takes the action stated in the second warning letter, the student will be notified of a withdrawal date and will be withdrawn from the University.
- Students who are absent for a continuous period of 30 days or miss an entire end-of-semester set of examinations without good reason will be assumed to have withdrawn. Students will be notified of a withdrawal date and will be withdrawn from the University.
• Students who achieve a weighted average of 35% or less in their first semester examinations will be required to attend a compulsory interview with a senior member of academic staff.

**Note:** For students holding a **Tier 4 Student Visa**, once a withdrawal has been completed on the University’s Student System, students will be reported to the UKVI and will be required to leave the UK within 60 days of their withdrawal date.

Further information about work and attendance of students is given in Regulation XX, which is downloadable from the website:


### 4.2 ATTENDANCE MONITORING CENSUS FOR INTERNATIONAL STUDENTS

International students under the Tier 4 Points Based Immigration System (PBS) will be contacted by the International Advice Team during Welcome Week. Students will be asked to provide a copy of their passport and visa documentation to comply with the UKVI requirements.

The University operates attendance monitoring census points within the academic year in order to confirm the attendance of students holding a **Tier 4 Student Visa**. This is to ensure the University meets the UKVI statutory requirements as a sponsor of Tier 4 students and its responsibilities in accordance with its Highly Trusted Sponsor status.

If you are a Tier 4 visa holder, you must attend these attendance monitoring census points, **in addition** to complying with the School’s own attendance requirements. (See Section 4.1 of this Handbook for information about the School’s attendance requirements.)

**When are the census points?**

In the 2014-15 academic year, the attendance monitoring census points will be during the following periods:

- 29 September - 13 October 2014
- 12 - 26 January 2015
- 13 May - 3 June 2015

**Please note:**

• If you are a new student, registration is your first point to confirm your attendance at the University and you will not be required to attend a further census point in October 2014.

• You will receive an e-mail from the School to confirm when and where you should attend to have your attendance confirmed. **You must** check your University e-mail account regularly. Failure to check your e-mail account is not a valid reason to be absent from a census point.
What if a Tier 4 student cannot attend a census point?

If you cannot attend in person for a valid reason such as illness or for reasons connected to your programme of study, you must e-mail the School at

mathematics@manchester.ac.uk

to inform us of your absence and your inability to attend in person. In the case of illness, you must provide a copy of a medical certificate. If you are in this position you should report in person to the School as soon as possible after you return to campus.

Students who are recorded as interrupting their studies are not expected to attend during their period of interruption.

What happens if a student does not attend a census point?

The School must be able to confirm your presence to the UKVI by the end of each census point in the academic year. If you do not attend a census point when required by your School and you do not provide a valid explanation for your absence you will be deemed to be “not in attendance”.

Those students identified as “not in attendance” will be reported to the UKVI and the University will cease to sponsor the student’s Tier 4 visa. The Tier 4 visa will then be curtailed and the student must leave the UK within 60 days.

Further information on Tier 4 visas can be found at the website:
https://www.gov.uk/tier-4-general-visa

If you have any concerns about the attendance monitoring census points, or your Tier 4 visa status, please contact pbs@manchester.ac.uk

4.3 HOW TO CHANGE YOUR DEGREE PROGRAMME OR STATUS

The University of Manchester’s Undergraduate Degree Regulations are given in Appendix B of this Handbook (for First, Second and Third Year students) and Appendix C of this Handbook (for Fourth Year students). These Regulations give the formal progression rules. To progress from one year of the degree programme to the next, students have to satisfy the criteria given in the progression rules. Appendix B and Appendix C also explain the criteria that have to be satisfied for students to achieve the various degree classifications for the MMath and BSc Honours Degrees, as well as the requirements for the award of the BSc Ordinary Degree, the Diploma of Higher Education and the Certificate of Higher Education.

Occasionally, students realise that they have made a mistake in their choice of degree programme and wish to transfer to a different degree programme. Alternatively, students sometimes decide to withdraw from their degree programme or apply to interrupt their studies. The procedures to be followed by students in these situations are given below.
In all cases, do consult your Academic Advisor and the Senior Tutor before making a decision. We are here to help and advise you. We may be able to suggest alternative solutions to the problems and difficulties that you are experiencing.

Transfer between degree programmes

Students contemplating any change of degree programme should consult their Academic Advisor as soon as possible. You must then see the Senior Tutor, Dr. R. M. Thomas, Room 1.108, Alan Turing Building. (Any transfer request requires the approval of the Senior Tutor.) If the Senior Tutor agrees to your request, she will ask you to complete the Transfer Form to apply for permission to transfer to a different degree programme. The Transfer Form is available from the Senior Tutor or from the School’s Teaching and Learning Office (via Reception in the Alan Turing Building) or from the website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/undergraduateforms/

Advice about changing degree programmes can be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/formal-procedures/course-change/

Interruption (or suspension) of studies

Sometimes students need to interrupt their programme of study to help them to recover from medical problems, or to resolve issues of a personal or financial nature. Alternatively, students may wish to suspend their studies to undertake a period of industrial or commercial experience, or to take up a sabbatical post in the Students’ Union. If you are thinking of interrupting or suspending your studies, then you must discuss your plans with your Academic Advisor as soon as possible. You must then see the Senior Tutor, Dr. R. M. Thomas, Room 1.108, Alan Turing Building, to discuss your application. She will ask you to complete the Interruption and/or Repeat of Studies Form to apply for permission to interrupt your studies. (Note that part of the form has to be completed by the Senior Tutor.) The Interruption and/or Repeat of Studies Form is available from the Senior Tutor or from the School’s Teaching and Learning Office (via Reception in the Alan Turing Building) or from the website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/undergraduateforms/

Advice about interruption of studies (taking a break from your degree programme) can be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/formal-procedures/interruption/

Repeat of studies

Students are not normally allowed to repeat a year or a semester of their degree
programme unless they can make a strong case based on mitigating circumstances. If you feel that you have such a case, you should discuss it with your Academic Advisor as soon as possible. You must then see the Senior Tutor, Dr. R. M. Thomas, Room 1.108, Alan Turing Building, to discuss your application. She will ask you to complete the **Interruption and/or Repeat of Studies Form** to apply for permission to repeat part of your studies. (Note that part of the form has to be completed by the Senior Tutor.) The **Interruption and/or Repeat of Studies Form** is available from the Senior Tutor or from the School’s Teaching and Learning Office (via Reception in the Alan Turing Building) or from the website:

http://www.maths.manchester.ac.uk/study/undergraduate-information-for-current-students/undergraduateforms/

Note that students are expected to pay the fees for the repeat year or repeat semester. Note also that students are not normally allowed to repeat the year without attendance (that is, take the examinations the following year, without attending lectures and classes).

**Withdrawing from your degree programme**

Students who are thinking of leaving (withdrawing from) their degree programme should consult their Academic Advisor as soon as possible. You must also see the Senior Tutor, Dr. R. M. Thomas, Room 1.108, Alan Turing Building. If you do decide to withdraw, the Senior Tutor will ask you to confirm your decision in writing by completing a **Student Withdrawal Form**, available from the Senior Tutor or from the School’s Teaching and Learning Office (via Reception in the Alan Turing Building) or from the website:

http://www.maths.manchester.ac.uk/study/undergraduate-information-for-current-students/undergraduateforms/

Advice about withdrawing from your degree programme can be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/formal-procedures/withdrawal/

**Tuition Fees for Students who Withdraw or Interrupt**

It is expected that students who are funded by the **Student Loans Company (SLC)** will be charged the following fees when they withdraw or interrupt (suspend) their studies.

<table>
<thead>
<tr>
<th>Withdrawal/suspension period</th>
<th>Fee charged</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 September 2014 to 11 January 2015</td>
<td>25% of the total fee will be charged</td>
</tr>
<tr>
<td>12 January 2015 to 26 April 2015</td>
<td>50% of the total fee will be charged</td>
</tr>
<tr>
<td>27 April 2015 to 5 June 2015</td>
<td>Full tuition fee will be charged</td>
</tr>
</tbody>
</table>
Home/EU and International students responsible for the payment of their own tuition fees will be charged on a daily basis should they withdraw or suspend their studies.

Further information may be found at the website:

http://www.studentnet.manchester.ac.uk/crucial-guide/financial-life/tuition-fees/refunds/
5. STUDENT SUPPORT AND GUIDANCE

5.1 THE DIRECTOR OF UNDERGRADUATE STUDIES

The Director of Undergraduate Studies for the School of Mathematics is

Dr. Louise A. Walker (Room 2.243, Alan Turing Building).
Direct Tel: 0161 275 5873.
E-mail: Louise.Walker@manchester.ac.uk

The Director of Undergraduate Studies has overall responsibility (under the Head of School) for the undergraduate programmes of the School of Mathematics and for the welfare of all undergraduates in the School of Mathematics.

5.2 THE DIRECTOR OF TEACHING

The Director of Teaching is

Dr. Mark D. Coleman (Room 1.109, Alan Turing Building).
Direct Tel: 0161 306 3649.
E-mail: Mark.Coleman@manchester.ac.uk

He chairs the School’s Teaching Committee and is responsible for the development of the undergraduate curriculum.

5.3 THE SENIOR TUTOR

The Senior Tutor for the School of Mathematics is

Dr. Ruth M. Thomas (Room 1.108, Alan Turing Building).
Direct Tel: 0161 306 3657.
E-mail: Ruth.Thomas@manchester.ac.uk

As well as preparing the Undergraduate Student Handbook and other documentation for undergraduates, the Senior Tutor is responsible for the welfare of all undergraduates in the School of Mathematics. She coordinates the activities of Academic Advisors and monitors the attendance and academic progression of all undergraduate students in the School of Mathematics. If you are thinking of leaving (withdrawing from) your degree programme, or interrupting (suspending) your studies, or repeating a year or a semester, or transferring to a different degree programme, you **must** see the Senior Tutor and then confirm your decision in writing. (Further information about transferring, interrupting and withdrawing from your degree programme is given in Section 4.3 of this Handbook.)

If you have any personal, medical or work-related problems and your Academic Advisor is unable to help you, then you should see the Senior Tutor. She is usually available to see students between 8.30 am and 10.30 am, and then between 12 noon and 3.30 pm on week-days. An appointment is not usually necessary. However, if you prefer, you may contact her by telephone or e-mail to arrange an appointment.
5.4 PROGRAMME DIRECTORS

Each of the undergraduate degree programmes has a member of staff responsible for ensuring that any problem which arises is dealt with as quickly as possible. These Programme Directors meet the students on a regular basis, are able to provide information about the general structure of the programme and to advise students about any difficulties which they may have and provide job references when necessary. The Programme Directors for the Undergraduate Degree Programmes are as follows:

<table>
<thead>
<tr>
<th>PROGRAMME</th>
<th>DIRECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMath/BSc in Mathematics</td>
<td>Dr. R. M. Thomas</td>
</tr>
<tr>
<td>MMath/BSc in Mathematics and Statistics</td>
<td>Dr. R. M. Thomas</td>
</tr>
<tr>
<td>MMath/BSc in Mathematics with Financial Maths</td>
<td>Dr. R. M. Thomas</td>
</tr>
<tr>
<td>BSc Actuarial Science and Mathematics</td>
<td>Dr. R. Loeffen</td>
</tr>
<tr>
<td>BSc in Mathematics with Business and Management</td>
<td>Dr. D. Denisov</td>
</tr>
<tr>
<td>BSc in Mathematics with Finance</td>
<td>Dr. D. Denisov</td>
</tr>
<tr>
<td>BSc in Mathematics with a Modern Language</td>
<td>Dr. O. Dorn</td>
</tr>
<tr>
<td></td>
<td>Dr. D. Waldron(*)</td>
</tr>
<tr>
<td>BSc in Mathematics and Philosophy</td>
<td>Dr. M. Tressl</td>
</tr>
<tr>
<td>BSc in Computer Science and Mathematics</td>
<td>Dr. S. Crawford(#)</td>
</tr>
<tr>
<td></td>
<td>Dr. A. Schalk(**)</td>
</tr>
<tr>
<td>MMath&amp;Phys/BSc in Mathematics and Physics</td>
<td>Dr. M. Dasgupta(#)</td>
</tr>
<tr>
<td></td>
<td>Dr. M. Simon</td>
</tr>
</tbody>
</table>

(*) School of Arts, Languages and Cultures
(#) School of Social Sciences
(**) School of Computer Science
(#) School of Physics and Astronomy

Full contact details for all members of staff of the School of Mathematics may be found in Appendix A of this Handbook.

