

Handbook for the M.Sc. in Mathematical Modelling and Scientific Computing



Version 1.0
Issued September 2024

Welcome from the Course Director

I would like to welcome you as a student on the M.Sc. in Mathematical Modelling and Scientific Computing here at the Mathematical Institute in Oxford. I hope the year ahead of you will be interesting and enjoyable and will build on the mathematical knowledge you already have.

The Mathematical Institute is housed in the Andrew Wiles Building and we hope it will provide an inspirational setting in which to learn more mathematics and undertake research. It houses one of the largest and most successful mathematics departments in the world and you will have the opportunity to be taught by and work with internationally renowned mathematicians.

As a group of students you are diverse, coming from a variety of backgrounds both academically and geographically. I am sure this will mean we have different strengths and that we can all learn from each other.

Once again, welcome to the MMSC programme at Oxford, and best wishes for an enjoyable and successful year.

Dr Kathryn Gillow
Course Director

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1 Foreword

1.1 Statement of Coverage

This handbook applies to students starting the M.Sc. in Mathematical Modelling and Scientific Computing in Michaelmas Term 2024. The information in this handbook may be different for students starting in other years.

1.2 Disclaimer

The Examination Regulations relating to this course are available at <https://examregs.admin.ox.ac.uk/Regulation?code=mossbimmandsciecomp&srchYear=2024&srchTerm=1&year=2024&term=1>. If there is conflict between information in this handbook and the Examination Regulations then you should follow the Examination Regulations. If you have any concerns please contact the Course Director at the Mathematical Institute, Dr Kathryn Gillow, email kathryn.gillow@maths.ox.ac.uk.

The information in this handbook is accurate as of 1st September 2024, however, it may be necessary for changes to be made in certain circumstances, as explained on the University's changes to courses webpage at <http://www.graduate.ox.ac.uk/coursechanges>. If such changes are made, the department will publish a new version of this handbook together with a list of the changes and all students will be informed.

1.3 The Handbook

The purpose of this handbook is to provide you with information about the way the M.Sc. in Mathematical Modelling and Scientific Computing is taught and assessed and the options you can take. It also provides some practical information about the department. If there are any questions you still have, please ask someone. Your supervisor, the Course Director and the Course Administrator will be happy to help.

This handbook can be found online at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc/course-handbooks>.

1.4 Useful Links

The course webpage is at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc> and contains details of the lecture courses, as well as termly timetables, a diary of important events for the academic year and the examination conventions.

The Proctors' and Assessor's Memorandum is the document relating to the rules and the statutes of the University which you are expected to follow. This can be found in the student handbook available at <https://www.proctors.ox.ac.uk/handbook/handbook/>.

The Oxford Students website at <https://www.ox.ac.uk/students> provides access to information, services and resources to help you get the most out of your university experience.

Finally, your college will have a handbook giving information about your college and how it operates. You should receive a copy of this, but you should also be able to find it on your college website.

1.5 Departmental Contacts

Useful departmental contact details are:

- **Course Director**

Dr Kathryn Gillow, kathryn.gillow@maths.ox.ac.uk

- **M.Sc. Course Administrator**

mmsc@maths.ox.ac.uk

- **Director of Graduate Studies (taught)**

Prof. Christoph Reisinger, christoph.reisinger@maths.ox.ac.uk

- **IT Support**

it-support@maths.ox.ac.uk

- **Head of Academic Administration**

Charlotte Turner-Smith, academic.administrator@maths.ox.ac.uk

- **Reception**

reception@maths.ox.ac.uk, tel 01865 273525

- **Librarian: Whitehead Library**

Cathy Hunt, library@maths.ox.ac.uk

- **Harassment Advisors**

For the list of current departmental harassment advisors see
<https://www.maths.ox.ac.uk/members/hr/wellbeing-and-support/harassment-advisors>

- **Mental Health First Aiders**

The department has a number of members who are mental health first aid trained. A list can be found at
<https://www.maths.ox.ac.uk/members/personnelhr/wellbeing-and-support/mental-health-first-aid>

- **Disability Coordinator**

Charlotte Turner-Smith, academic.administrator@maths.ox.ac.uk

- **Safety Officer**

Dr Keith Gillow, safety-officer@maths.ox.ac.uk

- **Facilities Management**

facilities-management@maths.ox.ac.uk

- **Consultative Committee for Graduates Representatives**

For current representatives see <https://www.maths.ox.ac.uk/members/governance/committees/standing-orders-and-memberships/consultative-committee-graduates>

1.6 Building Location, Maps and Access

The postal address of the department is:

Mathematical Institute
University of Oxford
Andrew Wiles Building
Radcliffe Observatory Quarter
Woodstock Road
Oxford
OX2 6GG

Maps of Oxford, and in particular a map showing the location of the Mathematical Institute, can be found at <https://www.maths.ox.ac.uk/about-us/travel-maps>. You should expect all lectures and classes to take place in the Mathematical Institute in the teaching space on the mezzanine level.

The building has been designed with accessibility in mind. More details of the disability policy and the access guide are given at <https://www.maths.ox.ac.uk/members/building-information/accessibility>.

1.7 The Academic Year

The course lasts almost twelve months, from the beginning of October to the end of the following September. Although the lecture courses are given during the three University terms, the examinations will take place on the Thursdays and Fridays of the weeks preceding both Hilary and Trinity terms. Additionally, much other work is carried out in the vacations, and you should expect to spend most of the year in Oxford. There will be no time for long holidays.

For the academic year 2024–2025, the course will begin with a week of introductory material based at the Mathematical Institute, beginning on Monday 7th October 2024.

The dates of the University Full Terms for the Academic Year 2024–2025 are:

MT = Michaelmas Term 2024: Sunday 13th October – Saturday 7th December

HT = Hilary Term 2025: Sunday 19th January – Saturday 15th March

TT = Trinity Term 2025: Sunday 27th April – Saturday 21st June

You are expected to live in Oxford during term time. Details of the University's residency requirement can be found at <https://examregs.admin.ox.ac.uk/Regulation?code=rfrintheuniv&srchYear=2024&srchTerm=1&year=2024&term=1>.

Further important dates for the academic year are given in the Diary of Important Events at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc/diary-important-events>.

1.8 Role of the College

On arrival in Oxford you will be assigned a college advisor who will be an academic member of your college, normally a fellow. The role of the College Adviser is additional and complementary to that provided in the Mathematical Institute. The College Adviser is not expected to perform the role of the Department or Faculty Supervisor, or to be responsible for directing your academic work. Rather, the intention is to provide a focal point for your relationship with the College, and general academic or pastoral advice and assistance throughout the your course of study. Beyond this, however, the college has no role in the teaching of the course (although the mathematics tutors from your college may be involved in the teaching of the course in the department).

