
# HANDBOOK
## FOR THE UNDERGRADUATE COURSE IN
# MATHEMATICS AND PHILOSOPHY
# 2010 – 2011

**Joint Committee for Mathematics and Philosophy**

**UNIVERSITY OF OXFORD**

# About this Handbook and other sources of information

This Handbook is issued to all undergraduates reading Mathematics & Philosophy and gives information, advice and guidance about the course. You will be provided each year with a new edition of the Mathematics & Philosophy Handbook. This contains up-to-date information for the current academic year for all years of the course.

This Handbook should be read in conjunction with two publications which together stipulate the content of the course. These are

- The University of Oxford *Examination Regulations* (commonly referred to as the Grey Book);
- The Handbook for the Undergraduate Mathematics Courses including its Supplements, issued by the Mathematical Institute.

At the start of your course you will be issued in hardcopy form the current Grey Book and Mathematics Course Handbook. In addition you will be provided with any necessary Supplements to the Mathematics Course Handbook, including those giving current syllabuses and synopses of lecture courses.

The Grey Book specifies the formal structure of all Oxford degree courses and the Regulations governing these. It also gives detailed examination syllabuses in certain subjects, including Philosophy. In some subjects, including Mathematics, detailed syllabuses may vary from year to year and they are published not in the Grey Book but in the appropriate course handbook.

There is no Philosophy Course Handbook covering philosophy in the various degree courses in which it forms a component. The Grey Book itself is therefore the primary source for the regulations concerning Philosophy, and it contains detailed syllabuses of the philosophy subjects you will study in your course. You are referred also to the appendix to this Handbook, VII.2, 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 Grey Book. instead, Synopses are issued annually for each year of the Mathematics courses. These constitute supplements to the Mathematics Handbook and contain the formal syllabuses for the courses as well as more detailed and informal descriptive material. In addition you will find in the Mathematics Course Handbook some general information of relevance to all undergraduates taking courses involving Mathematics.

For ease of reference, Appendix A (VII.1) of this Handbook lists the courses available in all four years of the Mathematics & Philosophy degree for the current academic year. This amalgamated list may also be useful to students planning their pathways through the successive stages of the course.

Note that the information about the Mathematics & Philosophy course given in this Handbook supplements rather than supplants the Examination Regulations, which you should consult in conjunction with the Handbook. This Handbook provides explanations of the Regulations in the Grey Book, but the Grey Book is always definitive. For further information on the formal documentation specifying the requirements for your degree course, please refer to II.2 below.

## Accessing important sources of information

Virtually all the information you will need, including this Handbook, the Grey Book, and the Mathematics Course Handbook (including Supplements) can be accessed electronically. If you require hardcopy course documentation in a format different from that in which it is normally issued please contact the Academic Administrator in the Mathematical Institute, `academic.administrator@maths.ox.ac.uk`.
The Mathematical Institute web-site address is

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

and that of the Philosophy Centre is

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

This Handbook is available on-line at

`http://www.maths.ox.ac.uk/current-students/undergraduates/handbooks-synopses/`
or at
`http://weblearn.ox.ac.uk/site/human/philosophy/handbooks/ughandbook/` .
The Grey Book is at
`http://www.admin.ox.ac.uk/examregs`
(for the links to particular sections of the Grey Book specifying Regulations for Mathematics & Philosophy see Section II.2 below).
The web page of the Mathematical Institute
`http://www.maths.ox.ac.uk/current-students/undergraduates`
provides links to all the course documentation for the Mathematics courses, including current and recent issues of the Mathematics Course Handbook, and its Supplements.
Lecture lists and timetables for Mathematics and for Philosophy each term are available, respectively, at
`http://www.maths.ox.ac.uk/notices/lecture-lists/`
and at
`http://www.philosophy.ox.ac.uk/lectures`
The Mathematics list contains a section for the Mathematics & Philosophy course; for Philosophy a Prospectus of courses is also available. (For more details see III.2.1.)
information concerning examinations: past examination papers in Mathematics, and also Notices to candidates and Examiners' reports for recent examinations, are available at
`http://www.maths.ox.ac.uk/current-students/undergraduates/examinations`
and past papers in Philosophy at
`http://www.philosophy.ox.ac.uk`
or on OXAM at `http://www.oxam.ox.ac.uk` .

(For further information see III.8.3 and also VI.3.)

You will also receive the **Proctors' and Assessor's Memorandum**, *Essential Information for Students*—it is just that! Your attention is drawn in particular the sections dealing with examinations and student welfare. This Memorandum is on the web at
`http://www.admin.ox.ac.uk/proctors/info/index.shtml`.

In addition you will receive in one form or another, but probably as a **college handbook**, detailed guidance about your own college's regulations and requirements. You are advised to note carefully any sections dealing with academic matters, and may also find useful sections dealing with student welfare and support.

For general information for students provided by the University see
`http://www.ox.ac.uk/current_students` .

# Email: Important information

You are allocated a college e-mail account on your arrival in Oxford. It is essential that you are able to be reached quickly by e-mail. If you elect not to access your college account regularly (at least once a day) then you must set up automatic forwarding from your Oxford University address—and you should check that it works. Do not let your inbox accumulate messages beyond your user allocation: otherwise new mail will not always reach you.

Important information about your course will be sent to your college account: from tutors making tutorial arrangements, from lecturers and departments giving information about courses, and from departments about administrative matters, forthcoming events and opportunities, etc.

Any e-mail 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 canonical University address.

You are asked to bear in mind that lost email is students' responsibility should they choose to forward email to a system outside the University.

Please address queries about the Mathematics & Philosophy course to the Chairman of the Joint Committee for Mathematics and Philosophy, c/o the Academic Administrator, at the Mathematical Institute, 24/29 St Giles, Oxford OX1 3LB. The Chairman for 2010–2011 is Dr Volker Halbach, Philosophy Centre, 10 Merton St.

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# Part I
# The course: informal and formal descriptions

## 1 The Course in Mathematics and Philosophy

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

- B.A. (3-year course),
- MMathPhil (4-year course).

Candidates for both degrees follow a common 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 at the end of the fourth year for which a separate classification is awarded.

## 2 Nature of the Course: an informal view

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 (Pythagorus, Bolzano, Cantor, Poincaré, Hilbert, Weyl, Brouwer). There are some (Descartes and Leibniz, notably) who have 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 Formal description of the course

Formal descriptions of degree programmes are set out in their Programme Specifications. These include statements of the educational aims and of the Programme outcomes, including Teaching, Learning and Assessment Strategies and set out ways by which students' intellectual and transferable skills are developed and fostered as they progress through the course. On-going review and development of the course takes place through the quality assurance mechanisms which exist at departmental, University and national levels.

Subsections 3.1 and 3.2 are reproduced from the Programme Specification for the degrees in Mathematics & Philosophy. The entire document can be found at `https://www.maths.ox.ac.uk/teaching-staff/programme-specifications` .

Corresponding extracts from the Programme Specification for the Oxford Mathematics courses can be found in the Mathematics Course Handbook, Part I. For Aims and Objectives for Philosophy in all undergraduate courses with Philosophy in Oxford University see Appendix B.2 (VII.2.2) of this Handbook.

### 3.1 Educational aims of the 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.

## 3.2 Programme outcomes with Teaching, Learning and Assessment Strategies

### 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. |

### Assessment

Formative assessment is carried out through tutorials, classes and termly practice examinations (collections), which are marked and returned to students. These are provided at college level and have no influence upon university examinations.

Summative assessment is by four 3-hour written examinations at the end of year one, and by three 2-hour written examinations at the end of year two. These examinations are designed to test through bookwork and unseen problems breadth of understanding of core subjects across the whole syllabus and through further questions on bookwork and more substantial unseen problems understanding in depth of both core and optional subjects. In years three and four, most assessment is by unseen written examinations of three hours duration, though some are shorter, and there is also some assessment by theses and projects.

### Skills and attributes

**Students will have the opportunity to develop the following skills during the course:**

**I Intellectual skills**

*In mathematics*

1. The ability to demonstrate knowledge of key mathematical concepts and topics, both explicitly and by applying them to the solution of problems.
2. The ability to comprehend problems, abstract the essentials of problems and formulate them mathematically and in symbolic form so as to facilitate their analysis and solution.
3. The ability to select and apply appropriate mathematical processes to problems including, where appropriate, an understanding that this might give only a partial solution.
4. Skill in giving mathematically rigorous arguments and in the logical development of formal theories.
5. The ability to present mathematical arguments and conclusions from them with clarity and accuracy, in forms suitable for the audiences being addressed.
6. Skill in understanding and using the generality that is achieved in mathematics by establishing results abstractly.

*In philosophy*

7. Ability to digest and assess several diverging answers to philosophical questions, to make up their own minds on the issues, and to argue for their own view in a clear and cogent fashion.
8. Ability to abstract, analyse and construct sound arguments and identify logical fallacies.
9. Skill in independent and creative philosophical thinking, moving between generalisation and appropriately detailed discussion, inventing or discovering examples to support or challenge a position, and distinguishing relevant and irrelevant considerations.
10. Willingness to evaluate opposing arguments, to formulate and consider the best arguments for different views, to identify the weakest elements of the most persuasive view, to make up their own minds on the issues, and to argue for their own view in a clear and cogent fashion. *em[11.] Understanding and appreciation of perspectives different from their own.*

*In both mathematics and philosophy*

12. The ability to construct logically valid arguments with clear identification of assumptions and conclusions.

**Teaching/learning methods and strategies**
These are acquired through lectures, classes, tutorials, studying recommended textbooks and through work done for projects and dissertations.

## Assessment

These intellectual skills are tested summatively in the examination processes at the end of each year, in projects and dissertations, and formatively in weekly tutorials or classes, and college collections.

| **II. Practical skills** | **Teaching/Learning methods and strategies** |
|---|---|
| 1. Calculating fluently and accurately in abstract notation. | 1. Practised throughout the mathematics part of the course in problem solving for tutorials and classes. When necessary, mathematics tutorial teaching focuses on helping students to improve these essential skills. |

## Assessment

All problem-solving for Mathematics tutorials and classes and college collections provides formative assessment of this skill, and examinations at the end of each year assess this skill summatively.

| **III. General skills** | **Teaching/Learning methods and strategies** |
|---|---|
| 1. To analyse and solve problems, and to reason logically and creatively. | 1. Problem sheets in mathematics, including logic, with tutorial or class support, often requiring significant develop of ideas beyond material found in lectures and books. |
| 2. To analyse arguments by identifying their assumptions, and to assess their cogency. | 2. Preparation including reading and essay writing for tutorials and classes in philosophy. |
| 3. Effective communication and presentation orally. | 3. Weekly tutorial and class assignments; requirement to defend written work in tutorials, and presentation of mathematical solutions or philosophical views in classes. |
| 4. The ability to learn independently. | 4. A learning process that requires students to put together material from a number of sources, including lectures, tutorials, text-books, and electronic sources, largely in their own time. |
| 5. Independent time management. | 5. Requirement to produce substantial amounts of written work against strict tutorial and class deadlines; necessity to balance academic and non-academic activities without continuous oversight. |
| 6. To think critically about arguments and solutions and to defend an intellectual position. | 6. Discussion and criticism in tutorials |
| 7. Collaboration | 7. Students are encouraged by the tutorial system to work together, to share ideas and concepts and to develop the practice of crediting others for their contributions. |
| 8. Use of information technology. | 8. The use of web-based resources in philosophy provided through the library sector; extensive use of the network for distributing teaching materials and for communication. |
| 9. Language skills. | 9. The opportunity may be available in the third or fourth year to study a foreign language. |

## Assessment

The tutorial system provides formative assessment of (I-3). There is summative assessment of (I-6) in annual examinations. The language option does not contribute to final class, but successful completion will be recorded on student transcripts.

The official Programme Specification for the Mathematics & Philosophy degree programme can be found at `http://www.maths.ox.ac.uk/current-students/undergraduates/`. This document is a statement of the educational aims of the programme and also gives a description of Programme Outcomes with Teaching, Learning and Assessment Strategies.

# Part II
# Structure and outline of the course

## 1 Some background

### 1.1 The University, Departments, Faculties and Divisions

The University may be viewed as containing both a federation of the colleges and a federation of departments and faculties. The latter are grouped into four administrative Divisions: the Mathematical Institute falls under the Mathematical, Physical & Life Sciences Division and the Faculty of Philosophy under the Humanities Division.

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

The University awards degrees on the basis of examination results in Public Examinations. The responsibility for the delivery of undergraduate degree courses and for the associated University examinations has been placed on various departments and faculties in the Divisions. This means that the way particular degree courses are administered and run varies to some extent from one to another, to take into account the needs and styles of different disciplines. This is clearly evident in respect of the courses in Mathematics & Philosophy, where both formal and informal arrangements differ for the two sides of the School.

The Mathematical Institute is responsible for courses in Mathematics as a single subject, and co-operates with the Computing Laboratory 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, 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 PPP (Philosophy, Physiology and Psychology).

The Mathematical Institute and the Faculty of Philosophy have international reputations for their research profile 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 administers the course and makes regulations for examining 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. It normally meets on the Tuesday afternoon of the fourth week of each term. Correspondence may be addressed to the Chairman, Joint Committee for Mathematics and Philosophy, c/o Academic Administrator, Mathematical Institute, 24–29 St Giles.

# 2 Documentation specifying the course

The University of Oxford *Examination Regulations* (usually referred to as the 'Grey Book') is published annually at the start of each academic year (including in its title the year of its publication, i.e. the edition that governs the academic year 2010–2011 is entitled *Examination Regulations* 2011). The entire Grey Book is available on-line at `http://www.admin.ox.ac.uk/examregs/` .

The Grey Book provides the source, and ultimate authority, concerning each Oxford degree course. It stipulates the formal structure of the courses and the Regulations which govern them. The Examination Regulations for Mathematics & Philosophy are on the web at
`http://www.admin.ox.ac.uk/examregs/Mathematics_and_Philosophy.shtml`

The Grey Book also stipulates the content (syllabuses) of Philosophy subjects for examination. These can be found at `http://www.admin.ox.ac.uk/examregs/11-30ap_SPECIAL_REGULATIONS_FOR_PHILOSOPHY_IN_ALL_H_S_INCLUDING.shtml`

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 each year: Syllabus and Synopses for

Honour Moderations in Mathematics & Philosophy;

Mathematics & Philosophy Part A;

Mathematics & Philosophy Part B;

Mathematics Part C.