5.5 ACADEMIC ADVISORS

The various MMath/BSc (Honours) programmes offered by the School of Mathematics attract about 400 students a year. With such a large number of students, there is a possibility that a student may feel lost or overlooked. That is why each student is assigned an Academic Advisor who will normally remain the same person throughout your years in the School. This member of academic staff is your first point of contact when you have personal worries or problems of any kind. If you are ill or have any other reason for being away from the university you must always inform your Academic Advisor. (See Section 5.8 of this Handbook for further information about sickness and absence.) If you are unable to contact your Academic Advisor, and you want to make an appointment to see him or her, you should go to Reception in the Alan Turing Building to arrange a mutually convenient time. Alternatively, you can contact your Academic Advisor by e-mail to arrange an appointment. Full contact details for all members of staff
Financial problems can arise unexpectedly. If you are in a hall of residence you should inform your Warden if this is likely to affect your ability to pay hall fees on time. You should always tell your Academic Advisor. If you need further advice, you should go to the Students’ Union Advice Service. It is important to seek advice early, so that the situation does not get out of hand. You can obtain full information about sources of financial support from the Student Services Centre located on Burlington Street and also in the Joule Library (on E floor of the Sackville Street Building). Some information about the Students’ Union Advice Service and the Student Services Centre can be found in Section 5.12 of this Handbook.

Your Academic Advisor will see you regularly during your degree programme. It is important that you attend when your Academic Advisor arranges a meeting. Your first meeting with your Academic Advisor will take place in Welcome Week (the week beginning 15 September 2014) of the First Year. This meeting will be arranged by the School as part of the Welcome Week activities. Second, Third and Fourth Year students are asked to contact their Academic Advisor during Welcome Week to arrange a meeting before the end of Week 1 of Semester 1.

Although students normally keep the same Academic Advisor throughout their degree programme, it is possible for students to request to change their Academic Advisor. However, there is no guarantee that students can be allocated their choice of Academic Advisor. Students who wish to change their Academic Advisor should see the Director of Undergraduate Studies (Dr L A Walker, Room 2.243, Alan Turing Building). She will want to discuss with you the reasons why you feel a change of Academic Advisor is necessary.

**Operation of the Academic Advisor System (Mathematics)**

**Objectives:**

(a) To break down large numbers of students into small groups where the relationship between students can be fostered and where personal contact with members of staff is possible.

(b) To establish a personal relationship between students and staff that allows the following to operate:

   (i) Advisor's support to students with advice and information.

   (ii) Guidance on choice of options in the Second, Third and Fourth Years.

   (iii) Providing references for banks, housing and above all for careers.

   (iv) Identifying problems of health (medical note to be obtained whenever possible), absence and domestic problems which should be made known to teaching staff and the Boards of Examiners. The Academic Advisor will respect the confidence of the student and will not discuss any details
of the student's personal life with another person, except with the student's express permission.

(v) Helping students acclimatise to University life, Manchester, etc. by discussion with the Academic Advisor and fellow students.

(vi) Providing information for meetings of Boards of Examiners which may help explain the marks attained.

Content of Meetings with Academic Advisor

This varies and may follow such patterns as:

(i) Personal interviews for each advisee to discuss his/her progress, domestic circumstances etc. (Every student has the right to a private meeting with his or her Academic Advisor at a mutually convenient time.)

(ii) General get-together with no set agenda.

(iii) Mathematical discussions arising out of lectures, feedback tutorials, feedback supervisions etc. The Academic Advisor may check the advisee’s lecture notes periodically, to ensure that satisfactory notes are being kept.

Minimum Suggested Requirements of Academic Advisors

(i) At the first meeting of the academic year with their advisees, discuss the Health and Safety information given in Section 1.4 of this Handbook.

(ii) Arrange to meet First Year advisees as a group in Week 7 (to review their personal development) and Week 11 (to discuss examination regulations etc.) of the First Semester. (Academic Advisors normally act as Supervisor for their advisees in the First Semester, so they meet their First Year advisees every week in the First Semester.)

(iii) Arrange to meet advisees individually to feedback end of semester marks and discuss problems of general academic performance.

(iv) Arrange to meet Second, Third and Fourth Year advisees in Weeks 1 and 7 of Semester 1.

(v) Arrange to meet First Year advisees as a group in Week 1 of Semester 2 (to identify any problems arising during the examination period).

(vi) Arrange to meet all their advisees in late February or early March (to discuss their First Semester examination results), and in the week immediately following the Easter Vacation.
Meet their advisees when necessary to give advice about issues such as plagiarism and help students to complete Mitigating Circumstances Forms, for example.

Attend all relevant Examiners' meetings affecting advisees.

If their advisees are ill or have personal problems, advise them to complete a School of Mathematics Mitigating Circumstances Form (see Sections 3.1 and 5.8 of this Handbook) and, if appropriate, advise them to get further help, for example from the Disability Support Office (see Section 5.7) or the Counselling Service (see Section 1.4). Also tell the Senior Tutor and the Student Support Administrator that the advisee has a problem.

Notify the Senior Tutor and the staff in the Teaching and Learning Office if regular contact with an advisee cannot be maintained.

Arrange at least one office hour each week during each semester when students can expect to find staff available in their office, and publicise their office hour on their office door.

Minimum Suggested Requirements of Advisees

Advisees must attend meetings or see their Academic Advisor as frequently as the Advisor shall deem necessary in order that the Advisor can judge whether the student is fulfilling various requirements of the regulations. In particular,

- First Year students must see their Academic Advisors in Welcome Week and in Weeks 7 and 11 of Semester 1. In Semester 2, they must see their Academic Advisors in Week 1, and in late February or early March (to discuss their First Semester examination results), and in the week immediately following the Easter Vacation.

- Second, Third and Fourth Year students must see their Academic Advisors in Weeks 1 and 7 of Semester 1. In Semester 2, they must see their Academic Advisors in late February or early March (to discuss their First Semester examination results), and in the week immediately following the Easter Vacation.

Your attendance at these meetings will be monitored. Additionally, advisees should keep the Academic Advisor informed about matters relevant to their studies and performance. Academic Advisors specify office hours and so these are good times to contact your Academic Advisor. It is possible to see your Academic Advisor at other times, too, by arrangement. (Full contact details for all members of staff in the School of Mathematics are given in Appendix A of this Handbook.)

Advisees should give their e-mail address to their Academic Advisor.
(iii) If you are thinking of leaving the School before the end of your degree programme, or if you are thinking of interrupting your studies, or repeating a year or a semester, or changing to a different degree programme, you should discuss your plans with your Academic Advisor and the Senior Tutor (Dr R M Thomas, Room 1.108, Alan Turing Building). For further information, see Section 4.3 of this Handbook.

(iv) It is the student's responsibility to ensure that the Academic Advisor is informed of all difficulties and problems pertinent to general academic progress, such as health, domestic or personal problems. These may then be reported to members of staff or to meetings of examiners. When reporting matters likely to affect examination performance, the student should provide supporting evidence where possible: all reported medical problems should be supported by a medical note, if possible. Students will sometimes wish the Academic Advisor not to divulge confidential information. They have the right for such matters not to be divulged, but must appreciate that Boards of Examiners may feel unable to take note of matters not fully reported. (For further information about sickness and absence, see Section 5.8 of this Handbook. For further information about Boards of Examiners, see Section 3.1 of this Handbook.)

(v) If a student wishes an Advisor (or other appropriate member of staff) to write a reference, the referee should be advised and provided with any necessary background information. Requests for references which are apparently unsolicited are normally refused until confirmation that a reference can be provided has been obtained from the student concerned. Don’t forget to seek permission from a referee before citing him or her in an application. Otherwise delays could occur.

You will be given a separate list showing the name and room number of your Academic Advisor.

5.6 THE UNDERGRADUATE SUPPORT TEAM AND THE TEACHING AND LEARNING OFFICE

The Undergraduate Support Team is located in the Teaching and Learning Office, which is situated in Room G.202/G.204 of the Alan Turing Building, behind the Reception Area. The team is as follows:

Teaching and Learning Administrators

Francesca Moss        Tel: 0161 275 5899
Tracie McArthur       Tel: 0161 306 6415

Francesca Moss is responsible for all administration concerning undergraduate affairs, while Tracie McArthur is responsible for all administration concerning examinations and she is also the School Disability Coordinator.
Academic and Student Support Administrator

Jenny Gradwell  Tel: 0161 275 4632

Jenny Gradwell is responsible for all administration concerning student welfare and student support.

Teaching and Learning Administrative Assistants

Karen Morris  Tel: 0161 275 5797
John White  Tel: 0161 275 5801

Receptionist and Clerical Assistant

Tracey Smith  Tel: 0161 275 5800

The team is there to help with matters concerning undergraduate administration.

The main enquiry point is the Reception Area on the Ground Floor in the Foyer of the Alan Turing Building which is open on Monday to Friday from 9 am to 5 pm. The main telephone number and e-mail address for all enquiries are

Tel: 0161 275 5800.
E-mail: mathematics@manchester.ac.uk

Students wishing to collect undergraduate documentation will usually find copies at Reception. Some undergraduate documentation (such as the timetable and various undergraduate forms) is also available from the following website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/

Useful information about student support in the School of Mathematics and across the University is available from the website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/

With over 400 students in each year, we cannot know each of you personally and monitor your whereabouts without your assistance. If you move house, get married, change your name or if in any other way your status changes, it is vital that you update the personal details given on My Manchester. You should also tell your Academic Advisor.

You can log into My Manchester at

https://my.manchester.ac.uk

You will need your University username and password to log into My Manchester. If you have forgotten your password or you cannot log in for some other reason, you will be
prompted to contact the IT Service Helpdesk. Alternatively you can contact them at the website:

http://www.itservices.manchester.ac.uk/contacts

If you are unable to update your details on *My Manchester*, then you should inform the Undergraduate Support Team in the Teaching and Learning Office (Room G.202/G.204, Alan Turing Building) via Reception.

**You should ensure that your home (or mailing) address for the Summer Vacation given on *My Manchester* is correct, in case we need to contact you about your performance in the examinations.** This is important if you are required to take some resit examinations in August, for example. Unless you tell us otherwise, we shall contact you at the home address given on *My Manchester*. **Note however that we normally contact students via their University e-mail address in the first instance, so it is very important that you read your University e-mail regularly, even during the vacations.**

Occasionally students have problems with *My Manchester* and in this case you should first seek advice from the Student Services Centre (see Section 5.12 of this Handbook) unless the problem relates specifically to a School of Mathematics matter. For matters relating to the School of Mathematics, advice can be sought from the Undergraduate Support Team in the School’s Teaching and Learning Office.

