INFORMATION FOR STUDENTS ENTERING YEAR 1 IN ACADEMIC SESSION 2021/22

(Supplement to Student Handbook)

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Note: the information contained herein may be subject to change. (For example, the Department reserves the right to alter the list of modules available, the semester in which modules are delivered or degree course structures.)

24 August 2021
INTRODUCTION

This supplementary handbook has two aims:

1. To give you the information you need about the first year of the Department of Mathematics and Statistics degree courses.
2. To offer advice on how to get the best out of your chosen course.

In particular, we will discuss the structure of the first year of our undergraduate degree courses; we will provide information on how we teach and how you should learn; information about examinations and assessments will be given; and we will explain how you can express your views to us and where to seek help.

Further information for Year 1 students can be found in the University Student Handbook, the Department's Student Handbook and the University web pages.

The contents of this handbook are, as far as possible, up to date and accurate at the date of publication. The web links quoted were available on 24/08/2021. Changes and restrictions are made, however, from time to time and the University reserves the right to add to, amend, or withdraw modules, courses and facilities, to restrict student numbers and to make any other alterations, as it may deem desirable and necessary. Changes are published by incorporation in the next edition of the University Calendar:

www.strath.ac.uk/studywithus/academicregulations

Please read the regulations for your degree course carefully, in particular, the information about compulsory and elective modules available to you in Year 1, and progress requirements.

DEPARTMENTAL WEBSITE

Information about the Department of Mathematics and Statistics is provided online at:

www.strath.ac.uk/science/mathematicsstatistics

The site also contains links to pages for individual modules and other useful information.
CALENDAR OF DATES

Year 1 modules are taught in two semesters each consisting of an 11-week teaching block followed by a Revision and Assessment Period:

- **First Semester**
  - Welcome & Development Week: Monday 13th — Friday 17th September 2021
  - Teaching Block: Monday 20th September — Friday 3rd December 2021
  - Revision & Assessment: Monday 6th — Friday 17th December 2021
  - Student Holiday: Monday 21st December — Friday 8th January 2022
    (Public holiday: Monday 27th September)

- **Second Semester**
  - Consolidation & Development Week: Monday 10th — Friday 14th January 2022
  - Teaching Block: Monday 17th January — Friday 1st April 2022
  - Student Holiday: Monday 4th — Friday 15th April 2022
  - Revision & Assessment: Tuesday 19th April — Friday 20th May 2022
    (Easter Monday: Monday 18th April)

- **Resit Examination Diet**
  - Wednesday 27th July — Wednesday 10th August 2022 (to be confirmed)

  Permission to resit is not automatic, being subject to the approval of the appropriate Board of Examiners.

GENERAL INFORMATION: MATHEMATICS AND STATISTICS

Information for students about all the modules and courses provided by the Department of Mathematics and Statistics can be found via a class on Myplace called:

*Mathematics & Statistics: Information for Current Students*

All students on our degree courses are automatically enrolled for this class on Myplace
CONTACT INFORMATION

Departmental Office

Should you need to contact us by mail or telephone, the address and telephone numbers are:

Department of Mathematics and Statistics
University of Strathclyde
Room LT916
Livingstone Tower
26 Richmond Street
Glasgow, G1 1XH.

Telephone: 0141 548 3804
Email: contact-mathematics@strath.ac.uk

Key Staff Contacts 2021/2022

There are around 40 full-time members of staff in the department. All have offices in the Livingstone Tower on levels 8, 9 or 10. You can find a complete list of contact details on the Department's web pages. The office location, telephone extension and email address of some of the key staff are listed below.

If you have a problem or request, it is usually best to speak first with a module lecturer or your Personal Development Adviser. The Department's Administrator or secretarial staff can also deal with many routine enquiries.

**Head of Department**
Prof John MacKenzie  LT1009  3668  j.a.mackenzie@strath.ac.uk

**Academic Director**
Dr Penny Davies  LT1034  3416  penny.davies@strath.ac.uk

**Year 1 Coordinator**
Dr Peter Davidson  LT1036  3658  peter.davidson@strath.ac.uk

**Department Administrator**
Ms Sandra Miller  LT914  3598  s.j.miller@strath.ac.uk

All members of staff can be contacted on the University's internal phone system with the given extension. From off campus, these numbers should be prefixed by (0141) 548.

JOINT DEGREE CONTACTS

The departmental offices for students on joint degree courses are located as follows.