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. In addition, certain courses available as additional options are listed in the following Supplements to the Mathematics Course Handbook: Syllabus and Synopses for

Mathematics Part A;

Mathematics Part B.

All these documents are issued 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 status of Grey Book Regulations) and also a more detailed description of each course, its aims and objectives, learning outcomes and suggested reading.

All the Supplements can be found on the web at `http://www.maths.ox.ac.uk/current-students/undergraduates/handbooks-synopses/`. or at `http://www.maths.ox.ac.uk/` .

Subsequently in this Handbook these Supplements will usually be referred to in shorthand form: Mathematics & Philosophy Part B Supplement, for example. (Note that the Grey Book uses the term 'Mathematics Course Handbook' to mean the Handbook together with all its supplements.)

Information on the form of assessment used in University examinations in Mathematics & Philosophy is collected together in Section IV.4 below.

The conventions used in the marking of examinations and the classification of candidates is in the document Examination Conventions which forms Section IV.5 of this Handbook and is also published on the web.

# 3 The framework of University examinations

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

The examinations for each undergraduate degree course in Oxford consist of a First Public Examination and a Final Honour School (also sometimes just referred to as 'Finals'). To enter for Finals you must have

passed a First Public Examination, (this does not apply to those who 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.6.2 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.

In Mathematics & Philosophy the First Public Examination consists of a four-paper Honour Moderations, sat after three terms, that is, at the end of the first year. In order to pass Mods in Mathematics & Philosophy it is necessary to gain a University Standardised Mark (USM) of each least 30 on each of the four papers.

A candidate who is prevented, in particular by illness, from taking Mods may, with the permission of his or her college, enter for a Preliminary Examination in Mathematics & Philosophy sat in September. Subjects are examined in this Prelims as for Mathematics & Philosophy Mods but they are examined in two papers rather than four, one in Mathematics and one in Philosophy. Candidates only take the paper in one subject if they have already passed the other subject in a previous examination.

# 4 Honour Moderations in Mathematics & Philosophy

The course for Honour Moderations comprises four sections:

Section 1: Pure Mathematics I

Section 2: Pure Mathematics II

Section 3: Elements of Deductive Logic

Section 4: Introduction to Philosophy

All four sections are compulsory. Each section is examined in a 3-hour paper.

Pure Mathematics I, covering mainly Algebra, and Pure Mathematics II, covering mainly Analysis, are the same as the corresponding papers for Honour Moderations in Mathematics. Syllabuses are set out in the Mathematics & Philosophy Moderations Supplement. The programme of lectures in support of the Mods course for the current year is set out in Appendix A (VII.1).

The first part of Section 3, 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 Moderations in Mathematics & Philosophy and in Physics & Philosophy, and the examination includes questions of a more mathematical nature.

Section 4, Introduction to Philosophy, covers

(a) General Philosophy, a topic-based introduction to key topics in epistemology and metaphysics, and

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

Details of the syllabuses for Sections 3 and 4 can be found in the Grey Book `http://www.admin.ox.ac.uk/examregs/10-27i/_Special_Regulations_for_Honour_Moderations_in_Mathematics.shtml` . For the programme of supporting lectures for the current year see Appendix A (VII.1) and for information on teaching arrangements, see III.4.1.1.

# 5 Finals in Mathematics & Philosophy

## 5.1 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 paper B1 Foundations, 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.

## 5.2 Progression

At the end of Part A you will receive a USM for each of the papers you take, but will not be classified. After Part B you receive a classification on the basis of Parts A and B together (as explained in IV.5). 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.

Candidates must achieve second class honours or higher in Parts A and B together, that is, an average USM $\geq 50$, in order to be allowed to proceed to Part C.

The Part C examination covers the work done in the fourth year and is separately classified. For detailed information on classification see the Examination Conventions for Marking and Classification IV.exam-conv. A candidate achieving Honours in Part C, that is, achieving an average USM $\geq$ 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 fails to achieve an average USM $\geq$ 40, may, so long as they have not taken the B.A., enter again for Part C on at most one subsequent occasion. 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. The University's rules concerning withdrawal from, or failure to complete, an examination are summarised in Section 9 of the Proctors' and Assessor's Memorandum and set out in full in *Examination Regulations* 2011, Part 11; see p. 32, lines 13–40.

## 5.3 Part A (2011 examination)

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

The compulsory core of Algebra and Analysis is covered by 24 lectures on each in Michaelmas Term; this comprises two-thirds of the material for single-subject Mathematics in that term. You then choose from a menu of second-year Pure Options; see Appendix A (VII.1) or the Mathematics & Philosophy Part A Supplement. Whole unit courses are normally covered by 16 lectures each, half-unit courses by 8 lectures each. You are expected to study $1\frac{1}{2}$–2 units' worth of Options.

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.6.1.

## 5.4 Parts B and C

### 5.4.1 Mathematics in Parts B and C

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

Courses are designated as being at either H-level (Honours) or M-level (Masters). Most, but not all, of those listed for Part B are at H-level, a few (normally available only in alternate years) are at M-level and are common to both Parts B and C. All courses in Part C are at M-level.

Most units and half-units in Mathematics will be assessed through written examination papers of three hours for a unit and $1\frac{1}{2}$ hours for a half-unit, though some may be assessed in whole or in part by submitted coursework. The whole unit B1 Foundations (B1a Logic and B1b Set Theory) is compulsory in Mathematics & Philosophy Part B.

### 5.4.2 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/11-30ap_SPECIAL_REGULATIONS_FOR_PHILOSOPHY_IN_ALL_H_S_INCLUDING.shtml` .For the FHS of Mathematics & Philosophy the subjects are drawn from 101–118, 120, 122, 124, and 199 (Thesis) and also, in Part C only, the Rise of Modern Logic as specified in the Regulations for the Degree of Bachelor of Philosophy.

These subjects are listed, together with an informal description of each, prerequisites, and supporting reading, in Appendix B.1 (VII.2.1) of this Handbook. (Subject 119, Formal Logic, which overlaps with the compulsory Foundations paper in Mathematics & Philosophy Paper B1 and with a Part C option on Gödel's Incompleteness Theorems, is not available. Nor is 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 traditional 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 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.)

### 5.4.3 Part B (2011 examination)

The following is reproduced from the Examination Regulations applicable to the 2011 examination.

The examination for Part B shall consist of units in Mathematics and subjects in Philosophy. The schedule of units in *Mathematics* shall be published in a supplement to the Mathematics Course Handbook by the beginning of the Michaelmas Full Term in the academic year of the examination concerned. The schedule shall be in two parts: Schedule 1 (standard units and half-units) and Schedule 2 (additional units and half-units). In *Philosophy* the subjects shall be subjects 101–118, 120, 122, 124 and 199 from the list given in *Special Regulations for All Honour Schools Including Philosophy*. Each subject in Philosophy other than a Thesis shall be examined in one 3-hour paper. Each candidate shall offer

(i) Two units of *Mathematics* from Schedule 1, one of which shall be B1 *Foundations: Logic and Set Theory*,

(ii) three subjects in *Philosophy* from 101–118, 120, 122 and 124, of which two must be 122 and **either** 101 **or** 102, and

(iii) **either** one further unit in *Mathematics* drawn from Schedules 1 and 2 combined **or** one further subject in *Philosophy* from subjects 101–118, 120, 124, and 199: *Thesis*.

Thus, subject to the provisos indicated, you are allowed to offer either three or four subjects in Philosophy.

All units and half-units in Mathematics are drawn from the list of options for Mathematics Part B. **Schedule 1** comprises those Mathematiccal Institute courses for which the core and options in Mathematics & Philosophy Part A provide the requisite background. **Schedule 2** contains an Extended Essay option and certain further courses from Mathematics Part B appropriate for the Joint School. In addition you may apply for special approval to be examined in Mathematical Institute units and half-units not included under Schedule 1; any such subject approved will be treated as falling under Schedule 2. For the procedure for seeking approval, see III.6.3 below.

The Schedules of subjects for examination in 2011 can be found in Appendix A (VII.1) and, with further details, in the Mathematics & Philosophy Part B Supplement.

For information on classification in Parts A and B together see the Examination and Marking Conventions IV.5.

#### 5.4.4 Part C (2011 examination)

For Part C you are examined on three units, chosen in any combination from the lists prescribed for Mathematics and for Philosophy. Thus you are free to take only Mathematics, or only Philosophy, or to elect to offer courses from both sides of the Joint School.

The list of approved units and half-units in Mathematics for Part C are listed in the Mathematics Part C Supplement to the Mathematics Course Handbook. In 2010–2011, the list includes three half-units in Mathematical Logic: Model Theory, Axiomatic Set Theory, and Gödel's incompleteness Theorems.

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 and 124, as specified in the Regulations for Philosophy in all Honour Schools including Philosophy,
- The Rise of Modern Logic as specified in the Regulations for the Degree of Bachelor of Philosophy, given in the Examination Regulations, and reproduced in Appendix B.1 (VII.2.1).
- an M-level Philosophy Thesis, for which the word limit is 20,000 words.

Each unit except the Thesis is assessed by a 3-hour examination paper together with a submitted essay of up to 5,000 words. For information concerning the prescribed topics for these essays, see IV.4.4. For details of the requirements for a Thesis see the Grey Book and also III.7.2.

For information on classification in Part C see II.5.2 and the Examination and Marking Conventions IV.5.

# 6 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.

## 6.1 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 two years, and your career intentions. You will want to discuss your decision with your college tutors, who will be able to advise you on which course is more appropriate for you. To proceed to Part C you must obtain second class honours or higher in Parts A and B together.

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.

You will be asked in Michaelmas Term of your third year in an e-mail from the Academic Office in the Mathematical Institute to confirm whether or not you intend to stay for the fourth year. You will be asked for a reply giving your decision by Friday of week 8 in MT. 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. There are circumstances in which you cannot be certain of your intentions by the end of MT: for example you might be considering the MMathPhil but also be submitting applications for jobs or graduate courses, of which the outcome is not yet known.

Please ensure that you have consulted your college tutor(s) before making your decision. It is critically important that your college knows your intentions as early as possible in order to plan for the following year. The Mathematical Institute will notify your college of your decision, but in many colleges this will not happen soon enough if the allocation of accommodation to continuing students takes place before the end of MT. You are therefore requested to notify your college, either yourself or through your tutor, of your intentions, and to keep the college fully informed if these subsequently change.

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. See also II.5.2 and IV.1.3.

## 6.2 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 will feel you are benefiting 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 Maths and Phil).

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 Mods, then you need to be aware that besides catching up on course work in applied mathematics that

you will have missed you will also need to work through the Maple course and submit the required Maple projects (see the Mathematics Course Handbook for details).

To change to single-subject Mathematics after Mods will involve studying over the summer some of the material examined in the two Applied Mathematics papers of Honour Mods 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 six 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 web-site, 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 for 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, such as Psychology, 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.

## 6.3 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, `http://www.direct.gov.uk/en/EducationAndLearning/UniversityAndHigherEducatiion/StudentFinance` 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. (See also the information in II.6.1 about funding.)

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.admin.ox.ac.uk/studentfunding/fees/feerates/elq.shtml` .

The BPhil is Oxford's flagship 2-year taught graduate course in philosophy, and the normal route into the DPhil program. If you plan to apply for admission to the BPhil, you should be aware that if you are admitted with an MMathPhil then you will be classified as an ELQ student and will normally be liable to pay fees at the ELQ rate that the University has established; this does not however apply to BPhil

ELQ students who are awarded AHRC scholarships. If you want to apply for the BPhil, and wish to avoid paying the higher ELQ fees, **you are advised to apply in January of your third year and graduate after Part B with a BA qualification**. This will not disadvantage you in relation to the majority of applicants to the course. You should discuss with your tutors whether this option is right for you.

If you have decided to take the MMathPhil, please note that the question concerning your eligibility to apply for the DPhil program in philosophy (as a probationary research student) is presently under discussion in the Philosophy Faculty. For an update on this matter, please contact the graduate studies administrator, Victoria Payne, at (2)76933 or email `victoria.payne@philosophy.ox.ac.uk`.

# 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. Each undergraduate also has a designated Personal Tutor or Advisor (who may be one of their College Tutors) concerned with the student's personal welfare and to whom the student can turn for support and advice on non-academic matters.

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 with you 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

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.

You are encouraged to provide feedback on the lectures, tutorials and classes you attend; see III.10.

### 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 Mods 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 `http://www.maths.ox.ac.uk/notices/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. (With effect from Hilary Term 2011 printed copies of lecture lists will no longer be centrally produced for distribution to students through their colleges.)

### 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?* prepared by Charles Batty with the assistance of Nick Woodhouse. These are available for purchase at the Mathematical Institute or can be downloaded from the Maths web-site at:
`http://www.maths.ox.ac.uk/files/study-guide/index.shtml`.

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/$\sim$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 MP 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 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 web-site), 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 Moderations and Part A are supported by problem sheets compiled by the lecturers. These are available on the Mathematical Institute web-site, 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 ten (or occasionally up to 12) 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, and for Part C there are generally seven one- hour classes for each 16-hour lecture course. There may, however, be some variation in this, particularly for courses involving a practical component. 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

## 4.1 The first year

### 4.1.1 Philosophy

As indicated in II.4, you will sit two three-hour examinations in Philosophy for Honour Moderations 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 Honour Moderations 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, in contrast to Honour Moderations in Mathematics & Philosophy, 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 Mods candidates in Mathematics & 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 Honour Moderations 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 two Mathematics papers will be given as set out in Appendix A (VII.1). Details of the content of the courses can be found in the Mathematics & Philosophy Mods Supplement.