### 5.7 THE SCHOOL DISABILITY COORDINATOR

The Disability Coordinator for the School of Mathematics is Tracie McArthur, who is based in the School’s Teaching and Learning Office (Room G.202/G.204, Alan Turing Building). Her direct telephone number is 0161 306 6415.

The Disability Coordinator acts as the central focal point of contact for students (both Undergraduates and Postgraduates) who may need help and advice. She coordinates School support for students and can refer students to others specialising in particular areas. She also liaises with the University’s Disability Support Office (DSO). The DSO can organise a wide range of individual practical support and students who require such support are encouraged to contact the DSO as early as possible. Further information about the DSO is given in Section 5.12 of this Handbook.

The DSO makes recommendations and arrangements for disabled students taking examinations. This may include students who need extra time for their examinations. For students with a temporary injury or disability, authorisation for alternative arrangements for examinations can be given by the Senior Tutor of the School of Mathematics.

Arrangements for students who need extra time in examinations are normally made centrally by the University’s Examinations Office. However, for injuries or illnesses which occur immediately before or during one of the examination periods, arrangements for students to have extra time for their examinations, or a scribe or a reader, will be
made by the School’s Disability Coordinator. If you have the misfortune to find yourself in this position, please give the Disability Coordinator as much notice as you possibly can.

Students who need to take their examinations in a special room or who need extra time for their examinations, or who need the help of a scribe or a reader because of a long-term or on-going disability are strongly advised to see the School’s Disability Coordinator as soon as possible. Students with a short-term disability (for example, resulting from an injury or illness that occurs during the year) should see the School’s Disability Coordinator as soon as possible after the disability occurs.

If the DSO makes recommendations for special arrangements for examinations, then the same arrangements can be put in place for coursework tests. Students with a disability who need extra time (or a scribe, or a reader) for coursework tests should see the School’s Disability Coordinator and she will make the arrangements. Please give the Disability Coordinator as much notice as possible for each test, so that she has plenty of time to make the arrangements. Extra time for coursework tests is not given automatically and it is not arranged by the DSO, so if you require disability support provision you do need to make the arrangements personally with the School’s Disability Coordinator.

5.8 SICKNESS AND ABSENCE

When you register you sign to follow University regulations. These require you to attend all classes organised for you. The only reasons for non-attendance are on health or compassionate grounds. If you miss a class you must let the member of staff who is taking the class know why. In the event of injury or illness likely to lead to your absence for any appreciable time, you must let your Academic Advisor, the Senior Tutor or the Student Support Administrator know at the time. Illness must be confirmed by a medical note from your G.P. or other doctor wherever possible. This is particularly important if you have missed an examination or coursework test or coursework deadline as a result of illness. (Please note that some G.P. practices will only provide medical certificates at a charge.) You must always submit electronically a School of Mathematics Mitigating Circumstances Form, obtainable from the website:

http://www.maths.manchester.ac.uk/study/undergraduate/information-for-current-students/student-support/mitigating-circumstances/

For other problems that cause you to miss classes, examinations or coursework, you must also submit electronically a School of Mathematics Mitigating Circumstances Form. (For further information about what to do if your performance in examinations is affected by illness or other special circumstances, see Section 3.1 of this Handbook.)

For illnesses of up to seven days that affect an assessment worth no more than 20% of the total mark for that course unit, we will accept a Self-Certification Form (instead of a medical certificate) obtainable from the School’s website:
If you have missed a coursework test or coursework deadline, or your performance has been affected, you should submit your mitigating circumstances before the test or deadline or, exceptionally, within five working days. You should also see the lecturer concerned and your Academic Advisor. Students may be given permission to submit work late if there are special circumstances but this would need to be authorised in due course by the Mitigating Circumstances Panel.

If you have difficulties of any kind (whether medical problems, personal problems or family problems), do seek out some support and contact initially the School’s Student Support Administrator, Jenny Gradwell.

5.9 PEER ASSISTED STUDY SCHEME (PASS) AND PEER MENTORING

The School of Mathematics runs a Peer Mentoring Scheme and a Peer Assisted Study Scheme (PASS).

The Peer Mentoring scheme helps new students to integrate effectively and get to know students from other years.

The PASS scheme consists of weekly sessions, which give First Year students a chance to share ideas with Second and Third Year students in the School. Each First Year academic advisor group is assigned two Second (or sometimes Third) Year students as mentors and these mentors will arrange to meet each week with the group. The Second and Third Year students have invaluable experience of course units and life as a student in Manchester, and they can help First Year students to learn how to study. Although material on examples sheets may be discussed at these sessions, this is not the primary purpose of the scheme and the PASS sessions are not considered to be alternatives to the feedback supervisions and feedback tutorials.

The aims of the PASS scheme are:

- To enhance the quality, quantity and diversity of student learning within the School.
- To provide you with a supportive environment to work through issues relating to your academic course.
- To involve you as partners in the learning experience.

You will benefit by improving your communication skills, and organisation and time management skills. You will have a greater understanding of your academic discipline(s), which will lead to improved examination performance. It will also improve your CV (Curriculum Vitae) and give you something to talk about at job interviews. Further information about both the Peer Mentoring scheme and the PASS scheme in the School of Mathematics will be given to you early in the First Semester.

The School of Mathematics also has a PASS scheme for Second Year students, who will be assigned Third and Fourth Year students as mentors.
5.10 PERSONAL DEVELOPMENT PLANNING (PDP)

Personal Development Planning (PDP) is a means by which you can monitor, build and reflect on your personal development. It is intended to help you become a more effective, independent and confident self-directed learner. It should also improve your general skills for study and career management and enable you to articulate your personal goals.

You will have regular meetings with your Academic Advisor to plan and monitor your academic progress. See Section 5.5 of this Handbook for more details of the support your Academic Advisor can provide.

We run Mathematics-specific careers events throughout the year. Our Calculating Careers fair in October is a chance to meet graduate employers and receive advice on writing CVs and job applications. More information about graduate opportunities and skills development is available at the website:

http://www.maths.manchester.ac.uk/study/undergraduate/careers/

The Mathematical Workshop in the First Year (MATH10001) and the optional course unit on Career Management Skills in the Second Year (CARS20042) will also help you to improve your general skills for study and career management.

5.11 OVERSEAS STUDENTS

In addition to learning new skills, overseas students face the challenge of learning to live in a different society. Problems of communication are frequent. Occasionally the distance from home can lead to acute personal or financial problems. The University wants all students to be free to study without these difficulties. The first thing to do in all cases is to see your Academic Advisor, explaining your problem in full. You can also contact the School’s Student Support Administrator.

There is no need to feel isolated. The Students' Union has societies catering for most overseas students. (If there isn't one for your country, why not start one?) In addition, the International Society aims to draw together all nationalities on a social basis. Its address and telephone number are William Kay House, 327 Oxford Road, Manchester M13 9PG. Tel: 0161 275 4959. Further information can be found at the following website:

http://www.studentnet.manchester.ac.uk/crucial-guide/university-life/mutual-support-groups/international-students/
E-mail: info@internationalsociety.org.uk

The International Advice Team provides support to all international students studying at the University of Manchester. Advice and information are offered in a variety of areas including immigration issues, work permits, finance and funding and academic and personal problems. The International Advice Team is based in the Student Services Centre in Burlington Street and also in the Joule Library, on E floor of the Sackville
Street Building. (See Section 5.12 for further information about the Student Services Centre.) Tel: 0161 275 5000. Further information can be found at the following website: http://www.manchester.ac.uk/international/support/advice/
E-mail: iat@manchester.ac.uk

International students under the Tier 4 Points Based Immigration System (PBS) will be contacted by the International Advice Team during Welcome Week. Students will be asked to provide a copy of their passport and visa documentation to comply with the UKVI requirements.

The University operates attendance monitoring census points within the academic year in order to confirm the attendance of students holding a Tier 4 Student Visa. Further information can be found in Section 4.2 of this Handbook.

Further information about immigration issues can be found at the following website: http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/immigration/

If you are at all concerned about the standard of your English, in particular if you think it will hinder your progress on the course, you should discuss this with your Academic Advisor. The University of Manchester runs a University Language Centre (Oddfellows Hall, Grosvenor Street) where help with your English can be obtained. The contact details are:
Tel: 0161 306 3397
E-mail: englang@manchester.ac.uk
Further information can be found at the website: http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/support/english-language/

In addition, the School of Mathematics runs an English Language course for First Year students who require extra support. The title of the course unit is English for Mathematicians and its code is MATH10990. Some students are required to take this course unit because they did not satisfy the English language requirement for their degree programme. Other students choose to take this course unit because they want to improve their standard of English. Further information can be obtained from Dr. Carolyn Dean, Room 2.208, Alan Turing Building.

We hope that you will enjoy your stay in Manchester, but please be assured that the School will try to assist you if things go wrong.

5.12 CENTRAL SERVICES

Student Services Centre

The Student Services Centre (SSC) is the main point of contact for most of the administrative tasks you need to carry out during your time here as a student, including registration, assessment and payment of tuition fees, issue of student swipe cards, examinations information and timetabling, student loan and grant enquiries, financial assistance, issue of official documents (such as academic transcripts, certificates,
confirmation of award letters, Council Tax exemption certificates), and enquiries about graduation. The SSC is located on Burlington Street and there is also a Satellite Centre in the Joule Library, on E floor of the Sackville Street Building. The Student Services Centre on Burlington Street is open five days a week from 9 am to 5 pm (apart from Tuesday, when it is open from 10 am to 5 pm). The contact details for the Student Services Centre are:

Tel: 0161 275 5000.
E-mail: ssc@manchester.ac.uk

Further information can be found at the website:
http://www.studentnet.manchester.ac.uk/crucial-guide/ssc-contact-details/

The Crucial Guide contains essential advice, information and guidance for students at the University of Manchester. It covers academic life (including disability support, advice for international students and examination timetables), financial life (including tuition fees, student loans and scholarship information), city life, personal life (including advice on how to manage ill health and cope with personal and academic problems) and university life. The Crucial Guide Live can be found at the website:
http://www.studentnet.manchester.ac.uk/crucial-guide/

The Atrium, University Place

The Atrium is an information and advice hub, located on the first floor of University Place. It houses several key services for students, including the Careers Service (see below), the International Programmes Office and the Information, Advice and Guidance Service. The International Programmes Office provides information and support on a wide range of international opportunities for undergraduate students, including study abroad (see Section 2.9). The Information, Advice and Guidance team can provide advice and guidance about a range of issues affecting students such as student finance, health and well-being, and making the most of opportunities while at University.

Students’ Union Advice Service

The Students’ Union Advice Service is similar to a Citizens Advice Bureau, although there is greater emphasis on those problems that particularly affect students. It can offer advice, for example, on finance and housing, and on academic issues such as appeals and disciplinary hearings, as well as advice on areas relating to overseas students (such as visa and immigration problems).

The Students’ Union Advice Service is located on the ground floor of the Students’ Union Building on Oxford Road. It is open from 10 am to 4 pm on Monday to Friday. Tel: 0161 275 2952. Further information can be found at the website:
http://manchesterstudentsunion.com/adviceservice

Student Counselling Service

The Student Counselling Service provides confidential, individual counselling for all work related difficulties, exam anxiety, stress and other personal problems. The service is located on the fifth floor of Crawford House, and can be contacted by dialling 0161
The e-mail address is counselling.service@manchester.ac.uk. Further information can be found at the following website: http://www.studentnet.manchester.ac.uk/counselling

Disability Support Office

Students wishing to be considered for disability support provision in relation to their studies should contact the University’s Disability Support Office (DSO). The DSO can organise a wide range of individual practical support and can assist you to access external resources like the Disabled Students Allowance. The DSO is situated on the second floor of University Place, Block 2. Tel: 0161 275 7512. The e-mail address is dso@manchester.ac.uk. Further information can be found at the following website: http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/support/disabled-students/

For information about the Disability Coordinator in the School of Mathematics, see Section 5.7 of this Handbook.