**Computer & Information Sciences**: Livingstone Tower, Level 11

**Mathematics, Science & Technological Education (a Division of the School of Education)**: Lord Hope Building, Level 5

**Physics**: John Anderson Building, Level 8

**Accounting & Finance**: Stenhouse Wing, Business School, Level 3

**Economics**: Duncan Wing, Business School, Level 5

**Management Science (Business Analysis)**: Duncan Wing, Business School, Level 7

Should you need to contact someone from these departments, then please use one of the following contacts. *All joint degree enquiries, however, should be addressed to the Mathematics and Statistics Year 1 Coordinator in the first instance.*

**BSc in Mathematics & Computer Science/ BSc in Data Analytics**
Ms I. Ross: isla.ross@strath.ac.uk

**BSc in Mathematics & Physics**
Dr A. Yao: alison.yao@strath.ac.uk

**BSc in Mathematics with Teaching**
Mr J. Winter: john.winter@strath.ac.uk

**BSc in Mathematics, Statistics and Business Analysis**
Mr K. Koutsouradis: konstantinos.koutsouradis@strath.ac.uk

**BSc in Mathematics, Statistics and Accounting**
Mr C. McLaughlin: craig.mclaughlin@strath.ac.uk

**BSc in Mathematics, Statistics and Economics**
Dr L. McInally: lauren.mcinally@strath.ac.uk

**BSc in Mathematics, Statistics and Finance**
Ms J. Thamm: juliane.thamm@strath.ac.uk
GETTING STARTED

The Welcome and Development Week will start on Monday, 13\textsuperscript{th} September and details of some of the key departmental events are listed below. Lectures and other classes start on Monday, 20\textsuperscript{th} September and by the end of the welcome week you should have a good idea of where and when your classes will be held. Please note, however, that arrangements may change in response to Scottish Government guidance and social distancing measures.

Department Induction

Details of the Department’s induction events are given below.

\textbf{Tuesday, 14\textsuperscript{th} September}: Live Q&A session (conducted via Zoom) with the Year 1 Coordinator.

\textbf{Wednesday, 15\textsuperscript{th} September}: Meeting with your Personal Development Adviser.

\textbf{Thursday, 16\textsuperscript{th} September}: Introduction to the Careers Service.

The timings of these events will be emailed to you. Please ensure that you are checking your University email account on a regular basis.

Timetables

You can access the University timetables here:

\textit{www.strath.ac.uk/professionalservices/timetables}

You can search for individual module timetables as well as the timetable for your chosen degree. Once the Year 1 Coordinator has approved your curriculum (usually by the end of the welcome week), you will be able to access your personalised timetable via Myplace and the Strathclyde app.

Principal’s Inauguration

This year’s commencement ceremony will be a video presented by the Principal, Professor Sir Jim McDonald, which you can watch at any time. Information on where to access the video will be communicated to you.

Student Cards

At the time of writing, we understand that students will be able to collect their student cards at specific times in the new Learning & Teaching Building. Further information will be sent to you from Student Experience and Enhancement Services.
Personal Development Adviser

You will be allocated a Personal Development Adviser (PDA) who will stay with you throughout your studies. Your PDA will be a member of academic staff in the Department and will be a key contact for you throughout your undergraduate degree. The principal role of the PDA is to help ensure that your progress through your university studies is as free of problems and difficulties as possible. Briefly, you will meet your PDA at the start of each session, and again later in the session. If, however, you are worried about anything at all, do not wait: go and speak to your PDA. If he or she is not able to answer your questions immediately, then rest assured that your PDA knows someone who can. In your initial meeting on September 15th, your PDA will help you choose a suitable elective.

Remember that your PDA is someone to whom you may turn to for counsel and help on any problem, whether academic or personal. Students who are experiencing difficulty with their work, who feel that unreasonable demands are being made of them, or who find that they are being hindered by medical, domestic, financial, or other problems, should consult their PDA (or some other member of the academic staff) as soon as possible. Experience shows that problems that seem very serious can often be resolved if discussed at an early stage. Your PDA will treat anything you say as confidential unless you mutually agree to do otherwise.

Student Support

The University's Student Support and Wellbeing Service represents a network of staff able to provide expert help and counselling on any problem whether academic, personal or financial. More information about the support and services on offer can be found at the following website:

www.strath.ac.uk/professionalservices/sees
FIRST YEAR CURRICULA 2021 - 2022

The curriculum for each course comprises:

1. Compulsory Modules;
2. Optional Modules, chosen from a list of modules;
3. Elective Modules, chosen from any of the modules offered by the University.

Procedure to follow

Study the regulations giving the first year curriculum for your chosen course carefully. See pages 15-22. Syllabus details for all appropriate first year Mathematics and Statistics modules are provided on our website with a summary on pages 23-28. A list of popular elective modules is provided separately. This gives information on modules that are not run by the Department of Mathematics and Statistics. Syllabus details of compulsory modules for joint degree courses are available from the University Class Catalogue (http://classcat.strath.ac.uk/) or the parent department that runs the module.

Each year, you need to take modules amounting to no fewer than 120 credits. In first year, most of these modules are compulsory, but some students will need to choose 10 or 20 credits of elective modules. These may be chosen from any other modules on offer within the University that fit your timetable subject to you satisfying any necessary prerequisites.

If you think that you may wish to transfer to a different degree course then it is a good idea to use your choice of elective modules to ease this. For example, if you are registered for Mathematics but still wish to retain the option of studying Mathematics, Statistics & Economics then you should take BF114 Introduction to Economics and Business Analysis (total 20 credits) as your elective module. At your PDA meeting on Wednesday, 15th September, your PDA will check over your proposed curriculum/timetable and advise you as necessary. Changes to your curriculum may be made within the first two weeks of the semester and you are advised to contact the Year Coordinator to make these changes.