2 The M.Sc. Course: Content and Structure

2.1 Overview

The Master of Science in Mathematical Modelling and Scientific Computing is a 12 month course. The relevant QAA subject benchmark statement is Mathematics, Statistics and Operational Research and is available at <https://www.qaa.ac.uk/the-quality-code/subject-benchmark-statements/subject-benchmark-statement-mathematics-statistics-and-operational-research>.

2.2 Aims

The aims of the programme are as described below.

1. To provide graduates with a strong mathematical background with the skills necessary to apply their expertise to the solution of real problems.
2. To provide students with a systematic understanding of core areas in both applied mathematics and numerical analysis, as well as advanced topics in one or both of these areas.
3. To lay the foundation for further research for a career as a research mathematician in a whole range of application areas.
4. To develop students' skills so that they are able to:
 - formulate a well posed problem from a possibly sketchy verbal description;
 - carry out relevant mathematical analysis;
 - develop an appropriate numerical scheme;
 - present and interpret these results.

Particular emphasis is placed on the need for all these parts in the problem solving process, and on the fact that they frequently interact and cannot be carried out sequentially.

2.3 Intended Learning Outcomes

Students on the course will gain a knowledge of:

- core methods of applied mathematics and numerical analysis;
- computer coding in Matlab;
- mathematical modelling;
- more advanced topics in modelling, methods and numerical analysis;
- how to undertake a short research project in an area of applied mathematics and/or numerical analysis;
- how to communicate mathematics effectively both orally (in conversation and by giving presentations) and in written form.

2.4 Course Structure

During the course you will be assessed on 12 units counted as follows:

- Four core courses on mathematical methods and numerical analysis (1 unit each)
- Two special topics chosen from a range of about 20 courses (1 unit each)
- Two case studies: one in each of mathematical modelling and scientific computing (1 unit each)
- A dissertation and viva voce examination (4 units)

More details of these units are given below.

You will be assigned a supervisor on arrival in Oxford whose main role throughout the first two terms is to act as an academic advisor. They will be able to help with decisions about which options to take and the Course Director is also available for advice.

2.4.1 Core Courses

There are four core courses with a weighting of 1 unit each:

- A1: Mathematical Methods I
- A2: Mathematical Methods II

- B1: Numerical Linear Algebra and Numerical Solution of Partial Differential Equations
- B2: Further Numerical Linear Algebra and Continuous Optimisation

A1 and B1 are taken during Michaelmas Term and are examined during Week 0 of Hilary Term. A2 and B2 are taken during Hilary Term and are examined during Week 0 of Trinity Term. The examinations will be sat in person and so students are expected to be present in Oxford for these.

Each core course consists of 24 lectures. The lectures are backed up by one or two problem solving classes per week, usually with no more than 15 students per class, in which the class tutor goes through the problems given out in lectures as well as clarifying any of the material as necessary. However, the course is assessed solely by the examination.

Revision classes will be organised before the written examinations and students are encouraged to look at and attempt past examination papers which are available online at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc/past-papers>.

Note that calculators will not be allowed, or required, in the written examinations.

Details of the synopses for the core courses are available online at <https://courses.maths.ox.ac.uk/course/index.php?categoryid=845>.

2.4.2 Special Topics

You must complete two special topics, with each special topic having a weighting of 1 unit. Special topic courses usually consist of 16 lectures, although the online Python course is a mix of lectures and practicals. There is a great variety of special topic lecture courses which are classified under the broad headings of Modelling, [M], and Computation, [C]. You should complete one Modelling course and one Computation course. A special topic is usually assessed by a mini-project on a topic agreed with the lecturer. If you wish to do a special topic on one of these courses you should discuss a suitable plan with the lecturer by the end of term, and submit a pdf of your topic to the online site by the deadline (see the Diary of Important Events at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc/diary-important-events>). Usually special topics based on Michaelmas Term lecture courses should be submitted by the deadline at the beginning of Hilary Term. The exception to this is if you wish to submit two special topics based on Michaelmas Term courses. In this case, one special topic should be submitted by the deadline at the beginning of Hilary Term and the second special topic may be submitted by the deadline at the beginning of Trinity Term. However, if you wish to submit two special topics based on Hilary Term courses, these must both be submitted by the deadline at the beginning of Trinity Term.

Special topic marks are awarded by the examiners on the recommendation of the assessors; usually the relevant course lecturer and a second independent marker. Once the official marks have been released, you will also be sent the feedback provided by the assessors.

The special topic guidelines are given in Appendix A.

These are the special topic courses expected to be available for the Academic year 2024–2025.

Michaelmas Term

- Elasticity and Plasticity [M]
- Further Mathematical Biology [M]
- Integer Programming [C]
- Mathematical Geoscience [M]
- Mathematical Physiology [M]
- Perturbation Methods [M]
- Theories of Deep Learning [C]
- Topics in Fluid Mechanics [M]
- Viscous Flow [M]

Hilary Term

- Applied Complex Variables [M]
- Computational Algebraic Topology [C]
- Finite Element Methods for PDEs [C]
- Mathematical Models of Financial Derivatives [M]
- Networks [M]
- Optimal Control [M]
- Optimisation for Data Science [C]
- Python in Scientific Computing [C]
- Solid Mechanics [M]
- Stochastic Modelling of Biological Processes [M]
- Waves and Compressible Flow [M]

Details of the synopses for the special topic courses are available online at <https://courses.maths.ox.ac.uk/course/index.php?categoryid=845>.

2.4.3 Case Studies

Some of the time in the induction week will be spent teaching Matlab, and hopefully this will provide a good introduction if you do not already know the language, and revision if you do. In MT you will take the course Practical Numerical Analysis (1 lecture per week throughout term) in which you will use Matlab to investigate numerical algorithms as described in lectures. You will also attend Mathematical Modelling classes (3 hours per week in weeks 5–8 of term) which will also include group work and presentation of results.

The skills learnt in these courses are further developed in HT when you participate in the Case Studies in Scientific Computing and in Mathematical Modelling. Your group project will be individually written up for assessment for each course. These assessments are worth 1 unit each. The Case Studies in Scientific Computing consist of developing numerical solutions to problems of interest, possibly using algorithms beyond the scope of the lecture courses. You will work in groups of 4 or 5 and meet with the course lecturer weekly over four weeks to report on progress and discuss future directions. The course is then assessed by an individual written report. The Case Studies in Mathematical Modelling extend the MT course and you will work in groups to model problems of practical interest. Each group meets with the group leader weekly and at the end of the term they give a presentation; the mark for the presentation makes up 20% of the final mark for this unit. The remaining 80% of the mark is for your individual written report.

