HANDBOOK
FOR THE UNDERGRADUATE COURSE IN
MATHEMATICS AND PHILOSOPHY
2018 – 2019

Joint Committee for Mathematics and Philosophy

UNIVERSITY OF OXFORD

This handbook applies to students starting the course in Michaelmas term 2018. The information in this handbook may be different for students staring in other years. This handbook is intended as a guide and reference for you throughout your Mathematics and Philosophy course at Oxford. Please keep it as a handy reference guide.

The Examination Regulations relating to this course are available at:
Preliminary Examination – https://www.admin.ox.ac.uk/examregs/2018-19/peimathandphil/studentview/
Final Honour School – https://www.admin.ox.ac.uk/examregs/2018-19/hsomathandphil/studentview/ and https://www.admin.ox.ac.uk/examregs/2018-19/piahsinclphil/studentview/.
If there is a 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 Academic Administrator in the Mathematical Institute
(`academic.administrator@maths.ox.ac.uk`).

The information in this handbook is accurate as at October 2018, however it may be necessary for changes to be made in certain circumstances, as explained at www.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 students will be informed.

Version 1.0, October 2018.

Welcome from the Chair of the Joint Committee for Mathematics and Philosophy

Welcome to Oxford and what we hope is a memorable time studying Mathematics and Philosophy. You may reasonably expect the next three or four years of study to be unlike any others in your lifetime and we hope you make the most of the opportunity that they represent. If embraced, the challenges the study of Mathematics and Philosophy offer will mean a fruitful and enjoyable time at the University and you will be able to look back appreciatively at how far you have progressed in your technical and analytical skills, your presentation and argumentation.

Oxford only offers joint degrees involving subjects that lend reflection to one another in a beneficial, complementary manner. Logic and Set Theory are obvious examples where there is a natural overlap of mathematical and philosophical interest. You may see this overlap extend into algebra, geometry, analysis, probability, physics and beyond, depending on your choices, and hopefully you will come to more generally appreciate the benefits of studying both disciplines alongside one another.

A final word on learning at University: a student's attitude is the key component to success. Lecturers and tutors, books and libraries and, of course, fellow students, all have their parts to play, but it is a student's engagement with a degree's challenges that means most. Tutors will be supportive and help address your uncertainties and questions, but for the tutorial system to work well a student needs both to have spent time, effort and reflection identifying and wrestling with problems, and also then needs to discuss their thoughts in tutorials in seeking to take their understanding further. It is in the acts of seeking out questions for yourself and refining your understanding by answering them that you will progress most.

With that we very much hope you enjoy your time at Oxford, and flourish taking on the challenges it offers.

Prof. Jonathan Pila

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Part I

Introduction

1 Important information

1.1 Using this Handbook

This **Handbook** is issued to all undergraduates reading Mathematics & Philosophy and gives information, advice and guidance about the course. It provides you with information to help you understand the processes and procedures of the Mathematical Institute and Faculty of Philosophy, and the other facilities such as libraries and computers to which you have access. It gives you information on how you will be assessed and how your examinations are classified.

The Handbook supplements the material published in the **Examination Regulations**, a document containing the formal regulations of the University relating to examinations and to the structure of different programmes of study offered by the University. The Examination Regulations is always definitive.

Since there is no Oxford degree for which Philosophy is the sole subject, there is no Philosophy Course Handbook separate from the Handbooks for the various joint degrees of which Philosophy is a component subject. The Examination Regulations themselves are therefore the primary source for the regulations concerning Philosophy, and it contains detailed examination syllabuses of the philosophy subjects you will study in your course. You are referred also to Appendix B in Section VII of this Handbook, which provides supplementary information and guidance from the Faculty of Philosophy.

For the Mathematics component of the course only an outline of the course structure is specified in the Examination Regulations. Instead, **Supplements** to the course handbook are issued annually for each year of the course. These contain the formal examinable syllabuses and synopses of lecture courses. Supplements refer to the course materials pages which can be found here https://courses.maths.ox.ac.uk/

You are supplied with this Handbook at the beginning of your course and will be informed of the availability of supplements, including the **synopses of lecture courses** for each year of your course. All this material is also published on the Mathematical Institute website https://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning/handbooks-synopses and https://courses.maths.ox.ac.uk/

The list of mathematical courses available in all four years of the Mathematics & Philosophy degree for the current academic year can be found at https://courses.maths.ox.ac.uk/. There is also an online course planner https://courses.maths.ox.ac.uk/course_planner which you can use to explore pathways through the degree.

1.2 Other Important Documents

Virtually all the information you will need, including this Handbook, the Examination Regulations, and the Mathematics Supplements to the Course Handbook can be accessed

online. A list of useful websites is given in Part V Section 11.

Examination Regulations: http://www.admin.ox.ac.uk/examregs.

These are published annually at the start of each academic year and provide the source, and ultimate authority, concerning each Oxford degree course. They stipulates the formal structure of the courses and the regulations which govern them.

The Examination Regulations for Mathematics & Philosophy are on the web at https://www.admin.ox.ac.uk/examregs/2018-19/peimathandphil/studentview/ for Prelims and https://www.admin.ox.ac.uk/examregs/2018-19/hsomathandphil/studentview/ for Finals

The Examination Regulations also stipulate the content (syllabuses) of Philosophy subjects for examination. These can be found at

> http://www.admin.ox.ac.uk/examregs/2018-19/piahsinclphil/studentview/

Mathematics Handbook and Supplements: https://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning/handbooks-synopses and https://courses.maths.ox.ac.uk/

A new edition of the Mathematics Course Handbook is issued in October each year to the first-year students. Updates, in the form of Supplements, are issued as necessary. The following Supplements to the Course Handbook are published online each year: Syllabus and Synopses for

Preliminary Examination in Mathematics & Philosophy;
     https://courses.maths.ox.ac.uk/overview/undergraduate#38375

Mathematics & Philosophy Part A;
     https://courses.maths.ox.ac.uk/overview/undergraduate#38376

Mathematics & Philosophy Part B;
     https://courses.maths.ox.ac.uk/overview/undergraduate#36638

Mathematics & Philosophy Part C.
     https://courses.maths.ox.ac.uk/overview/undergraduate#37105

These Supplements describe courses available in a given academic year for, respectively, the first, second, third and fourth years of the mathematics component of the joint course, for examinations sat at the end of that year. Further, certain courses available as additional options are listed in Supplements to the Mathematics Course Handbook: Syllabus and Synopses for Parts A, B and C in Mathematics. All these documents are published online no later than the start of the Michaelmas Term of the year to which they apply.

Each Supplement contains general information applying in the academic year in question, and, for each course on offer, a syllabus (which has the same status as those specified in the Examination Regulations) and also a more detailed description of each course, its aims and objectives, learning outcomes and suggested reading.

Lecture lists: the lists give the titles, times and places of lectures and are available online at

http://www.maths.ox.ac.uk/members/students/lecture-lists for Mathematics
http://www.philosophy.ox.ac.uk/lectures for Philosophy

Oxford Student Handbook: http://www.proctors.ox.ac.uk/handbook/.

This contains general information and guidance about studying at the University of Oxford, and gives you formal notification and explanation of the University's codes, regulations, policies and procedures.

You will also receive guidance about your own college's regulations and requirements, probably in the form of a **college handbook**. You are advised to note carefully any sections dealing with academic matters, and may also find useful sections dealing with student welfare and support.

1.3 Email

You will be allocated a college email account. Important information about your course will be sent to this account. You should check your college email account regularly, at least once a day in term time. You are asked to bear in mind that lost email is the students' responsibility should they choose to forward email to a system outside the university.

Any email concerning your course that you send to members of the administrative staff, in particular to those in the Academic Office in the Mathematical Institute, should come from your University address.

1.4 Queries about the course

Your College tutors will normally be your first point of contact if you have queries about the course. If you do wish to contact the Chair, please address your query to the Chair of the Joint Committee for Mathematics and Philosophy, c/o the Academic Administrator of the Mathematical Institute, by email to `academic.administrator@maths.ox.ac.uk`, or by post to the Academic Administrator, Mathematical Institute, Andrew Wiles Building, Woodstock Road, Oxford OX2 6GG.

The current Chair is Prof Jonathan Pila, Mathematical Institute.

If you require this handbook in a different format, please contact the Academic Administrator in the Mathematical Institute: `academic.administrator@maths.ox.ac.uk` or `(6)15203`.

A list of useful contacts is given in Part V Section 10

2 Your First Weeks at Oxford University

Many of you will already have read 'How do Undergraduates do Mathematics?' originally prepared by Professor Charles Batty with the assistance of Professor Nick Woodhouse with more recent updates by Dr Richard Earl, Prof Frances Kirwan and Dr Vicky Neale. If you have not done so, then it is available online at

https://www.maths.ox.ac.uk/system/files/attachments/study_public_0.pdf

and you are strongly recommended to read it as part of the induction to your course.

The Mathematical Institute Induction session is held at 2pm on Friday Week 0 in lecture theatre 1, Mathematical Institute. Following this there will be a course specific induction in the Faculty of Philosophy at which you will be given important documentation for your course. Further useful information can be found at

http://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning/ prelims-students

The mathematics students have also developed a useful "Guide to Freshers" and website (https://www.maths.ox.ac.uk/members/students/undergraduate-courses/undergraduate-representation/ murc). You may find it helpful to read their briefer more informal view on what you need to know at the beginning of your course.

Part II

The Course in Mathematics and Philosophy

1 Some background

1.1 The University: Divisions, Departments and Faculties, and Colleges

The University is a federation of departments and faculties, and at the same time a federation of colleges. The departments and faculties of the University are grouped into four Divisions: the Humanities Division, Mathematical, Physical & Life Sciences Division, Medical Sciences Division, and Social Sciences Division. Science subjects, including Mathematics, are generally organized as departments, and Humanities subjects, including Philosophy, are generally organized as Faculties (to explain the difference between a Faculty and a Department in Oxford is beyond the scope of this Handbook).

Teaching is provided both by the University (lectures) and by the colleges (tutorials). The colleges provide accommodation, meals, pastoral care, and an academic community within which undergraduates can thrive and develop.

The University organises examinations for each degree course, and awards degrees on the basis of examination results in these Public Examinations.

The Mathematical Institute is responsible for courses in Mathematics as a single subject, and co-operates with the Department of Computer Science and the Department of Statistics to deliver joint courses in Mathematics & Computer Science and Mathematics & Statistics. The existence of a large single-subject course in Mathematics implies that, on the mathematics side, much of the content of the Mathematics Course Handbook is also applicable to Mathematics & Philosophy.

By contrast, Philosophy at undergraduate level at Oxford is always studied in conjunction with some other subject: besides that with Mathematics, there are joint courses with Modern Languages, Physics, Computer Science, and Theology (all studied by a small number of undergraduates). In addition, Philosophy forms a component in the degrees in Literae Humaniores ("Greats", which combines Classics, Ancient History and Philosophy),PPE (Philosophy, Politics and Economics) and PPL (Philosophy, Psychology and Linguistics).

The Mathematical Institute and the Faculty of Philosophy have international reputations for their research, and the University believes that there are many benefits to graduate and undergraduate teaching which stem from this research excellence. The academic staff with whom you interact during your course are not only employed to teach you, but also engage actively in research, with many staff recognised internationally as leaders in their field of specialisation. The impact of research on teaching may take many forms: tutors and lecturers including their own ideas from research in their teaching; the regular updating of curricula and reading lists, with options in the later stages of the course which reflect research developments; opportunities to meet members of the faculties and research students, through classes and through project or thesis work; access to research seminars; and, in certain subject areas, opportunities to develop research skills and research-based approaches

to study through participation in research projects, principally in the long vacations. In general you will be encouraged to develop the ability to interpret and critically appraise information and the writings of others, and to build the sense that scientific knowledge is contestable and that its interpretation may be continually revisited.

1.2 Administration of the Mathematics & Philosophy course

A standing Joint Committee for Mathematics and Philosophy (JCMP) administers the course and makes regulations for it. The members of the committee are the three holders of University posts in Mathematical Logic and in Philosophy of Mathematics plus two representatives appointed by the Philosophy Faculty Board and two appointed by the Teaching Committee of the Mathematical Institute. An undergraduate representative reading Mathematics & Philosophy attends meetings. The Committee normally meets once a term, on Tuesday afternoon of fifth week. Matters for consideration by the Joint Committee should be addressed to the Chair, Joint Committee for Mathematics and Philosophy, c/o the Academic Administrator, Mathematical Institute, Andrew Wiles Building, Woodstock Road Oxford OX2 6GG, or by email to `academic.administrator@maths.ox.ac.uk`.

2 Overview of the Course

The University of Oxford provides two degrees in Mathematics & Philosophy:

- Bachelor of Arts (BA) in Mathematics and Philosophy (3-year course),

- Master of Mathematics and Philosophy (MMathPhil) (4-year course).

Candidates for both degrees follow the same path for the first three years and all receive a classification at the end of the third year. Those proceeding to the MMathPhil take a further examination (Part C) at the end of the fourth year, for which a separate classification is awarded, but the degree of MMathPhil is awarded for the whole four year course, and those who take the degree of MMathPhil do not receive the degree of BA in Mathematics and Philosophy, and a candidate who takes the degree of BA in Mathematics and Philosophy for the three year course cannot later take the degree of MMathPhil.

The joint courses in Mathematics & Philosophy provide the opportunity to attain high levels of two quite different kinds of widely applicable skills. Mathematical knowledge and the ability to use it is a key element in tackling quantifiable problems and the most highly developed means of obtaining knowledge through purely abstract thinking, while philosophical training encourages the ability to analyse issues, often by questioning received assumptions, and to articulate that analysis clearly. Historically, there have been strong links between mathematics and philosophy. Philosophy of mathematics bridges the two subjects and has been of great importance to major philosophers (Plato, Aristotle, Kant, Frege, Russell, Wittgenstein) and to major mathematicians (Pythagoras, Bolzano, Cantor, Poincaré, Hilbert, Weyl, Brouwer). There are some (Descartes and Leibniz, notably) who are both major philosophers and major mathematicians. Logic, the systematic study of reasoning, is also the bridge between the two subjects. It has been a branch of philosophy since Aristotle and a branch of mathematics since the nineteenth century.

The Oxford degrees in Mathematics & Philosophy provide a strong background from which to pursue diverse careers or professional trainings on completion of the MMathPhil or the B.A. in Mathematics & Philosophy, including graduate study in either mathematics or philosophy.

3 Programme Specification

The Master of Mathematics and Philosophy (MMathPhil) and the Bachelor of Arts (BA) in Mathematics and Philosophy may be compared to national standards for higher education qualifications through the Framework for Higher Education Qualifications (FHEQ). The University awards framework (UAF) maps the awards of the University against the levels of the FHEQ. The FHEQ level for the MMathPhil is 7 and for the BA is 6. The relevant subject benchmark statement for the course, which sets out expectations about standards of degrees in a given subject area, is Mathematics, Statistics and Operational Research (QAA 2015) and Philosophy (QAA 2015).

The aims and intended learning outcomes for the Mathematics & Philosophy degree programme can be found in Appendix C.2 of this Handbook.

For the Aims and Objectives for Philosophy in all undergraduate courses with Philosophy in Oxford University see Appendix C.1 (VII).

4 The framework of University examinations

(For further information on examinations in Mathematics & Philosophy see Section IV.)

The examinations for each undergraduate degree course in Oxford consist of a First Public Examination and a Final Honour School. The Final Honour School is often referred to simply as Finals, and may, as for the Final Honour School of Mathematics & Philosophy, consist of Parts taken in different years. To enter for Finals you must have passed a First Public Examination, unless you already have a degree from another university and have been granted Senior Status. There is no University requirement that you take both First and Second Public Examinations in the same subject (but note II.7.2 below, Changing course).

The form and timing of the First Public Examination takes different forms for different courses. For example, it may consist of a Preliminary Examination (Prelims), on which candidates are awarded Distinction, Pass or Fail or of Honour Moderations (Mods) in which candidates are awarded first, second or third class honours, pass or fail, and may take place after two, three, or four terms.