Accommodation Office

The Accommodation Office is located in the Student Services Centre on Burlington Street. It is responsible for all Halls of Residence and University Leased Houses. It can also offer advice, including legal rights for tenants.
Tel: 0161 275 2888.
E-mail: accommodation@manchester.ac.uk
Website: http://www.accommodation.manchester.ac.uk

Manchester Student Homes is an Accommodation Bureau. It assists students with private sector accommodation. You can view property details by visiting Manchester Student Homes, which is located in Unit 1-3, Ladybarn House, Moseley Road, Fallowfield, Manchester M14 6ND (Tel: 0161 275 7680, E-mail: manchesterstudenthomes@manchester.ac.uk). Alternatively, Manchester Student Homes provides students with a free, online, Virtual Housing Bureau. Comprehensive details of thousands of properties are provided on Manchester Student Homes’ website at: http://www.manchesterstudenthomes.com

Careers Service

The Careers Service is located in the Atrium on the first floor of University Place. (Tel: 0161 275 2829, E-mail: careers.info@manchester.ac.uk). The Careers Service gives careers guidance and provides details of jobs available for graduates. Comprehensive careers and employer information can be found at the website: http://www.careers.manchester.ac.uk/

The Careers Service can also provide advice on finding work experience, as well as details of relevant work experience schemes and sources of vacancies. As well as providing extra funding, work experience will help you develop the personal work-related
skills critical to your career success, test your ability and knowledge in a real work setting, demonstrate your skills to potential future employers and add valuable experience to your CV. Further information about work experience can be found at the website: 
http://www.careers.manchester.ac.uk/findjobs/workwhilestudy/internships/

Contact details for some other useful student support services are listed below:

Childcare

There are two nurseries associated with the University. Their contact details are:

Dryden Street Nursery, Chorlton-on-Medlock, Manchester M13 9AU.
Tel: 0161 272 7121
E-mail: admin.drydenstreetnursery@btconnect.com

Echoes Nursery, Echo Street (off Granby Row), Manchester M60 1QD.
Tel: 0161 200 4979
E-mail: network.nurseries@lineone.net

Further information for student-parents may be found at the website:
http://www.studentnet.manchester.ac.uk/crucial-guide/personal-life/student-parents/

Mature Students

The University has a large and diverse population of students and around one in five is over the age of twenty-one at the start of their degree programme. Mature students are some of our best-equipped learners, bringing with them a number of skills gained from work, family and other life experiences.

The Students’ Union has a dedicated Diversity Officer, whom you can approach about any concerns or issues.

Further information for mature students may be found at the website:
http://www.studentnet.manchester.ac.uk/crucial-guide/university-life/mutual-support-groups/mature-students/

Nightline

This is a confidential listening and information service (run by the Students’ Union), offering a point of contact through the night in semester time.
Tel: 0161 275 2983/4. (The number is on the back of your library card.)
E-mail: nightmail@nightline.manchester.ac.uk

Further information can be found at the website:
http://www.nightline.manchester.ac.uk/
6. STUDENT REPRESENTATION AND FEEDBACK

6.1 YOUR REPRESENTATION IN THE SCHOOL

The Head of School is advised directly by the School Board (which meets regularly during semester time) and by several specialist committees. Students are represented on some of these committees. The committees of most relevance to undergraduate students are the School Board, the Undergraduate Teaching Committee, the Staff-Student Liaison Committee and the Programme Committees.

The School Board is the official body for monitoring academic activities. It is responsible for advising the Head of School on academic matters such as changes to degree programmes. A range of other matters affecting life in the School is also discussed and there are several statutory items which must be discussed each time. The School Board usually meets four times a year.

The Teaching Committee oversees the provision of undergraduate and postgraduate lecture courses (course units). It is responsible for deciding which course units should be offered and monitors the content of the individual course units. The Teaching Committee meets when required, usually five times a year.

The Staff-Student Liaison Committee meets to discuss day-to-day problems concerning degree programmes and course units, and advise the School Board on student-related matters. The issues raised are intended to be resolved between the students and staff concerned, or by the staff representatives taking them up with members of staff not present. The Staff-Student Liaison Committee usually meets once or twice each Semester.

Feedback from students on course units and teaching has always been valued by the School, particularly for the role it plays in ensuring and enhancing the overall quality of degree provision. Staff-Student Liaison Committees provide a forum for staff and students to discuss issues relating to a degree programme or the School. They are important because:

- they provide a unique forum of staff and students for the discussion of new ideas and for solving problems;
- they form the basis for the representation of students’ views within the School;
- they are a formal means of gauging student opinion on academic matters including degree programmes and syllabuses and form part of the School’s quality assurance and enhancement procedures;
- they provide an opportunity for students to learn about and contribute to the development of quality assurance and enhancement procedures in the School.
Each degree programme has a **Programme Committee** which oversees the degree programme. The Programme Committee meets at least once each year and one of its main functions is to review the degree programme, taking into account student feedback on the organisation and functioning of the programme. The membership of each Programme Committee always includes the Programme Director.

Undergraduate student representatives sit on the School Board, the Teaching Committee and the Staff-Student Liaison Committee. The representatives are elected each year by the students. An election is usually held early in the First Semester. Details of the constituencies for this election will be announced when the election is called. Students are encouraged to contact their representatives if they have matters they wish to have raised at any of these committees.

There is usually no difficulty in getting students prepared to act in this capacity; however, there are always those who, once elected, fail to attend meetings or are unable to attend. (Meetings of the School Board are usually held on Wednesday afternoon, clashing with sporting and other commitments.) If students are to have a voice in the affairs of the School, it is essential that representatives do attend, speak and report back.

### 6.2 STUDENT FEEDBACK

We aim to offer teaching of high quality. Your views on the teaching and learning process that you have experienced are important to us, as they help us to identify areas where improvements could be made to meet the needs of our students.

All members of staff are required to distribute **student questionnaires** during the third week of lectures for each course unit. The main purpose of the Week 3 Questionnaires is to identify any serious problems with the lecture courses and put them right before it is too late.

The University issues questionnaires for each course unit and the lecturers encourage students to complete these. The results of the University questionnaires are available on the web, and are considered by the Staff-Student Liaison Committee and the Programme Committees, as well as the Quality Management Panel and the Teaching Committee. Each course unit is reviewed each year. The end of course questionnaires are included in the material used in the review of the course unit.

As mentioned in Section 2.10, if you find that a course unit is causing problems not only to you but also to your fellow students then you should first approach the lecturer concerned and discuss the problem with him/her. If this does not overcome the problem then you should inform your Academic Advisor of the difficulties and he/she will then discuss the problem with the lecturer concerned and other members of staff. If you remain unhappy with the outcome you can seek advice from your Programme Director or the Senior Tutor (Dr. R. M. Thomas, Room 1.108, Alan Turing Building), or the Director of Teaching (Dr. M. D. Coleman, Room 1.109, Alan Turing Building), or the Director of Undergraduate Studies (Dr. L. A. Walker, Room 2.243, Alan Turing Building). You can
also ask your student representative to raise the issue at the next meeting of the Staff-Student Liaison Committee.

The National Student Survey (NSS) is an annual survey of over 400,000 Final Year students across the UK. The School encourages students to take part in this influential survey and make their opinions heard. The survey only takes a few minutes to complete and runs from March to April each year.

Feedback from students to the NSS is important as the results from the survey are published and help prospective students to decide what and where to study. The results are also used by Universities, Colleges and Students’ Unions to identify areas for improvement. By completing the survey you will be helping future students who are thinking of applying, and contributing to improvements.

The students’ individual responses to the survey are kept strictly confidential, and all responses are anonymous to ensure individuals cannot be identified from the results.

The NSS is conducted by Ipsos MORI, an independent market research agency, and commissioned by the Higher Education Funding Council for England on behalf of all the funding bodies.

Further information can be found on the NSS website: http://www.thestudentsurvey.com/
7. LEARNING RESOURCES AND STUDENT FACILITIES

7.1 LIBRARY AND INFORMATION SERVICES

The University of Manchester Library has several sites across the campus, plus the John Rylands Library in the city centre. The Main Building of the University of Manchester Library is situated on Burlington Street. Mathematics books and periodicals are housed in the blue zone. Most books may be borrowed. The library holds copies of books on course unit reading lists, often multiple copies for course units attended by a large number of students. In addition, there is a high-demand collection on the ground floor which holds some additional copies which may be borrowed overnight.

A photocopying service is also provided in the University of Manchester Library.

The catalogue of the University of Manchester Library is accessible from the library webpage. Further details including the opening hours of the library are available from the website:

http://www.library.manchester.ac.uk

You are also allowed to use the Manchester Business School Library, the Manchester Metropolitan University Library, the Salford University Library and the Manchester Central Reference Library.

The University booksellers are Blackwell's situated in the University Precinct Centre, Oxford Road. Blackwell's stocks most of the recommended text books for your programme. Other bookshops, for example Waterstones, are also available in the city.

7.2 ALAN GILBERT LEARNING COMMONS

The Alan Gilbert Learning Commons opened in Summer 2012. It is situated on the corner of Oxford Road and Burlington Street and is close to the University of Manchester Library. It contains 1000 study spaces and 400 computers, with wi-fi throughout. Learning spaces are flexible and include a mixture of individual and open plan with thirty bookable rooms. The building also contains a café. A team of Library staff is on hand to give you all the help and support you need. The building is open twenty-four hours a day, seven days a week, so you can use it whenever it suits you best.

Further details are available from the website:

http://www.library.manchester.ac.uk/aboutus/locationsandopeninghours/learningcommons/
7.3 COMPUTING FACILITIES

The School of Mathematics undergraduate computing cluster is located in Room G.105 of the Alan Turing Building and contains 82 Intel Quad Core PCs with 4GB of RAM running the University’s Student Desktop Image (based on Windows 7). A wide range of software is available on these machines, including Microsoft Office (Word, Excel, Access and Powerpoint) and Microsoft Visual Studio along with mathematical packages such as Matlab, Mathematica, SPSS and Minitab. Several different web browsers are installed, including Internet Explorer, Firefox and Opera. These browsers also provide access to the University student e-mail service, hosted by Microsoft Office 365. There is also a smaller teaching cluster of 30 PCs running the Student Desktop Image which is usually partitioned off from the main cluster. Both clusters are open-access except when booked for teaching laboratories. The normal opening hours of the computing cluster in Room G.105 on weekdays are 8.30 am to 5.30 pm (although there may be extended hours during the revision/examination period).

Students may also use any of the public clusters on campus. Details of their locations and the facilities available can be found at

http://www.studentnet.manchester.ac.uk/it-services/pc-on-campus/

Undergraduate students in the School of Mathematics are allowed to print a small number of pages free of charge, up to a maximum value of £10. Please note that this ‘free’ printing credit is not usually available in the first three weeks of the First Semester. It cannot be carried over from one academic year to the next.

The University central IT services website

http://www.itservices.manchester.ac.uk

is a great source of information for the wide range of University-provided IT facilities accessible from both on and off campus.

First year students will be introduced to the computing facilities at the start of the academic year. Students must complete the “IT Signup” procedure to register for a computer account that provides access to the university computing facilities, including e-mail, personal filestore, central printing facilities and other IT facilities available within the University.