2.4.4 Dissertation

You will prepare your dissertation during Trinity Term and the long vacation. Your dissertation topic should be selected in consultation with your supervisor and the details of the form and scope of the dissertation are described in the Regulations. Some possible dissertation projects can be viewed at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc/dissertation> (although note that this list will not be updated for the 2024–25 academic year until February 2025).

The topics suitable for dissertations will be presented by the appropriate supervisors at a meeting in February. Also you are encouraged to talk to any potential supervisors, which includes most academics or researchers in OCIAM or the Numerical Analysis Group. Note that the supervisor allocated to you in the first term will not usually turn out to be the supervisor for your dissertation.

You will be required to give a short talk and answer questions on the background to your dissertation topic at an open meeting, attended by supervisors, examiners and other students, to be held at the end of May or early June.

The main body of the final dissertation (excluding appendices etc.) should usually be 40–50 pages in length (less than 55 pages without penalty). Precise guidelines on the length of the dissertation, the formatting and the penalties for overlong submissions are available in the dissertation handbook which can be downloaded from <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc/course-handbooks>.

You should submit a pdf version of your dissertation by 12 noon on Wednesday 3rd September 2025.

Your dissertation will be read by two internal examiners, neither of whom will be your supervisor.

The oral examination (viva) will be held in mid-September and you will be expected to answer questions on your dissertation. Each viva will last approximately 30 minutes and subfusc should be worn. At least two examiners will attend the viva and ask questions. They will begin by asking you to summarise briefly the main contributions of your dissertation and you are advised to prepare a few slides for this. The final mark for your dissertation and viva will be decided after the viva by the examiners who have read your work and were present in the viva.

3 Teaching and Learning

3.1 Organisation of Teaching and Learning

Almost all lectures and classes will take place in the teaching space in the mezzanine level of the Mathematical Institute's Andrew Wiles Building. Some of the lectures are shared with the undergraduate mathematics programme and can therefore have a large audience, but all problem solving classes are solely for M.Sc. students and you should expect there to be fewer than 15 people in each class.

In terms of workload, in the first term you should expect to spend about 14 hours per week on core lectures (lectures for the core courses as well as Practical Numerical Analysis, Mathematical Modelling and Additional Skills) and a further two hours per week on lectures for each special topic course followed. You should also expect to spend about four hours per week in problem solving classes, as well as further personal study time to work on the problem sheets and consolidate lecture material.

Termly timetables can be found on the course webpage at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc>.

If you have any issues with teaching or supervision please raise these as soon as possible so that they can be addressed promptly. Details of who to contact are provided in Section 7.2 Complaints and Appeals.

3.2 Expectations of Study

You are responsible for your own academic progress and so it will be important for you, as an individual, to plan your own study time. As already indicated, the course has a large amount of structured teaching time, with about 20 hours of lectures and classes per week in the first terms. In addition you are expected to spend time working on the problem sheets and consolidating the material covered in lectures and classes. You will also be expected to work during the vacations with revision being required during the Christmas and Easter breaks. Special topic and case study reports will also be written during these vacations whilst most of the summer will be taken up with dissertation work. You will be responsible for planning your own work pattern during the vacations and so you may work in a “flexi-time” fashion, working harder sometimes in order to enjoy a break at other times.

The University policy on paid work can be found at <https://academic.admin.ox.ac.uk/policies/paid-work-guidelines-graduate-students>. In general, it is strongly recommended that students on the M.Sc. in Mathematical Modelling and Scientific Computing do not undertake paid work during the course.

4 Examinations and Assessment

The board of examiners will consist of 4 internal members (2 from the Numerical Analysis Group and the Data Science Group and 2 from OCIAM and the Wolfson Centre for Mathematical Biol-

ogy) and 1 external examiner. The examiners will appoint assessors to help with the assessment of special topics, case studies and dissertations.

You should complete 12 units. Each unit will carry the same weight. Marks will be given in terms of USMs out of 100 with the usual conventions: 0–49 fail, 50–64 pass, 65–69 merit, 70–100 distinction.

In order to complete these 12 units, you will take and be assessed on: 4 core courses; 2 special topics (one labelled [M] and one labelled [C]); 2 case studies (one in modelling and one in scientific computing); and a dissertation.

1. Core Courses (1 unit each). There are four courses, two in Michaelmas Term and two in Hilary Term. Each course will be assessed by a written examination paper in Week 0 of the following term. Each paper will be two and a half hours long and contain 6 questions. The best 4 answers, including an answer to at least one question in each section, will count and you will be given a USM for each paper, with a weighting of 1 unit.
2. Special Topics (1 unit each). You must do one special topic in the area of Modelling [M] and one in the area of Computation [C]. For each special topic taken you must submit a mini-project. Mini-projects will be marked by two assessors, one of whom will usually be the course lecturer. For each mini-project you will be given a USM, with a weighting of 1 unit.
3. Case Studies in Modelling and in Scientific Computing (1 unit each). You must complete one modelling case study and at least one scientific computing case study. Each scientific computing case study involves about 4 weeks of group work, further personal study and a report. Each mathematical modelling case study involves about 6 weeks of group work, an oral presentation, and a report. In both cases reports are written individually and are marked by the appropriate lecturer and one other assessor. For the modelling case study 20% of the mark will be for the oral presentation. Each case study will be given a USM with a weighting of 1 unit.
4. Dissertation (4 units). Dissertations will be read and marked by at least two examiners, neither of whom will be your supervisor. The main body of the dissertation should be around 40–50 pages long, and need not necessarily contain original research to pass. You will also be examined viva voce. The dissertation and viva will be given a USM with a weighting of 4 units. The USM marks will include credit for originality and performance in the viva.

The USMs, weighted as above, are averaged to give an Average USM. This Average USM and your performance on the individual units determines your final course outcome (distinction, merit, pass, or fail) and this is detailed in the Examination Conventions for the course which can be downloaded from the course website at <https://www.maths.ox.ac.uk/members/students/post-graduate-courses/msc-mmssc>. The definitive version of the Examination Conventions for the academic year 2024–25 will be available by Week 6 of Michaelmas Term. You will be notified of any subsequent changes to the conventions by email.

Qualitative class descriptors for these levels of performance are summarised below.

Distinction: High quality work throughout the course. Candidates achieving a distinction show excellent problem-solving skills and excellent knowledge of the material over a wide range of topics, and are able to use that knowledge innovatively and/or in unfamiliar contexts.

Merit: The merit shows very good quality of work throughout the course. Candidates who achieve a merit will have demonstrated very good problem solving skills and knowledge over a wide range of topics, or excellent command of some material and good command of the rest.

Pass: The pass covers a wide range of results from candidates who show basic problem solving skills and adequate knowledge of most of the material to candidates who show good or very good problem-solving skills, and good or very good knowledge of much of the material over a wide range of topics.