The Joint Committee for Mathematics and Philosophy recommends that first-year Mathematics & Philosophy students should also attend lectures in Michaelmas Term on Calculus of One Variable and of Two or More Variables. These lectures cover elementary methods and results widely used in mathematics and are specifically designed to help in the transition from school to university mathematics. Though they appear on the lecture list as background to Applied Mathematics I and II for Honour Moderations in Mathematics, a grasp of the material they cover deepens understanding of differentiation and integration, a key part of Pure Mathematics II, and familiarity with partial differentiation is assumed in the Core Analysis course in the second year. Specifically, Mathematics & Philosophy students are recommended to cover all of Calculus of One Variable and the material in Calculus of Two or More Variables up to and including that on the chain rule (approximately the first 9 of the total of 16 lectures), and to work through the associated problem sheets. Students may however wish, or be advised by their tutors, to attend all the lectures on Calculus of Two or More Variables in order to cover material which is relevant to some parts of certain Mathematics courses they may elect to take in the second or subsequent years.

## 4.2 The second and third years

You will be aware that 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 Foundations, takes place at the end of the third year.

The two core courses constitute two thirds of the mathematics studied for Finals Part A. Options take up the remaining third. Lectures for these are given in Hilary Term (for most options) or the first four weeks of Trinity Term (for a few options).

In Michaelmas Term of the second year you will have 24 lectures on each of the Part A core courses on Algebra and Analysis. These constitute two thirds of the full-time load for single subject Mathematics students in that term.

Lectures for Part A Mathematics options are given in Hilary and Trinity Terms. The options available to Mathematics & Philosophy students in 2010–2011 are listed in Appendix A (VII.1), with details available in the Mathematics & Philosophy Part A Supplement.

**Paper B1: Foundations: Logic and Set Theory**

Paper B1 Foundations: Logic and Set Theory, from the Honour School of Mathematics Part B, is compulsory for Mathematics & Philosophy students. It consists of B1a: Logic and B1B: Set Theory and plays a central role in the course as a bridge between the two sides of the Joint School.

B1b 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. Paper B1 is examined in the third year but the Joint Committee for Mathematics and Philosophy **recommends** that that B1b should be studied during the second term of 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 B1a 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 B1a and B1b, and what teaching you should receive. Inter-collegiate classes are provided for B1, as for other Part B units in Mathematics. **You may attend classes for each half of B1 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 B1a or B1b 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 History of Philosophy from Descartes to Kant 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.

**Scheduling in the second and third years**

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.

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 Mathematics 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 B1a 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.

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 Options (if this has not been done in Hilary Term) 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 B1b 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 | HT + ? TT year 2 |
| B1a Logic | MT year 2 or MT year 3 |
| B1b 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.

# 5 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.

# 6 Choosing options

## 6.1 Options 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.

As of Michaelmas Term 2010 candidates may be examined in Probability (discrete variables) from Honour Moderations in Mathematics, to include the eight lectures of Probability I and the first four lectures of Probability II. This is treated as a half-unit Option.

Given that this option, which is in applied mathematics, presume facility with some or other results and techniques covered in Maths Mods or the core syllabus of Mathematics Part A not taken by Mathematics & Philosophy candidates, such applications will be exceptional.

## 6.2 Options 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, History of Philosophy from Descartes to Kant (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 a 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 are advised to consult your college tutors who may be able to advise you on appropriate background reading.

### 6.3 Additional Mathematics options in Part B 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.1) are automatically available for Part B. You may, 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 from the list of Mathematical Institute units and half-units given in the Mathematics Part B Supplement to the Mathematics Course Handbook.

Applications for special approval must be made through the candidate's college and sent to the Chairman 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.

### 6.4 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 9 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 and the Mathematical Education 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.**

## 7 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, O1 History of Mathematics, N1a & N1b Mathematical Education Undergraduate Ambassadors' Scheme and BE Mathematical Extended Essay (for the constraints on choices regarding these see II.5.4.3 and the Mathematics & Philosophy Part B Supplement);

**in Part C:** Mathematics Dissertation (whole unit or half-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.4.4.

## 7.1 Extended Essays and Dissertations in Mathematics

There are two reasons, both educational, why the Part B extended essay and Part C dissertation options are offered by the Mathematical Institute. The first is that most mathematics graduates have to write reports of one kind or another. The necessary skills—of collecting material, organising it, expounding it clearly and persuasively—are better learned sooner than later. The second reason is that the Faculty recognises that some students may show their abilities better on a sustained piece of exposition than on the problems set in a three-hour examination paper.

In Part B a student may write a Mathematical Extended Essay constituting a whole unit, that is, equivalent to 32 lectures. In Part C a student may write a whole unit or a half-unit Dissertation. If some preparation has been done in the Long Vacation, a whole unit project should occupy between one quarter and one third of the student's working time during Michaelmas Term, the Christmas Vacation and Hilary Term. There is always a risk that a project might not succeed, especially if the original plan had involved some original research. Although this is a rare occurrence, examiners are aware of the possibility. They accept that a well-written account of the work done, with an explanation of why the original aims were not met, can nevertheless be worthy of high credit.

Students who have ideas about essays or dissertations they wish to present should seek guidance from their tutors. Members of the Mathematics Projects Committee will also be very happy to help focus a project and find a supervisor.

Tutors and undergraduates are reminded that, under the regulations, an examination candidate proposing to offer this option must seek approval from the Projects Committee. Proposals must be received by the chairman of this committee, c/o the Deputy Academic Adminstrator, Mathematical Institute, before the end of Week 0 of Michaelmas Term. The Projects Committee gives its approval if it estimates that the project is appropriate and viable. There will be presentations of possibilities for projects, with discussion of the issues, in each Trinity Term. Undergraduates (and tutors) who seek guidance are invited to attend these sessions.

For full information on the Dissertation option please consult the section on Dissertations in the Mathematics Part C Supplement to the Mathematics Course Handbook.

## 7.2 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, Faculty of Philosophy, c/o the Undergraduate Studies Administrator at 10 Merton Street, 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 Chairman 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 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 by up to one class. (See also IV.2.2 below.

# 8 Examinations

## 8.1 College Collections

As well as a medium of instruction, the tutorial is a personally tailored form of continuous assessment, and both you and your tutor will have a very good idea of how you are getting on.

Most colleges will require you to sit college examinations, called "Collections", from time to time and normally before the start of term.

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. They are 'internal' examinations to help you and your tutors assess your progress; they are not to be confused with the University examinations you sit each year. 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 times and subjects of the next term's Collections.

## 8.2 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 'short weight', i.e. 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.4.

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.

## 8.3 Accessing materials related to examinations

You will find useful material on the Mathematical Institute web-site concerning examinations under `http://www.maths.ox.ac.uk/current-students/undergraduates/examinations` .
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/current-students/undergraduates/examinations/past-papers`, recent past papers for Mathematics, including those for Mathematics & Philosophy. Finals papers in Philosophy are accessible on the Philosophy web site at `http://www.philosophy.ox.ac.uk/undergraduate` . Recent past Oxford University examination papers for all undergraduate degrees can be downloaded from the University's OXAM web-site `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 VI.3.2 below.

# 9 Representation

Each of the Mathematical Institute and the Philosophy Faculty has a joint consultative committee with undergraduates. Each of these committees has as a member an undergraduate reading Mathematics & Philosophy. A member of the Joint Standing Committee for Mathematics and Philosophy, which administers the School, also nominates a representative to serve on the Mathematics JCCU. Reports from this committee can be found on the web page: `http://www.maths.ox.ac.uk/current-students/undergraduates/jccu.`In addition there is undergraduate representation via student member observers at department, faculty and divisional levels.

There is also MURC (Mathematics Undergraduate Representative Committee) which represents the interests of undergraduate mathematicians; it has twice-termly meetings, runs a weekly bookstall and maintains a web-site. Full details are contained in the Mathematics Course Handbook.

# 10 Feedback

You will be asked to give feedback on tutorial teaching to your college, and on lectures and class teaching to the faculty that has provided it. The feedback which you provide to tutors and lecturers is valued and is taken seriously. It has an important contribution to make to maintaining the quality of the education you receive at Oxford.

The various colleges and the two faculties differ in the exact questions asked to elicit your assessment of tutorials or classes, 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 towards the middle or end of his or her 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; the form used can be viewed on the Mathematical Institute web-site.

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.

Mathematics & Philosophy is quite a small School and there may be few other students in your college doing the course. It is therefore very worthwhile for you to get to know those in other colleges reading M&P. You may do so through centrally organised classes, for example for Elements of Deductive Logic in Hilary Term of your first year. But there are also opportunities for you to meet M&P students from other colleges and years, and also members of the Joint Committee for Mathematics and Philosophy. For everyone, there is a party early in Michaelmas Term each year immediately following the induction session for Mathematics & Philosophy first years, and, early in Trinity Term, a tea-party. The tea-party provides a valuable opportunity for 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. We hope you already find your course rewarding but we'd welcome the chance to find out how it might be improved.

Your attention is also drawn to mechanisms for feedback at University and national level: `http://ceq.oucs.ox.ac.uk/` and `http://www.unistats.com/` .

# 11 Language classes (third and fourth years)

Mathematics & Philosophy students are invited to apply to take classes in a foreign language. In 2010–2011 classes are offered in French.

Students' performance in these classes will not contribute to the degree classification in Mathematics & Philosophy. However, successful completion of the course will be recorded on student transcripts.

Students reading Mathematics have priority in registering for these classes, but, if there are vacancies, places are offered to those reading for joint schools. For further details of the classes see the Mathematics Part B or Part C Synopses.

# Part IV
# Assessment and examinations

## 1 Taking University examinations

General information, not specific to subject, is given on the University web-site at
http://www.ox.ac.uk/current_students/examinations_assessments/index.html .
Links are provided from this url to information on all aspects of University examinations.

### 1.1 Entering for University Examinations

**It is your responsibility to enter for University examinations.** For details of the procedure see
http://www.admin.ox.ac.uk/schools/oxonly/entries/index.shtml

### 1.2 Timing of University examinations

The starting dates of examinations for Mods, 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:

**Moderations:** Mathematics papers early in week 9 of Trinity Term; Philosophy papers are usually sat earlier.

**Part A:** week 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 end of week 6.

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

Examination timetables are published on the web at http://www.admin.ox.ac.uk/schools/oxonly/timetables/index.shtml some weeks ahead of the examination start date. No candidate will normally be expected to sit papers on the morning and afternoon of the same day. A personal timetable, showing your own papers and the dates, times and locations at which they will take place, will be sent to you at your college approximately five weeks before the written papers begin.

### 1.3 Procedures for University examinations

Practical information on the conduct of examinations is given at
http://www.ox.ac.uk/current_students/examinations_assessments/index.html .

Before the examinations you will also receive at least one *Notice to Candidates* from the examiners which will let you know the details of the examination procedure in relation to your particular examination, and also the date by which the examiners hope to publish the results. For general information on access to results via Student Self Service you are referred to the url above.

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.

**Your attention is drawn to the information concerning University examinations contained in the Proctors' and Assessor's Memorandum**, http://www.admin.ox.ac.uk/proctors/info/pam/index.html Section 9, 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 9 of the Proctors' and Assessor's Memorandum and set out in full in *Examination Regulations* 2011, Part 11; see p. 32, lines 13–40; for the consequences of failure to submit coursework see IV.2.2 below.

It must be stressed that to preserve the independence of the Examiners, candidates are not allowed to make contact directly about matters relating to the content or marking of papers. Any communication must be via the Senior Tutor of the candidate's college, who will, if he or she deems the matter of importance, contact the Proctors. The Proctors in turn communicate with the Chairman of Examiners.

# 2 Assessed coursework

See also III.7.2 (Theses in Philosophy), III.7.1 (Dissertations in Mathematics and III.4.4 (essays in Part C).

## 2.1 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 B Extended Essay | Frid. week 3, MT | Chairman, Projects Committee | Deputy Academic Administrator, Math. Inst. | III.7.1 |
| Part B Philosophy Thesis topic | Frid. week 4, MT | Director of Undergraduate Studies, Phil. Faculty | Undergraduate Studies Administrator, 10 Merton St | III.7.2 |
| Part B additional Schedule 2 option | Frid. week 5, MT | Chairman, JCMP | Academic Administrator, Math. Inst. | III.6.3 |
| Part C Philosophy Thesis topic | Frid. week 4, MT | Director of Undergraduate Studies, Phil. Faculty | Undergraduate Studies Administrator, 10 Merton St | III.7.2 |
| Part C: Special essay topic on a Philosophy subject | Frid. week 6, HT | Director of Undergraduate Studies, Phil. Faculty Board | Undergraduate Studies Administrator, 10 Merton St | IV.4.4 |
| Part C Mathematics Dissertation | Frid. week 3, MT | Chairman, Projects Committee | Deputy Academic Administrator, Math. Inst. | III.7.1 |

For submission deadlines for assessed coursework see the Examination Regulations and the Mathematics & Philosophy Part B and Mathematics Part C Supplements.

## 2.2 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, 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 2011, p. 46, available at
`http://www.admin.ox.ac.uk/examregs/08-16_Part_16_Marking_and_assessment.shtml`.

Late submission of coursework will normally result in the following penalties:

- With permission from the Proctors under clause (2) of para 16.8, page 45, no penalty.
- With permission from the Proctors under clauses (3) + (4) of para. 16.8, a penalty of a reduction in the mark for the coursework in question of at least 5 USMs (or at least 5% of the maximum mark available for the piece of work); the exact penalty to be set by the Examiners with due consideration to the advice given in the document 'Academic Penalties for Late Submission of a Thesis or Other Exercise: Proctors' Notes for Guidance', dated 1/11/06.
- Where the candidate is not permitted by the Proctors to remain in the examination he or she will be deemed to have failed the examination as a whole.
- Where no work is submitted or it is proffered so late that it would be impractical to accept it for assessment the Proctors may, under their general authority, and after (i) making due enquiries into the circumstances and (ii) consultation with the Chairman of the Examiners, permit the candidate to remain in the examination. In this case the Examiners will award a mark of zero for the piece of coursework in question.

# 3 Plagiarism

The University and its Departments and Faculties employ a series of sophisticated software applications to detect **plagiarism** in submitted examination work, both in terms of copying and collusion. It regularly monitors on-line essay banks, essay-writing services, and other potential sources of material. It reserves the right to check samples of submitted essays for plagiarism. Although the University strongly encourages the use of electronic resources by students in their academic work, any attempt to draw on third-party material without proper attribution may well attract severe disciplinary sanctions.

The University Code on plagiarism is reproduced in 1.1.1.