5 Preliminary Examination in Mathematics & Philosophy

In Mathematics & Philosophy the First Public Examination consists of a five-paper Preliminary Examination sat at the end of the first year.

The course for the Preliminary Examination comprises five sections, corresponding to the five papers of the examination:

Section 1: Mathematics I

Section 2: Mathematics II

Section 3: Mathematics III(P)

Section 4: Elements of Deductive Logic

Section 5: Introduction to Philosophy

All five sections are compulsory. Sections 1 and 2 are each examined in a 2.5-hour paper, Section 3 in a 2-hour paper, and Sections 4 and 5 are each examined in a 3-hour paper.

Mathematics I, covering mainly Algebra, and Mathematics II, covering mainly Analysis, and Mathematics III(P) (Introductory Calculus, Probability) are the same or similar to corresponding papers for the Preliminary Examinations in Mathematics. Syllabi are set out in the Mathematics & Philosophy Prelims Supplement.

The first part of Section 4, Introduction to Logic, is designed for all those who are starting logic in all Schools including philosophy. The second part, Elements of Deductive Logic, is designed specifically for Prelims in Mathematics & Philosophy and Physics & Philosophy and Computer Science & Philosophy, and the examination includes questions of a more mathematical nature.

Section 5, Introduction to Philosophy, covers

(a) General Philosophy, a topic-based introduction to key topics in epistemology, metaphysics, ethics and philosophy of mind.

(b) Gottlob Frege's *Foundations of Arithmetic*.

Details of the syllabuses for Sections 4 and 5 can be found in the Examination Regulations

https://www.admin.ox.ac.uk/examregs/2018-19/peimathandphil/studentview/

For the programme of supporting lectures for the current year see Appendix A, Section VII and for information on teaching arrangements, see III.4.1.1.

5.1 Important Dates

Below is a summary of important dates in the first year.

Michaelmas Term

Friday 5th October (week 0)	2pm Undergraduate Induction
	3pm Maths & Philosophy Induction
Monday 8th October (week 1)	Michaelmas term lectures begin

Wednesday 10th October (week 1)	5pm Philosophy Undergraduate Welcome Lecture and Drinks Reception
Thursday 11th October (week 1)	5pm Annual Institute Celebration/Welcome
Friday 30th November (week 8)	Michaelmas term lectures end

Hilary Term

Monday 14th January (week 1)	Hilary term lectures begin
Friday 8th March	Hilary term lectures end

Trinity Term

Monday 29th April (week 1)	Trinity term lectures begin
Wednesday 1st May (week 1)	Maths & Philosophy Tea Party
Friday 24th May (week 4)	Prelims Maths preparation lecture
Monday 24th June (week 9)	Provisional start date for the examinations

6 Finals in Mathematics & Philosophy

6.1 Overview

The examinations for the Final Honour School of Mathematics & Philosophy are divided into three parts:

- Part A, taken at the end of the second year;

- Part B, taken at the end of the third year;

and, for those taking the MMathPhil, also

- Part C, taken at the end of the fourth year.

In the Part A examination you are examined on the second-year Mathematics courses only. Although study of Philosophy continues during the second year of the course, no Philosophy subjects are examined in Part A. In Part B you are examined on all of your work in the second and third years except for the Mathematics courses already examined in Part A. Note III.4 below; this gives advice from the Joint Committee for Mathematics and Philosophy on scheduling your study for the compulsory B1 papers (Logic and Set Theory), examined within Part B.

In Parts A and B together, you will take roughly equal proportions of Mathematics and of Philosophy, with logic as a compulsory bridge subject. In Part B, as indicated below, there is some limited scope to choose to take a greater or lesser proportion of Mathematics and correspondingly a lesser or greater proportion of Philosophy. In Part C you may opt to take only Mathematics, only Philosophy, or to continue to study both.

6.2   Progression

At the end of Part A you will receive a University Standardized Mark (USM), between 0 and 100, for each of the papers you take, but will not be classified (i.e. assigned a class: 1, 2.1, 2.2, etc.). After Part B you receive a classification on the basis of Parts A and B together (as explained in IV.4). There is no minimum standard to be achieved in Part A in order to be allowed to proceed to Part B.

If you leave after successfully completing Parts A and B you may supplicate for a B.A. in Mathematics & Philosophy with the classification obtained at the end of Part B.

See section 7.1 below on Exit Points and the criteria to continue to the fourth year.

The Part C examination covers the work done in the fourth year and is separately classified. A candidate achieving Honours in Part C, that is, achieving an average USM $\geqslant 40$, may supplicate for the degree MMathPhil. Note that a successful candidate may supplicate for one degree only—either a B.A. or an MMathPhil. The MMathPhil is doubly classified but a candidate will not be awarded a B.A. degree and an MMathPhil degree.

Any candidate who fails to obtain Honours in Part C, that is, who achieves an average USM < 40, may, so long as they have not taken the B.A., enter again for Part C on at most one subsequent occasion or may supplicate for the B.A. in Mathematics & Philosophy.

The University's rules concerning withdrawal from, or failure to complete, an examination are summarised in Section 8 of The Student Handbook (which is sometimes referred to as the "Proctors' and Assessor's Memorandum") and set out in full in the *Examination Regulations*, Part 14.

6.3   Part A

In your second year you will study roughly one half of the syllabus for the Honour School of Mathematics.

There are two compulsory core papers *Linear Algebra* and *Metric Spaces and Complex Analysis*. The former is covered by 16 lectures, the latter by 32, both in Michaelmas Term. You then choose from a menu of second-year Long and Short Options; see Appendix A or the Mathematics & Philosophy Part A Supplement.

You may also, if you have the support of your Mathematics tutor, apply to the Joint Committee for Mathematics and Philosophy for approval of other options from the list of those available in Mathematics Part A. For further details, see III.5.2.

6.4   Parts B and C

6.4.1   Mathematics in Parts B and C

The Mathematics subjects in Parts B and C are published in the Mathematics & Philosophy Part B and Mathematics & Philosophy Part C Supplements to the Course Handbook.

Courses are designated as being at either H-level (Honours) or M-level (Masters). Usually Part B courses are designated H-level and Part C courses M-level.

Most units in Mathematics will be assessed through written examination papers of $1\frac{3}{4}$ hours for a single unit, though some may be assessed in whole or in part by submitted coursework. The two units B1.1 Logic and B1.2 Set Theory are compulsory in Mathematics & Philosophy Part B.

6.4.2 Philosophy in Parts B and C

Subjects in Philosophy are specified in the *Examination Regulations*, in the section entitled Philosophy in all Honour Schools Including Philosophy,

> http://www.admin.ox.ac.uk/examregs/2018-19/piahsinclphil/studentview/.

For the FHS of Mathematics & Philosophy the subjects are drawn from 101–118, 120, 122, 124, 125, 127, 128 and 199 (Thesis).

These subjects are listed in Appendix B of this Handbook.

(A note on unavailable subjects: subject 121: Advanced Philosophy of Physics, which requires substantial background in Physics, is available only in the Honour Schools of Physics, and Physics & Philosophy. The subjects numbered in the 130s, which require study of texts in ancient Greek, are available only in Greats.)

A 3-hour examination paper is set on each Philosophy subject other than a Thesis.

As indicated above, Philosophy subjects in both Part B and Part C are drawn from the same list. But in Part C a Philosophy subject is studied at greater depth than in Part B (that is, at M-level rather than at H-level). A Philosophy *unit* in Part C other than a Thesis consists of a Philosophy subject together with an essay of up to 5,000 words. The same subject may not be offered in both Part B and Part C.

You are permitted to offer a Philosophy Thesis in each of Parts B and C provided the topics do not overlap. (The Examination Regulations require that no part of a Part C Thesis may include work submitted for the same or another degree.)

6.4.3 Part B

Details of the Part B schedule can be found in the *Examination Regulations*.

http://www.admin.ox.ac.uk/examregs/2018-19/hsomathandphil/studentview/

Note that the Regulations permit you to take units listed under Schedule 2 only if you take three Philosophy subjects and a total of six units in Mathematics in Part B.

The Schedules of subjects for examination in 2019 can be found in Appendix A and, with further details, in the Mathematics & Philosophy Part B Supplement.

https://courses.maths.ox.ac.uk/node/36637

For information on classification in Parts A and B together see the Examination Conventions IV.4.

6.4.4 Part C

Details of the Part C schedule can be found in the *Examination Regulations.*

http://www.admin.ox.ac.uk/examregs/2018-19/hsomathandphil/studentview/

The approved units in Mathematics for Part C are listed in the Mathematics Part C Supplement. https://courses.maths.ox.ac.uk/node/37104

In 2018–2019, the list includes four units in Mathematical Logic: Model Theory, Gödel's incompleteness Theorems, Analytic Topology and Axiomatic Set Theory. No unit in Mathematics may be offered in both Part B and Part C.

Part C Philosophy units may be chosen from the following, with the proviso that a candidate may not offer in Part C any subject previously offered in Part B:

- subjects 101–118, 120, 124, 125 and 127 as specified in the Regulations for Philosophy in all Honour Schools including Philosophy,

- an M-level Philosophy Thesis, for which the word limit is 20,000 words.

Each unit in Philosophy other than a Thesis shall be examined by a three-hour written paper together with an essay of at most 5,000 words. For information concerning the prescribed topics for these essays, see IV.3.4. For details of the requirements for a Thesis see the Examination Regulations and also III.2.2.

For information on classification in Part C see II.6.2 and the Examination Conventions IV.4.

7 Exit points

We hope, and expect, that you will enjoy studying Mathematics and Philosophy at Oxford and will successfully complete your degree. A very high proportion of those admitted to read Mathematics & Philosophy elect to stay for 4 years to complete the MMathPhil; of the remainder, almost all obtain the B.A. in Mathematics & Philosophy after 3 years. A very few students will opt to switch to another Oxford course or, exceptionally, to a course at another university.

7.1 Three years or four years

The choice of which degree you will take will be based on your interests and aptitudes, your performance in the first three years, and your career intentions. You may wish to discuss your decision with your college tutors, who will be able to advise you on which course is more appropriate for you.

You will need to achieve overall a 2.1 or better in your second and third year exams and a weighted average of 59.5 or above for your third year exams to progress to Part C.

In the event that you do not achieve a 2.1 or better, there is an appeal process whereby you might ask that this regulation be waived in your case. For further guidance please refer to the

Examination Conventions, which can be found at https://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments/examination-conventions The departments strongly feel that the fourth year is a challenging masters year and that in most cases at least a 2.1 is needed as an indicator of likely success on the MMathPhil; consequently the departments will only support the appeal if they feel there is a good academic case nonetheless. Successful appeals have usually had an overall USM at Parts A and B close to 60 (which corresponds to a 2.1) and/or a clear sense of progress from Part A to Part B (showing that you are coping well as the course becomes more difficult) and/or good marks in those options which you plan to continue studying into Part C – for example you may have done markedly better in mathematics rather than philosophy, or vice versa, and only wish to continue with your stronger subject. Strong support from your college is also expected.

By default, all students are registered for the MMathPhil. If you subsequently decide to take the B.A. option you must inform your college office who will in turn inform the central administration and the departments. Around the time that you enter for your Part B examinations you will be asked to confirm whether or not you intend to stay for the fourth year. The decision you declare at this point is not immutable, but should be final if at all possible, and you are strongly advised to take a final decision before the start of your Part B examinations. Please ensure that you have consulted your college tutor(s) before making your decision. It is important that your college knows your intentions as early as possible in order to plan for the following year.

It could happen that, having embarked upon your fourth year, you are for whatever reason unable to complete the Part C course, or decide that you do not wish to do so. In these circumstances you are advised to discuss your situation with your college's Senior Tutor at the earliest opportunity. Students who withdraw partway through Part C will graduate with a BA degree. See also II.6.2 and IV.1.6.

7.2   Changing course

We very much hope, and in the great majority of cases can confidently expect, that you will do well in this course and benefit from your studies. At the same time, you should not feel that your original choice is irrevocable if it is not turning out as you had anticipated. In any degree course some who embark upon it may come to feel it is not the right course for them. Mathematics & Philosophy is no exception, and a few students doing the course change to another (also a few doing some other course change to Mathematics & Philosophy).

If you are feeling you should change, the first thing is to be patient for a while. You may be finding the course difficult, but all courses that are worth doing are difficult at times, and your tutors are there to help you with difficulties. Seek their advice, and discuss problems too with your contemporaries; you are not in competition with them, and you should get into the habit of helping and being helped. Nevertheless you may continue to feel that the course is not right for you.

If you are considering changing to another Oxford course from Maths and Philosophy, the three possibilities are to change to Mathematics, to some other course involving Philosophy, or to an entirely different course. This last is the most radical and feasibility depends on particular interests, background and circumstances. The first two are more generally feasible. You will find it helpful to talk to fellow students studying the course or courses you

might like to change to and to consult the University Prospectus and course documentation available on the web. Normally your college will have admitted you to read for a specific undergraduate degree (consisting of the sequence of First Public Examination followed by Final Honour School). If you wish to explore the possibility of changing course, first talk to one of your current tutors or, if that is embarrassing, to the Senior Tutor or to someone else in your college with responsibility for academic welfare of students. After that, talk to tutors in the subject you wish to change to.

If you have already made a substantial start on this course then it is likely that your tutors will advise you to stay with it until you have completed your First Public Examination. By proceeding in this way you may be able to change course without losing a year, since you must pass a First Public Examination in some course or other before you can proceed to any Final Honour School and any First Public Examination counts as a qualification for any Final Honour School. (The only undergraduates eligible for exemption from the requirement to pass a First Public Examination before entering for an Honour School are those who have already obtained a degree at another university.)

Changing to Mathematics, or to another course joint with Mathematics

If you are considering changing to single-subject Mathematics (or to Mathematics & Statistics) before Prelims, then you need to be aware that besides catching up on course work in applied mathematics that you will have missed you may also need to work through the Computational Mathematics course and submit the required Computational Mathematics projects (see the Mathematics Course Handbook for details).

To change to single-subject Mathematics after Prelims will involve studying over the summer some of the material examined in the two Applied Mathematics papers of Prelims in Mathematics. Your Maths tutors will advise you what to concentrate on.

Changing to another course joint with Philosophy

Philosophy is studied at undergraduate level in Oxford only in combination with other subjects (there are a number of other combinations besides Mathematics & Philosophy; see II.1). You will need to look at these other combinations to decide which would be best for you in terms of your interests and background. The Undergraduate Prospectus, and the Handbooks for each of the courses available on the Philosophy website, will give you basic information.

Changing to another Oxford course: the formalities

If you decide you do want to change course, there are three bodies that must approve: your college, the University, and those who are paying for you. Permission from your college will be needed to change to another course. This is liable to be refused if the receiving tutors think you unsuited to their course, or don't have room. The University is unlikely to be a problem. It accepts for any examination all candidates who are suitably qualified and supported by their colleges. However, a few departments do have quotas for acceptance on to the courses taught in them.

See below as regards financial issues in connection with a change of course.

Moving to another university

The most radical (and rare) change is to decide to study at another university, either because the course you realise you want to do isn't offered by Oxford, or because you feel that you will do better somewhere else. Before deciding to pursue such a step be sure to get lots of advice, both from tutors and from family and friends. If in the end it seems a good idea, you should be able to ask your college to support your application for a place at another university.

7.3   Financial Issues

Please be aware that any change to your choice of degree may impact on your level of maintenance funding and the time taken to receive your student loan. You are advised to contact Student Finance,

https://www.gov.uk/student-finance

for further enquiries.

If you have financial support for your studies from an award, scholarship, or sponsorship, this is likely to be on the basis of the specific course you are pursuing, in which case permission from your funding body to change course, even within Oxford, will be required if this support is to continue. You will need to ask your Senior Tutor to write to your funding body to certify that you have been given permission to change course.