Fail: Candidates who fail show inadequate grasp of the basic material. Such candidates may have shown some understanding but the majority of work is likely to show major misunderstanding and confusion, and/or inaccurate calculations.

A student who fails the whole course may resit on one, but not more than one, subsequent occasion. This resit attempt shall normally be taken at the next opportunity, but may be deferred once, i.e. it must be taken at one of the next two opportunities. In such a case a student will not be eligible for a merit or distinction on the whole course. The examiners will specify at the time of failure which of the assessed components of the course may or must be redone. A candidate who resits a unit for which a technical fail mark was originally awarded (a unit for which no work was submitted or a written examination was missed) will have the mark for that unit capped at 50.

No student who has satisfied the examiners in the examination may enter again for the same examination.

If a student fails one particular unit, there is no provision for the candidate to resit that unit during the same academic year.

The official Examination Regulations can be downloaded from <https://examregs.admin.ox.ac.uk/Regulation?code=mossbcmmandsciecomp&srchYear=2024&srchTerm=1&year=2024&term=1>.

4.1 Feedback on Learning and Assessment

Informal feedback on progress is provided during the first two terms via the marking of problem sheets and verbal feedback on group work in the modelling classes and case study meetings. In the third term you will be expected to present your dissertation project to the examiners and you will be provided with feedback afterwards.

You can expect marks for exams, special topics and case studies to be released throughout the year. Exam marks should be available within four weeks of sitting the exam and special topic and case study marks should be available by the end of the term in which they were submitted.

Feedback on assessed work is given for the special topics and the case studies once the marks have been released. All the assessors are expected to fill in a feedback sheet commenting on the content of the work, the accuracy of the mathematics and the presentation. These comments forms are then passed on to you. The hope is that this feedback will be constructive and provided

in a timely manner so that it can be used to help you improve your other written reports.

In addition you will receive feedback on your dissertation after the final results have been released. This will take the form of comments from the examiners.

4.2 Examination Conventions

Examination conventions are the formal record of the specific assessment standards for the course to which they apply. They set out how your examined work will be marked and how the resulting marks will be used to arrive at a final result and classification of your award. They include information on marking scales, marking and classification criteria, scaling of marks, resits, use of viva voce examinations, penalties for late submission and penalties for over-length work. The examination conventions can be downloaded from the course website at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc>.

4.3 Good Academic Practice and Avoiding Plagiarism

The University defines plagiarism as follows:

“Presenting work or ideas from another source as your own, with or without consent of the original author, by incorporating it into your work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition, as is the use of material generated wholly or in part through use of artificial intelligence (save when use of AI for assessment has received prior authorisation e.g. as a reasonable adjustment for a student’s disability). Plagiarism can also include re-using your own work without citation. Under the regulations for examinations, intentional or reckless plagiarism is a disciplinary offence.”

This definition, and further University guidance on plagiarism, can be found at <https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism> and you should take the time to read this carefully.

Specific guidance of academic good practice and topics such as time management, note-taking, referencing, research and library skills and information literacy can be found on the Oxford Students skills webpage at <https://www.ox.ac.uk/students/academic/guidance/skills>.

4.4 Entering for University Examinations

General advice on exam entry is given at <https://www.ox.ac.uk/students/academic/exams/examination-entry>.

For the M.Sc. in Mathematical Modelling and Scientific Computing, you should expect to fill in an exam entry form in each of Michaelmas and Hilary Terms. In Michaelmas Term you will enter for all four core courses, the two case studies and the dissertation. You will also enter

for any special topics you wish to submit for the Hilary Term deadline based on Michaelmas Term lecture courses. Then in Hilary Term it will simply be necessary to enter for the special topic(s) which you will submit for the early Trinity Term deadline. The exam entry deadlines are given in the Diary of Important Events at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmsc/diary-important-events>.

When it is time to complete the exam entry form, you will receive an email invitation to log in to the Student Self Service and you will be able to make the appropriate selections.

After the final deadline for submitting your exam entry data, it is still possible to change your special topic choices. There are three types of change you may wish to make and all should be done via your college:

1. Adding a special topic entry: if you wish to enter for an extra special topic additional to any special topics you are already entered for then you will be liable for a late entry fee.
2. Change of special topic option: if you wish to withdraw from one special topic option and enter for another you will be required to pay a change of options fee.
3. Withdrawal from a special topic: if you no longer wish to submit a project for a special topic you should withdraw from this course.

In all cases the change should be made as soon as possible and certainly by the special topic deadline.

4.5 Sitting Your Examinations

Practical information and support for sitting in-person exams is provided on the Oxford students website <https://www.ox.ac.uk/students/academic/exams/in-person-exams>. This page also gives information on the standards of conduct expected in examinations.

All the written examinations will take place at Examination Schools where there are dedicated exam rooms, and the quiet environment required for examinations can be ensured. Examination Schools is on the High Street and its location can be found on the map available at <https://www.accessguide.ox.ac.uk/examination-schools>.

Since the written examinations are at Examination Schools, you will be required to wear academic dress and sub fusc. You will also need your University card. If you wish to take water into the exam room this will need to be in a clear, spill-proof bottle with a sports cap. Calculators will not be allowed in the examinations but nor will they be necessary.

Information on what to do if you would like examiners to be aware of any factors that may have affected your performance before or during an examination (such as illness, accident or bereavement) is available on the Oxford Students website at <https://www.ox.ac.uk/students/academic/exams/problems-completing-your-assessment>.

The viva voce examinations at the end of the course will take place in two of the classrooms on the mezzanine level of the Mathematical Institute. For these examinations sub fusc must be worn by both students and internal examiners. The examination lasts 30 minutes and you

should take with you a copy of your dissertation (with no notes on). In addition you may take a clear, spill-proof bottle of water.

4.6 Submitted Work

Deadlines for submission of written reports are provided in the Diary of Important events at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc/diary-important-events>. All assessments will be submitted online via Inspira (<https://oxford.inspera.com/>). You should ensure you are familiar with the online submission process in advance of any deadline. Full information is provided on the Oxford students website at <http://www.ox.ac.uk/students/academic/exams/submission>.

4.7 Problems Completing Assessment

There are a number of University processes in place to help you if you find that illness or other personal circumstances are affecting your assessments or if you experience technical difficulties with an online submission. Full information is available on the Oxford students website at <http://www.ox.ac.uk/students/academic/exams/problems-completing-your-assessment>.

4.8 External Examiner

The Examination Board contains an External Examiner, nominated by the Supervisory Committee and appointed by the Vice Chancellor, who acts as an external arbiter of standards. In particular, national guidance requires external examiners to report on three major areas:

1. whether the standards set are appropriate for the institution's awards;
2. the standards and comparability of student performance in the programme concerned;
3. the extent to which procedures for assessment, examination and the determination of awards are sound and have been fairly conducted.