# 4 Format of papers (2011 examinations)

For marking and classification conventions see Section IV.5, Examination Conventions.

## 4.1 Honour Moderations

All candidates take four papers, *viz.*

Pure Mathematics I

Pure Mathematics II

Elements of Deductive Logic

Introduction to Philosophy

Each of the Mathematics papers has eight questions and candidates may submit answers to at most five questions. Each question is marked out of 20 marks and is divided into two or three 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.

## 4.2 Final Honour School: Part A

Part A consists of four papers, all in Mathematics. These are

**AC1(P)** Algebra and Analysis

**AC2(P)** Algebra and Analysis

**AO1(P)** Options

**AO2(P)** Options

The two papers AC1(P) and AC2(P) will each be of 2 hours' duration and the two papers AO1(P) and AO2(P) will each be of $1\frac{1}{2}$ hours' duration. The four papers taken together will count as the equivalent of two 3-hour papers, of which each of AC1(P) and AC2(P) contributes 1/3 of the weight and AO1(P) and AO(2) jointly the remaining third. [The differential weighting takes account of extra examination time allocated to AO1(P) and AO2(P) granted to assist candidates fully to demonstrate their knowledge of the optional material.]

**Paper AC1(P)** will contain six short questions on each of Algebra and Analysis each worth 10 marks. Candidates are expected to attempt all questions.

**Paper AC2(P)** will contain three longer questions on each of Algebra and Analysis each worth 25 marks. Candidates may submit answers to as many questions as they wish of which at least one must be in Algebra and one in Analysis. The best answer in Algebra and the best answer in Analysis will count, together with the best of the remaining answers.

**Paper AO1(P)** and **Paper AO2(P)** will contain questions on each of the options listed in the Supplement to the Mathematics Course Handbook, Syllabus and Synopses for Part A in Mathematics & Philosophy 2010–2011 for examination in 2011, and also on any option for which special approval has been obtained (see III.6.1). Paper AO1(P) and AO2(P) will each contain one question on each half-unit course and two questions on each whole unit course.

**Paper AO1(P)** consists of short questions each worth 10 marks. Candidates may submit answers to as many questions as they wish: the best of 4 answers will count.

**Paper AO2(P)** consists of longer questions each worth 25 marks. Candidates may submit answers to as many questions as they wish: the best 2 answers will count.

## 4.3 Final Honour School: Part B

The form of assessment for units and half-units in Mathematics is indicated in the Supplement to the Mathematics Course Handbook, Syllabus and Synopses for the Honour School of Mathematics & Philosophy Part B 2010–2011, for examination in 2011 and likewise, for any additional options approved under Schedule 2, Syllabus and Synopses for the Honour School of Mathematics Part B. Except for options O1: History of Mathematics and N1: Undergraduate Ambassadors' Scheme and BE Mathematical Extended Essay, assessment is by a 3-hour paper for a whole unit and a $1\frac{1}{2}$-hour paper for a half-unit. There are three questions in each half unit. For a whole unit paper the rubric states "candidates may submit answers to as many questions as they wish: the best two from each section will count". For a half-unit paper the rubric states "candidates may submit answers to as many questions as they wish: the best two will count".

## 4.4 Final Honour School: Part C

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

The form of assessment for Mathematics units and half-units is set out in the Syllabus and Synopses for Part C of the Honour School of Mathematics 2010–2011 for examination in 2011. In the case of assessment wholly by written examination each whole unit paper will be of 3 hours' duration and each paper on a

half-unit of $1\frac{1}{2}$ hours' duration. There are three questions in each half-unit. For a 3-hour paper the rubric states "candidates may submit answers to as many questions as they wish: the best two from each section will count". For a $1\frac{1}{2}$-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 that subject in the most recent previous examination set for that subject in examinations for Honour Schools including Philosophy, with the following exceptions:

- The commentary or "gobbets" question on Plato: Republic (subject 115)
- The commentary or "gobbets" question on Aristotle: Nicomachean Ethics (subject 116);

(these questions consist of passages for comment from the set text and so not suitable as essay topics). Past examination papers can be downloaded from `http://www.oxam.ox.ac.uk` (see VI.3.2 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, Philosophy Centre, 10 Merton St, 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.

# 5 Examination Conventions for Marking and Classification (2011 examinations)

The formal procedures determining the conduct of University examinations are established by the University's Education Committee. The Proctors have responsibility for the proper conduct of examinations, and are available for consultation by examiners and chairmen of examiners.

The examination conventions applying to examinations in Mathematics & Philosophy in any given academic year are reviewed in Michaelmas Term of that year by the Joint Committee for Mathematics and Philosophy, and must then be approved by the Mathematical, Physical and Life Sciences Division, following consideration by the Mathematics Teaching Committee, and by the Board of the Faculty of Philosophy.

This document consolidates and confirms the examining conventions for marking and classification in examinations in Mathematics & Philosophy. It is subsidiary in all respects to

*Examination Regulations*;

*Proctors' Notes of Guidance for Examiners and Chairmen of Examiners*;

Education Committee *Policy and Guidance on Examinations and Assessment.*

The examiners will be provided, in hardcopy or electronic form, with the documents listed above, and with the Mathematics & Philosophy Course Handbook, in addition to documentation with which they are equipped by virtue of their acting as examiners in Mathematics or in Philoosphy.

# Marking of scripts

Examination scripts, theses, dissertations, and essays, both in Mathematics and in Philosophy, are each ultimately given a University Standardised Mark (USM), a natural number up to 100, which are then used in the process of classifying candidates. These USMs for each paper are reported to colleges and candidates and constitute a 'transcript' of the student's performance in the course.

All Philosophy papers are marked independently by two examiners, and a third examiner in any case where the two examiners cannot resolve a discrepancy between their marks.

In classified examinations USMs on individual papers are correlated with classification bands as follows:

| | |
|---|---|
| Class I | 70 or higher |
| Class II 1 | 69–60 |
| Class II 2 | 59–50 |
| Class III | 49–40 |
| Pass | 39–30 |
| Fail | below 30 |

## Qualitative description of examination performance

Qualitative descriptors of examination performance in Mathematics and in Philosophy for the various classes are as follows.

In **Mathematics**

**First Class:** the candidate shows excellent skills in reasoning, deductive logic and problem-solving. He/she demonstrates an excellent knowledge of the material, and is able to use that in unfamiliar contexts.

**Upper Second Class:** the candidate shows good or very good skills in reasoning, deductive logic and problem-solving. He/she demonstrates a good or very good knowledge of much of the material.

**Lower Second Class:** the candidate shows adequate basic skills in reasoning, deductive logic and problem-solving. He/she demonstrates a sound knowledge of much of the material.

**Third Class:** the candidate shows reasonable understanding of at least part of the basic material and some skills in reasoning, deductive logic and problem-solving.

**Pass:** the candidate shows some limited grasp of at least part of the basic material.

[Note that the aggregation rules in some circumstances allow a stronger performance on some papers to compensate for a weaker performance on others.]

**Fail:** little evidence of competence in the topics examined; the work is likely to show major misunderstanding and confusion, coupled with inaccurate calculations; the answers to questions attempted are likely to be fragmentary only.

In **Philosophy**

The standard of work for the various classes is specified in the following terms.

**Class I** Work displaying analytical and argumentational power, with good command of the facts and/or arguments relevant to the questions and evidence of ability to organise them with clarity, insight and efficiency. When these qualities are evident throughout, the mark should be 74 or above. A script marked in the range 86 and above will be truly outstanding, showing remarkable originality of mind and depth of understanding.

**Class II.1** Work displaying analytical power and argumentation of the quality associated with a First, but with less comprehensive and thorough command of evidence. Or work showing considerable thoroughness but less analytical skill or less clarity in organisation.

**Class II.2** Competent work with no major defects, but giving an incomplete account of the question, or marred by inaccuracies. Or work which demonstrates lapses in (but does not lack) analytical and argumentational skills.

**Class III** Work that is generally weak with muddled argumentation, but containing some evidence of knowledge of facts and analytical skill. Marks in this range may also be used for work that, while competent and knowledgeable in itself, does not address the question asked by the Examiners.

**Pass** Very poor quality work, showing only slight evidence of having studied.

**Fail** Work of such a low standard that it cannot be given a Pass mark.

# Honour Moderations

All candidates take four papers, *viz.*

Pure Mathematics I

Pure Mathematics II

Elements of Deductive Logic

Introduction to Philosophy

Each of the Mathematics papers has eight questions and candidates may submit answers to at most 5 questions. Each question is marked out of 20 marks and is divided into two or three parts. The marks for each part will be given on the examination paper.

Examiners may recalibrate the raw marks to arrive at a USM for each paper. It is USMs rather than raw marks that are reported to candidates and to their colleges.

On the two Philosophy papers candidates are required to answer four questions.

## Classification in Honour Moderations

A candidate may be given a class higher than the average of their marks in conformity with the Regulation that "The highest honours can be obtained by excellence either in Mathematics or in Philosophy provided that adequate knowledge is shown in the other subject of the examination." (*Examination Regulations* 2010, p. 97, lines 9–11)). The convention governing the implementation of this Regulation is the following. Denote by

- $A$ the average of the four USMs,
- $M$ the average of the two Mathematics USMs and
- $P$ the average of the two Philosophy USMs:

A candidate who achieves

$$A \geq 67 \text{ and either } M \geq 70 \text{ and } P \geq 60, \text{ or } P \geq 70 \text{ and } M \geq 60$$

will be awarded a First.

The second class in Honour Moderations is undivided. USMs in the range 50–69 are all awarded Class II.

In order to be awarded a Pass or Honours a candidate must score at least a USM of 30 on each of the four papers. Otherwise no candidate is given a classification lower than that determined by the average of their USMs on their four papers.

A **Preliminary Examination** is set for candidates who fail Honour moderations or who, for some good reason, are unable to sit Honour Moderations.

The Preliminary Examination consists of two papers; one in Pure Mathematics and one in Philosophy. It is an unclassified examination. To pass the examination a candidate must achieve a USM of at least 40 on each of the two papers.

# Final Honour School

The Final Honour School comprises three parts. Candidates for both the B.A. in Mathematics and Philosophy and the MMathPhil take Part A at the end of the second year and Part B at the end of the third year. All candidates are classified on the basis of Parts A and B together. There is no requirement of a minimum standard to be achieved in Part A before a candidate can proceed to Part B.

All candidates who wish to leave at the end of their third year and who satisfy the Examiners may supplicate for a classified B.A. in Mathematics and Philosophy at the end of Part B based on the above classification.

In order to be allowed to proceed to Part C a candidate must be awarded second class honours or higher in Parts A and B together.

Candidates for Part C will receive a separate classification based on their USMs in the Part C examination. A candidate achieving Honours, that is, an average USM $\geq 40$, is permitted to supplicate for the degree of MMathPhil. A candidate who in Part C is awarded a Pass or who fails to satisfy the examiners (that is, any candidate whose average USM in Part C $< 40$) may supplicate for a B.A. with the classification obtained at the end of Part B.

[Note that successful candidates 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.]

## Mark schemes for Mathematics papers

Mark schemes for questions out of 25 will aim to ensure that the following qualitative criteria hold:

- 20–25 marks: a completely or almost completely correct answer, showing excellent understanding of the concepts and skill in carrying through the arguments and/or calculations; minor slips or omissions only.

- 13–19 marks: a good though not complete answer, showing understanding of the concepts and competence in handling the arguments and/or calculations. In this range, an answer might consist of an excellent answer to a substantial part of the question, or a good answer to the whole question which nevertheless shows some flaws in calculation or in understanding or in both.

Mark schemes for questions out of 10 will aim to ensure that the following qualitative criteria hold:

- 9–10 marks: a completely or almost completely correct answer, showing good understanding of the concepts and skill in carrying through arguments and calculations; minor slips or omissions only.

- 5–8 marks: a good though not complete answer, showing understanding of the concepts and competence in handling the arguments and calculations.

## Part A

Part A consists of four papers, all in Mathematics. These are AC1(P), AC2(P), AO1(P) and AO2(P) (C stands for Core, O stands for Options), Each of papers AC1(P) and AC2(P) is sat for 2 hours and each of papers AO1(P) and AO2(P) for $1\frac{1}{2}$ hours. These papers cover essentially half the material of Part A in the Honour School of Mathematics, consisting of 2/3 of the Core subjects and roughly 1/3 as many Options subjects as are studied by candidates for the Honour School of Mathematics.

**Paper AC1(P)** consists of six short questions, three on each of Algebra and Analysis. Candidates are expected to answer all of them. Each question is worth 10 marks.

**Paper AC2(P)** will contain three longer questions on each of Algebra and Analysis each worth 25 marks. Candidates may submit as many questions as they wish, of which at least one must be in Algebra and one in Analysis. The best answer in Algebra and the best answer in Analysis will count, together with the best of the remaining answers.

**Paper AO1(P)** and **Paper AO2(P)** will contain questions on each of the options listed in the Supplement to the Course Handbook, Syllabus and Synopses for Part A in Mathematics & Philosophy, and also on any option for which special approval has been obtained in accordance with the procedure described in the Supplement referred to above. Papers AO1(P) and AO2(P) will each contain one question on each half-unit course and two questions on each whole unit course.

**Paper AO1(P)** consists of short questions each worth 10 marks. Candidates may submit answers to as many questions as they wish: the best 4 answers will count.

**Paper AO2(P)** consists of longer questions each worth 25 marks. candidates may submit answers to as many questions as they wish: the best 2 answers will count.

# Parts B and C

## Mathematics

Where not otherwise stated, the syllabus and form of the examination papers for each unit and half-unit is defined by the lecture synopsis published in the appropriate Supplement to the Mathematics Course Handbook.

Examinations for whole unit papers are of **three hours duration** and half-unit papers are of **one and a half hours duration**. The rubrics are as follows. **There are three questions in each half-unit. For a whole unit paper the rubric states "candidates may submit answers to as many questions as they wish: the best two from each section will count". For a half-unit paper the rubric states "candidates may submit answers to as many questions as they wish: the best two will count".**

## Analysis of marks

### Part A

At the end of the Part A examination, a candidate will be awarded a USM for each of the four papers. The Examiners will recalibrate the raw marks to arrive at the USMs reported to candidates.