Every student has 2 Gb of personal filestore on their “P drive”. This should be used to store coursework files. P drive filestore is accessible on any cluster PC, and via the web at

http://www.itservices.manchester.ac.uk/our-services/my-it/file/

Every PC has anti-virus software installed and whilst you are registered as a student, you are entitled to install the campus-licensed anti-virus software on your home PC and/or laptop. This software and information about computer viruses can be accessed at

http://www.its.manchester.ac.uk/secure-it/virusprotection/
University computing facilities should only be used in connection with your course and other normal reasonable use. Hacking, installation of unauthorized software, deliberately spreading computer viruses and disruption to the normal operation of a computer are all criminal offences. Most software installed on the computers is covered by licensing agreements and thus should not be copied or otherwise distributed in breach of the licence. The use of University computing facilities for the downloading, distribution or viewing of pornography, or for the sending of unsolicited (“SPAM”) emails is forbidden.

The IT Service Desk can help you with any questions related to IT services in the University, for example e-mail accounts, usernames and passwords. The IT Service Desk can be contacted by telephone (Tel.: 0161 306 5544) or from the webpage

http://www.itservices.manchester.ac.uk/contacts/

7.4 SOCIAL AND RECREATIONAL ACTIVITIES

There is a Mathematics Student Society, MATHSOC, which organises various events and runs teams in inter-school leagues. The success of the Society depends entirely on the efforts of a few individual students and you should consider helping to make it a success. MATHSOC is housed in Room G.116 of the Alan Turing Building. This office has a hatch in the atrium, opposite the main entrance to the building. This counter is used by MATHSOC from time to time for the distribution of information about events and sometimes for booking for these events.

The Galois Group and the Actuarial Society are also run by students in the School of Mathematics. The Galois Group organises a series of Mathematics talks, many of which are given by undergraduate students in the School. The Actuarial Society arranges lectures and other events for students.

The Students’ Union has societies to cater for almost every taste, sporting or intellectual. Details can be found in the Students' Union Building on the Oxford Road site. The Students' Union provides an extensive range of facilities, including shops where you can buy food, stationery equipment etc., bars and coffee lounges, and printing and photocopying facilities. Further information may be found at the following website:

http://manchesterstudentsunion.com

The main sports facilities are the Armitage Site in Fallowfield and the Sugden Centre for indoor sports. The Sugden Centre is situated on Grosvenor Street, between the Mancunian Way flyover and the Grosvenor Place Halls of Residence.

The Manchester Aquatics Centre is open to University of Manchester staff and students. It is situated on Booth Street East, close to the Grosvenor Place Halls of Residence. As well as two large pools, it has a sauna and steam room, a fitness suite etc.

Further information on the University of Manchester’s sports facilities may be found at the following website:
8. **CONTACT DETAILS FOR THE SCHOOL OF MATHEMATICS**

A full list of members of staff of the School of Mathematics is given in Appendix A of this Handbook. Their telephone numbers, e-mail addresses and room numbers in the Alan Turing Building are also given in Appendix A.

The postal address for the School of Mathematics is

School of Mathematics,
University of Manchester,
Oxford Road,
MANCHESTER M13 9PL.

The telephone number for the School of Mathematics (general enquiries) is **0161 275 5800/5801**. The telephone number for the University switchboard is **0161 306 6000** (external) or 100 (internal).

The e-mail address for all enquiries is **mathematics@manchester.ac.uk**
APPENDIX A: Members of Staff of the School of Mathematics

This staff list was correct at the time of going to press. An up-to-date staff list may be found at the following website:
http://www.maths.manchester.ac.uk/people/staff/

Notes:

E-mail addresses for members of staff are of the form name@manchester.ac.uk where name is given below in the column headed E-MAIL.

For telephone calls from outside the Manchester area, add the prefix 0161 to the telephone numbers given below. For internal telephone calls (that is, calls from within the University of Manchester), 275 is replaced by 5, and 306 is replaced by 6.

All staff offices are in the Alan Turing Building, unless stated otherwise.

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<td>Simon, Mike, Dr.</td>
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<td>Mike.Simon</td>
<td>2.115</td>
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<tr>
<td>Stafford, Toby, Prof.</td>
<td>275 5828</td>
<td>Toby.Stafford</td>
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<tr>
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<td>306 3632</td>
<td>Colin.Steele</td>
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<td>Pure</td>
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<td>Subba Rao, Tata, Prof.</td>
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<td>Tata.Subbarao</td>
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<td>Thomas, Ruth, Dr.</td>
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<td>Ruth.Thomas</td>
<td>1.108</td>
<td>Numerical Analysis</td>
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<tr>
<td>Thompson, William, Dr.</td>
<td>275 5832</td>
<td>William.Thompson-2</td>
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<td>Tisseur, Francoise, Prof.</td>
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<td>Mike.Tso</td>
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<td>Charles.Walkden</td>
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<td>Walker, Louise, Dr.</td>
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<td>Louise.Walker</td>
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<td>Wilkie, Alex, Prof. (FRS)</td>
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<td>Alex.Wilkie</td>
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<td>Williams, Jack, Dr.</td>
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<td>Jack.Williams</td>
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<td>Wood, Reginald, Prof.</td>
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<td>Reg.Wood</td>
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<td>(Emeritus)</td>
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<tr>
<td>Yuan, Jingsong, Dr.</td>
<td>306 3695</td>
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<td>Zhang, Tusheng, Prof.</td>
<td>275 5907</td>
<td>Tusheng.Zhang</td>
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<tr>
<td><strong>ADMINISTRATIVE STAFF</strong></td>
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<td><strong>ROLE</strong></td>
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<td>Duck, Peter, Prof.</td>
<td>275 5831</td>
<td>Peter.Duck</td>
<td>1.205a</td>
<td>Head of School</td>
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<tr>
<td>Bigland, Anna, Mrs.</td>
<td>275 0176</td>
<td>Anna.Bigland</td>
<td>G.202/ G.204</td>
<td>Postgraduate Administrator</td>
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<td>Bown, Abigail, Miss</td>
<td>306 6416</td>
<td>Abigail.Bown</td>
<td>G.202/ G.204</td>
<td>FMC Manager</td>
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<tr>
<td>Broom, Steven, Mr.</td>
<td>275 5878</td>
<td>Steven.Broom</td>
<td>1.206</td>
<td>Head of Admissions, Recruitment and External Affairs</td>
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<tr>
<td>Chan, Anna, Ms.</td>
<td>306 3570</td>
<td>Anna.Chan</td>
<td>G.202/ G.204</td>
<td>Academic and Student Support Administrator</td>
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<tr>
<td>Gradwell, Jenny, Ms.</td>
<td>275 4632</td>
<td>Jenny.Gradwell</td>
<td>G.204</td>
<td>Administrator</td>
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<tr>
<td>Green, Lenox, Mr.</td>
<td>275 0174</td>
<td>Lenox.Green</td>
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<td>PG Admissions</td>
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<td>Greenwood, Paul, Mr.</td>
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<td>Paul.Greenwood</td>
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<td>IS Support Analyst, EPS</td>
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<td>Harper, Helen, Mrs.</td>
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<tr>
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<tr>
<td>Lythgoe, David, Mr.</td>
<td>275 5824</td>
<td>David.Lythgoe</td>
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<td>Finance Manager</td>
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<td>Masterson-Kerr, Diane, Mrs.</td>
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<td>Diane.Masterson-Kerr</td>
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<td>Head of School Administration</td>
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<tr>
<td>McArthur, Tracie, Mrs.</td>
<td>306 6415</td>
<td>Tracie.McArthur</td>
<td>G.202/ G.204</td>
<td>Teaching and Learning Administrator</td>
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<tr>
<td>McDonald, Tony, Mr.</td>
<td>275 6118</td>
<td>Tony.McDonald</td>
<td>Kilburn/ 2.93</td>
<td>Health and Safety and Environment Manager</td>
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<tr>
<td>Morris, Karen, Miss</td>
<td>275 5797</td>
<td>Karen.Morris-2</td>
<td>G.202/ G.204</td>
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<td>Moss, Francesca L, Mrs.</td>
<td>275 5899</td>
<td>Francesca.Moss</td>
<td>G.202/ G.204</td>
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<td>Newbold, Julia, Mrs.</td>
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<td>Julia.Newbold</td>
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<td>UG Admissions</td>
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<td>Parmar, Raksha, Miss</td>
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<td>Paul, Chris, Dr.</td>
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<td>Pearson, Joanne, Mrs.</td>
<td>275 0178</td>
<td>Joanne.Pearson</td>
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<td>Rees, Sebastian, Mr.</td>
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<td>Sebastian.Rees</td>
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<td>External Affairs Administrative Assistant</td>
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<td>Seesod, Jan, Ms.</td>
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<td>1.135</td>
<td>Research Finance Officer</td>
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<td>Smith, Tracey, Miss</td>
<td>275 5800</td>
<td>Tracey.Smith</td>
<td>G.202/ G.204</td>
<td>Clerical Assistant/Receptionist</td>
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<td>Helen.M.Taylor</td>
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<td>Senior Research Finance Officer</td>
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<td>Verghese, Vinod, Mr.</td>
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<td>G.204</td>
<td>Assistant</td>
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APPENDIX B: UNDERGRADUATE DEGREE REGULATIONS

All students commencing their studies from September 2012 will be subject to the Undergraduate Degree Regulations given in this Appendix. These rules are described briefly in Section 3.3 of this Handbook. In the academic year 2014-2015, they will apply to all First, Second and Third Year students in the School of Mathematics.

The following regulations are an edited version of the formal regulations of the University of Manchester. The full regulations can be accessed from the website

http://www.tlso.manchester.ac.uk/degree-regulations/

(Click on to Undergraduate Degree Regulations and Guide to the Taught Degree Regulations.)

Credit and Award Framework

1. All awards of the University of Manchester will be given on the basis of the accumulation of credit as mapped out in Table 1.

Table 1: Credit and Award Framework

<table>
<thead>
<tr>
<th>Name of Award</th>
<th>Minimum Credit for the Award</th>
<th>Minimum Credits at the Level of Qualification Required for an Award</th>
<th>Level of Qualification Required for an Award</th>
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<tr>
<td>MMath Degree</td>
<td>480</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>BSc Honours Degree (3 years)</td>
<td>360</td>
<td>90 (100 in the School of Mathematics)</td>
<td>3</td>
</tr>
<tr>
<td>BSc Ordinary Degree</td>
<td>300</td>
<td>60</td>
<td>3</td>
</tr>
<tr>
<td>Diploma of Higher Education (DipHE)</td>
<td>240</td>
<td>90</td>
<td>2</td>
</tr>
<tr>
<td>Certificate of Higher Education (CertHE)</td>
<td>120</td>
<td>90</td>
<td>1</td>
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</tbody>
</table>

Note: The column entitled ‘minimum credits at the level of qualification required for an award’ is to be used when making awards only and is not to be used for the purpose of deciding progression.

2. All students who exit prior to completion of the programme on which they registered will receive an exit award if they have achieved the appropriate amount of credit in accordance with that award, as specified in Table 1.

3. A student must achieve the minimum amount of credit at the level of the qualification in accordance with Table 1. However, (subject to the programme requirements) students can take credit at a higher or lower level in order to achieve the minimum credit for the award.
Accreditation of Prior Learning – AP(E)L

4. A maximum of 120 credits of a three year Bachelors degree can be considered for AP(E)L. A maximum time limit of 5 years should apply between award and consideration of AP(E)L.

5. AP(E)L may be used in exceptional circumstances for entry into the Third Year (or the Fourth Year of the MMath). However, a case must be made to and approved by the Faculty.