Within this framework, boards of examiners will work with their external examiner(s) in a variety of ways, but the University expects external examiners to:

1. have opportunity to comment on all examination papers in draft form;
2. have access to all scripts and other material submitted by candidates;
3. see a sample of scripts including scripts at the borderlines of classes;
4. see a sufficient sample of dissertations, extended essays and coursework to be able to comment on the marks awarded;
5. be in a position to comment on the fairness of any procedures for the reconciliation of marks, moderation, scaling and adjustments arising out of medical or other evidence.

In relation to 5, the University does not regard this as requiring the external examiner to give a definitive final mark where there is initial disagreement between first markers (although examining boards may choose to ask the external examiner(s) to act in this way) but to be in a position to report on the soundness of the procedures used to reach a final agreed mark.

The external examiner for the M.Sc. in Mathematical Modelling and Scientific Computing for the academic year 2024–25 is Prof. David Hewett who is Professor of Mathematics at University College London.

Students are strictly prohibited from contacting examiners directly. If you are unhappy with an aspect of your assessment you may make a complaint or appeal (see Section 7.2).

4.9 Examiners' Reports

You may access the internal examiners' reports for the course from <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmsc/internal-examiners-reports>. In addition, the external examiners' reports are available at <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmsc/external-examiners-reports>, although you will need to log in to the website using your maths username and password in order to access these.

4.10 Prizes

A prize will be awarded by the examiners to the student who has performed best on the course. There will also be a prize awarded to a student who has completed a particularly strong dissertation. These prizes will not normally be awarded to the same person.

5 Skills and Learning Development

5.1 Academic Progress

Academic progress will be measured within the department. In each of the first two terms you should expect to meet at least twice with your supervisor and all supervisors will report on student progress at the end of term and at the end of the long vacation via GSR (Graduate Supervision Reporting). The Course Director will also monitor all students' progress and, in particular, will have access to grades on all the weekly problem sheets. The Course Director will also report on progress at the end of each term and the long vacation using GSR.

During the third term and the long vacation you should expect to meet regularly with your dissertation supervisor(s) (in person during term time, possibly via MS Teams or email during the long vacation). Your dissertation supervisor(s) will then assume responsibility for monitoring and reporting on your progress.

5.2 Learning Development and Skills

Throughout the course you will develop a variety of skills, both academic and transferable. The ways in which these will be developed are detailed in Table 1.

Skill	Related teaching/learning method and assessment
Knowledge of core methods of applied mathematics and numerical analysis	Lectures and classes in MT and HT, written examinations in January and April.
Computer coding in Matlab	Introductory course on Matlab followed by Practical Numerical Analysis course in MT. Group work in Case Studies in Scientific Computing in HT assessed by individual written report.
Mathematical Modelling	Students work in small groups on a variety of case studies and give oral presentations in MT. Group work in Case Studies in Mathematical Modelling in HT assessed by group presentation and individual written report.
More advanced topics in Modelling, Methods and Numerical Analysis	About 20 special topic lecture courses are available and each student will follow 2 courses and write up a mini project for assessment.
A short research project in an area of applied mathematics and/or numerical analysis	Students work with a supervisor and write a thesis of about 50 pages. The thesis is assessed by the board of examiners who also examine the students viva voce.
Effective oral communication of mathematics	Presentation of work in modelling classes, discussions with supervisors and peers, viva voce examination.
Effective written communication of mathematics	Practised throughout the course on problem sheets, in written reports and in the dissertation.
Ability to learn independently	The dissertation and special topics require students to put together material from a number of sources including lectures, textbooks, and electronic sources, in their own time.
Independent time management	Requirement to produce substantial amounts of written work against class deadlines; necessity to balance academic and non-academic activities without continuous oversight.

Table 1: Learning development and skills.

5.3 Induction

The induction programme will take place in Week 0 of Michaelmas Term and will consist of an introduction to programming in Matlab, an introduction to the M.Sc. programme and the department and the related research groups. Several social activities will also take place.

5.4 Skills Training and Development

You will learn Matlab at the start of the course if you do not already know it. Your computing skills will be developed further in the Practical Numerical Analysis classes, the Mathematical Modelling classes, and the Case Studies.

During Michaelmas Term you will attend the Additional Skills classes. These sessions will provide information about how the course is assessed and advice about special topics as well as covering the use of L^AT_EX and the web, sources of numerical software, literature searches, communication and career development.

The Mathematical Institute runs a weekly seminar series ‘Fridays@4’ with sessions on skills training, career development, and other topics. You are encouraged to attend any seminars you may find useful or interesting. For further details see <https://www.maths.ox.ac.uk/events/list/> and follow the Fridays@4 link. The department also runs a series ‘Fridays@2’ for undergraduate and masters students with information about managing exams and writing mathematical reports as well as some general interest mathematical talks. For further details see <https://www.maths.ox.ac.uk/events/list/> and follow the Fridays@2 link. Again, you are encouraged to attend any seminars you may find useful or interesting.

A wide range of information and training materials are available to help you develop your academic skills including time management, research and library skills, referencing, revision skills and academic writing. This information can be accessed through the Oxford Students website <https://www.ox.ac.uk/students/academic/guidance/skills>.

You can also make use of the training opportunities offered, for example, by IT Services.

5.5 Opportunities to Engage in the Department Research Community

The dissertation provides an ideal chance to work on a research project with one or more members of the academic faculty within the Mathematical Institute. During this time your supervisor may encourage you to attend some of the research seminars where academics from outside Oxford present their recent research. You are welcome to attend these seminars earlier in the year, providing the course timetable allows this. The list of such seminars can be found at <https://www.maths.ox.ac.uk/events/list/>.

There is a small amount of funding available to attend relevant seminars or courses outside of Oxford. Colleges may also have funding for this but you are encouraged to discuss your plans with the Course Director in the first instance.

5.6 Careers Information and Advice

A Jobs for Mathematicians Fair is held annually in November. This will give you the opportunity to find out about careers using maths as well as chance to talk to a wide variety of employers.

The Careers Service can advise students considering continuing studying for a DPhil or PhD as well as providing advice on careers. The Careers Service runs a range of sessions including lunchtime sessions on writing CVs and interview skills. Job vacancies are advertised on the

Careers Service website (<https://www.careers.ox.ac.uk>).

6 Student Representation, Evaluation and Feedback

6.1 Department Representation

6.1.1 M.Sc. Supervisory Committee

The M.Sc. Supervisory Committee oversees the running of the M.Sc. It approves the syllabus for the course as well as the documentation. The committee also has responsibility for considering the feedback on the course from students. This feedback is obtained through lecture questionnaires and an end of course questionnaire, but the committee also obtains feedback by having a student representative. This representative will be elected in early Michaelmas Term and will serve on the committee for the whole year of the M.Sc.