The MMathPhil is recognized as a masters-level qualification. For students not classified as Overseas, there may be adverse financial consequences in taking the MMathPhil (rather than the B.A.) if they wish thereafter to take another masters-level Taught Course. This arises because of ELQ (Equivalent or Lower Qualifications) fee liabilities: universities do not receive any government funding for ELQ students and consequently adopt a special ELQ fees rate, which is likely to be roughly double that of the standard fee for graduate taught courses. Information can be found at

http://www.ox.ac.uk/students/fees-funding/fees/elq.

Part III

Teaching and learning

1   Tutors

Each student in Mathematics & Philosophy has a College Tutor in Mathematics and a College Tutor in Philosophy who oversees their academic progress in the two sides of the school. The College Tutors arrange college teaching (tutorials and classes), advise on general academic matters such as choice of options, oversee library provision of relevant texts in the college library, arrange college Collections, provide career advice (when requested) and references.

It will probably be a rule of your college that you call on these in-college subject tutors at the beginning of term to arrange tuition, and at the end of term to arrange vacation study and next term's programme. In this case it is a very good idea to pay such calls, if necessary on your own initiative. You will also be required to attend a meeting at the end of term to discuss the reports from those who have taught you that term; arrangements vary from college to college. Your reports will also be available to you electronically, through the University's on-line system OxCORT.

Please ensure that you know by when in week 0 your college expects you to be back in residence at the start of term, and do not miss pre-term meetings with tutors unless excused for some good cause. You should try to ensure that by the Sunday of First Week of Full Term (when term officially starts) you know who your tutors for the term will be, have met or corresponded with them, and have been set work and assigned tutorial times by them.

Anybody to whom you go for tutorials or college classes counts as one of your tutors. For the Mathematics & Philosophy course you are bound to have at least two of them, and there are likely to be several more over the years. Some will be tutorial fellows or lecturers of your own college; some may be tutorial fellows or lecturers of other colleges, or research fellows, or graduate students. The overall responsibility for giving or arranging your tuition will lie with tutorial fellows or lecturers of your own college, probably one in each of Mathematics and Philosophy.

2   The framework of lectures, tutorials, and classes

Students are responsible for their own academic progress. You will be expected to attend lectures, and required to attend tutorials, and probably at various stages also classes, in both Mathematics and Philosophy. You will be required to do pre-assigned work, in the form of essays (in Philosophy) and problem sheets (in Mathematics), for most tutorials and classes. The way lectures support your learning varies on the two sides of the School. Broadly, tutorials are the primary medium of instruction in Philosophy whereas lectures form the backbone of mathematics teaching supported by tutorials and classes, with problem sheets provided by the lecturers available for most courses. A table setting out the recommended patterns of teaching for each year of the course is included in appendix D.

You are encouraged to provide feedback on the lectures, tutorials and classes you attend; see III.7.

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 F complaints and appeals.

2.1 Lectures

Each subject specified for examination in the Examination Regulations or in the Supplements to the Mathematics Course Handbook has, with a very few exceptions, lectures which cover the official syllabus specified for that subject. A Lecture List is produced each term for Mathematics and for Philosophy. These list the courses on which lectures are to be given that term, in the form of a timetable. The Mathematics list contains a section for the Mathematics & Philosophy course which lists for Prelims and each Part of Finals the lectures both in Mathematics and in Philosophy for subjects that are compulsory or particularly relevant for that examination. Synopses of Mathematics courses, amplifying the syllabuses, are given in the Supplements to the Mathematics Course Handbook.

The Philosophy Lecture List and Prospectus for each term is available at

http://www.philosophy.ox.ac.uk/lectures

and the Mathematics list at

https://www.maths.ox.ac.uk/members/students/lecture-lists

Obtain copies of both lecture lists from the web or from your main subject tutors when you meet before the beginning of term and take your copies to meetings with any other tutors you have for that term, so that each tutor can advise you on which lectures to attend.

If you have missed a number of lectures through illness or other reasons, please consult with your College Tutor for advice on catching up missed work.

2.1.1 Lectures in Philosophy

Lectures are vital for some Philosophy subjects, less so for others, and their role depends also on individual differences; get advice from your tutors and fellow students. Learn to take notes at lectures; they will be useful to you later, when you can fit them into a wider picture. Although in Oxford's system lecturers do not necessarily set or mark the University examinations, they are consulted by those who do, and the lecture prospectuses inform examiners as well as students about the content of lectures.

2.1.2 Lectures in Mathematics

You are likely to be advised that you should attend all lectures for the Mathematics courses you are taking.

Undergraduates are given a lot of advice at the start of their course on how to get the best out of mathematics lectures and on note-taking. Guidance is also given in the Mathematics Course Handbook:–

You are strongly recommended to read the notes *How do Undergraduates do Mathematics?* originally prepared by Professor Charles Batty with the assistance of Professor Nick Woodhouse with more recent updates by Dr Richard Earl, Prof Frances Kirwan and Dr Vicky Neale, available online at

https://www.maths.ox.ac.uk/system/files/attachments/study_public_0.pdf

You may also like to see what is said in another place; it is recommended that you visit Dr Körner's homepage at http://www.dpmms.cam.ac.uk/~twk/and read his advice on *How to listen to a Maths Lecture.*

3 Tutorials and classes

3.1 General

For the most part you will find that you are sharing tuition in Mathematics with those who are reading Mathematics, and tuition in Philosophy with those who are reading some other subject that involves philosophy (e.g. PPE). There are a few subjects that are special to this joint school, principally in the philosophy of mathematics, but usually you are not on your own. It is, however, desirable that your tutorials in Logic in Michaelmas Term of your first year are conducted at a more mathematically sophisticated level than would be the case if you were paired with a student from another joint School. There is a list of tutors willing to give such tutorials, possibly pairing you with an Mathematics & Philosophy student from another college, and your own college tutor should be aware of this. Get to know those who are reading the same subjects as you, and talk to them about your work (as well as other things). Undergraduates learn a great deal from one another.

What you have a right to expect is your tutor's attention (shared with one or sometimes two or more other tutees if the tutorial is for a pair or small group) and guidance throughout the hour agreed. Styles differ, depending on how many students are sharing the tutorial, the nature of the topic, and above all the habits and personality of your tutor. You must not expect uniformity, and you will gain most if you adapt to differences.

If you would like to receive tuition from a particular person in Oxford, ask the in-college tutor concerned; do not approach the person yourself, who cannot take you on without a request from your college. If you feel strongly that you are not getting on with one of your tutors, and that a change of tutor would be helpful, then say so to the tutor concerned, if that is not too embarrassing. Otherwise, approach one of the people in your college designated to help in such circumstances (Senior Tutor, Head of College, or one of those responsible for academic or personal welfare).

3.2 Tutorials in Philosophy

What you are expected to bring to a Philosophy tutorial is knowledge of the readings which have been set for it (or a variant on your own initiative if some items prove really

inaccessible) and almost always also an essay in which you address some aspect of the topic covered by the readings.

Work on a tutorial essay in philosophy involves library searches, reading, thinking, and writing. It should occupy a minimum of three days. Read attentively and thoughtfully, skipping bits that obviously do not bear on your topic: one hour of that is worth many hours of 'summarising' paragraph by paragraph with the music on. As your reading progresses, think up a structure for your essay (but do not write an elaborate plan which you won't have time to execute). Expect to have to worry out your thoughts, both during and after reading. Use essays to develop an argument, not as places to store information. You may assume that your tutor knows what is in the reading set, and is not interested in a simple re-hash of that. But he or she will be interested in your critical appraisal of what you have read, and any arguments of your own that bear upon the topic. At the same time, it is important that the relation of what you say in your essay to what you have read can be made explicit if discussion in tutorial turns on it, and for this reason, it is important to include page references to your readings for points you criticise or make use of.

You will learn a lot if you share and discuss ideas with your fellow students, and if you chance your arm in tutorials. Be enterprising, and be prepared to be wrong, for that is how one learns. (Remember that Oxford's system is not one of continuous assessment; it is what you can do at the end that matters, and not the various mistakes that you will inevitably make on the way.) And bear in mind that tutorials are not designed as a substitute for lectures, or for accumulating information, but to develop the capacity to think on the spot and to articulate your thinking clearly in responding to issues raised about ideas in the essay you or a tutorial partner are presenting. This means that note-taking, if it occurs in a tutorial at all, should be incidental to the dialogue.

Producing essays for philosophy tutorials gives excellent training in writing, and particularly in writing to a deadline. You will need to equip yourself with a writer's tools, most crucially a dictionary, such as the Concise Oxford Dictionary or the on-line Oxford English Dictionary (accessible on the Oxford University website), also a thesaurus, and a grammar such as Fowler's *Modern English Usage.*

3.3 Tutorials and classes in Mathematics

Tutorials in mathematics will vary from college to college and subject to subject. You are likely to have between one and three other students with you. You will normally have been set a problem sheet to do in advance. In the tutorial you will discuss this work and will probably have an opportunity to ask about any difficulties you may have. In order to get the best out of a tutorial it is very important that you are well prepared. You should have done the work and handed it in if this is expected (even if you have not been able to solve every problem). It is also a good idea to make a note of anything you want to ask about.

Lectures for Mathematics Preliminary Examinations and Part A are supported by problem sheets compiled by the lecturers. These are available on the Mathematical Institute website, together with any supplementary material produced to accompany the lectures. Many college tutors use these problems for their tutorials and classes; others prefer to make up their own problem sheets.

For Mathematics in Parts B and C most students attend inter-collegiate classes rather than

tutorials. Classes consist of between five and twelve students from a number of different colleges and are run by a tutor and a Teaching Assistant. For Part B there are generally 4 $1\frac{1}{2}$ hour classes for each 16-hour lecture course. There may, however, be some variation in this, particularly for courses involving a practical component. For Part C there is an introductory 45 minute workgroup followed by 3 $1\frac{1}{2}$ hour classes for each 16-hour lecture course. Students are set the problem sheets provided on the web by the lecturer; work has to be submitted to the Teaching Assistant by a specific time for marking. The problems are then discussed in the class.

4 Scheduling your work

You are advised to read the University's guidance on undertaking paid work at www.ox.ac. uk/students/life/experience.

4.1 The first year

4.1.1 Philosophy

As indicated in II.5, you will sit two three-hour examinations in Philosophy for Prelims at the end of Trinity Term, on Elements of Deductive Logic and on Introduction to Philosophy. The latter consists of two parts, General Philosophy, and Frege's *Foundations of Arithmetic*, and candidates are required to answer at least one question from each part of the paper.

Lectures

The Philosophy Faculty provides the following lectures relevant to the two Philosophy papers for Preliminary Examinations in Mathematics & Philosophy.

Elements of Deductive Logic

Michaelmas Term: 8 lectures on Introduction to Logic. These lectures are intended for all students in courses that include Philosophy who are taking Logic in their First Public Examination (most of which are Preliminary Examinations in which there is a single paper on Philosophy of which Logic is part of that paper, and Moderations in Physics & Philosophy, for which Elements of Deductive Logic is a whole paper).

Hilary Term: 8 lectures on Elements of Deductive Logic. These lectures are specifically to cover the parts of the syllabus and more mathematical approach specifically for Prelims candidates in Mathematics & Philosophy, Computer Science & Philosophy and in Physics & Philosophy.

Introduction to Philosophy

For **General Philosophy**

Michaelmas Term: 8 lectures. For all First Public Examinations with Philosophy.

Hilary Term: 8 lectures. For all First Public Examinations with Philosophy.

For **Frege, Foundations of Arithmetic**

Trinity Term : 8 lectures. For Preliminary Examinations in Mathematics & Philosophy.

Tutorials and classes

Tutorial and class teaching is the responsibility of colleges, and colleges differ as to when and how teaching for each subject is provided, though this variation is subject to the following general points.

Lectures for Frege, Foundations of Arithmetic are in Trinity Term because candidates need as background Elements of Deductive Logic. This means that tutorials on Frege, *Foundations of Arithmetic* should also be in Trinity Term. You should have between 5 and 8 tutorials on Frege in Trinity Term for which you write between 4 and 6 essays and have 1 or 2 revision tutorials. In Trinity Term you may also have some revision tutorials on Elements of Deductive Logic and on General Philosophy, but you should have all your substantive tutorials and classes for Elements of Deductive Logic and General Philosophy in Michaelmas and Hilary Terms, when the lectures are given. How these Philosophy tutorials and classes are divided between Michaelmas and Hilary Terms is subject to variation between colleges. Some colleges teach M&P students in Logic classes in MT with all Philosophy students in college. Some make separate provision for Logic teaching in MT for M&P and Physics & Philosophy students. In Hilary Term tutorials or classes for MP and PP on Logic and specific to the material and approaches to Elements of Deductive Logic for candidates in those two courses. Candidates generally have 8 tutorials for General Philosophy (exclusive of revision tutorials), distributed over Michaelmas and Hilary Terms or concentrated more in one of these two terms.

4.1.2 Mathematics

Lectures for the three Mathematics papers will be given as set out in Appendix A (VII.A). Details of the content of the courses can be found in the Mathematics & Philosophy Prelims Supplement.

The first year course is run as a joint venture with the Statistics Department. The official first year syllabus for the Preliminary Examination for 2018/19 is available in the Handbook Supplement online. Lecture synopses are also available online. The lecture courses form a co-ordinated programme, ensuring full and careful coverage, avoiding unnecessary duplication to help you prepare for the examinations. Reading lists are given alongside the synopses.

4.2   The second and third years

Mathematics courses taken in the second year are examined at the end of that year whereas all examining of second and third year work in Philosophy, as well as work for B1 Logic and Set Theory, takes place at the end of the third year.

In Michaelmas Term of the second year you will have lectures on each of the Part A core courses on *Linear Algebra* and *Metric Spaces and Complex Analysis.*

Lectures for Part A Mathematics *Long Options* (16 lectures each) are given in Michaelmas and Hilary Terms and for *Short Options* (8 lecture each) in Trinity Term. The options available to Mathematics & Philosophy students in 2018–2019 are listed in Appendix A (VII.A), available in the Mathematics & Philosophy Part A Supplement.

Papers B1.1 Logic and B1.2 Set Theory

Papers B1.1 Logic and B1.2 Set Theory, from the Honour School of Mathematics Part B, are compulsory for Mathematics & Philosophy students. The papers consist of Logic and Set Theory and play a central role in the course as a bridge between the two sides of the Joint School.

B1.2 Set theory in particular provides essential background for the compulsory paper on the Philosophy of Mathematics, which is normally studied in the first term of the third year. Papers B1.1 and B1.2 are examined in the third year but the Joint Committee for Mathematics and Philosophy **recommends** that B1.2 should be studied during the second term of the second year (by doing so students are able to draw on the background they have obtained from their study of Logic and of Frege's Foundations in their first year). Individual tutors and students may have reason also to arrange for B1.1 Logic to be taken in the second year, but this practice is not considered necessary by the Joint Committee in view of the study of Logic undertaken in the first year.

It will be for your tutor to decide, in consultation with you, when you should study B1.1 and B1.2, and what teaching you should receive. Inter-collegiate classes are provided for B1.1 and B1.2, as for other Part B units in Mathematics. **You may attend classes for each half either in your second year or in your third year but the Mathematical Institute will not permit you, except in exceptional circumstances and with the support of your tutor, to attend classes for either B1.1 or B1.2 in both your second year and your third year.** It is, of course, open to you to attend lectures in both years, and you might find it worthwhile to do so.

Philosophy in Part B

You will continue with your study of Philosophy during your second year, though you will not sit University examinations on this until the end of your third year.

The preparation for the Philosophy subjects is covered by lectures throughout the year. Students will normally cover the material of each subject in eight tutorials, perhaps with later revision. As a general rule, on the more central and popular subjects (which include Early Modern Philosophy and Knowledge and Reality) there will always be at least 16

lectures so that undergraduates may choose according to their own interests; on the less central and less popular subjects there will always be at least 8 lectures and often 16. You cannot guarantee that Philosophy tutorials can always be arranged to coincide with lectures in the same subject, and you must be prepared to attend lectures in advance of tutorials or the other way round.