Elective Modules

Modules that were recently studied by our students as electives include: Accountancy, Economics and Business Analysis, English, Entrepreneurship, Finance, History, Law, Modern Languages, Politics and Psychology as well as other Science Faculty modules.

Note that the Mathematics & Statistics 10 credit modules MM106, MM107, MM108, MM109, MM123 and MM124 may be chosen as electives if not already compulsory for your course. Modules MM106 and MM107 cover the first and second semesters, respectively, of MM104, while MM123 and MM124 cover the first and second halves, respectively, of the second semester module MM103.
Education Modules

Note that the education component in the Mathematics with Teaching degree course does not start until Year 4. In Years 1 and 2, the curriculum is identical to that of the BSc Hons Mathematics course. If you wish to transfer to the joint degree in Mathematics with Teaching then you must seek advice from staff in the School of Education’s Department of Curriculum Studies: Mathematics, Science and Technological Education Division before submitting such a request. **Strict quotas place limits on the number of Mathematics with Teaching places available.** The coordinator for the joint degree is John Winter (contact details on page 5). Transfer to the joint degree course must be approved before the start of Year 3.

To enter an Initial Teacher Education course in Scotland you are required to have a pass in the SQA Higher English course, or equivalent.

You will also have to undergo Medical Screening during the course. Furthermore, School Experience and Registration with the General Teaching Council for Scotland (GTCS) also requires that you have not had any convictions that might prejudice your involvement with children, and to this effect you must be a member of the Protection of Vulnerable Groups scheme.

[Note that a student wishing to enter the teaching profession may alternatively take the yearlong Professional Graduate Diploma in Education (Secondary) once they have gained an undergraduate degree.]

BSc in Mathematics, Statistics and Accounting

This degree course may lead to a fully accredited accounting qualification provided that the following 20 credit module is studied and passed: AG105 Introduction to Finance and Financial Statistics. Although you do not need to take this module, it is strongly advised if you wish to become a Chartered Accountant. It is also best to take this module in your first year. Taking this module (and others later in your course) leads to exemptions from examinations set by the Institute of Chartered Accountants of Scotland while studying to be a Chartered Accountant after graduating. Note that there are further optional modules that should be taken in later years to give you an accredited degree.

It is NOT possible to transfer into this degree course after the start of the session due to its high entry requirements and accredited modules.

BSc Honours

All first year BSc students are initially enrolled on the Honours programme (a four-year degree). To progress on this degree into second year you must reach a minimum standard performance, namely a credit weighted average (CWA) in your exams of 40% and passes in both MM101 and MM102. If you fail to meet this standard, you will be transferred to the 3 year pass degree.
MMath in Mathematics

The MMath is an Integrated Masters degree, also called an enhanced undergraduate degree, and corresponds to the 4-year MMath degrees offered in England and Wales and therefore takes one more year than a BSc Honours degree. Note that progress requirements for the MMath are much higher (CWA over 60%). As the curriculum in the early years is the same as that for the BSc in Mathematics, a student performing very well may transfer from the BSc Hons to the MMath course.

Transfer between Undergraduate Courses

The opportunities that exist to transfer between undergraduate degree courses occur primarily at the beginning, in the middle and at the end of your first year and at the end of your second year. Transfer possibilities naturally become more limited as time passes although transfer to the single subject course in Mathematics (or Mathematics and Statistics from Year 4) is sometimes possible right up to the start of the final year.

If, at any stage, you are considering changing your degree course then you should consult with your PDA and/or Adviser of Studies responsible for your current course as soon as possible.

First Year Students Changing Course

A first-year student wishing to change to another course offered by Strathclyde should follow the procedure outlined above. For Scottish students supported by SAAS, funding for an additional year’s study may be available under the “plus one” rule. Students from outwith Scotland are advised to contact their equivalent funding authority. Contact the Student Financial Support Team (located in the Advice Centre in the McCance Building, email: finance-helpdesk@strath.ac.uk) for further details.

Part-Time Study

Students may study for the BSc in Mathematics, the BSc in Mathematics and Physics, or the BSc in Mathematics, Statistics and Economics on a part-time basis. Note that the first two years of the BSc in Mathematics with Teaching may also be studied on a part-time basis. If full-time study proves too much it is possible to apply to transfer to one of the above courses rather than leave the University. Contact your Adviser of Study for advice.

Voluntary Withdraw from Studies

If a student wishes to withdraw from a course of study after discussion with their PDA or Year 1 Coordinator, then the student must write to the University to notify them of their decision.
Attendance at Classes

You will find that the atmosphere at University is probably more relaxed than that at your previous school or college. However, you should be aware that the University (General Academic Regulations 20-23) and the Student Awards Agency for Scotland (SAAS), or your Local Education Authority (LEA), require you to be here and attend classes - you must be here during semesters and only compelling mitigating circumstances can excuse absence from classes. Staff responsible for each module will monitor attendance as appropriate. It is a student's responsibility to ensure that their attendance has been recorded. The Head of Department (or Nominee) can report an unsatisfactory attendance record to the Science Faculty Board of Study, which, in certain circumstances, may result in a report being sent to the SAAS or your LEA.