6.1.2 Consultative Committee for Graduates

Students on the M.Sc. course are eligible to serve on the Consultative Committee for Graduates (CCG). This committee consists of about 6 graduate students (including students from taught masters courses) and the two Directors of Graduate Studies. The committee considers syllabus, teaching arrangements, library facilities, office facilities, and the general aspects of examinations. Each year it reviews the examiners' reports for the taught M.Sc.s. The CCG webpage can be found at <https://www.maths.ox.ac.uk/members/governance/committees/standing-orders-and-memberships/consultative-committee-graduates>.

6.2 Division and University Representation

Student representatives sitting on the Divisional Board are selected through a process organised by the Oxford University Student Union (OUSU). Details can be found on the OUSU website, <https://www.oxfordsu.org/>, along with information about student representation at the university level.

6.3 Opportunities to Provide Evaluation and Feedback

6.3.1 Course Questionnaires

Student feedback is sought on all aspects of the course and students are invited to give feedback on each of the core lecture courses they attend through lecture and class questionnaires. The responses to these questionnaires are analysed and brought to the next Supervisory Committee meeting. Students are also given the opportunity to express their views in the end of course questionnaire.

6.3.2 University Feedback

M.Sc. students will be surveyed on their course through the annual Postgraduate Taught Experience Survey (PTES). A summary of previous results can be viewed at <https://www.ox.ac.uk/students/life/student-surveys>. Information from these surveys is also considered by the M.Sc. Supervisory Committee.

7 Student Life and Support

7.1 Who to Contact for Help

You are encouraged to talk about any problems you may have while on the course. Within the department, the Course Director and your supervisor may be in the best position to help. Within your college, your college advisor, tutor for graduates or senior tutor may be able to help. Each college has their own systems of support for students, please refer to your college handbook or website for more information on who to contact and what support is available through your college.

Details of the wide range of sources of support which are available more widely in the University are available from the Oxford Students website at <https://www.ox.ac.uk/students/welfare>. This includes information in relation to mental and physical health and disability.

If you are having difficulties with the academic side of the course, you should approach either your supervisor or the Course Director who will be able to arrange extra help.

7.1.1 Financial Support

Your offer of a place on the course will have been made subject to you proving that you can support yourself throughout your time in Oxford but it is appreciated that occasionally financial problems can occur. The hardship funding website <https://www.ox.ac.uk/students/fees-funding/assistance/hardship> has advice in such situations but initially you should discuss this with your college as they often have hardship funds. The M.Sc. course also has limited funds available, so if your college is unable to help you should discuss any financial problems with the Course Director.

7.1.2 Illness

It is appreciated that most people will be ill occasionally during the course of the year and this should not adversely affect your studies. Since all lectures will be recorded, you should be able to catch up, provided you are not ill for long. If you will miss a class, it is appropriate to inform the class tutor who will make a note in the attendance log. Similarly, it is helpful to contact the class tutor if you will not be able to submit solutions to a problem sheet because of illness.

If you are ill on the day of a written examination, you should contact your college doctor or nurse who will be able to write a note for you to submit as part of a mitigating circumstances

notice to examiners as described at <https://www.ox.ac.uk/students/academic/exams/problems-completing-your-assessment>. If you are able to sit the examination then this note will be taken into account when your final result is decided. More details of how such a note will be used are given in the Examination Conventions which can be found on the course website, <https://www.maths.ox.ac.uk/members/students/postgraduate-courses/msc-mmssc>.

If you are ill on the day of a written examination and unable to sit the examination then your college should apply to the Proctors on your behalf for you to be exempt from the examination — there will not be an opportunity to sit the examination at a later date.

If you are ill or suffer a bereavement in the time when you are revising or preparing reports for special topics, case studies or the dissertation, you should again approach your college and they can apply to the Proctors for an extension of the deadline (written reports only) or for your circumstances to be taken into account.

If you are ill for a significant period of time during the year, you should discuss this with the Course Director as it may be appropriate for you to suspend your status to allow you to recover, then return to complete the course the following academic year.

7.2 Complaints and Appeals within the Mathematical Institute

The University, the Mathematical, Physical and Life Sciences Division (MPLS) and the Mathematical Institute all hope that provision made for students at all stages of their course of study will result in no need for complaints (about that provision) or appeals (against the outcomes of any form of assessment).

Where such a need arises, an informal discussion with the person immediately responsible for the issue that you wish to complain about (and who may not be one of the individuals identified below) is often the simplest way to achieve a satisfactory resolution.

Many sources of advice are available from colleges, faculties/departments and bodies like the Counselling Service or the OUSU Student Advice Service, which have extensive experience in advising students. You may wish to take advice from one of those sources before pursuing your complaint.

General areas of concern about provision affecting students as a whole should be raised through Joint Consultative Committees or via student representation on the faculty/department's committees.

7.2.1 Complaints

If your concern or complaint relates to teaching or other provision made by the department, then you should raise it with the Director of Graduate Studies (Prof. Christoph Reisinger) or with the Associate Head of Department (Education) (Prof. Dan Ciubotaru), as appropriate. Complaints about departmental facilities should be made to the Director of IT and Physical Resources (Dr Keith Gillow). If you feel unable to approach one of those individuals, you may contact the Head of Department (Prof. James Sparks). The officer concerned will attempt to resolve your concern/complaint informally.

If you are dissatisfied with the outcome, you may take your concern further by making a formal complaint to the Proctors under the University Student Complaints Procedure (see the complaints and academic appeals webpage at <https://www.ox.ac.uk/students/academic/complaints>).

If your concern or complaint relates to teaching or other provision made by your college, you should raise it either with your tutor or with one of the college officers, Senior Tutor, Tutor for Graduates (as appropriate). Your college will also be able to explain how to take your complaint further if you are dissatisfied with the outcome of its consideration.

7.2.2 Academic Appeals

An academic appeal is an appeal against the decision of an academic body (e.g. boards of examiners, transfer and confirmation decisions etc.), on grounds such as procedural error or evidence of bias. There is no right of appeal against academic judgement.

If you have any concerns about your assessment process or outcome it is advisable to discuss these first informally with your college tutor, Senior Tutor, Course Director, Director of Studies, supervisor or college or departmental administrator as appropriate. They will be able to explain the assessment process that was undertaken and may be able to address your concerns. Queries must not be raised directly with the examiners.

If you still have concerns you can make a formal appeal to the Proctors who will consider appeals under the University Academic Appeals Procedure (see the complaints and academic appeals webpage at <https://www.ox.ac.uk/students/academic/complaints>).