It is obviously desirable that your work over your second and third years should be, as far as possible, distributed evenly. How best to achieve this will vary from one college to another, depending on the different teaching patterns favoured by a college's tutors, on students' choices of Mathematics options and Philosophy subjects, and on the timing of teaching for B1.

In total for Parts A and B together you will cover the equivalent of 8 3-hour papers (and in what immediately follows the term 'paper' is used as shorthand for 'equivalent of a 3-hour paper'). Each Philosophy subject counts as 1 paper; the Mathematics Part A Core counts as 2/3s of 2 papers and the Mathematics Part A Options as 2/3s of 1 paper (making Part A the equivalent of 2 papers in total); each half of B1 counts as 1/2 of a paper. Each paper is likely to be allocated 8 tutorials or class teaching equivalent to this. On this basis 2 papers can be covered each term.

Please note that from 2016/17 Part B Maths exams have increased in length from 1.5 to 1.75 hours but, in this context of scheduling work, are still considered the equivalent of 'half a paper'. The additional exam length is meant to give more time to solve the problems; the exams have not increased in difficulty.

It is reasonable to aim for the teaching for 7 of the 8 papers to be accommodated in year 2 and MT of year 3, excluding revision for topics examined in Part B. On the Philosophy side this would include 3 Philosophy subjects, including the compulsory component: one of subjects 101 and 102, and subject 122, with 101 or 102 studied first.

The Mathemmas Part A Core will normally be covered in Michaelmas Term of the second year and, on the Philosophy side, one of subjects 101 and 102. This gives a weight of slightly more than 2 papers, but should be manageable; if it is thought too heavy a load, 4 Philosophy tutorials could be given in MT and 4 in HT.

If B1.1 Logic classes are attended in MT of the second year, then it is likely that at most 4 Philosophy tutorials should be fitted in in Michaelmas Term, and even this would give a rather heavy load. But it is clearly desirable that the study of Philosophy should continue throughout the second year.

Most Part A Mathematics Long and Short Options are lectured in Hilary and Trinity terms, respectively. However Probability (a Long Option) is lectured in Michaelmas Term and Integral Transforms (a Short Option) is lectured in Hilary Term. Should you be interested in taking these options you are advised to consult with your tutors; it may well be easiest to postpone tutorials for these options for a term. In Hilary Term of the second year there should be time for 8 tutorials in Philosophy.

In Trinity Term, students will need to complete their primary study of the Mathematics Short Options (if applicable) and to revise for the Mathematics Part A papers. Alongside this they should study one Philosophy subject not studied earlier in the year, and depending on how time was allocated in the two preceding terms, perhaps also complete the primary study of a subject begun earlier.

The Philosophy subject to be studied in Trinity Term could be Philosophy of Mathematics, since by then B1.2 Set Theory should have been covered, and core lectures on Philosophy of Mathematics can have been attended in MT of the second year. However, the Joint Committee cannot advise everyone to study Philosophy of Mathematics in tutorials in Trinity Term. This is because first-years must have their tutorials on Frege's *Foundations of Arithmetic* in Trinity Term, and it is the same tutors who teach these two subjects. With teaching resources in this area already stretched, it is not possible for a high percentage of second years to have tutorials on Philosophy of Mathematics in Trinity Term. Colleges which have a tutor or college lecturer who teaches Philosophy of Mathematics may be in a position to provide these tutorials in Trinity Term, but colleges that need to find Philosophy of Mathematics teaching outside college are advised not to assume that they will be able to secure this for Trinity Term. Accordingly, the usual term in which to have tutorials in Philosophy of Mathematics is MT of the third year, during which term candidates should also be attending the core lectures for this subject.

Thus possible timetabling schemes can be based on:

Mathematics Part A Core	MT year 2
Mathematics Part A Options	MT + HT + TT year 2
B1.1 Logic	MT year 2 or MT year 3
B1.2 Set Theory	HT year 2
101 or 102	MT and/or HT year 2
122	TT year 2 or MT year 3
One other Philosophy subject	HT year 2 and/or TT year 2 or MT year 3

You can expect to have some support for your revision in the third year for subjects studied in the second year but not examined until the end of the third year.

4.3   The fourth year

There are no compulsory subjects in Part C, and you may choose to study entirely Mathematics (8 units), entirely Philosophy (3 subjects), or combinations of the two (6 units of Mathematics and one Philosophy subject, or 3 units of Mathematics 2 Philosophy subjects). All primary study of your choice of options should be completed by the end of Hilary Term, and the last deadline for work submitted for examination is for Philosophy essays of up to 5000 words, the M-level component of the study of a Philosophy subject in Part C, which are due by noon on Friday of 1st week of Trinity Term. Philosophy Theses are due by noon on Friday of 0th week of Trinity Term; Mathematics Dissertations are due by noon on the Monday of week 10 Hilary Term. It is clearly desirable to organise one's work in Part C so that the amount of work in Michaelmas Term is as near as possible equal to the amount in Hilary Term. If you're doing all Mathematics, this means aiming to do four subjects in each term. The Mathematical Institute facilitates such equal distribution by scheduling related subjects that are likely to be chosen together in different terms. Depending on when the exams of your chosen subjects are scheduled, you'll then have the first four to six weeks of Trinity Term for revision classes and individual study.

4.4 Study during vacations

Oxford University's official terms occupy less than half the year, and to master their courses students need to study during vacations as well as throughout each term. At the same time it is recognised that students need to use some of their vacation time for breaks from study and also, for many students, to earn money to support themselves during their course. Undergraduates in Oxford are said to 'read' for a degree and Mathematics & Philosophy has a strong reading component, especially on the Philosophy side. During term you will mostly move quickly from one article or chapter to another, picking out just what you need for your impending tutorial essay. Vacations are the time for more reflective attention to complete books and, in mathematics, for consolidating your new skills by working through key ideas and techniques on your own.

5 Choosing options

Your college tutors will be able to give you advice. Some preliminary work in the libraries, looking at the books recommended in the reading lists may also help. Past papers, and examiners' reports may give some of the flavour.

When making your choice you should consider not only options which you find interesting and attractive, but also the terms in which lectures and classes are held. Ideally your work in Michaelmas and Hilary terms should be spread evenly.

5.1 In Prelims

All subjects in the five papers in Prelims are compulsory. There is a choice of emphasis in the Introduction to Philosophy paper between the two parts of the paper, General Philosophy and Frege's Foundations of Arithmetic, in that you may choose to answer one question on General Philosophy and three questions on Frege, or the other way round, or to answer two questions from both sections.

5.2 In Part A

Besides the options in Pure Mathematics approved for Part A for Mathematics & Philosophy and listed in the M&P Part A Supplement, you may also, if you have the support of your Mathematics tutor, apply to the Joint Committee for Mathematics and Philosophy for approval of one or more other options available for Mathematics Part A and listed in the Mathematics Part A Supplement. It is also possible to apply for special permission to take options in Statistics and Computer Science. The application procedure is the same as for options in Mathematics.

Applications for approval must be made through the candidate's college and sent to the Chair of the Joint Committee for Mathematics and Philosophy, c/o Academic Administrator, Mathematical Institute, to arrive by **Monday of Week 2 of Hilary Term**. Be sure to consult your college tutors if you are considering asking for approval to offer one of these additional options.

Given that this option, which is in applied mathematics, presumes facility with some or other results and techniques covered in Maths Prelims or the core syllabus of Mathematics Part A not taken by Mathematics & Philosophy candidates, such applications tend to be uncommon and require some further work of the undergraduate.

5.3   In Parts B and C: general

In general, when choosing options, go for what interests you provided that your tutors think that your choices are suitable for you. But it's also a good idea to pay attention to what effect a given choice might have on future choices. For example, Early Modern Philosophy (101) is normally prerequisite to Philosophy of Kant (112). In the case of Philosophy options it is also worth bearing in mind that for two Philosophy subjects, one of which you will study in Part B and the other in Part C, and neither prerequisite to the other, it will be sensible to leave the one that interests you more deeply to Part C.

The Part C courses in logic and set theory are natural choices for MMathPhil students; your compulsory work for Part B will have prepared you well for all of these. Otherwise prerequisites are a particular issue in Mathematics, where many later courses draw on earlier ones. The lecture synopses will describe recommended 'background courses'. Many Mathematics courses in Part B and Part C depend to a greater or lesser extent on courses not included in the Mathematics & Philosophy course, and this is likely to constrain your choices. In general, almost all courses in Pure Mathematics in Part B and Part C will be feasible choices, provided you made appropriate choices in Part A or in Parts A and B, respectively. So it's a good idea to look ahead. Suppose you plan to do the MMathPhil and you think you might like to offer a Mathematics unit on Functional Analysis in Part C. Then you will need to have taken B4 Analysis in Part B, and for that, knowledge of the Part A option in Topology is highly desirable.

It should be noted that you may choose a course even though you have not done the background courses, but the lecturers and examiners will lecture and examine on the hypothesis that you have the background. If you wish to take a course and you have not taken the recommended background courses then you should consult one of your college tutors who can advise you on appropriate background reading.

There are Options Fairs run in the Mathematical Institute in Trinity term – of your second year for Part B and of your third year for Part C – where representatives from the different subject groups will discuss the individual Mathematics options and be available to answer any questions you may have.

5.4   Additional Mathematics options in Part B and C for which approval must be sought

Subjects in Schedules 1 and 2, as given in the Mathematics & Philosophy Part B Supplement and in Appendix A (VII.A) are automatically available for Part B. You may, if you have the support of your Mathematics tutor and providing that you are taking more than four mathematics units in Part B, apply to the Joint Committee for Mathematics and Philosophy for approval of one or more other options from the list of Mathematical Institute units and double-units given in the Mathematics Part B Supplement to the Mathematics Course

Handbook.

The same process also applies at Part C, where permission can be sought for approval of one or more other options from the list of Mathematical Institute units and double-units given in the Mathematics Part C Supplement. It is also possible to apply for special permission to take options in Statistics and Computer Science. The application procedure is the same as for options in Mathematics.

Applications for special approval must be made through the candidate's college and sent to the Chair of the Joint Committee for Mathematics and Philosophy, c/o Academic Administrator, Mathematical Institute, to arrive by **Friday of Week 5 of Michaelmas Term**. Be sure to consult your college tutors if you are considering asking for approval to offer one of these additional options.

Given that each of these additional options, which are all in applied mathematics, presume facility with some or other results and techniques covered in first or second year Mathematics courses not taken by Mathematics & Philosophy candidates, such applications will be exceptional. You should also be aware that there may be a clash of lectures for specially approved options and for those listed in Schedules 1 and 2 and for lectures in Philosophy; see the section in the Mathematics Part B Supplement on lecture clashes.

5.5   Registering for Mathematics courses in Parts B and C

Students taking Part B and Part C will be asked to register on-line for the departmentally-organised classes on Mathematics courses. Registration is required by the end of **week 10 of Trinity Term** in the academic year preceding the examination. Details of the procedure are given in the Mathematics & Philosophy Part B Supplement. You will need to nominate an alternative choice if you register for any course which has a quota. This applies to both History of Mathematics, Mathematical Education, and the Undergraduate Ambassadors' Scheme. A selection process for the latter takes place at the start of Michaelmas Term. The procedure is described in the Mathematics & Philosophy Part B Supplement.

Note that you are not permitted, except in exceptional circumstances, to attend classes for the same Part B course in both your second year and your third year.

6   Representation and communication

The course is administered by the Joint Committee for Mathematics and Philosophy, or JCMP (see II.1.2)

An undergraduate reading Mathematics & Philosophy serves as a representative on JCMP, which administers the course.

There are committees which seek to consult with undergraduates on matters relating to their course: the Philosophy Department's Undergraduate Joint Consultative Committee (UJCC) and the Mathematical Institutes Joint Consultative Committee with Undergraduates (JCCU). Both these committees have as members at least one undergraduate reading Mathematics & Philosophy. A member of JCMP serves as a member of the Mathematics JCCU.

There is also a Mathematics Undergraduate Representative Committee (MURC), which describes itself as "the line of communication between the body of undergraduates studying maths (and joint schools) at Oxford University and the Powers That Be. We also provide information for incoming maths students and a number of resources for current undergraduates". It has twice-termly meetings, runs a bookstall and maintains a website.

For information on the Mathematics JCCU and on MURC see https://www.maths.ox.ac.uk/members/students/undergraduate-courses/undergraduate-representation.

For information on the Philosophy UJCC see http://www.philosophy.ox.ac.uk/undergraduate/ujc_committee.

JCMP organises two events each year for all students reading Mathematics and Philosophy, a drinks reception in first week of Michaelmas Term, and a tea party in the first week of Trinity Term. These are opportunities for those reading Mathematics & Philosophy to meet each other and to talk with members of JCMP, and the Trinity Term tea party includes a general discussion between undergraduates and members of JCMP on issues concerning the course and the way it is taught. You are strongly encouraged to attend these events: we hope to see you there and to hear at first-hand your views on your course.

These systems of student representation require students willing to serve as representatives, and JCMP is grateful to all those who serve in these capacities. The other students reading Mathematics & Philosophy are encouraged to communicate any concerns they may have about the course through their student representatives, but they are also very welcome to communicate directly with JCMP, by writing to the Chair, Prof Jonathan Pila, via the Academic Administrator of the Mathematical Institute

`academic.administrator@maths.ox.ac.uk`.

We greatly hope you find your course rewarding, but we also very much welcome finding out from students on the course how it might be improved.

There is also undergraduate representation at Department, Faculty, and Divisional Board Meetings (though of course not necessarily by an undergraduate reading Mathematics & Philosophy). 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 along with information about student representation at the University level (see: http://ousu.org/).

7 Feedback

You will be asked to give feedback on lectures and class teaching to the faculty that has provided it, and on tutorial teaching to your college. The feedback which you provide to lecturers and tutors is valued and taken seriously. It has an important contribution to make to maintaining the quality of the education students receive at Oxford. The two faculties and the various colleges differ in the exact questions asked to elicit your assessment of lectures and tutorials, but in general they will ask your views on the amount and quality of teaching, reading materials, timeliness of comments on essays and tutorial performance, and feedback on your progress on the course. Colleges also arrange for you to hear or read reports written by your tutors and to make comments on them, and also for you to submit your own self-assessment of your progress to date and your academic goals.

Lecture questionnaire forms will be provided for you to comment on each set of lectures. They will be handed out by the lecturer around the middle or towards the end of the set of lectures, and further copies will be available from department or faculty offices. Completed forms may either be left for the lecturer at the end of the lecture or sent to the departmental office. The questionnaires you fill in are anonymous. For further details of the procedures for soliciting feedback in Mathematics, see the Mathematics Course Handbook; for the Maths Institute feedback forms see,
https://www.maths.ox.ac.uk/members/students/undergraduate-courses/undergraduate-representation/questionnaires.
For the Philosophy Faculty lectures questionnaire see http://www.philosophy.ox.ac.uk/lectures/undergraduate_questionnaire

The results of the questionnaires are seen by the Directors of Undergraduate Studies for Mathematics and for Philosophy. They are responsible for ensuring that problems with the delivery of particular courses identified through the questionnaire returns are discussed with the lecturers concerned, and addressed.

Students on full-time and part-time matriculated courses are surveyed once per year on all aspects of their course (learning, living, pastoral support, college) through the Student Barometer. Previous results can be viewed by students, staff and the general public at: http://www.ox.ac.uk/students/life/student-engagement. Final year undergraduate students are surveyed instead through the National Student Survey. Results from previous NSS can be found at http://www.unistats.com/. The results of both these surveys are discussed by the Teaching Committees and appropriate action agreed as necessary.