Additionally, students are required to perform satisfactorily the work of the module. Where laboratory work is an integral part of a module it is clearly important to attend regularly and to complete the scheme of work required. In some modules, the award of the credit is dependent upon satisfactory coursework being carried out in addition to the written examination being passed. Any student whose attendance or performance has not been satisfactory may be deemed ‘Not Qualified’ to sit the examination and hence disqualified from the degree examination in the module concerned.

Additional work will normally be required in order for a Not Qualified student to be reinstated for a subsequent attempt at a degree examination.

Your Responsibility as a Student

As a student, we expect you to attend classes in a respectful manner (for example, make sure you arrive promptly and turn off your phone), and to carry out assignments and submit them timeously. We also expect you to observe good conduct at all times and to treat your fellow students with consideration. University facilities (computers, library, etc.) should be used responsibly and you should inform us of changes in your address. Finally, we expect and encourage you to spend an appropriate amount of time on private study.

Above all, a key responsibility is to make the best of the learning opportunities afforded by the University. We want all students to progress successfully through their course and graduate with a degree that is a true reflection of their ability.

Feedback to Students

The Department of Mathematics and Statistics recognises the value to students of feedback and is therefore committed to providing timely and appropriate feedback. To get the best out of feedback you need to be actively engaged in your studies. Feedback is only helpful if the information/comments are used by yourself to improve your future performance. Through feedback, you should learn from your mistakes and misconceptions, and build on achievements.
Feedback will help you identify gaps in your understanding and enable you to seek help and clarification when you need it. Individual advice can be obtained at the tutorial/problems classes. Alternatively, you can arrange to consult your lecturer/tutor. Staff will endeavour to return within 15 days, during the teaching period, work you submit on time. In many modules, this will be within a week.

Feedback may take many forms, for example:

(i) Written or oral comments on work submitted.
(ii) The supply of model solutions in class or via Myplace.
(iii) Grading of submitted work (normally in conjunction with (ii)).

Feedback on examinations may be given by providing a generic commentary on students’ performance (identifying common strengths and weaknesses) along with comments on those parts of questions that need particular attention.

Termination

A student who persistently does not attend classes may be reported to the Board of Study and may have their registration terminated and be required to withdraw from their course (See Regulation 94 of the General Academic Regulations). The criteria for reporting shall be: (i) a significant and persistent failure to attend or engage with programme requirements has been confirmed by the appropriate Department/School or Programme; (ii) the student has been offered appropriate opportunities to redeem their position, including the offer of support in cases of significant personal difficulties.

Student-Staff Liaison Committee

The Faculty Board of Study, which is the University committee that manages Science Faculty business, has student representatives. They change from time to time, but the Faculty Manager can tell you who the current representatives are. The Department of Mathematics and Statistics also has a Departmental Student-Staff Committee with representatives from each year of study. Minutes are kept of its actions and these are available on Myplace. The results of these actions are scrutinised at Departmental Meetings and the Faculty of Science Academic Administration Committee. The committee is formed in October from willing volunteers. The members are listed on Departmental notice boards and may be contacted by email or through Myplace.

The line of student-staff communication may be defined as follows:

- Issues of student concern associated with particular modules (including individual student difficulties) should, in the first instance, be raised with the lecturer in charge. If these issues cannot be resolved, students should then communicate their concern to the appropriate Year Coordinator. Unresolved issues should then be raised at the
Student-Staff Committee meetings and, as a last stage, students may take particular issues to the Head of Department.

- Issues concerning the organisation of a particular year of a course or the operation of an entire course in general should be raised directly with the appropriate Year Coordinator. Once again, unresolved issues should then be communicated in the Student-Staff Committee meetings and ultimately to the Head of Department.
YEAR 1 COURSE REGULATIONS

Course regulations are to be read in conjunction with the General Academic Regulations, a selection of whose content is given below. See the following link for the full list of regulations:

www.strath.ac.uk/media/1newwebsite/documents/academicregulations/UG_General_Regulations.pdf

General Academic Regulations
Undergraduate, Integrated Masters and Professional Graduate Degree Programme Level

14 **Modes of Study**
Programmes may be offered on a full-time and/or part-time basis however part-time study is not available to certain groups, such as visa holding students.

At the discretion of the relevant Board of Study, on the recommendation of the relevant Head of Department/School (or their nominee), a student may transfer from full-time to part-time study and vice-versa where an appropriate programme is available. At this time, the relevant minimum and maximum periods of study will be reviewed. For some students, transfer from full-time to part-time study will be prohibited, in line with UK Visa & Immigration (UKVI) compliance requirements.

Part-time students will follow a pattern of working in line with that of full-time students, on a pro-rata basis.

65 **Progress of Students**
To progress to the second year of a chosen course a student must have accumulated a minimum of 20 credits fewer than the total number of credits specified by the course curriculum at first year.

70 A student studying on a part-time basis must satisfy the appropriate progress requirements following each period of the equivalent full time credit load. More detailed progress regulations may be specified in individual course regulations.

71 A student studying on a part-time basis shall not normally proceed to the next year of study with more than 20 credits outstanding.