The Examiners aim to ensure that all papers and all subjects within a paper are fairly and equally rewarded, but if in any case a paper, or a subject within a paper, appears to have been problematical, then the Examiners may take account of this in calculating USMs. The USMs awarded to a candidate for papers in Part A will be carried forward into a classification for Part B as described below.

### Part B

The Board of Examiners in Part B will assign USMs for whole unit and half-unit papers taken in Part B and may recalibrate the raw marks to arrive at University standardised marks reported to candidates for each Mathematics paper. The full unit papers are designed so that the raw marks sum to 100, however, Examiners will take into account the relative difficulty of papers when assigning USMs. In order to achieve this, Examiners may use information on candidates' performances on the Part A examination when recalibrating the raw marks. They may also use other statistics to check that the USMs assigned fairly reflect the students' performances on a paper.

### Part C

The Board of Examiners in Part C will assign USMs for whole unit and half-unit papers taken in Part C and may recalibrate the raw marks to arrive at University Standardised Marks reported to candidates. The full unit papers are designed so that the raw marks sum to 100, however, Examiners will take into account the relative difficulty of papers when assigning USMs. In order to achieve this, Examiners may use information on candidates' performances on the earlier Parts of the examination when recalibrating the raw marks. They may also use other statistics to check that the USMs assigned fairly reflect the students' performances on a paper.

Examination scripts in Parts B and C and Essays in Part C each receive a USM (in the process described above of double and if necessary triple marking). When candidates are classified in Part C the Essay USMs are given a weight of 1/3 that of an examination scripts (so the total weight of three Philosophy subjects in Part C is the same as that of four examination scripts).

# Classification in the Final Honour School

## Classification in Parts A and B together

After USMs have been determined for all scripts, the Examiners will calculate the average USM overall, the average USM for Mathematics papers, and the average USM for Philosophy papers.

**Weightings**

In calculating these averages, USMs for individual papers in Mathematics are first weighted to take account of the proportion of the course examined in each and then scaled so that Parts A and B are weighted in the ratio 2 : 3. This gives the following weights:

| | |
|---|---|
| Each of the Part A Core papers AC1(P) and AC2(P) | 8 |
| Each of the Part A Options papers AO1(P) and AO2(P) | 4 |
| A Part B Mathematics unit | 18 |
| A Part B Mathematics half-unit | 9 |

(Thus, in particular, the four Part A Mathematics papers jointly carry the same weight as 2 Part A papers in the Honour School of Mathematics, and 2/3 of the weight, 36, of two whole unit Part B papers in Mathematics.)

No weighting is applied to USMs for Philosophy papers.

**Rules for overall classification in Parts A and B together** 335

Let $M$ denote the average USM for Mathematics papers in Parts A and B, calculated according to the weightings given above. Let $P$ denote the average of the USMs in Philosophy in Part B. The overall average $A$ is calculated to be

$$A = [(8 - k)M + kP]/8,$$

where $k$ is the number of Philosophy papers taken (which may be either 4 or 3, depending on the papers chosen by the candidate).

In Mathematics and Philosophy a candidate may be given a class higher than the average of their marks in conformity with the Regulation that "The highest honours can be obtained by excellence either in Mathematics or in Philosophy provided that adequate knowledge is shown in the other subject of the examination." (*Examination Regulations* 2010, p. 335, lines 6–8).

The following conventions will apply

1. No candidate will be given a classification lower than that implied by the place of the value of $A$ on the scale 70–100 First; 60–69 Upper Second; 50–59 Lower Second; 40–49 Third; 30–39 Pass; 0–29 Fail.

2. In the following circumstances a candidate will be given a higher classification than that implied by the value of $A$:

   a. A candidate who achieves $A \geq 67$ and either

      $M \geq 70$ and $P \geq 60$, or

      $P \geq 70$ and $M \geq 60$

      will be awarded a First.

   b. A candidate who is not awarded a First but who achieves $A \geq 57$ and either

      $M \geq 60$ and $P \geq 50$, or

      $P \geq 60$ and $M \geq 50$

      will be awarded an Upper Second.

The award of a Third, Pass or Fail will, in all cases, be by individual consideration.

### Classification in Part C

Each candidate offers 3 units for the Part C examination. Here a unit is as defined in the *Examination Regulations* 2010, p. 336, lines 11-21.

The Examination Regulations stipulate that "The highest honours can be obtained by excellence either in Mathematics or in Philosophy provided that adequate knowledge is shown in the other subject of the examination." (p. 338, lines 14–16 of the 2010 edition). In keeping with this stipulation the conventions for classification in Part C are the following:

(i) No candidate will be given a classification lower than that implied by the average of their USMs for their three units, on the scale 70–100 First; 60–69 Upper Second; 50–59 Lower Second; 40–49 Third; 30–39 Pass; 0–29 Fail.

(ii) A candidate who offers two units in Mathematics and one in Philosophy or one unit in Mathematics and two units in Philosophy and who receives

- marks of 70 or above in both units in the majority subject and
- 64 or above for the unit in the minority subject

will receive a First Class classification.

(iii) The same considerations as in (ii) apply at the Upper Second/Lower Second borderline. A candidate who offers two units in one of Mathematics and Philosophy and one unit in the other and who receives

- marks of 60 or above in both units in the majority subject and
- 54 or above for the unit in the minority subject

will receive an Upper Second Class classification.

## Advice from Examiners

You will receive advice from the Examiners before each part of your finals examination, giving more information. Notices from Examiners in previous years can be found on the Mathematical Institute website.

# 6 Prizes

In **Mathematics**

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

- Two Gibbs Prizes, of £50 each, 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 Honour Moderations.

In **Philosophy**

- Two Gibbs Prizes of £50 each, 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, 10 Merton Street, early in Michaelmas Term.

# Part V
# Student support

## 1 Welfare

### 1.1 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.

In addition, in your college there will be a number of other people to whom students may turn for advice and support: for instance Senior Tutor, Dean, Junior Dean, Chaplain, College Counsellor, College Doctor and Nurse.

You can expect that the JCR (or equivalent student body) in your college will provide support for undergraduates from within its ranks. The JCR will elect one or two Welfare Officers, who will usually be second or third year students who will be happy to help, advise, or just listen. Other JCR Officers, such as a Women's Officer, may also be helpful in some cases.

[Note that the way welfare provision is organised varies in its details from one college to another (so that, for example, a college without a Chaplain is likely to appoint in lieu a person providing pastoral support). Your College Handbook, or other college documentation or college web-site, will contain information on student support.]

### 1.2 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.admin.ox.ac.uk/shw/counserv.shtml` .

For further assistance on welfare provision and related matters consult the Proctors' and Assessor's Memorandum `http://www.admin.ox.ac.uk/proctors/info/pam/index.html` and
`http://www.ox.ac.uk/current_students/equality_health_welfare/index.html`,
where links are given to information on health and welfare issues, financial matters, student support services, and more.

## 2 Equal opportunities

The University has in place policies relating to equal opportunities, disability and harassment which are kept under review. Details can be found in the University prospectus, on the Oxford University web-site `http://www.admin.ox.ac.uk/eop/` and to the Proctors' and Assessor's Memorandum, `http://www.admin.ox.ac.uk/proctors/info/pam/index.html` .

## 3 Provision for special needs

The University operates a Code of Practice to provide equality of opportunity for those with special 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 Committee for Disabled People 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/` or 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 web-site at `http://www.philosophy.ox.ac.uk` . Further information and advice are available from the University Disabilities Office, Tel. (1)80459 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 web-sites.

**Mathematics**

See the Mathematical Institute Departmental Disability Statement reproduced in 2.2.1.

For details of provision and sources of information for students with disabilities, see The University's Code of Practice on equal opportunities is given in 1.1.3 and the Mathematical Institute Departmental Disability Statement in 2.2.1.

# 4 Harassment

The University has a Code of Practice on Harassment, which is published in the Proctors' and Assessor's Memorandum. It a disciplinary offence for any member of the University to harass another on any grounds.

The Mathematical Institute has a Code of Practice on Harassment which is reproduced in Appendix 2.2. You will also find that your college has people you can approach if you feel harassed. You may wish to go to your tutor or the Senior Tutor; alternatively you may wish to deal with someone who is not connected with your academic work or your course.

# 5 Personal development and preparation for a career

See also VI.6.

For enhancement of your transferable skills, your attention is drawn to the University's ASPIRE programme: Personal Development Planning System, `http://www.aspire.ox.ac.uk/ASPIRE/` .

Information on international summer exchanges and summer projects for mathematicians can be found in the Mathematics Course Handbook. You will be circulated by email about opportunities of this kind as they arise.

The summer of your penultimate year is probably a good time to start thinking about what you will do next after Finals.

Your college tutors will be able to provide guidance and support, and they, and others who have taught you, will usually be willing to write references. If you are thinking of further study, mention it to your tutors by the beginning of your final year at the latest. Most postgraduate applications (to the northern hemisphere) have to be submitted by December or January. Overseas fellowships and scholarships may have closing dates as early as November. If you need references from tutors, please ensure that you give them plenty of notice of the deadlines by which these have to be submitted.

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.6.3, concerning the financial implications of choices you might wish to make.

# Part VI
# Resources and facilities

## 1 Departmental facilities

**The Mathematical Institute**

Full details about the Mathematical Institute can be found in the Mathematics Course Handbook and at its web-site.

**The Philosophy Centre**

The Philosophy Centre at 10 Merton Street is open from 9.30 to 17.25, Monday to Friday (16.25 outside of weeks 0—9). *The Centre operates an access control system and you will need your University Card to gain entry.* The administrative offices are generally closed between 13.00 and 14.00. The Centre is closed for about ten days at Christmas and Easter, and for five weeks from the beginning of August to early September. As well as the Library, it contains a lecture room, a seminar room, a common room, a garden, and the administrative offices. All enquiries, including the purchasing of study aids (such as 'Logic Exercises') should be directed to the Secretarial Assistant in room G11 (second office on the left of the administrative corridor). A few members of the Philosophy Faculty have offices in this building, though most are housed in their colleges. The philosophy web-site 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 Secretary.)

**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 Philosophy Centre Lecture Room (10 Merton Street). 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/philosop |
| 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 Computing

### 3.1 Oxford University Computing Services

The Oxford University Computing Services (OUCS) are at 13 Banbury Road. For information on the services available visit http://info.ox.ac.uk/oucs.

### 3.2 Access to the University network from outside the Oxford domain (VPN) and wireless access (OWL)

Many Oxford University services can only be accessed from within the University network. These include online access to journals available on OxLIP and past examination papers. Access to restricted resources from outside the campus network is provided via the OUCS Virtual Private Network (VPN) Service. A VPN connection provides your computer with 'virtual' connection to the University network—this allows you to access the University's restricted site remotely. For information on how to use VPN on your own computer, and to install the necessary software, go to http://www.oucs.ox.ac.uk/network/vpn/ Alternatively, see the Mathematical Institute's IT Notices page// http://www.maths.ox.ac.uk/help/faqs/undergrads .

Various colleges and departments, including the Philosophy Centre at 10 Merton Street, provide broadband wireless access to the University network via the Oxford wireless Lan (OWL) or "Bodleian-Libraries" (the Libraries' wireless service). For information on how to use OWL on your laptop in places where OWL is provided, go to http://www.oucs.ox.ac.uk/network/wireless/For information on wireless in library reading rooms, see http://www.bodleian.ox.ac.uk/sers/support_ouls/wireless2.

## 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 personal interest.

Language courses in eight languages, the Language Library (consisting of over 13,000 audio and video cassettes with accompanying textbooks in over 100 languages) and its study area (computer-based learning resources and audio/video study rooms) are available free of charge 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. Prospective users without a University Card must present a letter from their College or Departmental Administrator indicating their status within the University. You can find more information at

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

There may be an opportunity for students who have studied some French (particularly those who have studied to GCSE level but not to A-level) to take a course in the third or fourth year. This will not count towards your degree class but may be recorded on your transcript or CV.

# 5 University lectures

University lectures in all subjects (although not *classes*) are open to all students. A consolidated **lecture list** is available on the University web-site at:
`http://www.maths.ox.ac.uk/notices/lecture-lists/`. Further information can be found at `http://www.admin.ox.ac.uk/pubs/lectures/`

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

# 6 Careers

See also V.5

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. In addition the Careers Service provides information about occupations and employers and advertises work experience opportunities.

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. If you wish to receive such information you should 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.

The *Oxbridge Careers Handbook* is produced annually by Oxford University Students' Union and gives useful information.