8   Learning from discussing your work with fellow students

Students may learn as much from talking and working together as from their teachers. College tutorials and classes are not just for a tutor to teach students, but for students to interact with each other in the learning process, and this process can and should continue outside tutorials and classes. The number of students reading Mathematics & Philosophy in a given year is relatively small (in comparison with the number reading straight Maths, or PPE, say), and you might be the only Maths & Phil student in your college in that year. But the material in the course is almost always studied by students reading Mathematics, or students reading other joint Philosophy courses, and college tutorials and classes will bring you into contact with them. In the rare cases where a subject is particular to Mathematics & Philosophy, for example Frege's *Foundations of Arithmetic* in Prelims, there will be centrally organized classes, as also Elements of Deductive Logic, shared just with Physics & Philosophy and Computer Science & Philosophy. You have the opportunity also to get to know fellow students studying your subjects through the lectures you attend. Also, as mentioned above under "Representation and communication", the Joint Committee for Mathematics and Philosophy organises a drinks party at the beginning of Michaelmas Term and a tea party at the beginning of Trinity Term to bring all undergraduates reading Mathematics and Philosophy together.

9   Language classes (third and fourth years)

The Mathematical Institute gives its third and fourth year undergraduates access to language classes in French and German or Spanish (in alternative years. A student's performance in these classes will not contribute to their degree classification. However, a certificate will be issued upon successful completion of the course. Students reading Mathematics have priority in registering for these classes, but if there are vacancies, places are offered to those reading for joint schools, and Mathematics & Philosophy students are invited to apply. For further details of the classes see https://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning#LanguageClasses.

Part IV

Assessment and examinations

1   Taking University examinations

General information, not specific to subject, is given on the University website at
http://www.ox.ac.uk/students/exams/.
Links are provided from this url to information on all aspects of University examinations.

1.1   College Collections

As well as a medium of instruction, the tutorial is a personally tailored form of continuous, formative assessment, and both you and your tutor will have a very good idea of how you are getting on. Almost all colleges require you to sit examinations called Collections in week 0 before each term. Collections do not contribute towards your final classification. They should not be confused with the University's Public Examinations (Prelims and Finals).

Collections are usually set on work done for a set of tutorials or college classes in the preceding term. Thus you can expect them throughout your course on the Philosophy side and in the first two years in Mathematics. The objectives of Collections are to test your comprehension of work already covered and to give you practice in writing timed papers. Make sure at the end of each term that you know the subjects of the next term's Collections.

1.2   Preparing for examinations

Philosophy

When planning your examination strategy it is important to bear in mind the nature of the examinations. Past exam papers for a given subject are a good guide to the sorts of questions that will be asked (so long as the syllabus has not changed), but the questions are set specially for each exam so that candidates must prepare a reasonably wide range of material to be prepared to answer whatever comes up. In Philosophy there is almost never a "correct" answer to a question, but there are clear criteria as to whether an essay is answering the question asked, and examiners penalise answers which do not specifically address the question set. Reproducing your tutorial essay on the topic of the question rather than answering that particular question will result in a low mark, even if the essay is quite good as an answer to a different question. The examiners in Philosophy are looking for your own ideas and convictions, and you mustn't be shy of presenting them as your own: whether you are conscious of inheriting them from somebody else doesn't matter. When you have selected a question, work out what it means and decide what you think is the answer to it. Then, putting pen to paper, state the answer and defend it; or, if you think there is no answer, explain why not. Do not present more background to the question than is required for answering that question. Don't write too much: going beyond a concise statement and defence of your answer risks irrelevance. Good examinees emerge from the examination room with most of their knowledge undisplayed. The number of questions that must or

may be answered will be specified in each paper, and there are penalties for answers to too few questions.

Mathematics

Your tutor will advise you about revision and practice. As well as any consolidation work done after the end of term, it is usual to spend much of Trinity Term revising work for that year's examination. In subjects which have been taught in previous years, past examination papers are a good guide to the sort of examination question that you might be set. Please note that the syllabus for the examination may have changed, and is certainly not determined by what appeared in past papers. Your tutor will be able to give you advice on how relevant particular past papers are.

In Mathematics the criterion for a correct answer to a question is clear (examiners work hard in setting questions to make this so), though there are almost always a number of different ways to give a correct solution, some more efficient or elegant than others, and there is scope for wide variation in clarity of exposition.

General

Make sure that, well in advance of the examinations, you brief yourself thoroughly as to the format and rubrics of the papers you will be taking; see IV.3.

You may find it useful to your preparation for University examinations to know the following practical details concerning these examinations. You will be provided with booklets of A4 paper in which to write your answers; these are of lined paper for Philosophy papers and of unlined paper for Mathematics papers. You must write in ink, rather than pencil, though you may use pencil for any graphs and diagrams.

Students will find past papers most valuable when used in conjunction with corresponding examiners' reports which are posted online at http://www.maths.ox.ac.uk/members/ students/undergraduate-courses/examinations-assessments/examiners-reports. Examiners' reports will include generic feedback on the co-hort performance and may highlight common difficulties or mistakes made in the examinations.

1.3 Accessing materials related to examinations

You will find useful material on the Mathematical Institute website concerning examinations under

http://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments

This information includes Examiners' Notices to Candidates for the various examinations for the present and/or preceding year, and Examiners' reports for 2000 onwards. These reports contain numerical data on examination results as well as comments from the Examiners on the examination overall and on candidates' performance on individual papers.

You will also find, at
http://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments/past-papers,

recent past papers for Mathematics, including those for Mathematics & Philosophy. Finals papers in Philosophy are accessible on the Philosophy website at http://www.philosophy.ox.ac.uk/undergraduate-study. Recent past Oxford University examination papers for all undergraduate degrees can be downloaded from the University's OXAM website http://www.oxam.ox.ac.uk.

To access past papers from outside the Oxford domain you will need to use the University's VPN service giving remote access; see V.**??** below.

1.4   Entering for University Examinations

Entry for the Prelims examinations happens automatically when you register at the beginning of the year. Information about entering for examinations in future years is available online at http://www.ox.ac.uk/students/academic/exams along with guidance on alternative examination arrangements.

1.5   Examination Timetables

The starting dates of examinations for Prelims, and Parts A, B and C of the FHS, don't usually vary much from one year to the next. You can expect the examinations to be scheduled as follows:

Preliminary Examinations: week 9 of Trinity Term.

Part A: weeks 8 and 9 of Trinity Term.

Part B: generally spread over weeks 5–8 of Trinity Term, starting with Philosophy papers and with the first Mathematics paper no earlier than the start of week 6.

Part C: generally in weeks 5–7 of Trinity Term, with Mathematics papers in week 6–7.

Examination timetables are published on the web at

http://www.ox.ac.uk/students/academic/exams/timetables

some weeks ahead of the examination start date. A personal timetable, showing your own papers and the dates, times and locations at which they will take place, will be published online at least two weeks before your first examination.

1.6   Procedures for University examinations

Before the examinations you will receive at least one *Notice to Candidates* from the examiners to give you the details of the examination procedure. These notices are also published

online at http://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments/examination-conventions.

For all mathematics examinations no books or tables may be taken into the examination room. Calculators are not normally permitted and you should follow instructions in notices sent to you by the Chair of Examiners regarding calculators.

Together with your personal timetable you will receive notification of a randomly allocated *candidate number* which you will use to identify your scripts, instead of your name and college.

Please write your examination papers LEGIBLY. If an examiner has to struggle to decipher your writing, especially in a Philosophy paper, the flow of what you are saying is lost and the examiner wastes time when time is at an extreme premium (having to mark well over a hundred scripts in just a few weeks while carrying on with other duties). University regulations authorise examiners to require that illegible scripts be typed, but this is a very cumbersome procedure for all concerned, used only as a last resort. The cost of invigilating the typing of illegible scripts is borne by the candidate.

Information on (a) the standards of conduct expected in examinations and (b) 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) are available on the Oxford Students website www.ox.ac.uk/students/academic/exams/guidance.

Your attention is drawn to the information concerning University examinations contained in the Student Handbook,

https://www.proctors.ox.ac.uk/handbook/handbook/

Section 8, Examinations. Please note in particular the subsections dealing with late submission of entries and late alteration of options; special examination needs; special circumstances (including illness and medical certificates); complaints. You should also be aware of the University's rules concerning withdrawal from, or failure to complete, an examination. These are summarised in Section 8 of the Student Handbook and set out in full in the *Examination Regulations*, Part 14; for the consequences of failure to submit coursework see IV.2.4 below.

For each examination (Prelims, Part A, Part B and Part C) the departments nominate a board of examiners, which is made up of internal examiners and, for the second public examinations, external examiners (academics from another university). Assessors may also be appointed to assist the examiners. Formally, the examiners are independent of the Departments and of those who lecture courses. However, the examiners are expected to consult with course lecturers in the process of setting questions. It must be stressed that to preserve the independence of the examiners, students are strictly prohibited from contacting examiners directly about matters relating to the content or marking of papers. If you are unhappy with an aspect of your assessment you may make a complaint or appeal (see Appendix F.3). The names of all examiners can be found in the relevant Examination Conventions.

You will be able to access your results via the Student Self Service https://evision.ox.ac.uk. The Academic and Assessment Results page within Student Self Service gives details of all your assessment results (examination papers and/or submissions) and the overall result for

the year (if applicable).

1.7 University Standardised Marks

The marks for each individual examination paper or assessment you sit will be reported as University Standardised Marks (USMs). The object of the USMs is to allow direct comparison between the results of examinations in different subjects. Raw marks are turned into USMs by recalibration, sometimes necessary to ensure that all papers are fairly and equally rewarded. The correspondence between the USM ranges and classes in a classified examination is according to the following rules:

- 70-100: First Class
- 60-69: Upper Second Class
- 50-59: Lower Second Class
- 40-49: Third Class
- 30-39: Pass
- 0-29: Fail

These marks reflect the qualitative descriptors given in the Examination Conventions 4.

2 Assessed coursework

You may be interested in offering options examined wholly or in part by submitted coursework:

in Part B: Thesis (subject 199) in Philosophy, BO1.1 History of Mathematics, BN1.1 Mathematics Education & BN1.2 Undergraduate Ambassadors' Scheme, BEE Mathematical Extended Essay and BOE "Other Mathematical" Extended Essay (for the constraints on choices regarding these see II.6.4.3 and the Mathematics & Philosophy Part B Supplement);

in Part C: Mathematics Dissertation (double-unit) and Philosophy M-level Thesis.

Also, if you offer a Philosophy unit in Part C other than a Thesis you will be assessed on a submitted essay as well as a written paper; see IV.3.4.

2.1 Extended Essays and Dissertations in Mathematics

Those interested in offering an extended essay at Part B or dissertation at Part C should consult the Project Guidance Notes https://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning/projects

For full information on the project options, including submission deadlines, please consult the Mathematics & Philosophy Part B and Part C Supplements.

2.2 Theses in Philosophy

Candidates may offer a Philosophy thesis in Part B and/or Part C. A thesis in Part B is subject 199 in the list of Philosophy subjects given in the Examination Regulations.

A thesis in Part C is governed by the Special Regulations for the Honour School of Mathematics and Philosophy, in the Examination Regulations. You are advised to read these Regulations carefully.

The deadline for seeking approval of your proposed topic for a Philosophy Thesis for Part B or Part C is Friday of Week 4 of the Michaelmas Term preceding the examination.

The application for approval of topic is submitted to the Director of Undergraduate Studies, c/o the Undergraduate Studies Administrator, Faculty of Philosophy, Radcliffe Humanities, and should consist of your proposed title and an explanation of the subject in about 100 words and a letter of approval from your tutor. But you can seek approval earlier and it's a good idea to do so before you put in a lot of work. Begin thinking about a thesis topic during the Easter Vacation of the preceding year, and have a talk with a tutor during that Trinity Term. If the tutor thinks that the subject is manageable, get some initial suggestions for reading and follow them up. Remember that tutors can only advise: the decision to offer a thesis is your own, and so is the choice of topic. So of course is the work; what makes a thesis worthwhile is that it is your own independent production. Don't worry if the outline of your topic in an early application is not in the end very closely adhered to: the point of it is to make clear the general subject of the thesis and to show that you have some idea how to go about tackling it. If later you wish to alter the title of your thesis, that should not be a difficulty, but you must apply in the same way for permission to do so. (This is so that the Chair of Examiners knows what to expect.)

The Regulations state that you may discuss with your tutor the field of study, the sources available, and the method of presentation. Before you start work, go over the plan of the whole thesis very carefully with your tutor. The plan must be yours, but the tutor can help you make sure that the plan is clear, coherent and feasible. Get more advice on reading. But bear in mind that much of your reading will be discovered by yourself, so arrange to be in Oxford, or near a large library, for some weeks of the vacation.

Don't let your topic expand or your reading range too widely; 20,000 words is the length of two articles, not a book. Your tutor may also read and comment on drafts, subject to the constraint that the amount of assistance the tutor may give is equivalent to the teaching of a normal paper, so tutorial sessions can be used for trying out drafts of parts of the thesis. However, you have to write the finished version on your own: make sure you allow plenty of time: almost certainly more will be needed than you first expected. You must not exceed the limit of 15,000 words for a Part B Philosophy Thesis, 20,000 words for a Part C Philosophy Thesis, excluding bibliography. That will probably, to your surprise, become a problem; but the exercise of pruning is a valuable one, encouraging clarity and precision which you should be aiming for in any case.

Some general advice: (i) explain in your introduction just what you are going to do, and in what follows present the argument, step by step, in as sharp a focus as you can achieve: (ii) it is much better to be candid about difficulties than to sweep them aside or fudge issues, and you should show that you appreciate the force of counter-arguments; (iii) bad grammar

and bad spelling diminish clarity and detract from an overall impression of competence.

Your bibliography should list all works to which you refer, plus any others you have used that are relevant to the final version. The style for references can be modelled on any recent philosophy book or periodical. The rules for format and submission are in the Examination Regulations.

If for any reason you expect to submit your thesis late, consult your Senior Tutor in good time. The Proctors may grant permission (in which case payment of a fine for late-presentation may be required). If permission is refused the thesis may be rejected or it may be accepted but penalised by reducing its mark in accordance with the Examination Conventions. (See also IV.2.4 below).

2.3   Important deadlines

As noted elsewhere in this Handbook, you need to take action if you wish to request a 'non-standard' option or to obtain approval to be examined on a nominated piece of coursework (essay, dissertation, or thesis). The table below collects together the deadlines for such requests, and to whom they should be sent. In each case the term specified is that in the academic year in which the examination is to be taken.

	application deadline	application to	via	Ref.
Part A additional schedule options	Fri. week 2, HT	Chair of JCMP	Academic Administrator Math. Inst.	III.5.2
Part B Extended Essay in Mathematics	Fri. week 0, MT	Chair, Projects Committee	Deputy Academic Administrator, Math. Inst.	III.2.1
Part B Philosophy Thesis topic	Fri. week 4, MT	Director of Undergraduate Studies, Phil. Faculty	Undergraduate Studies Administrator, Phil. Faculty	III.2.2
Part B & C additional Schedule 2 option	Fri. week 5, MT	Chair, JCMP	Academic Administrator, Math. Inst.	III.5.4
Part C Philosophy Thesis topic	Fri. week 4, MT	Director of Undergraduate Studies, Phil. Faculty	Undergraduate Studies Administrator, Phil. Faculty	III.2.2
Part C: Special essay topic on a Philosophy subject	Fri. week 6, HT	Director of Undergraduate Studies, Phil. Faculty	Undergraduate Studies Administrator, Phil. Faculty	IV.3.4
Part C Mathematics Dissertation	Fri. week 3, MT*	Chair, Projects Committee	Deputy Academic Administrator, Math. Inst.	III.2.1

*Students choose from a pre-approved list of abstracts published on Friday week 0, MT.

For submission deadlines for assessed coursework see the Examination Regulations.

2.4   Penalties for late submission of assessed work or failure to submit

The Examination Regulations stipulate specific dates for submission of the required pieces of coursework to the Examiners. This includes, in Mathematics, History of Mathematics coursework, Mathematics Education coursework, Undergraduate Ambassadors' Scheme coursework, Extended essays and Dissertations and, in Philosophy, Theses and submitted Essays in Part C.

Rules governing late submission and any consequent penalties are set out in the 'Late Submission of Work' subsection of the 'Regulations for the Conduct of University Examinations' section of the Examination Regulations, Part 14 available at

https://www.admin.ox.ac.uk/examregs/2018-19/rftcoue-p14ls-n-snawfromexam/.