103 **Award**
To be awarded a Certificate of Higher Education a student must have accumulated no fewer than 120 credits with at least 100 credits at Level 1.
Mathematics

MMath in Mathematics, MMath in Mathematics and Statistics
BSc (with Honours) in Mathematics
BSc (with Honours) in Mathematics and Statistics
BSc (with Honours) in Mathematics with Teaching
BSc (with Honours) in Mathematics with Teaching (International)
Diploma/Certificate of Higher Education in Mathematical Studies

Curriculum (Full-time study)
First Year
All full-time students shall undertake modules amounting to 120 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM101 Introduction to Calculus</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM102 Applications of Calculus</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM103 Geometry and Algebra with Applications</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM104 Statistics and Data Presentation</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM108 Applying Mathematics 1</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>MM109 Applying Mathematics 2</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Elective Module(s)</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Curriculum (Part-time study)
Students studying on a part-time basis will normally take modules amounting to 60 credits in each year.

Progress
To progress to the second year of either the MMath or Bachelor with Honours degrees in addition to satisfying the requirements of General Academic Regulation 65, students must gain passes in MM101 Introduction to Calculus and MM102 Applications of Calculus.

To progress to second year of the Bachelor degree General Academic Regulation 65 shall apply.

Progress (Part-time study)
General Academic Regulations 65 and 71 shall apply.

Award
Certificate of Higher Education in Mathematical Studies: General Academic Regulation 103 shall apply.
Mathematics and Computer Science

BSc (with Honours) in Mathematics and Computer Science
Diploma/Certificate of Higher Education in Mathematics and Computer Science

Mode of Study
The courses are available by full-time study.

Curriculum
First Year
All full-time students shall undertake modules amounting to 130 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM101 Introduction to Calculus</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM102 Applications of Calculus</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM106 Essential Statistics</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>MM123 Geometry and Algebra</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>CS103 Machines, Languages and Computation</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>CS104 Information and Information System</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>CS105 Programming Foundations</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Elective Module(s)</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

Progress
In order to progress to the second year of the Honours course in addition to satisfying the requirements of General Academic Regulation 65, students must also gain passes in the following modules: MM101 Introduction to Calculus and MM102 Applications of Calculus.

To progress to second year of the Bachelor degree General Academic Regulation 65 shall apply.

Award
Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Mathematics and Computer Science General Academic Regulation 103 shall apply.
Mathematics and Physics

BSc (with Honours) in Mathematics and Physics
Diploma/Certificate of Higher Education in Maths and Physics

Curriculum (Full-time study)
First Year
All full-time students shall undertake modules amounting to 120 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
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<tbody>
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<td>20</td>
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<tr>
<td>MM106 Essential Statistics</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>MM123 Geometry and Algebra</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>PH180 Experimental Physics</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>PH183 Mechanics, Optics and Waves</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>PH184 Quantum Physics and Electromagnetism</td>
<td>1</td>
<td>20</td>
</tr>
</tbody>
</table>

Curriculum (Part-time study)
Students studying on a part-time basis will normally take modules amounting to 60/70 credits in each year.

Progress
In order to progress to the second year of the Honours course in addition to satisfying the requirements of General Academic Regulation 65 student must also gain passes in the following modules: MM101 Introduction to Calculus and MM102 Applications of Calculus.

To progress to second year of the Bachelor degree General Academic Regulation 65 shall apply.

Progress (Part-time study)
General Academic Regulations 65 and 71 shall apply.

Award
Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Mathematics and Physics General Academic Regulation 103 shall apply.
Mathematics, Statistics and Accounting

BSc (with Honours) in Mathematics, Statistics and Accounting
Certificate/Diploma of Higher Education in Mathematical Studies

Status of the Courses
All students are normally admitted in the first instance as Honours students. Transfer to BSc in Mathematics, Statistics and Accounting is possible at any time subject to satisfying the appropriate progress regulations. Students wishing to obtain professional accreditation in Accounting should consult the Adviser of Study (Accounting) regarding their choice of optional modules. To be eligible for accreditation students will require to take an additional 20 credit module.

Mode of Study
The courses are available by full-time study.

Curriculum
First Year
All full-time students shall undertake modules amounting to 120 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
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</tr>
<tr>
<td>MM103 Geometry and Algebra with Applications</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM104 Statistics and Data Presentation</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>AG111 Accounting Technologies</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Elective Module(s)</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Students seeking professional accreditation in Accounting must additionally take the module
AG105 Introduction to Finance and Financial Statistics 1 20

Progress
In order to progress to the second year of the Honours course in addition to satisfying the requirements of General Academic Regulation 65 student must also gain passes in the following modules: MM101 Introduction to Calculus, MM102 Applications of Calculus and AG111 Accounting Technologies.

In order to progress to the second year of the Bachelors course in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following module: AG111 Accounting Technologies.

Award
Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Mathematical Studies General Academic Regulation 103 shall apply.
Mathematics, Statistics and Economics

BSc (with Honours) in Mathematics, Statistics and Economics
Certificate/Diploma of Higher Education in Mathematical Studies

Curriculum (Full-time study)

First Year
All full-time students shall undertake modules amounting to 120 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM101 Introduction to Calculus</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM102 Applications of Calculus</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM103 Geometry and Algebra with Applications</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM104 Statistics and Data Presentation</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>BF114 Introduction to Economics &amp; Business Analysis</td>
<td>1</td>
<td>20</td>
</tr>
</tbody>
</table>

Elective Module(s) 20

Curriculum (Part-time study)

Students studying on a part-time basis will normally take modules amounting to 60 credits in each year.