6. Students can receive an exit award if they have AP(E)L credit in their profile, providing their performance in the University of Manchester also satisfies the award requirements in Table 1 and at least half of the credits have been awarded by the University of Manchester.

Assessment and Progression

7. Undergraduate students must pass a minimum of 40 credits on the first attempt at each level, including any non-compensatable units specified by the School, in order to progress. When a student fails to do this, they will have failed the year. (See the paragraphs below on repeating the year and on exit awards.)

Note: The pass mark for each course unit is 40%. In the School of Mathematics, the following course units are non-compensatable: MATH10101, MATH10111, MATH10121, MATH10131, MATH10202, MATH10212, MATH10222 and MATH10232. This means that students have to obtain a mark of at least 40% in these course units. If their mark at the first attempt is between 30% and 39%, then they will have to resit it and achieve a mark of at least 40% in the resit. They will not be able to carry these course units in the Second Year. (See the paragraphs below on compensation and carrying forward failed credits.)

8. Undergraduate students progress on the basis of credit accumulation in accordance with the programme requirements. Students can progress once they have achieved enough credit as specified by the programme requirements in each year of their programme. (See Section 2 of this Handbook.)

9. Where the student has failed more than 80 credits on the first attempt, or fails to meet progression requirements after compensation or reassessment, the Board of Examiners has the following options at its discretion:

- Withdraw the student and award an Exit Award if criteria are met in accordance with Table 1.
- Permit the student to re-take the year. (See the paragraphs below on repeating the year.)
- Permit the student to carry over up to 20 credits (see the paragraphs below on carrying over credit) in exceptional circumstances, as defined by the Board of Examiners.
- Consider reassessment, where there is approved and verified mitigation.
**Note:** In the School of Mathematics, students are not normally allowed to repeat a year unless there are strong mitigating circumstances.

10. The progression rules in paragraphs 7 to 9 apply to progression to and from any year of study, regardless of level, except when progressing to the final year (the fourth year) of the MMath Degree.

11. Students progressing to the final year of the MMath Degree must achieve an average of at least a lower second classification in order to progress.

**Note:** In the School of Mathematics, MMath students must also achieve an overall Third Year mark of at least 55% to progress to the Fourth Year. To progress to the Third Year of the MMath Degree, students must achieve a Second Year average of at least 55%.

**Compensation**

12. The compensation zone for a course unit consists of marks that are less than 40% but no lower than 30%.

13. A maximum of 40 credits per year can be compensated in the First and Second Years of an undergraduate degree programme.

14. Compensated units will keep the original mark and this is used in the weighted average for the calculation of the final classification / award.

15. Referred assessment is compensatable. (See paragraphs 17 to 25 for details of referred assessment or reassessment.)

16. Decisions on compensation are made by the Board of Examiners. Schools can specify when a course unit is not compensatable.

**Reassessment**

17. Where the overall mark for a course unit is below the compensation zone or the maximum amount of compensation has been exceeded, reassessment may be taken unless in the final year (the Third Year) of a Bachelors degree or the final years (the Third and Fourth Years) of the MMath. This is known as a *Referral* and the referred assessment must be designed to assess the achievement of the same intended learning outcomes but need not be of the same form as that originally used. The referred assessment will normally take place in the same academic year as the original assessment to enable the students to progress as originally intended.

18. If a Board of Examiners has documented evidence that (a) a student’s work or attendance or both have been unsatisfactory, and (b) the student has been formally warned of the unsatisfactory work or attendance but has not shown significant improvement acceptable to the Board, then the Board has the right to refuse referred assessment.
19. The Board of Examiners must specify the minimum circumstances to enable the student to progress and any remedial action required by the student, subject to teaching capacity not being exceeded. The Board of Examiners will decide which referred assessment should be taken, to achieve the credit to enable them to progress.

20. The Board of Examiners may allow a student one attempt per course unit at referred assessment (two attempts in total). This principle does not apply to attempts with approved and verified mitigating circumstances. Additional attempts at assessment as a result of mitigating circumstances, known as Deferrals, are considered a first attempt and no cap is applied.

21. When a student fails to achieve the required credit after referred assessment, the Board of Examiners may decide to allow them to take the whole course unit again, on one further occasion in attendance, subject to teaching capacity not being exceeded. This only applies in the First and Second Years.

22. First and Second Year undergraduate students can be offered referrals in up to 80 credits per year. The authority to decide which course units are retaken rests with the Board of Examiners.

23. Referral pass marks will be capped at the lowest compensatable mark (30%), unless the previous mark was within the compensation zone (that is, it was between 30% and 40%), in which case the original mark will stand.

24. If a student fails a referred assessment, the first mark stands and the student has failed to achieve the required credit.

25. Third and Fourth Year students cannot be referred in order to improve their marks.

Carrying Forward Failed Credit on Undergraduate Programmes

26. The Board of Examiners may exceptionally permit an undergraduate student to carry forward up to 20 failed credits. This decision will be based on a student’s academic standing and in cases of mitigating circumstances. The student should resit, in attendance, at the next available opportunity subject to teaching capacity not being exceeded.

27. Whole units must be repeated in attendance, with assessment taken in full and (if successful) marks are capped at the lowest compensatable mark. (This assumes that the original mark was less than 30%. If the original mark was between 30% and 40%, then the original mark stands.)

Note: In the School of Mathematics, students are not normally allowed to do the coursework again.

28. Students can only have one attempt at regaining credit carried over to a subsequent year. If they fail to regain the credit, they will be considered for an exit award.
29. Optional course units can be substituted but a replacement unit should not be considered a first sitting and there will be no further opportunities to regain the credit if the course unit is failed after assessment / reassessment.

30. Students should be advised by the Board of Examiners that if they fail the credit then they may not qualify for an Honours degree. Because carrying extra course units imposes a significant additional burden on the student, the Board of Examiners should give permission only where it judges that, in the light of previous results, the student is likely to be able to cope adequately.

Repeating the Year

31. Boards of Examiners are permitted to make a decision on academic grounds when deciding whether or not a student is academically suitable to repeat a year of study. The outcome of this decision is also subject to teaching capacity not being exceeded.

   **Note:** In the School of Mathematics, students are not normally allowed to repeat a year unless there are strong mitigating circumstances.

32. An undergraduate can normally only repeat a year on one occasion during the whole programme. This must be either the First Year or the Second Year and is subject to teaching capacity not being exceeded. Exceptions may be permitted in cases of mitigating circumstances.

33. Fees are payable when years are repeated as a result of failure, without approved and verified mitigating circumstances.

   **Note:** In the School of Mathematics, students normally have to pay the fees for a repeat year.

34. A student who is repeating a year cannot carry over credit from the year that is repeated.

Exit Awards

35. Once a student has exhausted all the opportunities to retrieve failed assessment, they will be given an exit award in accordance with Table 1, subject to the accrual of the appropriate number of credits, as defined in the Programme Specification. (See Section 2 of this Handbook.)

36. All programmes must have approved exit awards.

37. If a student decides to withdraw, they will automatically be awarded the relevant exit award in accordance with Table 1 and as defined in the Programme Specification. (See Section 2 of this Handbook.)

Final Year of an Undergraduate Programme

38. There will be no reassessment in the final year (Third or Fourth Year).
Note: In the School of Mathematics, there is no reassessment in either the Third Year or the Fourth Year.

39. In order to qualify for an award, students must meet the credit criteria as stated in the credit and award framework (see Table 1) and passed assessment as specified in the Course Unit / Programme Specifications.

40. When considering classifications for a first, 2.1 or 2.2, the Board of Examiners may award 'special' compensation for up to 40 credits at Levels 3 or 4, for any failed course unit, provided the student has passed at least 80 credits at the level of the award.

41. When considering classifications for a first, 2.1 or 2.2, the Board of Examiners may award 'special' compensation for up to 60 credits at Levels 3 or 4, for any failed course unit, provided the student has passed at least 60 credits at the level of the award. However, there is a penalty applied due to the failure of more than 40 (but no more than 60) credits and the student will have the classification reduced to the classification below that which would have been awarded on the basis of the weighted average for the programme.

42. When considering classifications for a third class degree, the Board of Examiners may award 'special' compensation for up to 60 credits at Level 3 (or 4) of a Bachelors degree programme, for any failed course unit, provided the student has passed at least 60 credits at the level of the award.

43. Where 'special' compensation is given, this is for credit only and the original marks are recorded and used to calculate the degree classification.

44. Where up to 20 credits have been carried over from the Second Year to the Third Year, this credit may be considered under the ‘special compensation’ regulations providing the maximum allowable has not been exceeded. This also applies to credit carried over from the Third Year to the Fourth Year of an Integrated Masters.

Note: The School of Mathematics does not allow students to carry credit from the Third Year to the Fourth Year of the MMath. Moreover, the School of Mathematics does not apply the ‘special compensation’ regulations to carried course units.

45. Ordinary degrees can only be awarded at the end of a programme of study where a student has obtained 300 credits, 60 of which must be at the level of the qualification (Level 3). Special compensation does not apply to ordinary degrees. Students can also progress on to an ordinary degree on the basis of decisions made by a School or Faculty or University misconduct committee/discipline panel or equivalent.

Classification of the MMath

46. The overall mark for degree classification is a weighted average of the overall marks for each year of the programme with the following weights:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 0.2 : 0.4 : 0.4.
47. Decisions with regards to ‘borderline’ classifications for individual students should be resolved using the mechanisms outlined below.

Classification in Bachelors Programmes

48. To be considered for a Bachelors degree, a student must have achieved the requisite minimum credits listed in Table 1 in accordance with the unit marking scheme and grade descriptors. Students who have not achieved the minimum credit requirement for an honours degree will be awarded an ordinary degree in accordance with Table 1.

49. The overall mark for degree classification is a weighted average of the overall marks for each year of the programme with the following weights:

For the three-year BSc programmes:

Year 1 : Year 2 : Year 3 = 0 : 0.33 : 0.67.

For the BSc programme in Mathematics with a Modern Language:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 0.33 : 0 : 0.67.

50. Decisions with regards to ‘borderline’ classifications for individual students should be resolved using the mechanisms outlined below.

Aegrotat Degrees

51. The Board of Examiners may determine from evidence available to it that a candidate for an Honours degree who has been prevented by good cause from completing the final examination or assessment will be awarded a class of degree the Board judges to be suitable, as long as the candidate has gained over half the credits required for the award.

Examination Board Arrangements

52. There are normally three available assessment opportunities: January, May / June and August / September within each academic year. It is expected that all reassessment will take place in the academic year in which the assessment was first attempted.

53. There must be an opportunity after every assessment period for a chaired forum to make decisions regarding students’ attainment on completed units.

54. Meetings of Boards of Examiners will take place at the end of each academic year or at points in the calendar where decisions are required with regards to progression, overseen by an External Examiner.