# 7 Contact points (for 2010–2011)

## Mathematical Institute

**Director of Undergraduate Studies** Director of Undergraduate Studies (tel: (6)15207)
email: `director-ugrad-studies@maths.ox.ac.uk`

**Faculty Chairman** Professor Charles Batty (tel: (2)77375)
email: `charles.batty@sjc.ox.ac.uk`

**Academic Administrator** Mrs Charlotte Turner-Smith (tel: (6)15203)
email: academic.administrator@maths.ox.ac.uk

**Deputy Academic Adminstrator** Mrs Helen Lowe (tel: (6)15204)
email: hlowe@maths.ox.ac.uk

**Graduate Studies Assistant** Mrs Margaret Sloper (tel:(6)15206)
email: sloper@maths.ox.ac.uk

**Academic Assistant** Miss Sandy Patel (tel:(6)15208)
email: patels@maths.ox.ac.uk

**Academic Assistant** Ms Amelia Bliss (tel: (6)15204)
email: *bliss@maths.ox.ac.uk*

## Philosophy Centre

**Director of Undergraduate Studies** Professor Ralph Wedgewood (tel:(2)76334)
email: ralph.wedgewood@philosophy.ox.ac.uk

**Chair of the Faculty Board** Professor Terry Irwin
email: terry.irwin@philosophy.ox.ac.uk

**Vice Chair of Faculty Board & Chair of Faculty** Dr Daniel Isaacson (tel:(2)76929)
email: daniel.isaacson@philosophy.ox.ac.uk

**Chair of Joint Committee for Mathematics and Philosophy** Dr Volker Halbach (tel:(2)79534)
email: volker.halbach@new.ox.ac.uk

**Undergraduate Studies Administrator** Mr James Knight (tel:(2)76925)
email: james.knight@philosophy.ox.ac.uk

**Director of Graduate Admissions** Dr Terry Irwin (tel:(2)72730)
email: terry.irwin@philosophy.ox.ac.uk

**Graduate Studies Administrator** Victoria Payne (tel: (2)76933)
email: victoria.payne@philosophy.ox.ac.uk

## Department of Statistics

**Chairman of Academic Committee** Dr Neil Laws (tel: (2)72875)
email: laws@stats.ox.ac.uk

**Academic Administrator** Ms J Boylan (tel: (2)72860)
email: boylan@stats.ox.ac.uk

## Computing Laboratory

**Chairman of Teaching Committee** Professor Peter Jeavons (tel: (2)73841)
email: Peter.Jeavons@comlab.ox.ac.uk

**Academic Administrator** Shoshannah Holdom (tel: (2)73863)
email: shoshannah.holdom@comlab.ox.ac.uk

## Mathematics Projects Committee

**Chairman** Prof R Heath-Brown
email: rhb@maths.ox.ac.uk

## MURC

**General**
webpage: http://www.maths.ox.ac.uk/~murc

**Chairperson** Rosie Cretney, The Queen's College
email: rosanna.cretney@queens.ox.ac.uk

## General

**Careers Service Enquiries** (tel: (2)74646)

**Mathematics Link** Dr Abigail Evans (tel: (2)74660)
email: abby.evans@careers.ox.ac.uk

**Disabilities Office** (tel: (2)89840)
email: disability@admin.ox.ac.uk

**Counselling Service** (tel: (2)70300)

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

**Equal Opportunities Officer** (tel: (2)89821)
email: equal.opportunities@admin.ox.ac.uk

**Accessible Resources Acquisition and Creation Unit** (tel: (2)83861)
email: ruth.harris@ouls.ox.ac.uk

**Oxford University Student Union, Vice President (Welfare)** (tel: (2)88450)
email: welfare@ousu.org

# Part VII
# Appendices (academic material)

## 1 Appendix A: Courses offered in 2010–2011

[It should be noted that changes may be made for 2011–2012 and beyond, principally on the Mathematics side.]

### Honour Moderations: programme of lectures (all subjects compulsory)

**Mathematics**

**Michaelmas Term**

| | |
|---|---|
| Introduction to Pure Mathematics | 8 lectures |
| Introduction to Complex Numbers | 2 lectures |
| Linear Algebra I | 14 lectures |
| Geometry I | 7 lectures |
| Analysis I | 14 lectures |

**Hilary Term**

| | |
|---|---|
| Linear Algebra II | 8 lectures |
| Introduction to Groups, Rings and Fields I | 8 lectures |
| Analysis II | 16 lectures |

**Trinity Term**

| | |
|---|---|
| Introduction to Groups, Rings and Fields II | 8 lectures |
| Geometry 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**

| | |
|---|---|
| Algebra | 24 lectures |
| Analysis | 24 lectures |
| Probability | 8 lectures |

**Options**

Courses covered by 16 lectures are whole units, those covered by 8 lectures are half-units.

**Hilary Term**

| | |
|---|---|
| Introduction to Fields | 8 lectures |
| Group Theory | 8 lectures |
| Number Theory | 8 lectures |
| Integration | 16 lectures |
| Topology | 16 lectures |

**Trinity Term**

| | |
|---|---|
| Number Theory | 8 lectures |
| Multivariable Calculus | 8 lectures |

For information on additional courses available by special approval see III.6.1.

## Part B

**Mathematics: list of units and half-units** (B1 is compulsory)

**Schedule 1 (standard units and half-units)**

| | | |
|---|---|---|
| B1 | Foundations: Logic and Set Theory | whole unit |
| B2 | Algebra | whole unit |
| B2a | Introduction to Representation Theory | half-unit |
| B2b | Group Theory | half-unit |
| B3 | Geometry | whole unit |
| B3a | Geometry of Surfaces | half-unit |
| B3b | Algebraic Curves | half-unit |
| B3.1a | Topology and Groups | half-unit |
| B4 | Analysis | whole unit |
| B4a | Banach spaces | half-unit |
| B9 | Number Theory | whole unit |
| B9a | Galois theory | half-unit |
| B10a | Martingales through measure theory | half-unit |
| B11a | Communication theory | half-unit |
| C3.1a | Topology and Groups M-level | half-unit |

**Schedule 2 (additional units and half-units)**

| | | |
|---|---|---|
| BE | Mathematical Extended Essay | whole unit |
| O1 | History of Mathematics | whole unit |
| OCS3a | Lambda Calculus and Types | half-unit |
| N1 | Mathematics Education Undergraduate Ambassadors' Scheme | whole unit |
| N1a | Mathematics Education | half-unit |
| N1b | Undergraduate Ambassadors Scheme | half-unit |
| C3.2 | Lie Groups and Differentiable Manifolds M-level | whole unit |
| C3.2a | Lie Groups M-level | half-unit |
| C3.2b | Differentiable Manifolds M-level | half-unit |

And also

Any other whole unit or half-unit course from the list of Mathematical Institute units, other than those in Schedule 1 and BE: Extended Essay, for which special approval is granted.

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

101 History of Philosophy from Descartes to Kant
102 Knowledge and Reality
103 Ethics
104 Philosophy of Mind
105 Philosophy of Science and Philosophy of Psychology and Neuroscience
106 Philosophy of Science and Social Science
107 Philosophy of Religion
108 The Philosophy of Logic and Language
109 Aesthetics
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
118 The Later Philosophy of Wittgenstein
120 Intermediate Philosophy of Physics
122 Philosophy of Mathematics
124 Philosophy of Science
125 Philosophy of Cognitive Science - *first examination in 2012*
199 Thesis

## Part C

### Mathematics

See the Mathematics Part C Supplement.

### Philosophy

As for Part B, except for

- the exclusion of Subject 122;
- the addition of **The Rise of Modern Logic**;
- the substitution of an M-level Thesis for Subject 199.

# 2 Appendix B: Documents produced by the Faculty of Philosophy

## 2.1 Appendix B.1: Informal Descriptions of FHS Philosophy Courses

The following informal descriptions of the subjects for examination in Honour Schools with Philosophy should be read in conjunction with the official stipulation of the examination syllabus of each of these

subjects in the *Examination Regulations* 2010, pp. 399 - 408. 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 web-site from Oxford Examination Papers Online (OXAM) `http:www.oxam.ox.ac.uk/main.asp`.

In what follows, you will find that some subjects are named as 'normal prerequisites' for the study of others. For instance: 112 The Philosophy of Kant (NP 101) means that those studying 112, Kant, would either normally be expected to have studied 101 (History of Philosophy from Descartes to Kant), or to have undertaken relevant background reading in the History of Philosophy, as suggested by their tutor. In some cases alternatives are given as the prerequisite, e.g. 107 Philosophy of Religion (NP 101 or 102) means that those studying 107, Philosophy of Religion, would normally be expected either to have studied 101 (History of Philosophy) or 102 (Knowledge and Reality), or to have undertaken relevant preparatory work in one or other of those areas, as suggested by their tutor. In cases of doubt students are encouraged to consult their tutors and establish with them, in their individual circumstances, what the best options are.

**101: History of Philosophy from Descartes to Kant**

The purpose of this subject is to enable you to gain a critical understanding of some of the metaphysical and epistemological ideas of some of the most important philosophers of the early modern period, between the 1630s to the 1780s. This period saw a great flowering of philosophy in Europe. Descartes, Spinoza and Leibniz, often collectively referred to as 'the rationalists', placed the new 'corpuscularian' science within grand metaphysical systems which certified our God-given capacity to reason our way to the laws of nature (as well as to many other, often astonishing conclusions about the world). Locke wrote in a different, empiricist tradition. He argued that, since our concepts all ultimately derive from experience, our knowledge is necessarily limited. Berkeley and Hume developed this empiricism in the direction of a kind of idealism, according to which the world studied by science is in some sense mind-dependent and mind-constructed. Kant subsequently sought to arbitrate between the rationalists and the empiricists, by rooting out some assumptions common to them and trying thereby to salvage and to reconcile some of their apparently irreconcilable insights.

Reading the primary texts is of great importance.

The paper will be divided into three sections and students will be required to answer at least one question from Section A (Descartes, Spinoza, Leibniz) and at least one from Section B (Locke, Berkeley, Hume). Section C will contain questions on Kant and students taking paper 112 may not attempt questions from this section.

R.S.Woolhouse, *The Empiricists*; J.Cottingham, *The Rationalists* (both O.U.P. Opus series).

**102: Knowledge and Reality**

The purpose of this subject is to enable you to examine some central questions about the nature of the world and the extent to which we can have knowledge of it.

In considering knowledge you will examine whether it is possible to attain knowledge of what the world is really like. Is our knowledge of the world necessarily limited to what we can observe to be the case? Indeed, are even our observational beliefs about the world around us justified? Can we have knowledge of what will happen based on what has happened? Is our understanding of the world necessarily limited to what we can prove to be the case? Or can we understand claims about the remote past or distant future which we cannot in principle prove to be true?

In considering reality you will focus on questions such as the following. Does the world really contain the three-dimensional objects and their properties-such as red buses or black horses- which we appear to encounter in everyday life? Or is it made up rather of the somewhat different entities studied by science, such as colourless atoms or four-dimensional space-time worms? What is the relation between the common sense picture of the world and that provided by contemporary science? Is it

correct to think of the objects and their properties that make up the world as being what they are independently of our preferred ways of dividing up reality? These issues are discussed with reference to a variety of specific questions such as 'What is time?','What is the nature of causation?', and 'What are substances?' There is an opportunity in this subject to study such topics as reference, truth and definition, but candidates taking 102 and 108 should avoid repetition of material across examinations, though it is safe to assume that good answers to questions would not involve repetition for which you might be penalised.

Jonathan Dancy, *Introduction to Contemporary Epistemology* (Oxford), chs. 1–3.

Michael J. Loux, *Metaphysics* (Routledge)

**103: Ethics**

The purpose of this subject is to enable you to come to grips with some questions which exercise many people, philosophers and non-philosophers alike. How should we decide what is best to do, and how best to lead our lives? Are our value judgements on these and other matters objective or do they merely reflect our subjective preferences and viewpoints? Are we in fact free to make these choices, or have our decisions already been determined by antecedent features of our environment and genetic endowment? In considering these issues you will examine a variety of ethical concepts, such as those of justice, rights, equality, virtue, and happiness, which are widely used in moral and political argument. There is also opportunity to discuss some applied ethical issues. Knowledge of major historical thinkers, e.g. Aristotle and Hume and Kant, will be encouraged, but not required in the examination.

John Mackie, *Ethics* (Penguin), chs. 1–2.

**104: Philosophy of Mind (NP 101 or 102)**

The purpose of this subject is to enable you to examine a variety of questions about the nature of persons and their psychological states, including such general questions as: what is the relation between persons and their minds? Could robots or automata be persons? What is the relation between our minds and our brains? If we understood everything about the brain, would we understand everything about consciousness and rational thought? If not, why not? Several of these issues focus on the relation between our common sense understanding of ourselves and others, and the view of the mind developed in scientific psychology and neuroscience. Are the two accounts compatible? Should one be regarded as better than the other? Should our common sense understanding of the mind be jettisoned in favour of the scientific picture? Or does the latter leave out something essential to a proper understanding of ourselves and others? Other more specific questions concern memory, thought, belief, emotion, perception and action.

Paul Churchland, *Matter and Consciousness* (Cambridge) chs. 1-3.

**105: Philosophy of Science and Philosophy of Psychology and Neuroscience (NP 101 or 102).**

The purpose of this subject is to enable you to study topics in the philosophy of science in general, and topics in the philosophy of psychology and neuroscience in particular. In the broadest sense the philosophy of science is concerned with the theory of knowledge and with associated questions in metaphysics. What is distinctive about the field is the focus on "scientific" knowledge, and metaphysical questions-concerning space, time, causation, probability, possibility, necessity, realism and idealism-that follow in their train. As such it is concerned with distinctive traits of science: testability, objectivity, scientific explanation, and the nature of scientific theories.

The philosophy of psychology and neuroscience addresses questions that arise from the scientific study of the mind. (The philosophy of mind, in contrast, starts from our ordinary everyday thinking about mental matters.) Some of the questions addressed are extremely general and are closely connected with topics, such as explanation and reduction, that you will cover in the philosophy of science part of

the course. Other questions relate to key notions that are used in cognitive psychology and cognitive neuroscience, such as representation, computation, tacit knowledge, implicit rules and modularity. There are also questions that focus on specific aspects of contemporary research into topics such as consciousness, perception, memory, reasoning and the way that cognitive abilities break down after brain damage. It is not necessary for you to be studying neuroscience or experimental psychology; nor do you need expertise in statistics. What is important is that you should enjoy reading about psychology and neuroscience and that you should be interested in the relationship between scientific and philosophical ways of approaching questions about the mind.

Don Gillies, *Philosophy of Science in the Twentieth Century* (Blackwells)

Paul Churchland, *Matter and Consciousness* (Cambridge) chs. 1-3.

**106: Philosophy of Science and Social Science (NP 101 or 102)**

The purpose of this subject is to enable you to study topics in the philosophy of science in general, and topics in the philosophy of social science in particular. In the broadest sense the philosophy of science is concerned with the theory of knowledge and with associated questions in metaphysics. What is distinctive about the field is the focus on scientific knowledge, and metaphysical questions-concerning space, time, causation, probability, possibility, necessity, realism and idealism-that follow in their train. As such it is concerned with distinctive traits of science: testability, objectivity, scientific explanation, and the nature of scientific theories.

Whether economics, sociology, and political science are "really" sciences is a question that lay people as well as philosophers have often asked. The technology spawned by the physical sciences is more impressive than that based on the social sciences: bridges do not collapse and aeroplanes do not fall from the sky, but no government can reliably control crime, divorce, or unemployment, or make its citizens happy at will. Human behaviour often seems less predictable, and less explicable than that of inanimate nature and non-human animals, even though most of us believe that we know what we are doing and why. So philosophers of social science have asked whether human action is to be explained causally or non-causally, whether predictions are self-refuting, whether we can only explain behaviour that is in some sense rational-and if so, what that sense is. Other central issues include social relativism, the role of ideology, value-neutrality, and the relationship between the particular social sciences, in particular whether economics provides a model for other social science. Finally, some critics have asked whether a technological view of 'social control' does not threaten democratic politics as usually understood.