3   Format of papers (2019 examinations)

For marking and classification conventions see Section IV.4, Examination Conventions.

3.1   Preliminary Examination 2019

All candidates take five papers, *viz.*

Mathematics I

Mathematics II

Mathematics III(P)

Elements of Deductive Logic

Introduction to Philosophy

Mathematics I and II have seven questions and candidates should attempt at most five questions; Mathematics III(P) has six questions and candidates should attempt at most 4 questions. Each question is marked out of 20 marks and is divided into two to four parts. The marks for each part will be given on the examination paper.

There is a 3-hour paper on each of Elements of Deductive Logic and Introduction to Philosophy. Candidates must submit answers to four questions in each paper.

The examination paper on Introduction to Philosophy consists of two parts (a) General Philosophy, and (b) Frege: studied in conjunction with Frege, *Foundations of Arithmetic.* All candidates in Mathematics & Philosophy must answer at least one question on General Philosophy and at least one question on Frege and four questions in total. The General Philosophy part of the examination is as in other First Public Examinations with Philosophy.

3.2 Final Honour School: Part A 2019

In Part A each candidate shall be required to offer four written papers in Mathematics from the schedule of papers for Part A (given below). These must include A0 and A2, and also two of A3, A4, A5, A8, ASO, making a total of 7.5 hours assessment.

At the end of the Part A examination a candidate will be awarded a 'University Standardised Mark' (USM) for each Mathematics paper in Part A. The four USMs will be carried forward into the classification awarded at the end of the third year. In the calculation of any averages used to arrive at the final classification, the USMs for A2 will have twice the weight of the USMs from the other three papers.

The Schedule of Papers

Schedule of papers can be found in the supplement here
https://courses.maths.ox.ac.uk/node/37777

Paper A0 - Linear Algebra   This paper will contain 3 questions set on the Core material in Linear Algebra for Part A of the FHS of Mathematics. The paper will be of $1\frac{1}{2}$ hours duration. Candidates may submit answers to as many questions as they wish, of which the best 2 will count. Each question is out of 25 marks.

Paper A2 - Metric Spaces and Complex Analysis   This paper will contain 6 questions set on the Core material in Metric Spaces and Complex Analysis for Part A of the FHS of Mathematics. The paper will be of 3 hours duration. Each question is out of 25 marks. Candidates may submit answers to as many questions as they wish, of which the best 4 will count.

Papers A3 (Rings and Modules), A4 (Integration), A5 (Topology) and A8 (Probability)   These papers will contain questions on the Long Option subjects as above. Each paper will be of $1\frac{1}{2}$ hours duration. In each paper there will be 3 questions. Candidates may submit answers to as many questions as they wish, of which the best 2 will count.

Paper ASO   This paper will contain one question on the following nine Short Options:

- Integral Transforms

- Number Theory

- Group Theory

- Projective Geometry

- Introduction to Manifolds

- Calculus of Variations

- Graph Theory

- Special Relativity

- Mathematical Modelling in Biology

The paper will be of $1\frac{1}{2}$ hours' duration. Candidates may submit answers to as many questions as they wish, of which the best 2 will count.

3.3 Final Honour School: Part B 2019

The form of assessment for single and double units in Mathematics is indicated in the Supplement, https://courses.maths.ox.ac.uk/overview/undergraduate#36638 and likewise, for any additional options approved under Schedule 2, Syllabus and Synopses for the Honour School of Mathematics Part B. Except for options BO1.1: History of Mathematics and BN1: Mathematics Education/ Undergraduate Ambassadors' Scheme, BEE Mathematical Extended Essay and BOE Other Mathematical Extended Essay, assessment is by a 3-hour paper for a Philosophy subject and a $1\frac{3}{4}$-hour paper for a Mathematics unit.

The number of questions on a Philosophy exam paper varies but the standard rubric states that candidates must "answer three questions".

For a single Mathematics unit there are three questions on each paper and the rubric states "candidates may submit answers to as many questions as they wish: the best two will count".

3.4 Final Honour School: Part C 2019

Candidates offer a total of eight units in Mathematics and/or Philosophy.

The form of assessment for Mathematics units and double units is set out in the Syllabus and Synopses for Part C of the Honour School of Mathematics https://courses.maths.ox.ac.uk/overview/undergraduate#37105 In the case of assessment wholly by written examination each single unit paper will be of $1\frac{3}{4}$ hours' duration. There are three questions in each single unit. For a $1\frac{3}{4}$-hour paper the rubric states "candidates may submit answers to as many questions as they wish: the best two will count".

Each Philosophy unit, other than a Thesis, is examined in a 3-hour paper together with a submitted essay of not more than 5,000 words.

Part C essays for each permitted Philosophy subject consist of the questions set for the most recent examination of that subject in Honour Schools with Philosophy, with the following exceptions:

- The multiple passages for comments on Plato: Republic (subject 115)

- The multiple passages for comments on Aristotle: Nicomachean Ethics (subject 116)

- The formal exercises on Philosophical Logic (subject 127);

(these questions consist of passages for comment from the set text and so are not suitable as essay topics). Past examination papers can be downloaded from http://www.oxam.ox.ac.uk (see V.**??** below). Normally the most recent paper will be that set in the previous academic year. But note that in any given year examinations may not be set on every subject. This explains why topics are taken from the most recent paper rather than from the previous year's paper.

You may apply for approval of essay topics not prescribed by writing to the Director of the Undergraduate Studies, Philosophy Faculty, c/o the Undergraduate Studies Administrator, Faculty of Philosophy, Radcliffe Observatory Quarter, giving the title you propose, together with an explanation of the subject and enclosing a letter from your tutor attesting to the suitability of this topic for you. Any such application must be received no later than Friday of the sixth week of the Hilary Term preceding the Part C examination for which the essay is to be submitted. Late applications will not be considered. Any such application shall be accepted or rejected within two weeks of its being received.

4 Examination Conventions for Marking and Classification

Examination conventions are the formal record of the specific assessment standards for the course or courses 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, progression, resits, use of viva voce examinations, penalties for late submission, and penalties for over-length work.

The definitive version of the conventions is made available online each October at http://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments/examination-conventions. Modifications must be published to prospective candidates not less than one whole term before the examination takes place.

5 Prizes

In **Mathematics**

The following University prizes are available. They are awarded by the Examiners and no application is required.

- Two Gibbs Prizes are available for overall performance of Mathematics and Philosophy candidates, one for performance in the Preliminary Examination in Mathematics and Philosophy; one for performance in the Honour School of Mathematics and Philosophy Part A.

- Two Gibbs Prizes are available for performance in Mathematics papers for candidates in the Honour School of Mathematics and Philosophy: one of the prizes is available for performance in Part B; one of the prizes is available for performance in Part C.

- Two IBM prizes of £250 each, are available for performance in Mathematics papers for candidates in Preliminary Examinations.

In **Philosophy**

- The Faculty of Philosophy Prize recognises performance in Philosophy in the Preliminary Examination in Mathematics and Philosophy.

- Two Gibbs Prizes, one for Part B and one for Part C, are available for performance in Philosophy.

- The Henry Wilde Prize, value £500, may be awarded each year for an outstanding performance in Philosophy in any of the Honour Schools involving Philosophy.

  The Examiners in Part B will nominate a candidate in that examination whose performance in the Philosophy papers in Part B gives them a reasonable chance of winning the prize. The prize is open to all candidates in Part B, whether or not they plan to go on to Part C.

- The Elizabeth Anscombe Thesis Prize, value £100, is awarded to the best FHS Thesis across all FHS's involving Philosophy.

The above prizes are awarded on the nomination of the Examiners and no application is required.

In addition there is a Philosophy prize for which suitably qualified students may apply.

- Candidates who have passed Part B are eligible to enter for the John Locke Prize in Mental Philosophy, worth £500, since they satisfy the requirement to have passed all the examinations requisite to the Degree of Bachelor of Arts of the University, provided that they may not take the examination later than the tenth term from that in which they completed the said examinations. This prize is awarded on the basis of two three-hour examinations which are set during Michaelmas Term. Intending candidates must submit an application form, which may be obtained, along with further details of the Prize, from the Graduate Studies Administrator of the Philosophy Faculty, Radcliffe Observatory Quarter, early in Michaelmas Term.

Part V

Resources and facilities

1 Departmental facilities

The Mathematical Institute

The mezzanine teaching floor of the Mathematical Institute, Andrew Wiles Building, contains three lecture theatres (L1–L3), three smaller lecture rooms (L4–L6) and six classrooms (C1–C6).

The area also contains an undergraduate study room with desk space for about 40 people, along with sockets for personal laptop use. There is wifi throughout the building. The departmental desktops in the room are currently for the sole use of first year students without laptops to work on the Computational Mathematics projects.

The mezzanine area also hosts a café with seating and tables for 100; serving drinks, snacks and meals at competitive prices.

Also found on the mezzanine is the work hand–in area for third/fourth year intercollegiate classes.

The building is accessible to undergraduates during the opening hours 8am–6pm

The Faculty of Philosophy

The Faculty of Philosophy, in the Radcliffe Humanities building at the Radcliffe Observatory Quarter in Woodstock Road, is open from 7.00 to 20.00, Monday to Friday and 8.00 to 14.00 on Saturday during term and 9.30 to 16.30 in other weeks. The Faculty operates an access control system and you will need your University Card to gain entry. The administrative offices, found on the first floor, are generally closed between 13.00 and 14.00. The Faculty is closed for about ten days at Christmas and Easter, and for five weeks from the beginning of August to early September. The Philosophy and Theology Faculties Library is found on the same site. All enquiries should be directed to the Secretarial Assistant. A few members of the Philosophy Faculty have offices in this building, though most are housed in their colleges. The philosophy website at http://www.philosophy.ox.ac.uk contains further useful information.

2 Libraries

The library provision in Oxford University is very good but can seem rather complex. Mathematics & Philosophy students will need to use a variety of libraries during their time in Oxford. Your local college library will have a good selection of books which can be borrowed. Each library is equipped with computers for searching databases and catalogues, and for checking email and printing. A more extensive range of books will be available from the relevant University libraries. Brief information about each of these libraries is listed below. Looking up the web page, picking up a paper guide or asking library staff can provide you with further information about specific services or the rules and regulations of

each library.

Admission: The University Card, which is distributed by your College, will be required to enter and/or to borrow books or order items from closed stacks. The best policy is to always carry your University Card with you. (If you lose your University Card, request a replacement as soon as possible from your College Office.)

Induction: There are induction sessions for all Mathematics & Philosophy students during 0th week. You will be taught how to use SOLO, a search and discovery tool for the Oxford Libraries' huge collections of resources, OLIS, the Oxford University library catalogue, and OxLIP, the local interface to a large selection of subject databases and internet resources. These sessions take place in the Faculty of Philosophy Lecture Room. You will receive further instructions from your College about the timing of these sessions.

Finding books: Begin by checking SOLO for items featured on your reading lists. Ask library staff for assistance if you cannot find the books you need. You can recommend new book purchases via the library's website.

Finding journal articles: First look for the title of the journal you need using SOLO. If you do not know the issue or the page number of the article, ask library staff who can help you search for the item in one of the many subject databases available from OxLIP+, e.g. Philosopher's Index. Many journals are now available electronically through OU e-Journals for reading or printing. Feel free to ask library staff for further information and assistance!

Borrowing from a library or reading in the library: Once you have found the books or journal articles you wish to read you may be able to borrow the item from a lending library or you can read a reference copy in a Bodleian Library Reading Room (see individual libraries' websites for details). In addition your college library will often have lending copies of items on reading lists.

IT: Printing, copying, and scanning: The PCAS system in operation across the Bodleian Libraries Group offers a range of services (see the link from the Bodleian Libraries website), paid for using an online account topped up by a debit/credit card.

Opening hours: These vary between libraries and are longer during term-time than in vacations; see individual libraries' websites for details.

Library	Main subjects covered	Web address
BOD Philosophy Reading Room	Philosophy	www.bodleian.ox.ac.uk/bodley
Philosophy Faculty Library	Philosophy	www.bodleian.ox.ac.uk/philosophy
Radcliffe Science Library	Science and Medicine	www.bodleian.ox.ac.uk/science

We hope you will enjoy using Oxford's libraries.

Please respect other library users and take care of library books and facilities.

2.1 Copyright law

The copying of books and journals and the use of self-service photocopiers are subject to the provisions of the Copyright License issued to the University of Oxford by the Copyright Licensing Agency for the copying (from paper on to paper) of:

- up to 5% or one complete chapter (whichever is the greater) from a book;

- up to 5% or one whole article (whichever is the greater) from a single issue of a journal;

- up to 5% or one paper (whichever is the greater) from a set of conference proceedings.

3 IT

The University is committed to making available computer facilities sufficient to cover the course-work requirements of undergraduates. Your computing requirements will be supported primarily by departmental and college IT staff.

All students will be automatically allocated a University email account and may register for further services with IT Services. IT Services are located at 13 Banbury Road and offer facilities, training and advice to members of the University in all aspects of academic computing. You can find more information at https://www.it.ox.ac.uk/. The Guide to IT at Oxford for New Users is available online at https://www.it.ox.ac.uk/want/get-started.

Colleges have PCs (and in some cases Macs), mostly networked, for the use of junior members. Many college students' rooms are wired with ethernet points to enable students to connect their own PCs to the network. There is a concern for computer security and anyone opening an account must agree to abide by the University's rules. At Oxford there is a University disciplinary procedure for enforcing the rules, and breaches of them will involve the Proctors with all the sanctions and penalties available to them.

Some University webpages are NOT available from outside the Oxford network. If you are regularly using a computer outside the Oxford network, you need to set up VPN. Instructions on how to do this can be found at:

https://help.it.ox.ac.uk/network/remote/index

4 The Language Centre

The *Language Centre* provides resources and services for members of the University who need foreign languages for their study, research or for personal interest, and also to improve English language skills.

Language courses in 10 languages, the Language Library (consisting of over 13,000 textbooks with accompanying audio-visual material in over 180 languages) and its study area (computer-based learning resources and audio/video study rooms) are available to junior members of the University pursuing a course. Those in possession of a University Card must present it when they register at the Centre. You can find more information at http://www.lang.ox.ac.uk/

There may be an opportunity for Mathematics and joint schools students who have studied some French, German or Spanish to take a course in the third or fourth year. This will not count towards your degree class but you will receive a certificate upon passing the course.

5 Careers and employability

Careers guidance is provided by the *Careers Service*, and at a personal level by college tutors. Careers advisers carry out guidance interviews with students, discussing with them their skills and aspirations. The Careers Service also provides training in writing applications, interview techniques and analysis of transferable skills. The Careers Service provides information about occupations and employers and advertises work experience opportunities.

Members of the Faculty who have taught you are usually willing to provide support and references. For those interested in a mathematically-based career, the Careers Service provides a link-person, who has expertise in areas where mathematicians (including students of Mathematics & Philosophy) are often in demand, for example, in finance careers. College tutors are regularly updated on Careers Service activities.

In addition to its general programme, the Careers Service runs an annual 'Jobs for Mathematicians' half-day, in collaboration with the Mathematical Institute. At this event there are talks from alumni currently working in jobs suitable for mathematicians. The event also helps students consider their transferable skills. You can find more information at http://www.careers.ox.ac.uk.

The Mathematics Undergraduate Representation Committee (MURC) has set up an emailing list for careers and studentship information,to which you could sign up. You can do this by sending a blank message to `murc-jobs-join@maths.ox.ac.uk`. The system will confirm your request and once that is completed you will be registered to receive careers information.

A significant proportion of students continue on to further study after completing their undergraduate degree. A talk on postgraduate study is included in the annual 'Jobs for Mathematicians' event and further information about postgraduate study opportunities at the Mathematical Institute can be found at https://www.maths.ox.ac.uk/study-here/postgraduate-study. Your college tutors will also be able to provide guidance and support.

If you are considering graduate work in philosophy, and in particular if you are considering taking Oxford's flagship 2-year taught graduate course in philosophy, the BPhil, then your attention is drawn to II.7.3, concerning the financial implications of choices you might wish to make.