Undergraduate Degree Classification Scheme

55. The undergraduate degree classification scheme is based upon a weighted average using a 0 – 100 mark range calculated to one decimal place, where marks for individual course units are recorded as whole numbers.
Stage 1: Classification Thresholds and Boundaries

Bachelor Degree Classification using 0 - 100 Mark Range and 120 Credits

56. The following boundaries inform classification when the weighted average falls below a classification threshold.

Table 2: Bachelors Degree Classification and Boundary Zone using Weighted Average with Mark Range 0 – 100:

<table>
<thead>
<tr>
<th>Bachelors Degree classification</th>
<th>Classification thresholds: weighted average (0 to 100 mark range)</th>
<th>Boundary zone weighted average</th>
</tr>
</thead>
<tbody>
<tr>
<td>First class</td>
<td>70.0</td>
<td>68.0 to 69.9</td>
</tr>
<tr>
<td>Upper Second class</td>
<td>60.0</td>
<td>58.0 to 59.9</td>
</tr>
<tr>
<td>Lower Second class</td>
<td>50.0</td>
<td>48.0 to 49.9</td>
</tr>
<tr>
<td>Third class</td>
<td>40.0</td>
<td>37.0 to 39.9</td>
</tr>
</tbody>
</table>

Consideration of Bachelor Degree Students within the Boundary Zone by Mark Distribution

57. After allowances have been made for mitigating circumstances, a student whose weighted average at the first assessment is within the boundary zone specified above must be awarded the higher classification as long as (at least) two-thirds of the credits in the Final Year are equal to or higher than the final award. (For example, if the student is in the boundary zone between an Upper Second and a First, (at least) two-thirds of the credits must be at 70% or higher to fulfil this criteria and award the student a First Class degree.)

MMath Degree Classification using 0 - 100 Mark Range and 120 Credits

58. The following boundaries inform classification when the weighted average falls below a classification threshold.

Table 3: MMath Degree Classification and Boundary Zone using Weighted Average with Mark Range 0 – 100:

<table>
<thead>
<tr>
<th>MMath Degree classification</th>
<th>Classification thresholds: weighted average (0 to 100 mark range)</th>
<th>Boundary zone weighted average</th>
</tr>
</thead>
<tbody>
<tr>
<td>First class</td>
<td>70.0</td>
<td>68.0 to 69.9</td>
</tr>
<tr>
<td>Upper Second class</td>
<td>60.0</td>
<td>58.0 to 59.9</td>
</tr>
<tr>
<td>Lower Second class</td>
<td>50.0</td>
<td>48.0 to 49.9</td>
</tr>
<tr>
<td>Fail</td>
<td>Below 49.9</td>
<td></td>
</tr>
</tbody>
</table>

Consideration of MMath Degree Students within the Boundary Zone by Mark Distribution

59. After allowances have been made for mitigating circumstances, a student whose weighted average at the first assessment is within the boundary zone specified above must be awarded the higher classification as long as (at least) 75 credits out of 120 in
the Final Year are equal to or higher than the final award. (For example, if the student is in the boundary zone between an Upper Second and a First, (at least) 75 out of 120 credits must be at 70% or higher to fulfil this criteria and award the student a First Class degree.)

**Stage 2: Mark Review and Use of Viva Voce**

60. If a student is in the boundary zone of the average mark and does not satisfy the additional criteria, Schools will apply a further stage of ‘Mark Review’, overseen by an External Examiner. The process of ‘Mark Review’ should not change unit marks and can only influence the classification awarded.

**Note:** The School of Mathematics does not use viva voce examinations.

**NOTES:**

1. All the BSc honours degree programmes offered by the School of Mathematics require 360 credits with the exception of the BSc honours degree programme in Mathematics with a Modern Language, which also includes a year abroad.

2. Progression on a programme which includes a year in an institution abroad (such as Mathematics with a Modern Language) requires a minimum overall mark of 40%.

3. Additional requirements apply to some degree programmes, as follows:

   **Actuarial Science and Mathematics.**

   - If a First Year student has an uncompensatable fail in any of MATH10951, ECON10041 or ECON10081, and ECON10042 or ECON10082, then they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Second Year, so long as they satisfy the Mathematics progression requirements. They will not be able to carry these course units in the Second Year.

   - If a Second Year student has an uncompensatable fail in any of MATH20951, MATH20802, MATH20962 and MATH20972, then they will have to transfer to an appropriate Single Honours Mathematics degree programme for the Third Year, so long as they satisfy the Mathematics progression requirements. They will not be able to carry these course units in the Third Year.

   **Mathematics with Finance.**

   - First Year students who do not achieve a mark of at least 40% in BMAN10522 will have to transfer to an appropriate Single Honours Mathematics degree programme for the Second Year, so long as they satisfy the Mathematics progression requirements.

   - Second Year students who do not achieve a mark of at least 40% in BMAN23000 will have to transfer to an appropriate Single Honours Mathematics degree
programme for the Third Year, so long as they satisfy the Mathematics progression requirements.

Mathematics with a Modern Language.

- To progress to the Second (or Third) Year of the Mathematics with a Modern Language degree programme, students also need to satisfy the language requirement. In general, this means that students have to obtain at least 40% in the compulsory Level 1 (or Level 2) language course unit(s). Students who do not satisfy the language requirement will have to transfer to an appropriate Single Honours Mathematics degree programme for the following year, so long as they satisfy the Mathematics progression requirements.
APPENDIX C: REGULATIONS FOR UNDERGRADUATE AWARDS

For students registered on an Undergraduate programme on or after 1 September 2010.

All students who commenced their studies before September 2012 (and have not interrupted, repeated a year or transferred from a different School) will be subject to the Undergraduate Degree Regulations given in this Appendix. These rules are described briefly in Section 3.4 of this Handbook. In the academic year 2014-2015, they will apply to all Fourth Year students in the School of Mathematics.

The following regulations are (a slightly abridged version of) the formal regulations of the University of Manchester. The full regulations can be accessed from the website

http://www.studentnet.manchester.ac.uk/crucial-guide/academic-life/courses/completing-course-successfully/

(Click on to degree regulations.)

Some variations apply to the School of Mathematics and these are described at the end of this Appendix.

Except where specified, these regulations apply only to full-time programmes.

DEFINITIONS

(a) Credit framework

1. Credit is a measure of units and programmes of study according to the volume of student work required. One credit corresponds to a notional ten hours of student workload.

2. Level describes the intellectual demands of units and programmes of study. A unit will be assigned a level as follows: 0 corresponding to the typical demands of a foundation year; 1, 2, or 3 corresponding to the typical demands of successive years of a bachelor’s degree programme; or 4 corresponding to the typical demands of a master’s degree programme.

3. The standard undergraduate academic year comprises 120 credits for programmes with honours, and 100 credits for ordinary programmes. The credits are normally divided equally between the semesters.

4. In undergraduate programmes, a unit will be worth 10 credits (or an integral multiple of this figure), except for a unit at level 4, which will be worth either 10 or 15 credits (or an integral multiple of these figures). Any variations in these credit values will require the permission of Senate. [See Note 1 below.]
(b) Award framework

5. Award of the Certificate of Higher Education requires 120 credits, with at least 100 credits at level 1 or above.

6. Award of the Diploma of Higher Education requires 240 credits, with at least 100 credits at level 2 or above.

7. Award of the Ordinary Degree of Bachelor for a programme of standard length (three years full-time study or its part-time equivalent) requires 300 credits, with at least 60 credits at level 3 or above.

8. Award of the Degree of Bachelor with honours for a programme of standard length (three years full-time study or its part-time equivalent) requires 360 credits, with at least 100 credits at level 3 or above. [See Note 2 below.]

9. Award of the integrated Degree of Master for a programme of standard length (four years full-time study or its part-time equivalent) requires 480 credits, with at least 120 credits at level 4.

10. For longer programmes, the total credit requirements for each award are increased pro rata to the length.

(c) Accreditation of prior learning

11. The University may accredit prior learning undertaken elsewhere when such learning may be shown to have delivered the appropriate level and volume of study and to have achieved the intended learning outcomes of a specific part of one of its own programmes, thereby preparing the student suitably for subsequent parts of the programme.

12. Prior learning that is certificated may be accredited by scrutiny of documentary evidence against the required criteria of level, volume and achievement of relevant intended learning outcomes. Prior learning that is experiential must be recognized by the compilation of material that allows equivalent scrutiny. In either case a fee may be payable, which may depend on the level and volume of credit to be recognized and on whether the learning is certificated or experiential.

13. Prior learning may be recognized for the purpose of admitting a student to a programme with advanced standing, i.e. to a year after the first, subject to the criteria under Paragraphs 11 and 12. Any year thus exempted will not be awarded a mark but will be graded pass (and hence excluded from the calculation of the overall mark for the programme).

14. Prior learning may also be recognized for the purpose of exempting a student from the attendance and assessment requirements of a specific unit in any year except the final year of a programme leading to the Degree of Bachelor or integrated Degree of Master. Any unit thus exempted will not be awarded a mark but will be graded pass (and hence excluded from the calculation of the overall mark for the year). The
The volume of credit so exempted will not exceed one half of the total credits in any year, or, for a student admitted to the programme with advanced standing, one sixth of the total credits in any year. Such exemption will not imply exemption from paying any part of the normal fees due for the year.

(d) Titles of awards

15. The title of a programme or an award will normally follow the following conventions:

The title “X” signifies that at least two thirds of the credits of the programme relate directly to the subject X.

The title “X and Y” signifies that the distinct subjects X and Y each comprise more than one third of the credits of the programme and of the credits in the final year.

The title “X with Y” signifies either
a. that subject X is studied with subject Y, where Y comprises at least one quarter but no more than one third of the credits of the programme and of the credits in the final year; or
b. that subject X is combined with a substantial period of study Y (typically one academic year) away from the University.

The titles “X (with Y)” or “X (Y)” may be used to signify that subject X is studied with subject Y where Y is another subject or pathway that comprises less than one quarter but at least one sixth of the credits of the programme and of the credits in the final year.

Titles of awards will not normally include more than two subjects, to which “with Y” for a period of study Y as above may be added where applicable.

MINIMUM STUDY PERIOD

16. The award of the Degree of Bachelor or the integrated Degree of Master for a student admitted to a programme with advanced standing in respect of learning completed prior to entry (see Paragraph 13) requires completion of at least the final year of full-time study (or its part-time equivalent) at the University of Manchester.

MAXIMUM STUDY PERIOD

17. A student will not be allowed to interrupt full-time study except with permission from Faculty. The full-time programme for the award of a degree will normally be completed within two academic years of the intended completion date following first registration for the programme.

ASSESSMENT

18. A student successfully completes a unit by demonstrating achievement of specified intended learning outcomes. For numerical assessment, marks are determined by the extent to which the student achieves the intended learning outcomes, such that in principle the full range from 0 to 100% is available. Where there is numerical
assessment, the normal pass mark will be 40%. Where there is no numerical
assessment the unit will be graded pass or fail.

19. The Board of Examiners may determine from evidence available to it that a student
who has been prevented by good cause from completing the assessment for a unit will
be awarded the percentage mark if at least half of the assessment has been completed
or a pass if less than half of the assessment has been completed.

20. For the purposes of determining progression, the percentage mark that represents a
compensatable fail will be not less than 30%. Where a unit is graded simply pass or
fail there is no compensatable fail mark.

PROGRESSION

21. The overall mark for a given year of a programme will be calculated as an average of
the numerical marks awarded for each unit in that year weighted by the credits for that
unit, with suitable provision for marks from any assessments that relate to more than
one unit or to study outside the standard programme. Units graded pass or fail are
excluded from the calculation.

22. The minimum overall pass mark will be 40% to progress from one year of a
programme for the Degree of Bachelor to the next and to progress to Years 2 and 3 of
a programme for the integrated Degree of Master. The minimum overall pass mark
will be 50% to progress to Year 4 of a programme for the integrated Degree of Master.
[See Note 3 below.]

23. To progress from one year of a programme to the next, except from Year 3 to Year 4
of a programme for the integrated Degree of Master, a student must
- reach the minimum pass mark overall; and
- reach the pass mark in individual units totalling at least two thirds of the credits
  for that year; and
- reach the compensatable fail mark in all remaining units.