7.3 Policies and Regulations

The University has a wide range of policies and regulations that apply to students. These are easily accessible through the A–Z of University regulations, codes of conduct and policies available on the Oxford Students website <https://www.ox.ac.uk/students/academic/regulations/a-z>. This includes the educational recordings policy at <https://academic.admin.ox.ac.uk/educational-recordings-policy>.

In addition, the Mathematical Institute has a set of policies for its members. These can be found at <https://www.maths.ox.ac.uk/members/policies>. Further information about some of these policies is given below.

7.3.1 Code on Harassment

The Mathematical Institute has appointed a group of staff who may be consulted in connection with the University’s Code on Harassment. Details of the departmental harassment advisors and the university’s policy on harassment and bullying are posted at <https://www.maths.ox.ac.uk/members/hr/wellbeing-and-support/harassment-advisors>.

7.3.2 Mathematical Institute Disability Statement

The Institute will do everything within its power to make available its teaching and other resources to students and others with disabilities to ensure that they are not at a disadvantage. In some cases, this may require significant adjustments to the building and to teaching methods. Those with disabilities are encouraged to discuss their needs with the Disability Coordinator (email academic.administrator@maths.ox.ac.uk) and/or Safety Officer (email safety-officer@maths.ox.ac.uk) at the earliest possible opportunity.

The university has produced an access guide for the Mathematical Institute's Andrew Wiles Building available at <https://www.accessguide.ox.ac.uk/andrew-wiles-building>.

The Executive Committee is responsible for the department's disability policy.

Further information is also available from the University Equality and Diversity Unit page at <https://edu.admin.ox.ac.uk/home>.

7.3.3 Safety

You are urged to act responsibly at all times, and with a proper care for your own safety and that of others. Departmental statements of safety policy are posted on noticeboards, and you must comply with them. Students should note that they (and others entering onto departmental premises or who are involved in departmental activities) are responsible for exercising care in relation to themselves and others who may be affected by their actions.

Within the Mathematical Institute, accidents should be reported immediately. This should be done by ensuring that the accident is recorded in the Accident/Incident Book located in the main reception area and held by the receptionists. The report will then be sent to the Safety Office. There is a First Aid room located on the ground floor of the South wing. If you require access to this room please report to reception. First aid boxes are located in every stair core (cores 1,2,3 and 5) on every level and are clearly signed.

Each lecture theatre has its own regulations for procedures to be followed in the case of fire or other emergency; you are urged to familiarise yourself with the proper escape routes. The assembly point is in the courtyard outside the Humanities Building adjacent to Woodstock Road.

More information about health and safety in the Mathematical Institute is available online at <https://www.maths.ox.ac.uk/members/health-safety/induction>.

8 Facilities

8.1 Social Spaces and Facilities

The Andrew Wiles Building has a cafeteria (Café Pi) on the mezzanine level which is open from 08:30 to 16:00 on Monday to Friday. The cafe offers a range freshly baked pastries and cakes, along with daily changing hot lunch, jacket potatoes, soup and a range of fresh sandwiches, baguettes, and salads from the deli. A weekly menu is displayed in the mezzanine near the cafete-

ria, on the kitchen noticeboards and as an online weekly menu at <https://estates.admin.ox.ac.uk/cafe-services>.

There are communal kitchens on every floor throughout the building. Boiling and filtered water is provided in these via Zip Hydroboil counter-top taps. A light will flash to indicate a filter change is required. Please report any issues with a Zip tap to facilities-management@maths.ox.ac.uk.

Each kitchen is stocked with tea, filter coffee (for the supplied machines) and milk (only for use with tea and coffee and not for use in larger quantities). Each kitchen is provided with a range of cutlery and crockery appropriate to the numbers each point serves. Please make sure you place your used items in the dishwasher. If the dishwasher is full please feel free to put in a tablet and turn it on. The overnight cleaning staff will also run and empty dishwashers when they can. Largely enclosed kitchens also have a microwave.

There is a common room on the first floor of the Andrew Wiles Building, linking the North and South Wings. Tea and coffee making facilities are available at all times in the kitchens adjacent to the common room. In addition, during term time, tea coffee, and biscuits are served on weekdays at 11am.

8.2 Workspace

The M.Sc. in Mathematical Modelling and Scientific Computing has a dedicated student workroom, room S0.45, on the ground floor in the South Wing of the Andrew Wiles Building. The room contains a number of computers on the Mathematical Institute's IT network as well as space for students to use their own laptops, although there is not room for each student to have an individual desk. There is also a box for each individual student and you are welcome to store things there.

If you wish to have the door or windows open whilst you are working in there, feel free to do so but if you are the last to leave please ensure the door and windows are closed.

8.3 Libraries

8.3.1 Whitehead Library, Mathematical Institute

Contact: Ms Cathy Hunt (Librarian)

Email: library@maths.ox.ac.uk

Website: <https://www.maths.ox.ac.uk/members/library>

The Whitehead Library holds material covering mathematical topics at postgraduate and research level. It is primarily for the use of current postgraduate students and research and academic staff of the Mathematical Institute.

Your University Card will have been activated to open the library door and will give you 24/7 access.

Books taken out of the Library must be checked-out on the SOLO computer loan system at the terminal in the library. Please note that books are not allowed to be taken away from Oxford

and should be returned to the library before you leave Oxford for vacation, or any other length of time.

8.3.2 College Libraries

You will have access to the library in your own College. Information about College libraries can be found at <https://libguides.bodleian.ox.ac.uk/colleges>.

8.3.3 Radcliffe Science Library (RSL)

The website for the Radcliffe Science Library is <https://www.bodleian.ox.ac.uk/libraries/rsl>.

The Radcliffe Science Library is the science library of the Bodleian and includes mathematics books at graduate and research level.

8.3.4 Oxford Libraries

Information about all Bodleian libraries can be found at <https://www.bodleian.ox.ac.uk/libraries>. For information about non-Bodleian libraries see <https://www.bodleian.ox.ac.uk/other-libraries-at-oxford>.

8.4 IT

You will have access to computer facilities in the Mathematical Institute and the department has an IT support team. You can also attend training sessions run by the IT Services and access centrally provided electronic resources. You will have a University email account and an account with the Mathematical Institute set up for you automatically.

The Mathematical Institute's academic network is primarily Linux based with almost 3000 installed packages per machine. A vast amount of information about the network and the software installed can be found online at <https://www.maths.ox.ac.uk/members/it>. This includes a list of all public machines and their specifications at <https://www.maths.ox.ac.uk/members/it/machines> (although note that you will have to log in to the website to access this page). The department also has a Remote Access Portal (RAP) that can be used to remotely access either a Linux or Windows machine: see <https://www.maths.ox.ac.uk/members/it/remote-access> for more information.