Martin Hollis, *The Philosophy of Social Science* (Cambridge)

Alexander Rosenberg, *Philosophy of Social Science* (Westview).

**107: Philosophy of Religion (NP 101 or 102)**

The purpose of this subject is to enable you to examine claims about the existence of God and God's relationship to the world. What, if anything, is meant by them? Could they be true? What justification, if any, can or needs to be provided for them? The paper is concerned primarily with the claims of Western religions (Christianity, Judaism and Islam), and with the central claim of those religions, that there is a God. God is said to be omnipresent, omnipotent, omniscient, perfectly good, a source of moral obligation and so on. But what does it mean to say that God has these properties, and are they consistent with each other? Could God change the past, or choose to do evil? Does it make sense to say that God is outside time? You will have the opportunity to study arguments for the existence of God—for example, the teleological argument from the fact that the Universe is governed by scientific laws, and the argument from people's religious experiences. Other issues are whether the fact of pain and suffering counts strongly, or even conclusively, against the existence of God, whether there could be evidence for miracles, whether it could be shown that prayer "works", whether there could be life after death, and what philosophical problems are raised by the existence of different religions. There may also be an optional question in the exam paper

about some specifically Christian doctrine - does it make sense to say that the life and death of Jesus atoned for the sins of the world, and could one know this? There is abundant scope for deploying all the knowledge and techniques which you have acquired in other areas of philosophy. Among the major philosophers whose contributions to the philosophy of religion you will need to study are Aquinas, Hume and Kant.

M. Peterson and other authors, *Reason and Religious Belief, An Introduction to the Philosophy of Religion* (Oxford University Press)

**108: The Philosophy of Logic and Language (NP Prelims/Mods Logic)**

The purpose of this subject is to enable you to examine some fundamental questions relating to reasoning and language. The philosophy of logic is not itself a symbolic or mathematical subject, but examines concepts of interest to the logician. If you want to know the answer to the question 'What is truth?', this is a subject for you. Central also are questions about the status of basic logical laws and the nature of logical necessity. What, if anything, makes it true that nothing can be at the same time both green and not green all over? Is that necessity the result of our conventions or stipulations, or the reflection of how things have to be independently of us? Philosophy of language is closely related. It covers the very general question how language can describe reality at all: what makes our sentences meaningful and, on occasion, true? How do parts of our language refer to objects in the world? What is involved in understanding speech (or the written word)? You may also investigate more specific issues concerning the correct analysis of particular linguistic expressions such as names, descriptions, pronouns, or adverbs, and aspects of linguistics and grammatical theory. Candidates taking 102 as well as 108 should avoid repetition of material across examinations, though it is safe to assume that good answers to questions would not involve repetition for which you might be penalised.

Mark Sainsbury, *"Philosophical Logic", in Philosophy, a Guide through the Subject*, edited by A. C. Grayling (Oxford).

**109: Aesthetics (NP 101 or 102 or 103 or 104 or 115)**

The purpose of this subject is to enable you to study a number of questions about the nature and value of beauty and of the arts. For example, do we enjoy sights and sounds because they are beautiful, or are they beautiful because we enjoy them? Does the enjoyment of beauty involve a particular sort of experience, and if so, how should we define it and what psychological capacities does it presuppose? Is a work of art a physical object, an abstract object, or what? Does the value of a work of art depend only upon its long- or short-term effects on our minds or characters? If not, what sorts of reasons can we give for admiring a work of art? Do reasons for admiring paintings, pieces of music and poems have enough in common with one another, and little enough in common with reasons for admiring other kinds of things, to support the idea that there is a distinctive sort of value which good art of every sort, and only art, possesses? As well as general questions such as these ones, the subject also addresses questions raised by particular art forms. For example, what is the difference between a picture and a description in words? Can fiction embody truths about its subject-matter? How does music express emotions? All of these questions, and others, are addressed directly, and also by examining classic texts, including Plato's Republic, Aristotle's Poetics, Hume's Essay on the Standard of Taste and Kant's Critique of Aesthetic Judgement.

Malcolm Budd, *Values of Art* (Penguin)

**110: Medieval Philosophy: Aquinas**

The purpose of this subject is to introduce you to many of Aquinas's central ideas and arguments on a wide variety of theological and philosophical topics. These include the proofs of the existence of God (the famous "five ways"), the concept of the simplicity of God (including the controversial issue of the identity of being and essence in God), the concept of the soul in general and of the

human soul in particular, the proof of the immortality of the human soul, the nature of perception and of intellectual knowledge, the notion of free will and of happiness, the theory of human actions. These are studied in translation rather than in the Latin original, though a glance at Aquinas's remarkably readable Latin can often be useful. Candidates are encouraged to carefully read and analyse Aquinas's texts and to focus on the philosophical questions they raise.

The subject will be studied in one of two sets of texts ( *The fathers of the English Dominican Province edition*, 1911, rev. 1920): Aquinas, Summa Theologica, Ia, 2–11, 75–89, which will cover the following topics: arguments for the existence of God; God's essence and existence; God and goodness; God and time; the soul in relation to the body; individual intellects; perception and knowledge; free will; the soul and knowledge. Aquinas, *Summa Theologica*, Ia IIae 1–10, 90- -97, which will cover the following topics: natural and supernatural happiness; voluntary action; the will; natural and universal law; human law.

This paper will include an optional question containing passages for comment. This subject may not be combined with subject 111]

Anthony Kenny, Aquinas; F.C. Copleston, Aquinas;

B. Davies, *The Thought of Thomas Aquinas* (O.U.P.)

**111: Medieval Philosophy: Duns Scotus and Ockham (NP 101 or 108)**

Duns Scotus and Ockham are, together with Aquinas, the most significant and influential thinkers of the Middle Ages. The purpose of this subject is to make you familiar with some fundamental aspects of their theological and philosophical thought. As to Scotus, these include the proof of the existence and of the unicity of God (the most sophisticated one in the Middle Ages) and the issues about causality that it raises, the theory of the existence of concepts common to God and creatures (the univocity theory of religious language), the discussion about the immateriality and the immortality of the human soul, and the reply to scepticism. As to Ockham, they include nominalism about universals and the refutation of realism (including the realism of Duns Scotus), some issues in logic and especially the theory of "suppositio" and its application in the debate about universals, the theory of intellectual knowledge of singulars and the question of whether we can have evidence about contingent properties of singulars, the nature of efficient causality and the problem of whether we can prove the existence of a first efficient cause. These are studied in translation rather than in the Latin original, though a glance at the Latin can often be useful. Candidates are encouraged to carefully read and analyse Scotus's and Ockham's texts and to focus on the philosophical questions they raise.

The subject will be studied in the following sets of texts :
*Scotus: Philosophical Writings*, tr. Wolter (Hackett), chapters II–IV, pp. 13–95 (man's natural knowledge of God; the existence of God; the unicity of God); *Five texts on the Mediaeval Problem of Universals*, tr. Spade (Hackett), pp. 57-113 (universals, individuation).
*Ockham: Philosophical Writings*, tr. Boehner (Hackett), pp. 18–27 (intuitive and abstractive cognition); pp. 97-126 (the possibility of natural theology, the existence of God); *Five texts on the Mediaeval Problem of Universals*, tr. Spade (Hackett), pp. 114-231 (universals).
The texts are studied in translation rather than the Latin original. This paper will include an optional question containing passages for comment. This subject may not be combined with subject 110.

R. Cross, *Duns Scotus*

M. McCord Adams, *William Ockham*, vol. 1.

**112: The Philosophy of Kant (NP 101)**

The purpose of this paper is to enable you to make a critical study of some of the ideas of one of the greatest of all philosophers. Immanuel Kant lived from 1724 to 1804. He published the Critique of Pure Reason in 1781, and the Groundwork of the Metaphysics of Morals in 1785. The Critique

is his greatest work and, without question, the most influential work of modern philosophy. It is a difficult but enormously rewarding work. This is largely because Kant, perhaps uniquely, combines in the highest measure the cautious qualities of care, rigour and tenacity with the bolder quality of philosophical imagination. Its concern is to give an account of human knowledge that will steer a path between the dogmatism of traditional metaphysics and the scepticism that, Kant believes, is the inevitable result of the empiricist criticism of metaphysics. Kant's approach, he claims in a famous metaphor, amounts to a Copernican revolution in philosophy. Instead of looking at human knowledge by starting from what is known, we should start from ourselves as knowing subjects and ask how the world must be for us to have the kind of knowledge and experience that we have. Kant thinks that his Copernican revolution also enables him to reconcile traditional Christian morality and modern science, in the face of their apparently irreconcilable demands (in the one case, that we should be free agents, and in the other case, that the world should be governed by inexorable mechanical laws).

In the Groundwork Kant develops his very distinctive and highly influential moral philosophy. He argues that morality is grounded in reason. What we ought to do is what we would do if we acted in a way that was purely rational. To act in a way that is purely rational is to act in accordance with the famous "categorical imperative", which Kant expresses as follows: "Act only on that maxim through which you can at the same time will that it should become a universal law."

*Critique of Pure Reason* , trans. Norman Kemp Smith (Macmillan)

*Groundwork of the Metaphysics of Morals*, trans, H.J. Paton (Hutchinson).

Roger Scruton, *Kant*

**113: Post-Kantian Philosophy (NP 101 or 102 or 103 or 112)**

Many of the questions raised by German and French philosophers of the 19th and early 20th centuries were thought to arise directly out of Kant's metaphysics, epistemology and ethics: Hence the title of this subject, the purpose of which is to enable you to explore some of the developments of (and departures from) Kantian themes in the work of Hegel, Schopenhauer, Nietzsche, Husserl, Heidegger, Sartre and Merleau-Ponty. Students typically focus their study on only two chosen authors.

Hegel and Schopenhauer delineate global, metaphysical systems out of which each develops his own distinctive vision of ethical and (especially in the case of Hegel) political life. Nietzsche's writings less obviously constitute a 'system', but they too develop certain ethical and existential implications of our epistemological and metaphysical commitments. Husserl will interest those pupils attracted to problems in ontology and epistemology such as feature in the Cartesian tradition; his work also serves to introduce one to phenomenology, the philosophical method later developed and refined by Heidegger, Sartre and Merleau-Ponty.

In Heidegger and Sartre, that method is brought to bear on such fundamental aspects of human existence as authenticity, social understanding, bad faith, art and freedom. Merleau-Ponty (who trained as a psychologist) presents a novel and important account of the genesis of perception, cognition and feeling, and relates these to themes in aesthetics and political philosophy. While this is very much a text-based paper, many of the questions addressed are directly relevant to contemporary treatments of problems in epistemology and metaphysics, in aesthetics, political theory and the philosophy of mind.

Robert C. Solomon, *Continental Philosophy since 1750: The Rise and Fall of the Self* (O.U.P.)

**114: Theory of Politics (NP 103)**

In order to understand the world of politics, we also need to know which views of politics and society people have when they make political decisions, and why we recommend certain courses of action rather than others. This purpose of this subject is to enable you to look at the main ideas we use when we think about politics: why do we have competing views of social justice and what makes a particular view persuasive, possibly even right? What happens when a concept such as freedom has

different meanings, so that those who argue that we must maximise freedom of choice are confronted with those who claim that some choices will actually restrict your freedom? Is power desirable or harmful? Would feminists or nationalists give a different answer to that question? Political theory is concerned with developing good responses to problems such as: when should we obey, and when should we disobey, the state? But it is also concerned with mapping the ways in which we approach questions such as: how does one argue in favour of human rights? In addition, you will explore the main ideologies, such as liberalism, conservatism and socialism, in order to understand their main arguments and why each of them will direct us to different political solutions and arrangements.

Will Kymlicka, *Contemporary Political Philosophy: An Introduction* (O.U.P.)

**115: Plato, Republic**

Plato's influence on the history of philosophy is enormous. The purpose of this subject is to enable you to make a critical study of The Republic, which is perhaps his most important and most influential work. Written as a dialogue between Socrates and others including the outspoken immoralist Thrasymachus, it is primarily concerned with questions of the nature of justice and of what is the best kind of life to lead. These questions prompt discussions of the ideal city - which Karl Popper criticised as totalitarian - of education and art, of the nature of knowledge, the Theory of Forms and the immortality of the soul. In studying it you will encounter a work of philosophy of unusual literary merit, one in which philosophy is presented through debates, through analogies and images, including the famous simile of the Cave, as well as rigorous argument, and you will encounter some of Plato's important contributions to ethics, political theory, metaphysics, philosophy of mind and aesthetics. You are expected to study the work in detail; the examination contains a question requiring comments on chosen passages, as well as a choice of essay questions. Julia Annas, *An Introduction to Plato's Republic*, introduction and ch. 1

Set translation: Plato: *Republic*, tr Grube, revised Reeve (Hackett).

**116: Aristotle, Nicomachean Ethics**

The purpose of this subject is to give you the opportunity to make a critical study of one of the most important works in the history of philosophy. Like Plato in the Republic, Aristotle is concerned with the question, what is the best possible sort of life? Whereas this leads Plato to pose grand questions in metaphysics and political theory, it leads Aristotle to offer close analyses of the structure of human action, responsibility, the virtues, the nature of moral knowledge, weakness of will, pleasure, friendship, and other related issues. Much of what Aristotle has to say on these is ground-breaking, highly perceptive, and still of importance in contemporary debate in ethics and moral psychology.

You are expected to study the work in detail; the examination contains a question requiring comments on chosen passages, as well as a choice of essay questions.

J. L. Ackrill, *Aristotle the Philosopher*, ch. 10. Set translation

Aristotle: *Nicomachean Ethics* translated and with notes by T.H. Irwin (Hackett).