Progress
In order to progress to the second year of the Honours course in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following modules: MM101 Introduction to Calculus, MM102 Applications of Calculus and BF114 Introduction to Economics and Business Analysis.

In order to progress to the second year of the Bachelors course in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following module: BF114 Introduction to Economics and Business Analysis.

Progress (Part-time study)
General Academic Regulations 65 and 71 shall apply.

Award
Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Mathematical Studies General Academic Regulation 103 shall apply.
Mathematics, Statistics and Finance

BSc (with Honours) in Mathematics, Statistics and Finance
Certificate/Diploma of Higher Education in Mathematical Studies

Mode of Study
The courses are available by full-time study only.

Curriculum
First Year
All students shall undertake modules amounting to 120 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
<th>Level</th>
<th>Credits</th>
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</thead>
<tbody>
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<td>20</td>
</tr>
<tr>
<td>MM103 Geometry and Algebra with Applications</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM104 Statistics and Data Presentation</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>BF116 Introduction to Finance and Accounting</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Elective Module(s) 20

Progress
In order to progress to the second year of the Honours course in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following modules: MM101 Introduction to Calculus, MM102 Applications of Calculus and BF116 Introduction to Finance and Accounting.

In order to progress to the second year of the Bachelors course in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following module: BF116 Introduction to Finance and Accounting.

Award
Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Mathematical Studies General Academic Regulation 103 shall apply.
Mathematics, Statistics and Business Analysis

BSc (with Honours) in Maths, Statistics and Business Analysis
Certificate/Diploma of Higher Education in Mathematical Studies

Mode of Study
The courses are available by full-time study only.

Curriculum
First Year
All students shall undertake modules amounting to 120 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
<th>Level</th>
<th>Credits</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>MM102 Applications of Calculus</td>
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</tr>
<tr>
<td>MM103 Geometry and Algebra with Applications</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM104 Statistics and Data Presentation</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>BF114 Introduction to Economics and Business Analysis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Elective Module(s) 20

Progress
In order to progress to the second year of the Honours course in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following modules: MM101 Introduction to Calculus, MM102 Applications of Calculus and BF114 Introduction to Economics and Business Analysis.

In order to progress to the second year of the Bachelors in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following module: BF114 Introduction to Economics and Business Analysis.

Award
Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Mathematical Studies General Academic Regulation 103 shall apply.
Data Analytics

BSc (with Honours) in Data Analytics
Certificate/Diploma of Higher Education in Data Analytics

Mode of Study
The courses are available by full-time study.

Curriculum
First Year
All students shall undertake modules amounting to 120 credits as follows:

<table>
<thead>
<tr>
<th>Compulsory Modules</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM101 Introduction to Calculus</td>
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<td>20</td>
</tr>
<tr>
<td>MM102 Applications of Calculus</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>MM106 Essential Statistics</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>MM123 Geometry and Algebra</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>CS103 Machines, Languages and Computation</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>CS104 Information and Information Systems</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>CS105 Programming Foundations</td>
<td>1</td>
<td>20</td>
</tr>
</tbody>
</table>

Progress
In order to progress to the second year of the Honours course in addition to satisfying the requirements of General Academic Regulation 65 a student must also gain a pass in the following modules: MM101 Introduction to Calculus and MM102 Applications of Calculus.

In order to progress to the second year of the Bachelors course General Academic Regulation 65 shall apply.

Award
Certificate of Higher Education: In order to qualify for the award of a Certificate of Higher Education in Data Analytics General Academic Regulation 103 shall apply.
SYLLABUS INFORMATION

Class Code: MM101
Class Title: Introduction to Calculus
Level: 1
Credits: 20
Class Coordinator: Dr P. Knight
Tel: 3818
Email: p.a.knight@strath.ac.uk
Teaching Staff: Dr P. Knight & Dr D. Pritchard

Pre-requisites: Essential: SQA Higher Mathematics (Grade A) or equivalent (including confidence in algebraic manipulation, arithmetic and elementary trigonometry).

Students: Compulsory: M, MS, MT, MSA, MSE, MSF, MSBA, MP, MCS, DA

CLASS DELIVERY (HOURS)

<table>
<thead>
<tr>
<th>LECTURES</th>
<th>TUTORIALS</th>
<th>LABORATORIES</th>
<th>ASSIGNMENTS</th>
<th>SELF STUDY</th>
<th>TOTAL</th>
</tr>
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<tbody>
<tr>
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<td>11</td>
<td>0</td>
<td>33</td>
<td>90</td>
<td>200</td>
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</tbody>
</table>

CLASS ASSESSMENT

Course work (20%), 2 hour degree examination (80%) in January. August resit examination (100%).

GENERAL AIMS

To study the basic concepts and standard methods of mathematical notation and proof, polynomial equations and inequalities, sequences and series, functions, limits and continuity, differentiation and integration.