6 University lectures

University **lectures** in all subjects are open to all students. A consolidated **lecture list** is available on the University website at:

http://www.ox.ac.uk/students/academic/lectures/.

Seminars and colloquia given in the Mathematical Institute, often by mathematicians of international repute, are announced on the departmental notice boards; although usually aimed at faculty and research students, all interested in the subject are welcome to attend.

7 Student support and Welfare

7.1 College support

Your college tutors in Mathematics and in Philosophy will provide you with support and guidance on your academic work.

You will almost certainly also be assigned a Personal Tutor or Advisor (who may be one of your College Tutors) concerned with your personal welfare and to whom you can turn for support and advice on non-academic matters.

Every 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 are available more widely in the University are available from the Oxford Students website (www.ox.ac.uk/students/welfare), including in relation to mental and physical health and disability.

7.2 Other sources of support

Nightline: This is a confidential anonymous listening service run by and for Oxford students, and open 8pm–8am in term-time. You can phone them (Tel. (2)70270) or visit their offices at 16 Wellington Square. See http://users.ox.ac.uk/~nightln/for more information.

University Student Counselling Service: The University has a professionally-staffed confidential Student Counselling Service for assistance with personal, emotional, social, and academic problems. The service is available free to all matriculated undergraduate members of the University and contact details can be found at http://www.ox.ac.uk/students/welfare/counselling/.

7.3 Disability Related Study Support

The University operates a Code of Practice to provide equality of opportunity for those with special educational needs/disabilities. The University and the colleges are committed to making arrangements to enable students with disabilities to participate as fully as possible in student life. The University's Equality and Diversity Unit is responsible for considering the issues facing disabled staff and students of the University, improving access to University buildings for people with impaired mobility, and providing support to disabled staff and students. Detailed information about provision and sources of assistance, including the University's Disability Statement and the Access Guide for People with Disabilities which gives details about the accessibility of most University buildings, can be accessed at http://www.admin.ox.ac.uk/eop/ Further information and advice is available from the University Disabilities Advisory Service http://www.ox.ac.uk/students/welfare/disability, by email to `disability@admin.ox.ac.uk` or by telephoning 01865 (2)80459.

Local information on access resources can be found from the following sources.

Philosophy

See the Philosophy Faculty website at http://www.philosophy.ox.ac.uk . The Disability Co-ordinator for the Philosophy Faculty is Dr Hilla Wait. Observations or complaints concerning disablement issues should be addressed via college or departmental disability contacts—details can be obtained from the University Disability Office or from websites.

Mathematics

See the Mathematical Institute Departmental Disability Statement reproduced in VII.E.

For details of provision and sources of information for students with disabilities, see the University's Code of Practice on equal opportunities given in VI.4 and the Mathematical Institute Departmental Disability Statement in VII.E.

8 Study Skills

Much of the advice and training in study skills will come in the regular tutorial and class teaching your college arranges for you. In these sessions, and in preparation for them, you will develop your powers of expression and argument. Further advice can also be found on the following webpages.

"How do Undergraduates do Mathematics?": https://www.maths.ox.ac.uk/system/files/attachments/study_public_0.pdf.

The Projects Committee's Guidance on the choice and preparation of extended essays and dissertations: http://www.maths.ox.ac.uk/members/students/undergraduate-courses/teaching-and-learning/projects.

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 - through the Oxford Students website: http://www.ox.ac.uk/students/academic/guidance/skills.

9 Enterprising Oxford

http://www.eship.ox.ac.uk/
Enterprising Oxford is an online map and guide to innovation and entrepreneurship in Oxfordshire, developed here at the University of Oxford. Start at the beginning, with Entrepreneurship 101, to discover how being entrepreneurial can help with research or employability, or go straight in to Explore & Build your idea. Read about entrepreneurs at all stages of the journey, mingle with successful startups, and find creative ways to fund your ideas and initiatives. Whether you have an idea, a start-up or a well and truly established venture, Enterprising Oxford highlights opportunities to develop further or help support others.

If you would like any further information please contact leah.thompson@mpls.ox.ac.uk

10 Contact points (for 2018–2019)

Mathematical Institute

There are a number of people in the department who can help you with any queries or problems you may have and their contact details are given below. If you are not sure who to contact please email `academic.administrator.ox.ac.uk`.

Director of Undergraduate Studies Dr Richard Earl (tel: (6)15202)
email: `director-ugrad-studies@maths.ox.ac.uk`
General academic queries and concerns.

Academic Administrator Mrs Charlotte Turner-Smith (tel: (6)15203)
email: `academic.administrator@maths.ox.ac.uk`
Disability Co-ordinator for Mathematics.

Deputy Academic Adminstrator Ms Gemma Proctor (tel: (6)15204)
email: `proctor@maths.ox.ac.uk`
Queries relating to JCCU, Part B and Part C projects and the Part B and Part C exams.

Academic Assistant Ms Nia Roderick (tel: (6)15205)
email: `roderick@maths.ox.ac.uk`
Queries relating to Prelims and Part A exams, the lecture list, lecture notes and other teaching material for students requiring disability-related study support and queries relating to registration for Part B and C courses and sign-up for intercollegiate classes.

Academic Assistant Ms Victoria Waterson (tel: (6)15206)
email: `acadadmin@maths.ox.ac.uk`
Queries relating to registration for Part B and C courses and sign-up for intercollegiate classes.

Chair of the Mathematics Projects Committee Dr Richard Earl (tel:(6)15202)
email: `earl@maths.ox.ac.uk`
Advice on Part B extended essay and Part C dissertation, including selecting a topic and finding a supervisor

Faculty of Philosophy

Director of Undergraduate Studies Prof Paul Lodge (tel: (2)76577)
email: `paul.lodge@philosophy.ox.ac.uk`
General academic queries and concerns.

Undergraduate Studies Administrator Mr James Knight (tel: (2)76925)
email: `james.knight@philosophy.ox.ac.uk`
Queries relating to the lecture list and undergraduate studies.

Administrative Assistant Mr Joe Williams (tel: (2)76926)
email: `admin@philosophy.ox.ac.uk`
General enquiries

MURC

General
  webpage: https://www.maths.ox.ac.uk/members/students/undergraduate-courses/
  undergraduate-representation/murc
  Contains the list of college representative who you can contact to raise an issue related
  to the teaching of the mathematics and joint schools degrees. Matters can also be
  sent to the MURC chairperson.

President Chris Fitzpatrick, St Peter's College
  email: `catherine.fitzpatrick@spc.ox.ac.uk`

Invariants

General
  webpage: http://www.invariants.org.uk

President Diana Mocanu, Hertford College
  email: `president@invariants.org.uk`

Mirzakhani Society

General
  email: `mirzakhanisociety@gmail.com`

General

Careers Service Enquiries (tel: (2)74646)
  email: `reception@careers.ox.ac.uk`

  Website http://www.careers.ox.ac.uk/

Disability Advisory Service (tel: (2)80459)
  email: `disability@admin.ox.ac.uk`

Counselling Service (tel: (2)70300)
  email: `counselling@admin.ox.ac.uk`

Proctors' Office (tel: (2)70090)
  email: `proctors.office@proctors.ox.ac.uk`

Equal Opportunities Officer (tel: (2)89825)
  email: `equal.opportunities@admin.ox.ac.uk`

Accessible Resources Acquisition and Creation Unit (tel: (2)83862)
  email: `aracu@bodleian.ox.ac.uk`

Oxford University Student Union, Vice President (Welfare) (tel: (2)88452)
  email: `welfare@ousu.ox.ac.uk`

IT Services email: `contact@it.ox.ac.uk`

Radcliffe Science Library (tel: (2)72800)
email: `enquiries.rsl@bodleian.ox.ac.uk`

11 Useful websites

Mathematical Institute

http://www.maths.ox.ac.uk/

Faculty of Philosophy

http://www.philosophy.ox.ac.uk/

Department of Statistics

http://www.stats.ox.ac.uk/

Department of Computer Science

http://www.cs.ox.ac.uk/

Lecture timetables

http://www.maths.ox.ac.uk/members/students/lecture-lists
http://www.philosophy.ox.ac.uk/lectures

Information about remote access to the University restricted pages (VPN service)

https://www.maths.ox.ac.uk/members/it/faqs/undergrads

Philosophy WebLearn information on courses and examinations

https://weblearn.ox.ac.uk/portal/hierarchy/humdiv/philfac/undergradu

Information about examinations on the Mathematical Institute website

http://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments

Archive of past exam papers 2000–2017

http://www.oxam.ox.ac.uk/

Unofficial archive of past exam papers 1991–2017

https://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments/past-papers

Examiners' reports 2000-2017

https://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments/examiners-reports

How do Undergraduates do Mathematics? Institute Notes

https://www.maths.ox.ac.uk/system/files/attachments/study_public_0.pdf

Information on the *Joint Consultative Committee for Undergraduates*

https://www.maths.ox.ac.uk/members/students/undergraduate-courses/undergraduate-representation/jccu

General information for students provided by the University

http://www.ox.ac.uk/students

Part VI

University Policies and Other Important Documents

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 http://www.ox.ac.uk/students/academic/regulations/a-z. Particular attention is drawn to the following University and Departmental policies.

1 Plagiarism

Plagiarism is presenting someone else's work or ideas as your own, with or without their consent, 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. Plagiarism may be intentional or reckless, or unintentional. Under the regulations for examinations, intentional or reckless plagiarism is a disciplinary offence. Please see the University's guidance on plagiarism http://www.ox.ac.uk/students/academic/guidance/skills/plagiarism for further information.

2 Intellectual Property Rights

The University in its Statutes claims ownership of certain forms of intellectual property which students create in the course of, or incidentally to, their studies. There are arrangements in the University's regulations for protecting and exploiting this property, and sharing the commercial exploitation revenues with the student originators. By accepting a place at Oxford and signing the Student Contract with the University, you agree to be legally bound by these provisions. The regulations relating to intellectual property can be found on the University website at www.admin.ox.ac.uk/rso/ip.

3 Code on Harassment

The Mathematical Institute has appointed two senior members who may be consulted in connection with the University's Code on Harassment. Details are posted in the Mathematical Institute undergraduate study room.

4 Disabilities and Equal Opportunities

The University is committed to making arrangements where appropriate to enable students with disabilities to participate fully in student life. Please see the University's Equal Opportunities Statement available at

http://www.admin.ox.ac.uk/eop/missionstatement/integratedequalitypolicy/, and the Mathematics Departmental Disability Statement in Appendix VII.E.

5 Safety

You are urged to act at all times responsibly, and with a proper care for your own safety and that of others. Departmental statements of safety policy are posted in all departments, 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.

They should also note that in the Institute accidents should be reported immediately to Reception, telephone 73525, who keep the accident book. 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.

Each lecture theatre has its own proper escape route and you are urged to familiarise yourself with these. Those for the Mathematical Institute lecture and seminar rooms, are set online at https://www.maths.ox.ac.uk/members/building-information/security-safety-and-reporting-building-issues. In the case of evacuation of the lecture theatre give heed to the instructions of the lecturer.

Part VII

Appendices

A Courses offered in 2018–2019

Preliminary Examinations: programme of lectures (all subjects compulsory)

Mathematics

Michaelmas Term

Introduction to University Mathematics	8 lectures
Introduction to Complex Numbers	2 lectures
Linear Algebra I	14 lectures
Analysis I	15 lectures
Introductory Calculus	16 lectures
Probability	16 lectures

Hilary Term

Linear Algebra II	8 lectures
Groups and Group Actions I	8 lectures
Analysis II	16 lectures

Trinity Term

Groups and Group Actions II	8 lectures
Analysis III	8 lectures

Philosophy

Michaelmas Term

Introduction to Logic	8 lectures
General Philosophy	8 lectures

Hilary Term

Elements of Deductive Logic	8 lectures
General Philosophy	8 lectures

Trinity Term

Frege, Foundations of Arithmetic	8 lectures

Part A: programme of lectures

Core (all subjects compulsory)

Michaelmas Term

A0: Linear Algebra	16 lectures
A2: Metric Spaces and Complex Analysis	32 lectures

Options

Courses covered by 16 lectures are Long Options, those covered by 8 lectures are Short Options.

Michaelmas Term

Probability	16 lectures

Hilary Term

Rings and Modules	16 lectures
Integration	16 lectures
Topology	16 lectures
Integral Transforms	8 lectures

Trinity Term

Number Theory	8 lectures
Group Theory	8 lectures
Projective Geometry	8 lectures
Introduction to Manifolds	8 lectures
Calculus of Variations	8 lectures
Graph Theory	8 lectures
Special Relativity	8 lectures
Mathematical Modelling in Biology	8 lectures

For information on additional courses available by special approval see III.5.2.

Part B

Mathematics: list of units

See also the Supplement to the Mathematics & Philosophy Handbook for Part B 2018-19 https://courses.maths.ox.ac.uk/node/36637.

(B1.1 and B1.2 are compulsory)

Schedule 1 (standard units)

The following are units unless otherwise stated.

B1.1	Logic
B1.2	Set Theory

B2.1	Introduction to Representation Theory
B2.2	Commutative Algebra

B3.1	Galois Theory
B3.2	Geometry of Surfaces
B3.3	Algebraic Curves
B3.4	Algebraic Number Theory
B3.5	Topology and Groups

B4.1	Functional Analysis I
B4.2	Functional Analysis II
B4.3	Distribution Theory and Fourier Analysis: An Introduction

B8.1	Probability, Measure and Martingales
B8.2	Continuous Martingales and Stochastic Calculus
B8.4	Information Theory
B8.5	Graph Theory

SB3a	Applied Probability

Schedule 2 (additional units and double-units)

The following are single unless otherwise stated.

BEE	"Mathematical" Extended Essay	double unit
BO1.1	History of Mathematics	double unit
BOE	"Other Mathematical" Extended Essay	double unit
OCS1	Lambda Calculus and Types	
OCS2	Computational Complexity	
OCS3	Knowledge Representation and Reasoning	
OCS4	Computer-aided Formal Verification	
BN1.1	Mathematics Eduction	
BN1.2	Undergraduate Ambassadors' Scheme	

And also

Any other unit or double-unit course from the list of Mathematical Institute units in Part B for which special approval has been granted.

Philosophy (Subject **122** is compulsory and at least one of subjects **101** and **102** must be chosen)

    101   Early Modern Philosophy
    102   Knowledge and Reality
    103   Ethics
    104   Philosophy of Mind
    106   Philosophy of Science and Social Science
    107   Philosophy of Religion
    108   The Philosophy of Logic and Language
    109   Aesthetics and the Philosophy of Criticism
    110   Medieval Philosophy: Aquinas
    111   Medieval Philosophy: Duns Scotus and Ockham
    112   The Philosophy of Kant
    113   Post-Kantian Philosophy
    114   Theory of Politics
    115   Plato, *Republic*
    116   Aristotle, *Nicomachean Ethics*
    117   Frege, Russell, and Wittgenstein *(Note 117 is likely to be unavailable in 2019)*
    118   The Later Philosophy of Wittgenstein
    120   Intermediate Philosophy of Physics
    122   Philosophy of Mathematics
    124   Philosophy of Science
    125   Philosophy of Cognitive Science
    127   Philosophical Logic
    128   Practical Ethics - *first examination in 2018*
    199   Thesis

Part C

Mathematics

See also the Supplement to the Mathematics & Philosophy Handbook for Part C 2018-19 https://courses.maths.ox.ac.uk/node/37104.

The following are single units unless otherwise stated.