For details of how and where to obtain IT help relating to the departmental systems see the information at <https://www.maths.ox.ac.uk/members/it/support>. In particular the department operates an email IT help request system (it-support@maths.ox.ac.uk) which is the recommended approach for IT queries as it keeps a record of the query and will reach all the IT staff. Note that there are also signs above the printers with details of how best to report problems and how to get IT help should you need it.

Information about how to connect your laptop to the Mathematical Institute network can be

found at <https://www.maths.ox.ac.uk/members/it/faqs/connection/personal-device-wifi-network-connection>.

For information about printing and the printers available for use see <https://www.maths.ox.ac.uk/members/it/faqs/printing>. Note that, while printing and photocopying are free within the department, it is expected that these machines will be used responsibly and not excessively.

8.4.1 Central IT Services

Central IT Services offer facilities, training and advice to members of the University in all aspects of academic computing. More information can be found at <https://www.it.ox.ac.uk>.

8.5 The Language Centre

The Language Centre provides resources and services for members of the University who need foreign languages for their studies or research and for those who have a personal interest in languages. The Language Centre runs a variety of language courses and has a large library and self-study area. Further information can be found at <https://www.lang.ox.ac.uk>.

9 Student Societies

There are number of Mathematical Sciences student societies which you may like to join. Details of the main societies are given below. In addition there are also over 200 clubs and societies covering a wide range of interest which you may join or attend. A full list is available at <https://www.ox.ac.uk/students/life/clubs/list/>.

9.1 Invariants

Invariants is Oxford University's student society for Mathematics. Their goal is to promote Mathematics and provide a social environment for the students of the Mathematical Institute. They hosts informal lectures, often given by leading mathematicians, as well as socials and puzzle competitions. The majority of events are held within the Andrew Wiles Building.

- Email: invariants@invariants.org.uk
- Website: <https://www.invariants.org.uk/>

9.2 Mirzakhani Society

The Mirzakhani Society is a society aimed at supporting female and non-binary students in Oxford who are studying Mathematics. They run a weekly 'Sip and Solve' where women are encouraged to come along to do problem sheets, with the provision of tea and cake.

- Email: mirzakhansociety@gmail.com
- Websites: <https://www.maths.ox.ac.uk/node/16035>
<https://www.mirzakhansociety.org.uk/>

9.3 LGBTI³

LGBTI³ is a student group for all LGBTQ-identifying students at the Mathematical Institute, the Department of Statistics and the Department of Computer Science. The group aims to provide a friendly space to connect for both undergraduates and postgraduates. They meet fortnightly during term for tea, biscuits and a chat.

- Email: oxlgbtqubed@gmail.com

A Special Topic Guidelines

A.1 Objective of a Special Topic

The lectures for the course should provide a broad overview of a topic but the purpose of the special topic is that it will allow the student to go into more depth in one particular area of the course that they find particularly interesting. This will involve reading material beyond the lectures and writing a report of about 15 pages. Original research is not expected.

There is a list of special topic courses available which has been publicised in Section 2.4.2 of this course handbook and online. Students are expected to choose 2 special topics from this list, one of which is labelled [M] (modelling) and the other being labelled [C] (computation).

A.2 Choosing a Topic to Write About

The subject of the special topic should be agreed between the lecturer and the student. The student should have an idea of which area they would like to focus on and it is expected that the lecturer will help to refine the project and suggest several appropriate references. Alternatively, the lecturer may prefer to provide a range of short project descriptions from which the students can choose a topic.

It is important to point out that just following one source will not be sufficient when writing the special topic. Assessors will be alert to the possibility of plagiarism and the board of examiners will deduct marks for derivative or poorly referenced work.

Once the special topic has been agreed the student will be expected to do the work on their own without further assistance from the lecturer. However, a student may consult their supervisor on general issues. In particular a draft of the special topic may be shown to the supervisor before final submission. In the event that the lecturer is the student's supervisor, the student may consult the Course Director.

A.3 Key Indicators of a Good Special Topic

- The mathematics described in the project should be correct.
- The report should be well presented, both in terms of the layout and the clarity of the mathematical expression.
- The report should demonstrate that a range of sources has been consulted (and these should be referenced appropriately). A suitable critical literature review would be an appropriate form for a special topic report.
- For computation based special topics, labelled [C], demonstrating the practical implementation of algorithms, interpretation of results and comparison to theory is another possible format for a special topic.
- For modelling special topics, labelled [M], additional details should be provided over and above what is given in the source materials. For example, extra steps in the calculations

could be given, alternative methods could be used, or there could be an alternative derivation of a model along with a critical discussion of the modelling ideas. In all cases this should allow the student to demonstrate understanding of the source materials.

- Overall, the student should have shown a good understanding of the subject area described in the project and have interpreted the material well (e.g. by comparing different approaches to a problem or unifying diverse treatments).

A.4 Length of Special Topic Report

Students are expected to write approximately 15 pages. Students may write up to 20 pages without penalty. Penalties for longer submissions are given in Table 2. The page limit includes the whole main body of the special topic (i.e. all text, mathematical equations, figures, tables, abstract, table of contents etc.) but excludes the references, title page (unless this contains more of the project than just the title and your candidate number), and the appendices. Whilst assessors are required to consider the main body of the report, they are not expected to read appendices, so all core analysis and findings should be presented within the main body of the document. A minimum of a 12pt font size must be used, the width of the text should be at most 15cm (6 inches) per page and the height of the text should be at most 22.5cm (9 inches) per page. The spacing of the text should be at least one and a quarter spacing (use a baselinestretch of 1.25 in L^AT_EX).

Length of special topic	Penalty (USMs)
21 pages	1
22 pages	5
23 pages	10
24 pages	20
25 pages	30
26 pages	40
27 pages or more	50

Table 2: Penalties for over long special topics.

A.5 Submission of Special Topics

A pdf version of the special topic should be submitted via the Inspira coursework submission platform, <https://oxford.inspera.com>, by the appropriate deadline.

A.6 Marking of Special Topics

The lecturer will usually mark the special topic themselves and the special topic will also be independently marked by another assessor. Special topic marks are awarded by the examiners on the recommendation of both assessors. If the assessors' marks do not differ by more than 10, the final special topic mark will usually be the average of the two marks (rounded up to the

nearest whole mark if necessary). However, if the marks are on opposite sides of the pass/fail borderline or differ by more than 10 marks there will be further discussion between the assessors in order to try to reach a decision on a final mark. In the unlikely event the two assessors are unable to agree on a mark the examiners will be consulted and, if necessary, a third assessor appointed in order to make a final decision on the mark.

A.7 Plagiarism

Students should read the University's policy on plagiarism which may be found online at: <https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism>.