LEARNING OUTCOMES

On completion of this class, the student should
- be able to understand and use correctly basic mathematical notation;
- be able to write mathematical arguments in a clear and concise way;
- understand the concept of mathematical proof by induction and other methods;
- be able to solve linear and quadratic equations and inequalities;
- be able to apply polynomial division and use the remainder theorem;
- know the factorial and binomial coefficient notation, and be able to use the binomial theorem;
- understand the concepts of a sequence and a series, and be able to do simple problems on finite and infinite summation;
- understand the concept of a function, its domain and its range;
- be able to apply all the standard rules of differentiation to find first and higher derivatives;
- be able to find integrals using substitutions and integration by parts; and
- be familiar with trigonometric functions and their inverses, exponentials, logarithms, and be able to evaluate derivatives and integrals of such functions.

RECOMMENDED TEXT/READING


Full syllabus: classcat.strath.ac.uk/classcatalogue/control/showclass?uiocode=138936&show=all
Class Code: MM102  
Class Title: Applications of Calculus  
Level: 1  
Credits: 20  
Class Coordinator: Prof M. Osipov  
Tel: 3821  
Email: m.osipov@strath.ac.uk  
Teaching Staff: Prof M. Osipov & Dr J. Pestana  
Pre-requisites: Essential: MM101 or equivalent  
Students: Compulsory: M, MS, MT, MSA, MSE, MSF, MSBA, MP, MCS, DA  

CLASS DELIVERY (HOURS)  
<table>
<thead>
<tr>
<th>LECTURES</th>
<th>TUTORIALS</th>
<th>LABORATORIES</th>
<th>ASSIGNMENTS</th>
<th>SELF STUDY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
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<td>44</td>
<td>10</td>
<td>0</td>
<td>30</td>
<td>116</td>
<td>200</td>
</tr>
</tbody>
</table>

CLASS ASSESSMENT  
Course work (20%), 2 hour degree examination (80%) in May/June. August resit examination (100%).

GENERAL AIMS  
The fundamental concepts of calculus (differentiation and integration) presented in MM101 will be examined in more detail, extended to a larger class of functions by means of more sophisticated methods, including an introduction to complex numbers and variables, all demonstrated in application to practical problems including solving basic first and second-order differential equations.

LEARNING OUTCOMES  
On completion of this class, the student should  
- be able to calculate derivatives of functions that are given implicitly or parametrically;  
- be able to compute linear and polynomial approximations of functions;  
- be able to construct Taylor polynomials;  
- be able to sketch simple curves;  
- be able to solve elementary max/min and related rate problems;  
- be able to integrate functions using various substitutions and integration by parts;  
- be able to compute the volume and surface area of bodies of revolution and the arc length of a plane curve;  
- be familiar with complex variables in both Cartesian and polar forms;  
- be able to carry out complex arithmetic operations, find roots, factorize polynomials and derive trigonometric identities;  
- be able to solve some basic first and second order differential equations; and  
- be able to identify solution properties of certain ODEs using the graph of the right-hand side function.

RECOMMENDED TEXT/READING  

Full syllabus: classcat.strath.ac.uk/classcatalogue/control/showclass?uiocode=138421&show=all
Class Code: MM103
Class Title: Geometry and Algebra with Applications
Level: 1
Credits: 20
Class Coordinator: Dr P. Davidson
Tel: 3658
Email: peter.davidson@strath.ac.uk
Teaching Staff: Dr P. Davidson & Dr K. Tant
Pre-requisites: Essential: SQA Higher Mathematics (Grade B) or equivalent
Students: Compulsory: M, MS, MT, MSA, MSE, MSF, MSBA

CLASS DELIVERY (HOURS)

<table>
<thead>
<tr>
<th>LECTURES</th>
<th>TUTORIALS</th>
<th>LABORATORIES</th>
<th>ASSIGNMENTS</th>
<th>SELF STUDY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>145</td>
<td>200</td>
</tr>
</tbody>
</table>

CLASS ASSESSMENT
Course work (20%), 2 hour degree examination (80%) in May/June. August resit examination (100%).

GENERAL AIMS
To give an introductory treatment of vectors and matrices, and to introduce the idea of mathematical modelling through their application to real-world problems.

LEARNING OUTCOMES
On completion of this class, the student should
- appreciate the interconnectedness of geometry and algebra;
- describe operations needed to transform congruent shapes into each other both algebraically and geometrically;
- use and manipulate vectors and matrices algebraically and geometrically;
- understand when matrices can be added or multiplied together;
- write any straight line in implicit, vector or (where possible) explicit form and convert between the three;
- convert between vector and Hessian forms of planes;
- solve simple problems involving straight lines and planes (e.g., intersection points, and angles) making use of distance and section formulae where appropriate;
- be familiar with the algebraic definition of conic sections to find and sketch key features;
- apply and invert affine transformations to vectors to understand their geometric effects;
- find affine transformations to map between any two given triangles;
- understand the concept of a linear transformation and appreciate that a linear transformation can be decomposed into certain basic mappings;
- generalise geometric concepts in 2D to 3D;
- understand the concept of a mathematical model and be able to interpret problems in a mathematical way, and appreciate the significance of modelling for real-world applications;
- formulate and solve problems involving difference and differential equations (for example in population modelling, heat conduction, and motion under gravity); and
- formulate and solve optimisation problems with constraints.