To progress from Year 3 to Year 4 of a programme for the integrated Degree of
Master, a student must
- reach the minimum pass mark overall; and
- satisfy the requirements for the Degree of Bachelor with at least 2ii Honours as set
  out in Paragraphs 32 to 37 of these Regulations.

Faculties may allow Schools on discipline-specific grounds to adopt more stringent
requirements, including (but not restricted to):
- limiting the number of credits for which a compensatable fail mark will be
  available in each of the separate components of a joint degree programme;
- specifying core units for which no compensatable fail mark will be available;
- increasing the proportion of the total credit that must reach the pass mark
  (ultimately to the total credits available, thus allowing no compensatable fails);
- setting a compensatable fail mark greater than 30% as allowed under Paragraph
  20;
- setting a higher pass mark overall.
[See Note 4 below.]
24. A student who fails to progress to a subsequent year of a programme for the Degree of Bachelor, or to a subsequent year other than the final year of a programme for the integrated Degree of Master, will be reassessed in all units for which the unit pass mark was not attained. Such reassessment must be designed to assess achievement of the same intended learning outcomes but need not be of the same form as that originally used. It will normally take place in time for the student to progress at the time originally intended. In order to progress, a student will be required to pass each unit reassessed. The student will then be deemed to have obtained the credits necessary for progression. However, the marks originally obtained will be used to calculate the overall mark for the year. Although compensation is not normally available, Faculties may for good cause allow a School to adopt a scheme of compensation, provided that such a scheme is no less stringent than the scheme the School uses under Paragraph 23. [See Note 5 below.]

25. A student who progresses to a subsequent year of a programme according to Paragraph 23 may be reassessed in order to achieve higher marks where such marks are required by a relevant professional, statutory or regulatory body. However, the marks originally obtained, which may include compensatable fail marks for some units, will be used to calculate the overall mark for the year.

26. A student who fails to progress to the final year of a programme for the integrated Degree of Master will not be reassessed but instead will be considered forthwith for the award of the Degree of Bachelor.

27. A student who fails after reassessment (and application of compensation allowed as in Paragraph 24) to progress to a subsequent year of a programme for an Honours Degree but has passed units totalling at least 100 credits (after compensation where allowed) will progress to the subsequent year of the programme for the Ordinary Degree of Bachelor, except as allowed under Paragraph 28.

28. A student who fails to progress to a subsequent year of a programme having failed after reassessment to reach the unit pass mark (or the compensatable mark where compensation is allowed) in units totalling no more than 20 credits may be allowed by the Board of Examiners to progress to the next year taking additional units of the same credit value and at the same level as the failed credits, in addition to the full set of units for that year. To complete that year successfully, the student must satisfy the usual criteria for the year and reach the unit pass mark for the additional credits at the first attempt. A student who satisfies the criteria for the year but fails to pass the additional credits will be treated as having completed successfully that year of the programme for the Ordinary Degree of Bachelor. [See Note 6 below.]

29. A student who fails to progress to Year 2 of a programme after reassessment may be allowed by the Board of Examiners to re-start Year 1 of that or a cognate programme. [See Note 7 below.]

30. To progress to a subsequent year of a programme for the Ordinary Degree of Bachelor, a student must:
   - reach the pass mark overall in units totalling 100 credits; and
   - reach the pass mark in individual units totalling at least 60 credits; and
• reach the compensatable fail mark in all remaining units.

MITIGATION

31. The Board of Examiners, or other cognate body constituted for this purpose, may determine from evidence of good cause shown before an assessment period (or exceptionally after the assessment period if the cause was not then known to the student or could not then have been shown by the student) that a student’s performance was likely to have been impaired. It may then judge that without the impairment the student would have reached higher marks sufficient to demonstrate the necessary learning outcomes and thereby satisfy the requirements for progression under the criteria in Paragraphs 21 to 30 or for a given degree classification under the criteria in Paragraphs 32 to 37. It will not adjust the mark of the student in individual units or overall, but will treat the unadjusted marks separately in any subsequent computations.

CLASSIFICATION

32. The Degree of Bachelor with Honours will normally be awarded in classes 1, 2i, 2ii and 3. The integrated Degree of Master will normally be awarded in classes 1, 2i and 2ii, unless approval by a professional, statutory or regulatory body requires the use of class 3. The Ordinary Degree of Bachelor will be awarded without any classes or divisions.

33. The Board of Examiners may determine from evidence available to it that a candidate for an honours degree who has been prevented by good cause from completing the final examination or assessment will be awarded a class of degree the Board judges to be suitable, or unclassified honours if the Board judges that no class can be determined.

34. A candidate for any award who fails to satisfy the requirements for the intended award but satisfies those for a lower award will be eligible for the lower award. The programme title of the lower award will normally be the same as that of the intended award, but an appropriate alternative programme title will be used:
   i. when the student has not satisfied the credit requirements for one of two subjects studied in combination; or
   ii. when at least part of the title of the degree is associated with a right to practise; or
   iii. for other good cause.
   The Certificate of Higher Education or Diploma of Higher Education may be awarded without a programme title.

35. The overall mark for a programme is a weighted average of the overall marks for different years of the programme. [See Note 8 below.] For the different classes the overall mark ranges are:
   • for class 1, not less than 70.0%;
   • for class 2i, less than 70.0% but not less than 60.0%;
   • for class 2ii, less than 60.0% but not less than 50.0%;
   • for class 3, less than 50.0% but not less than 40.0%.
For the different classes boundary zones are:

- for class 1, less than 70.0% but not less than 68.0%;
- for class 2i, less than 60.0% but not less than 58.0%;
- for class 2ii, less than 50.0% but not less than 48.0%;
- for class 3, less than 40.0% but not less than 38.0%.

36. A student who obtains an overall mark in the range required for class 1, 2i or 2ii and obtains at least two-thirds of the credits for the final year with a mark not less than 40.0% will be awarded that class of degree. A student who obtains the overall mark in the range required for class 3 and obtains at least half of the credits for the final year with a mark not less than 40.0% will be awarded that class of degree, unless the Faculty has approved more stringent requirements for such an award. Except as provided under Paragraph 37, a student who obtains an overall mark in the range for that class but obtains less than the specified fraction of the credits for the final year with a mark not less than 40.0% will be awarded the next class lower, or for class 3 will be considered under the criteria in Paragraph 38.

37. A student may be considered for the next higher class of degree than determined by Paragraph 36 by one of two methods approved for each programme by the relevant Faculty.

**Method A (by mark distribution)**
A student who obtains an overall mark in the boundary zone for that class and obtains at least two-thirds of the credits for the final year with a mark not less than 40.0% will obtain that class if at least two thirds of the credits for the final year are in or above the range required for that class.

**Method B (by mark review)**
For a student who **either**
- obtains an overall mark in the range required for a given class but does not obtain the fraction of the credits for the final year with a mark not less than 40.0% (as specified in Paragraph 36); or
- obtains an overall mark in the boundary zone for that class and obtains the fraction of the credits for the final year with a mark not less than 40.0% (as specified in Paragraph 36),
the relevant External Examiners will review the marks, and may conduct an oral (*viva voce*) examination of the student. On the basis of that review, the External Examiners may recommend that the student obtains that class of degree.
*[See Note 9 below.]*

38. The Ordinary Degree of Bachelor will be awarded to a student who at the end of the honours programme obtains an overall mark of not less than 40.0% averaged over final-year units totalling 60 credits, and obtains at least half of those credits with a mark of not less than 40.0%.

39. The Ordinary Degree of Bachelor will be awarded to a student who at the end of the Ordinary programme obtains an overall mark of not less than 40.0% averaged over final-year units totalling 100 credits, and obtains at least half of the credits with a mark of not less than 40.0%.
40. A student who fulfils the requirements for the award of a degree may seek to be reassessed in some units in the final year in order to achieve higher marks required by a relevant professional, statutory or regulatory body. However, the marks originally obtained will be used to determine the class of degree awarded to such a student.

NOTES

The variations that apply to the School of Mathematics are listed below.

1. **Regulation 4.** MATH10111 (Sets, Numbers and Functions B), MATH10131 (Calculus and Vectors B), MATH10212 (Linear Algebra B) and MATH10232 (Calculus and Applications B) are each worth 15 credits. For the purposes of Regulation 4, MATH10111 is paired with MATH10131 to form a 30 credit course unit. Similarly, MATH10212 is paired with MATH10232 to form a 30 credit course unit. However, they are taught and examined as four separate 15 credit course units.

2. **Regulation 8.** All the BSc honours degree programmes offered by the School of Mathematics require 360 credits with the exception of the BSc honours degree programme in Mathematics with a Modern Language, which also includes a year abroad.

3. **Regulation 22.** The minimum mark for progression from Year 2 to Year 3 of the MMath degree programme will be 55%, but the minimum mark for progression from Year 3 to Year 4 will be 50%.

4. **Regulation 23.** Students on joint honours degree programmes where there is an approximately equal balance between the two subjects will be required to achieve an average mark of at least 40% in each part of the programme. For example, Second Year students on the Mathematics and Philosophy degree programme normally must achieve an average mark of (at least) 40% in Mathematics and (at least) 40% in Philosophy.

Students who do not do well enough in the minor strand of a major/minor programme (such as Mathematics with Finance, for example) may be permitted to progress to Single Honours Mathematics so long as they satisfy the Mathematics progression requirements.

Progression on a programme which includes a year in an institution abroad (such as Mathematics with a Modern Language) requires a minimum overall mark of 40%.

To progress to the Third Year of the Mathematics with a Modern Language degree programme, students also need to satisfy the language requirement. In general, this means that students have to obtain at least 40% in the compulsory Level 2 language course unit(s).

5. **Regulation 24.** Students who fail to progress to a subsequent year of the degree programme have to be reassessed in all course units for which they have a mark less than 40%. Compensation will be available on reassessment and will be applied in the
same manner as on first assessment. It must be emphasised that the marks originally obtained are used to calculate the overall mark for the year. The marks obtained in the resits are only used to judge whether or not a student can progress to the next year of the programme. However, when judging the ability to progress to the next year of the programme, it is the marks obtained in the resits that count, not the marks originally obtained. (For example, if you obtained a mark of 35% for a course unit originally, but only achieved a mark of 10% in the resit, it would be the mark of 10% that would count when judging the ability to proceed to the next year of the programme.) The policy of the University does not allow resit examinations to be held abroad.

6. **Regulation 28.** Decisions about whether a student is permitted to progress to Year 2 or Year 3 if they have failed to achieve 120 credits in the preceding year (studying additional credits in the next year) will be made by the Board of Examiners taking into account the overall performance and any other relevant information. Students should normally have achieved an average of at least 50% in the course units for which the credits have been awarded.

Students who are carrying credits are not normally required to complete the coursework for the additional course unit, but they have to pass the examination at the 40% level at the first attempt.

7. **Regulation 29.** Students who fail to proceed to Year 2 will not automatically be allowed to repeat Year 1. Each case will be judged on its merits and any extenuating circumstances will be taken into account.

8. **Regulation 35.** The overall mark for degree classification is a weighted average of the overall marks for each year of the programme in the following proportions:

For the MMath programmes:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 1 : 2 : 2.

For the three-year BSc programmes:

Year 1 : Year 2 : Year 3 = 0 : 1 : 2.

For the BSc programme in Mathematics with a Modern Language:

Year 1 : Year 2 : Year 3 : Year 4 = 0 : 1 : 0 : 2.

9. **Regulation 37.** The School of Mathematics will adopt Method B. However, we normally award the higher class if the candidate obtains an overall mark in the boundary zone for that class and at least two-thirds of the credits for the final year are in or above the range required for that class.