C1.1 Model Theory

C1.2 Godel's Incompleteness Theorems

C1.3 Analytic Topology

C1.4 Axiomatic Set Theory

C2.1 Lie Algebras

C2.2 Homological Algebra

C2.3 Representation Theory of Semisimple Lie Algebras

C2.4 Infinite Groups

C2.5 Non-Commutative Rings

C2.6 Introduction to Schemes

C2.7 Category Theory

C3.1 Algebraic Topology

C3.2 Geometric Group Theory

C3.3 Differentiable Manifolds

C3.4 Algebraic Geometry

C3.5 Lie Groups

C3.7 Elliptic Curves

C3.8 Analytic Number Theory

C3.9 Computational Algebraic Topology

C3.10 Additive and Combinatorial Number Theory

C4.1 Functional Analysis

C4.8 Complex Analysis: Conformal Maps and Geometry

C8.1 Stochastic Differential Equations

C8.3 Combinatorics

C8.4 Probabilistic Combinatorics

CCD Dissertations on a Mathematical Topic (double unit)

CCS1 Categories, Proofs and Processes

CCS2 Quantum Computer Science

CCS3 Automata, Logic and Games

CCS4 Computational Learning Theory

COD Dissertations on a Topic Related to Mathematics (double unit)

And also

Any other unit or double unit course from the list of Mathematics Department units for which special approval has been granted.

Philosophy

As for Part B, except for

- the exclusion of Subject 122;

- the substitution of an M-level Thesis for Subject 199.

B Informal Descriptions of FHS Philosophy Courses

The Informal descriptions of all the subjects for examination in Honour Schools with Philosophy are available on the Faculty of Philosophy website:

https://www.philosophy.ox.ac.uk/course-descriptions-finals

They should be read in conjunction with the official stipulation of the examination syllabus of each of these subjects in the *Examination Regulations.*

It is helpful in understanding what a subject encompasses also to look at past exam papers set for that subject (in doing this you may need to check if the past paper you are looking at was set on the present syllabus, and be aware if not how the syllabus in force when that paper was set differs from the current one). Past exam papers are available on the University's website from Oxford Examination Papers Online (OXAM) http://www.oxam.ox.ac.uk.

C Programme Specifications

C.1 Aims and Objectives common to all undergraduate degree courses with Philosophy in Oxford

The Faculty of Philosophy shares the University's general aims as found in its Mission Statement.

In providing teaching in Philosophy it aims, by drawing on the strengths of the University and of its constituent Colleges, to provide a high-quality education, one which enriches the student's knowledge and understanding of fundamental issues.
Undergraduates may study Philosophy in Oxford as a degree subject in one of seven Joint Honours programmes. Their common aims are:

(1) to offer a structured but flexible programme of studies, one which entails the demands and the benefits of studying Philosophy in tandem with another discipline, and which allows study of an interdisciplinary nature;

(2) to develop in students qualities and skills of value to them in their professional and personal life;

(3) to attract and select high calibre students in the context of the University's policy on equal opportunities.

For all programmes it aims to appoint research-active staff to contribute their knowledge and skills to the teaching programmes.

OBJECTIVES

At all levels students will enjoy a challenging education in Philosophy. They will:

(1) have developed the ability to read carefully and with sensitivity to context philosophical texts of different ages and/or traditions, through following a guided programme of regular reading assignments;

(2) have been required to develop and to present (usually in writing) to their tutor/supervisor their own critical understanding of the issues studied;

(3) have learned to engage in critical dialogue with their tutors and peers during regular tutorials, i.e. meetings between an expert tutor and one, two or occasionally three students, at which the participants' views are discussed, and have benefited from the oral and/or written feedback on their work for tutorials;

(4) have enjoyed, through the University and their College, access to excellent library holdings and a good range of IT resources, and have learned to use libraries effectively;

(5) have had the opportunity to attend lectures and/or seminars (many given by leading researchers) both within and outside their chosen options, together with a range of special lectures and Philosophy society meetings.

Through the above they will:

(6) have acquired knowledge and understanding of philosophy;

(7) have developed the ability to think critically, to look for underlying principles, to identify and analyse key concepts;

(8) have developed independence of approach, good writing skills, a facility for independent learning and investigation, and good organisational skills.

In addition they will:

(9) have had the opportunity to participate in a wide range of extra-curricular activities at College and University level to stimulate personal development;

(10) have received sustained academic support from their tutors and pastoral support where appropriate from other providers;

(11) have had the opportunity of appropriate careers advice.

Undergraduate Programmes

All seven programmes are multi-disciplinary. Three of them, (Physics/Phil, Maths/Phil, and Phil/Theol) require interdisciplinary study. Appropriate 'bridge subjects' are available for each of the other programmes, but are not required. For their first year examination(s) in Philosophy students will have:

(1) pursued a course which introduces them to central philosophical texts and issues, and enables them to acquire key philosophical skills and concepts. After the first examinations students work towards Finals. On completion, all will have:

(2) taken an active role in planning a path through their programme, selecting subjects within each discipline and the balance between Philosophy and the other discipline(s), and will have benefited from the simultaneous study of both disciplines at a higher level;

(3) developed enhanced precision of thought and expression in the analysis of problems and in the construction and marshalling of arguments;

(4) received regular feedback through tutorials and regular reports, together with College examinations where considered appropriate, to enable them to assess their progress and identify strengths and weaknesses;

(5) taken the Final written examinations in up to five Philosophy subjects at a time, thus enjoying the benefit of a mature understanding and possible cross-fertilisation between subjects.

C.2   Educational aims of the Mathematics programme

- to provide, within the supportive and stimulating environment of the collegiate university, a course in mathematics and philosophy of the highest academic quality which attracts highly able students from the U.K. and abroad;

- to instil an understanding of the nature of mathematics, including logic as a natural bridge with philosophy, and of mathematical thinking;

- to enable students to appreciate the interest and importance of philosophical questions on a variety of topics, including the philosophy of mathematics, and to contribute to the discussion of these questions;

- to enhance understanding of both mathematics and philosophy by parallel study of these related disciplines with particular emphasis on the inter-disciplinary subjects of logic and philosophy of mathematics;

- to provide a learning environment which draws on the wide-ranging talents and expertise of staff in both mathematics and philosophy and challenges and encourages students, with their differing needs, interests, and aspirations, to reach their full potential, personally and academically;

- to develop transferable skills related to problem solving, as well as promoting the ability to think independently, to develop powers of critical analysis, of sustained argumentation and of clear and effective communication both orally and in writing;

- to bring students to a position on graduation that allows them to choose confidently from many different careers, and enables them to contribute rapidly to their chosen employment

and for students taking the 4-year MMathPhil (Hons):

- to provide the foundations for graduate study for a research degree at a leading university, in the UK or abroad, in either mathematics or philosophy.

Mathematics Programme Outcomes

Students will develop a knowledge and understanding of	Related teaching/learning methods and strategies
1. The core areas of pure mathematics, and the basic ideas of some areas of specialisation.	1. In the first four terms of the programme there are lectures on algebra, analysis, and geometry supported by discussion with a tutor in college-based tutorials or small classes. In the second half of the second year, a choice of lecture courses is supported by college based tutorials or small classes.
2. The correct use of mathematical language and formalism in mathematical thinking and logical processes.	2. Example in lectures in the first two years, practice in weekly problem sheets, with critical feedback by college tutors, tutorial discussion, printed notes of guidance (also available on the web).
3. The elements of the foundations of mathematics.	3. Lectures in the first and second years in Logic and Set Theory, supported in the first year by college-based tutorials and classes, and in the second year by problem classes conducted by subject specialists.
4. Some area or areas of specialisation in pure mathematics. Advanced topics in pure mathematics for those students who choose the options that reach this level.	4. Lectures in the third and fourth years delivered by lecturers actively engaged in research, together with supporting problem classes conducted by subject specialists.

D Recommended Patterns of Teaching

Part: Prelims (Year 1)

Course structure: there are 13 compulsory courses plus two introductory courses.

Paper	Term	Dept Lectures	Classes	College Tutorials	Classes	Comments
Mathematics Units						
Introduction to University Mathematics (MI)	MT	8		2		Weeks 1–2
Introduction to Complex Numbers (MII)	MT	2		0		Week 1 only
Linear Algebra I (MI)	MT	14		4		
Analysis I (MII)	MT	15		4		
Introductory Calculus (MIII(P))	MT	16		4		
Probability (MIII(P))	MT	16		4		Lectured by Dept. of Statistics.
Linear Algebra II (MI)	HT	8		2		
Groups and Group Actions (MI)	HT	8		2		
	TT	8		2		
Analysis II (MII)	HT	16		4		
Analysis III (MII)	TT	8		2		
Philosophy Units						
Introduction to Logic	MT	8		2		
General Philosophy	MT	8		2		
Elements of Deductive Logic	HT	8		2		
General Philsophy	HT	8		2		
Frege, Foundations of Arithmetic	TT	8		2		
Notes: All first year lecture courses are supported by tutorials organised by colleges. The normal expectation is that a 16-hour lecture course is supported by 4 one-hour tutorials or the equivalent in small classes. It may be the case that a tutorial or class addresses several lecture courses, rather than being solely dedicated to a single lecture course.						

Part: Part A (Year 2)

Course structure: there are 2 compulsory core courses (A0 & A2), 9 long options courses (A3–A5 & A8 or ASO) from which students choose 2. ASO comprises 9 short options from which students usually study 3 courses.

Paper	Term	Lectures	Classes	Tutorials	Classes	Comments
A0 Linear Algebra	MT	16		4		
A2 Metric Spaces and Complex Analysis	MT	32		8		
A3 Rings and Modules	HT	16		4		
A4 Integration	HT	16		4		
A5 Topology	HT	16		4		
A8 Probability	MT	16		4		Lectured by Dept. of Statistics.
ASO Number Theory	TT	8		2		Weeks 1–3
ASO Group Theory	TT	8		2		Weeks 1–3
ASO Projective Geometry	TT	8		2		Weeks 1–3
ASO Introduction to Manifolds	TT	8		2		Weeks 1–3
ASO Integral Transforms	HT	8		2		
ASO Calculus of Variations	TT	8		2		Weeks 1–3
ASO Graph Theory	TT	8		2		Weeks 1–3
ASO Special Relativity	TT	8		2		Weeks 1–3
ASO Mathematical Modelling in Biology	TT	8		2		Weeks 1–3
Notes: All second year lecture courses are supported by tutorials organised by colleges. The normal expectation is that a 16-hour lecture course is supported by 4 one-hour tutorials or the equivalent in small classes.						

Part: Part B (Year 3)

Course structure: Students take 4 units of Mathematics from Schedule 1, two of which shall be B1.1 Logic and B1.2 Set Theory, 3 units in Philosophy and either 2 further units in mathematics from Schedules 1 and 2 combined or 1 further subject in Philosophy.

Paper	Term	Lectures	Classes	Tutorials	Classes	Comments
		Dept		**College**		
Mathematics Units – Schedule 1						
B1.1 & B1.2	MT/HT	16	6			Compulsory units.
B2.1, B2.2, B3.1, B3.2, B3.3, B3.4, B3.5, B4.1, B4.2, B4.3, B8.1, B8.2, B8.4, B8.5	MT	16	6			
SB3a Applied Probability	MT	16	6			Taught by Dept. of Statistics.
Mathematics Units – Schedule 2 additional units						
BEE Mathematical Extended Essay ⋆	MT/HT	2		6		The balance of tutorials between MT and HT is agreed between the student and supervisor.
BOE Other Mathematical Extended Essay ⋆	MT/HT	2		6		The balance of tutorials between MT and HT is agreed between the student and supervisor.
BO1.1 History of Mathematics ⋆	MT	16	6			
	HT	12				Reading course consisting of 8 seminars.
BN1.1 Mathematics Education	MT	16	4			Taught in conjunction with the Dept. of Education.
BN1.2 Undergraduate Ambassadors Scheme	HT	4	4			Taught in conjunction with the Dept. of Education. Students are on placement in a school for 0.5 days per week. Lectures are delivered via a vodcast.
Computer Science Units						
Lambda Calculus and Types	HT	16	7			Taught by Dept. of Computer Science.
Computational Complexity	HT	16	6			Taught by Dept. of Computer Science.
Knowledge Representation and Reasoning	HT	16	6			Taught by Dept. of Computer Science.
Computer-aided Formal Verification	MT	16	6			Taught by Dept. of Computer Science.
Philosophy Units						
122 and 101 or 102 ⋆	MT	8–16		8		Compulsory units. Lectured by Faculty of Philosophy.
101-118, 120, 122, 124, 125 and 127, 128 and 198 ⋆	MT/HT	8–16		8		Lectured by Faculty of Philosophy.

Notes:

In Part B, intercollegiate classes are arranged in place of college tutorials for the Mathematics, Statistics and Computer Science lecture courses. For some lecture courses, there may not be sufficient students to run an intercollegiate classes and tutorials will be arranged instead. It is recommended that 4 hours of tutorials are provided for a 16 hour lecture course. Colleges may decide to opt out of the intercollegiate class scheme and teach their students in tutorials for a particular course.

In addition to the classes, drop-in consultation sessions are arranged in Trinity term by way of revision for those lecture courses assessed by written examination. Please note that courses marked with a ⋆ are double units.

Part: Part C (Year 4)

Course structure: students take the equivalent of 8 units at Part C. Students shall take one of the following:
8 units in Mathematics;
or 3 units in Mathematics and two units in Philosophy;
or 3 units in Philosophy

Paper	Term	Dept Lectures	Dept Classes	College Tutorials	College Classes	Comments
Mathematics Units						
C1.1, C1.2, C1.3, C1.4. C2.1, C2.2, C2.3, C2.4, C2.5, C2.6, C2.7, C3.1, C3.2, C3.3, C3.4, C3.5, C3.7, C3.8, C3.9, C3.10, C4.1, C4.8, C8.1, C8.3, C8.4	MT/HT	16	6			
CCD Dissertation on a Mathematical Topic ⋆	MT/HT	2		6		The balance of tutorials between MT and HT is agreed between the student and the supervisor.
COD Dissertation on a topic related to mathematics ⋆	MT/HT	2		6		The balance of tutorials between MT and HT is agreed between the student and the supervisor.
Computer Science Units						
Categories, Proofs and Processes	MT	20	7			Taught by Dept. of Computer Science.
Quantum Computer Science	MT	24	7			Taught by Dept. of Computer Science.
Automata, Logic and Games	HT	24	7			Taught by Dept. of Computer Science.
Computational Learning Theory	MT	24	4			Taught by Dept. of Computer Science.
Philosophy Units						
101-118, 120, 124, 125, 127, 128, and 199 ⋆	MT/HT	8–16			8	Lectured by Faculty of Philosophy.

Notes:
In Part C, intercollegiate classes are arranged in place of college tutorials for the Mathematics, Statistics and Computer Science lecture courses. For some lecture courses, there may not be sufficient students to run an intercollegiate classes and tutorials will be arranged instead. It is recommended that 4 hours of tutorials are provided for a 16 hour lecture course. Colleges may decide to opt out of the intercollegiate class scheme and teach their students in tutorials for a particular course.
In addition to the classes, drop-in consultation sessions are arranged in Trinity term by way of revision for those lecture courses assessed by written examination. Please note that courses marked with a ⋆ are double units.

Please note that in the case of teaching provided by colleges, these figures are the departmental recommendations only and individual colleges may provide different amounts of types of teaching than those stated above for a variety of reasons (e.g. individual student needs or differing number of contact hours depending on tutorial group size).

E   Mathematical Institute Departmental 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 Academic Administrator [tel: 01865 615203, email academic.administrator@maths.ox.ac.uk] at the earliest possible opportunity. The Academic Administrator will notify those directly involved with teaching and scheduling lectures. In some instances, it may be possible for lecturers to provide students with lecture notes, even when they are not posted on the Mathematical Institute website.

F   Complaints and Appeals

F.1   Complaints and academic appeals within the Mathematical Institute.

The University, the MPLS Division 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.

F.2   Complaints

If your concern or complaint relates to teaching or other provision made by the faculty/department, then you should raise it with Director of Undergraduate Studies for Mathematics (Dr Richard Earl) or Philosophy (Prof. Paul Lodge) as appropriate. If your concern relates to the course as a whole, rather than to teaching or other provision made by one of the faculties/departments, you should raise it with the chair of the Joint Committee for Mathematics and Philosophy (Prof. Jonathan Pila). 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. Mike Giles). 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 (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.

F.3   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 subject or 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 (https://www.ox.ac.uk/students/academic/complaints).