RECOMMENDED TEXT/READING

Full syllabus: classcat.strath.ac.uk/classcatalogue/control/showclass?uiocode=138422&show=all
Class Code: MM104  Class Title: Statistics and Data Presentation
Level: 1  Credits: 20
Class Coordinator: Dr A. Miller  Tel: 2975  Email: ainsley.miller@strath.ac.uk
Teaching Staff: Dr A. Miller & Dr A. Browne
Pre-requisites: Essential: SQA Higher Mathematics (Grade B) or equivalent
Students: Compulsory: M, MS, MT, MSA, MSE, MSF, MSBA

CLASS DELIVERY (HOURS)

<table>
<thead>
<tr>
<th>LECTURES</th>
<th>TUTORIALS</th>
<th>LABORATORIES</th>
<th>ASSIGNMENTS</th>
<th>SELF STUDY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>120</td>
<td>200</td>
</tr>
</tbody>
</table>

CLASS ASSESSMENT

Course work (100%). August resit examination (100%).

GENERAL AIMS

To present some basic ideas and techniques of statistics while introducing some essential study skills, allowing students to develop and practice personal and technical skills (e.g. self-study, teamwork, analysing data, writing reports and making presentations).

LEARNING OUTCOMES

On completion of this class, the student should
- be able to summarise and display data in an appropriate fashion;
- understand and be able to apply the laws of probability;
- be able to use sampling distributions, z- and t- tests and calculate confidence intervals using these statistics;
- be able to fit and interpret a simple linear regression model and understand correlation;
- know how to structure a statistical report;
- be able to prepare good quality reports using Word and/or LaTeX;
- be able to use Excel to make calculations using formulae, to analyse data and to produce suitable graphical and tabular representations of data;
- be confident with presenting results orally; and
- be able to work effectively as part of a team.

RECOMMENDED TEXT/READING

Veitch, R., Introduction to Statistics, University of Strathclyde.

Full syllabus: classcat.strath.ac.uk/classcatalogue/control/showclass?uiocode=138798&show=all
Class Code: MM108  
Class Title: Applying Mathematics 1  
Level: 1  
Credits: 10

Class Coordinator: Dr A. Sonnet  
Tel: 3648  
Email: andre.sonnet@strath.ac.uk

Teaching Staff: Dr A. Sonnet

Pre-requisites: Essential: SQA Higher Mathematics (Grade B) or equivalent

Students: Compulsory: M, MS, MT

<table>
<thead>
<tr>
<th>CLASS DELIVERY (HOURS)</th>
<th>LECTURES</th>
<th>TUTORIALS</th>
<th>LABORATORIES</th>
<th>ASSIGNMENTS</th>
<th>SELF STUDY</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
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<td>20</td>
<td>5</td>
<td>0</td>
<td>30</td>
<td>45</td>
<td>100</td>
</tr>
</tbody>
</table>

CLASS ASSESSMENT

Course work (20%), degree examination (80%) in December. August resit examination (100%).

GENERAL AIMS

To introduce students to some elementary number theory with interesting modern applications.

LEARNING OUTCOMES

On completion of this class, the student should

- be able to factorise integers and find highest common factors and lowest common multiples;
- be able to use the Euclidean algorithm;
- know the basic properties of congruences and be able to perform calculations using modular arithmetic;
- be familiar with the application of congruences to International Standard Book Numbers and Universal Product Codes;
- be able to solve Diophantine equations and linear equations in $\mathbb{Z}_n$; and
- understand what is meant by affine ciphers, exponential ciphers and the RSA cryptosystem.

RECOMMENDED TEXT/READING


Full syllabus: classcat.strath.ac.uk/classcatalogue/control/showclass?uiocode=138938&show=all
**Class Code:** MM109  
**Class Title:** Applying Mathematics 2

**Level:** 1  
**Credits:** 10

**Class Coordinator:** Dr D. Bevan  
**Tel:** 4535  
**Email:** david.bevan@strath.ac.uk

**Teaching Staff:** Dr D. Bevan

**Pre-requisites:** Essential: SQA Higher Mathematics (Grade B) or equivalent

**Students:** Compulsory: M, MS, MT

<table>
<thead>
<tr>
<th>CLASS DELIVERY (HOURS)</th>
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<td>0</td>
<td>30</td>
<td>45</td>
<td>100</td>
</tr>
</tbody>
</table>

**CLASS ASSESSMENT**

Course work (20%), degree examination (80%) in May. August resit examination (100%).

**GENERAL AIMS**

To introduce students to areas of mathematics not usually met in school or college courses.

**LEARNING OUTCOMES**

On completion of this class, the student should

- understand the mathematical concepts of graphs;
- understand how to solve mathematical problems using graphs;
- be able to construct graphs with given degree patterns;
- be able to identify Eulerian graphs and, in simple cases, Hamiltonian graphs.

**RECOMMENDED TEXT/READING**


**Full syllabus:** classcat.strath.ac.uk/classcatalogue/control/showclass?uiocode=138430&show=all