**Guidance on commentary ("gobbets") questions for FHS Philosophy papers 115 (Plato's Republic) and 116 (Aristotle's Nicomachean Ethics)**

The first requirement is to identify the argumentative context of the passage, e.g. 'This passage occurs in Socrates' response to Thrasymachus' claim that the ruler properly so-called is expert in promoting his own advantage; in reply Socrates urges that all expertise aims to promote the advantage of that on which the expertise is exercised, hence the expert ruler must aim to promote, not his own advantage, but that of the subject'. You should then set out the specific contribution of the passage to the argumentative context, e.g. a sub-argument (in which case the steps of the argument should be set out), or a distinction (in which case you should clearly state what is being distinguished from what), or the introduction of some key concept, which should be clearly elucidated. Where appropriate, elucidation should be followed by criticism; thus if the passage contains a fallacious or

unsound argument, or a faulty distinction, the flaw should be briefly identified. If the significance of the passage goes beyond the immediate argumentative context (e.g. in introducing a concept which is important for a wider range of contexts) that wider significance should be indicated. Wider significance may be internal to the work as a whole, or may extend beyond it, for instance by relating to some theme central to the thought of the author (such as Plato's Theory of Forms or Aristotle's Categories) or to some important topic in modern philosophy. Your primary focus in philosophy gobbets should be on argumentative and conceptual content. Details of sentence construction, vocabulary etc should be discussed only in so far as they affect the content thus conceived. The same goes for the identification of persons etc named in the passage; note that where the passage is taken from a Platonic dialogue it will usually be relevant to identify the speaker(s). It is vitally important to observe the time constraints imposed by the number of passages to be translated and commented on. Brevity, relevance and lucidity are crucial. It is especially important not to be carried away in expounding the wider significance of the passage (see above); a gobbet should not expand into an essay on the Theory of Forms or the problem of universals. Use your own judgement on how much you can afford to put in.

**117: Frege, Russell, and Wittgenstein (NP Prelims/Mods Logic)**

The purpose of this subject is to enable you to study some classic texts from which emerged modern logic and philosophy of language. Frege invented and explained the logic of multiple generality (quantification theory) and applied this apparatus to the analysis of arithmetic. Russell continued this programme, adding some refinements (the theory of types, the theory of descriptions), and he applied logic to many traditional problems in epistemology. Wittgenstein's Tractatus outlined an ambitious project for giving a logical account of truths of logic (as tautologies).

The texts are dense and sophisticated, but they are elegant and full of challenging ideas and your ability to understand logical symbolism will be important.

Anthony Kenny, *Frege* (Penguin) and *Wittgenstein* (Penguin)

J. O. Urmson, *Philosophical Analysis.*

**118: The Later Philosophy of Wittgenstein (NP 101 or 102 or 108 or 117)**

The purpose of this subject is to enable you to study some of the most influential ideas of the 20th century. The main texts are Wittgenstein' s posthumously-published Philosophical Investigations and The Blue and Brown Books. These writings are famous not just for their content but also for their distinctive style and conception of philosophy. There is much critical discussion about the relation between those aspects of Wittgenstein's work. Wittgenstein covers a great range of issues, principally in philosophy of language and philosophy of mind. In philosophy of language, one key topic is the nature of rules and rule-following. What is involved in grasping a rule; and how can I tell, in a new case, what I have to do to apply the rule correctly? Indeed, what makes it the case that a particular move at this stage is the correct way of applying the rule; is there any standard of correctness other than the agreement of our fellows? Other topics include: whether language is systematic; the relation between linguistic meaning and non-linguistic activities; whether concepts can be illuminatingly analysed. In the philosophy of mind, Wittgenstein is especially famous for the so-called "private language argument", which tries to show that words for sensations cannot get their meanings by being attached to purely internal, introspective, "private objects". Other, equally important, topics include the nature of the self, of introspection and of visual 0 ience, and the intentionality (the representative quality) of mental states. Most generally, can we (as Wittgenstein thought) avoid Cartesianism without lapsing into behaviourism?

The texts: try *Philosophical Investigations* paras 1–80; Blue Book pp. 1–17

Saul Kripke: *Wittgenstein on Rules and Private Language* (Blackwell);

Marie McGinn: *Wittgenstein and the Philosophical Investigations* (Routledge, 1997, in the Routledge Philosophy Guidebooks series)

**120: Intermediate Philosophy of Physics**

The purpose of this subject is to enable you to come to grips with conceptual problems in special relativity and quantum mechanics. Only those with a substantial knowledge of physics should offer this subject, which is normally available only to candidates reading Physics and Philosophy.

**122: Philosophy of Mathematics (compulsory in Part B) (NP 101 or 102 or 108 or 117 or 119 or 120)**

What is the relation of mathematical knowledge to other kinds of knowledge? Is it of a special kind, concerning objects of a special kind? If so, what is the nature of those objects and how do we come to know anything about them? If not, how do we explain the seeming difference between proving a theorem in mathematics and establishing something about the physical world? The purpose of this subject is to enable you to examine questions such as these. Understanding the nature of mathematics has been important to many philosophers, including Plato, Aristotle, and Kant, as a test or as an exemplar of their overall position, and has also played a role in the development of mathematics at certain points. While no specific knowledge of mathematics is required for study of this subject, it will be helpful to have studied mathematics at A-level, or similar, and to have done Logic in Prelims/Mods.

Stephen F. Barker, *Philosophy of Mathematics* (Prentice-Hall)

**124: Philosophy of Science (NP 101 or 102)**

Philosophy of science is applied epistemology and applied metaphyics. It is theory of scientific knowledge and scientific method, including elements in philosophy of language, philosophy of mathematics, and metaphysics. It deals with metaphysical questions—about space, time, causation, ontology, necessity, truth—as they arise across the board in the special sciences, not just in physics.

Questions of method include questions of the theory–observation divide, induction, theory confirmation, and scientific explanation. They also include theory-change, whether inter-theoretic reduction, unification, or revolutionary change. Theu are at once questions about scientific rationality, and connect in turn with decision theory and the foundations of probability. They connect also with metaphysics, especially realism: theory-change, scepticism, fictionalism, naturalism, the underdeterminism of theory by data, functionalism, structuralism, are all critiques of realism.

The subject also includes the study of major historical schools of philosophy of science. The most important of these is logical positivism (later logical empiricism) that dominated the second and third quarters of of the last century. In fact, some of the most important schools of philosophy of science are broadly continuous with it, notably constructive emppiricism and structural realism.

The syllabus for this subject contains that for Part A of 105 and 106.

Don Gillies, *Philosophy of science in the twentieth century* (Blackwell's)

James Ladyman, *Understanding philosophy of science* (Routledge)

**125: FHS Philosophy of Cognitive Science**

This paper covers some of key questions about the nature of the mind dealt with by a variety of cognitive scientific disciplines: experimental psychology, cognitive neuroscience, linguistics and computational modelling of the mind. Studying this paper will provide insight into the ways that contemporary scientific advances have improved our understanding of aspects of the mind that have long been the focus of philosophical reflection. It will also introduce you to a range of theoretical issues generated by current research in the behavioural and brain sciences.
The core topics are:

- Levels of description and explanation (e.g. personal vs. subpersonal, functional vs. mechanistic, mind vs. brain)

- Cognitive architecture, modularity, homuncular functionalism
- Conceptual foundations of information processing: rules and algorithms, tacit knowledge (e.g. of grammar), competence vs. performance
- Nature and format of representations: representationalism vs. behaviourism, the computational theory of mind and language of thought, connectionist alternatives
- The scientific study of consciousness, including the role of subjects' reports, non-verbal and direct measures; neural and computational correlates of consciousness; and the problem of distinguishing phenomenal and access consciousness empirically

The lectures will also cover philosophical issues raised by some areas of cutting-edge research, such as: agency and its phenomenology; attention and neglect; cognitive neuropsychology; concepts; delusions; dual-process theories; dynamical systems, embodied and embedded cognition; evolutionary psychology and massive modularity; forward models and predictive coding; imagery; implicit processing (e.g. blindsight, prosopagnosia); innateness (e.g. concept nativism); language processing and knowledge of language; perception and action (e.g. dorsal vs. ventral visual systems); spatial **representation**; theory of mind / mindreading; unity of consciousness. Lectures may also cover some historical **background** (e.g. the cognitive revolution).
For those studying psychology, neuroscience, linguistics or computation, the paper is a crucial bridge to philosophy. But you do not need to be studying a scientific subject to take this paper, as long as you enjoy reading about scientific discoveries about the mind and brain. The paper will be of great interest to philosophers without a scientific **background** who want to understand the benefits and limitations of bringing scientific data to bear on deep issues in the philosophy of mind.

Recommended pathways

Although there are no absolute prerequisites, it would be beneficial to study FHS 102 Knowledge and Reality and/or FHS 104 Philosophy of Mind in conjunction with this paper. For those doing so it would be useful to have begun work on one or both of those papers first.
In the transitional year 2010/11 eight lectures will be provided that are suitable for both the 105b (philosophy of psychology and neuroscience) half of the old FHS 105 paper and for the first half of the new FHS 125 course.
Since this is a new course, the Faculty is ready to advise and assist college tutors in ensuring adequate provision of tutorials for the paper. Such requests, and queries about the changeover from FHS 105 to FHS 125, can be addressed by tutors to Dr. Tim Bayne, St. Catherine's College or to the Undergraduate Studies Administrator.

Background reading:

Martin Davies, *'An approach to philosophy of cognitive science'*, in F. Jackson & M. Smith (eds.) *The Oxford Handbook of Contemporary Philosophy* (Oxford: O.U.P., 2005). An expanded version is available online at the Philosophy Faculty Weblearn (Undergraduate Reading Lists)

Clark, A. (2001), *Mindware: An Introduction to the Philosophy of Cognitive Science* (Oxford, OUP).

**The Rise of Modern Logic**

The period of scientific thought to be covered is 1879 to 1931 and includes principally the logical and foundational works of Frege, Russell, Hilbert, Brouwer, and Gödel that fall within this period. Questions may also be asked concerning Cantor, Dedekind, Poincaré, Zermelo, Skolem, Wittgenstein (Tractatus only), and Ramsey.

Most of the relevant material is contained in Jean van Heijenoort (ed.), *From Frege to Gödel. A Source Book in Mathematical Logic, 1879–1931* (Harvard University Press).

The Rise of Modern Logic is a bridge paper for this joint school. Mathematics and Philosophy fourth years are very well prepared for it having already studied B1 Foundations and 122 Philosophy of Mathematics. For someone with interests in this area a particularly good combination is this paper with some or all of the M-Level Logic courses in Mathematics, Gödel's Incompleteness Theorems, Axiomatic Set Theory, and Model Theory.

**198: Special subjects** (offered only occasionally)

As specified in the regulations for Philosophy in All Honour Schools including Philosophy in the Grey Book.

**199: Thesis**

As specified in the Regulations for Philosophy in All Honour Schools including Philosophy in the Grey Book.

## 2.2 Appendix B.2: 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.

# Part VIII
# Appendices (Codes of Practice, etc.)

## 1 University Codes and Regulations

### 1.1 Plagiarism

The University and Department employ a series of sophisticated software applications to detect **plagiarism** in submitted examination work, both in terms of copying and collusion. It regularly monitors on-line essay banks, essay-writing services, and other potential sources of material. It reserves the right to check samples of submitted essays for plagiarism. Although the University strongly encourages the use of electronic resources by students in their academic work, any attempt to draw on third-party material without proper attribution may well attract severe disciplinary sanctions.

Below is the University definition of what constitutes Plagiarism. All cases would be regraded as a serious disciplinary matter and could result in your being suspended or being sent down.

#### What is plagiarism?

Plagiarism is the copying or paraphrasing of other peoples work or ideas into your own work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition.

Collusion is another form of plagiarism involving the unauthorised collaboration of students (or others) in a piece of work.

Cases of suspected plagiarism in assessed work are investigated under the disciplinary regulations concerning conduct in examinations. Intentional or reckless plagiarism may incur severe penalties, including failure of your degree or expulsion from the university.

#### Why does plagiarism matter?

It would be wrong to describe plagiarism as only a minor form of cheating, or as merely a matter of academic etiquette. On the contrary, it is important to understand that plagiarism is a breach of academic integrity. It is a principle of intellectual honesty that all members of the academic community should acknowledge their debt to the originators of the ideas, words, and data which form the basis for their own work. Passing off anothers work as your own is not only poor scholarship, but also means that you have failed to complete the learning process. Deliberate plagiarism is unethical and can have serious consequences for your future career; it also undermines the standards of your institution and of the degrees it issues.

#### What forms can plagiarism take?

- Verbatim quotation of other peoples intellectual work without clear acknowledgement. Quotations must always be identified as such by the use of either quotation marks or indentation, with adequate citation. It must always be apparent to the reader which parts are your own independent work and where you have drawn on someone elses ideas and language.

- Paraphrasing the work of others by altering a few words and changing their order, or by closely following the structure of their argument, is plagiarism because you are deriving your words and ideas from their work without giving due acknowledgement. Even if you include a reference to the original author in your own text you are still creating a misleading impression that the paraphrased wording is entirely your own. It is better to write a brief summary of the authors overall argument in your own words than to paraphrase particular sections of his or her writing. This will ensure you have a genuine grasp of the argument and will avoid the difficulty of paraphrasing without plagiarising. You must also properly attribute all material you derive from lectures.

- Cutting and pasting from the Internet. Information derived from the Internet must be adequately referenced and included in the bibliography. It is important to evaluate carefully all material found on the Internet, as it is less likely to have been through the same process of scholarly peer review as published sources.

- Collusion. This can involve unauthorised collaboration between students, failure to attribute assistance received, or failure to follow precisely regulations on group work projects. It is your responsibility to ensure that you are entirely clear about the extent of collaboration permitted, and which parts of the work must be your own.

- Inaccurate citation. It is important to cite correctly, according to the conventions of your discipline. Additionally, you should not include anything in a footnote or bibliography that you have not actually consulted. If you cannot gain access to a primary source you must make it clear in your citation that your knowledge of the work has been derived from a secondary text (e.g. Bradshaw, D. Title of Book, discussed in Wilson, E., Title of Book (London, 2004), p. 189).

- Failure to acknowledge. You must clearly acknowledge all assistance which has contributed to the production of your work, such as advice from fellow students, laboratory technicians, and other external sources. This need not apply to the assistance provided by your tutor or supervisor, nor to ordinary proofreading, but it is necessary to acknowledge other guidance which leads to substantive changes of content or approach.

- Professional agencies. You should neither make use of professional agencies in the production of your work nor submit material which has been written for you. It is vital to your intellectual training and development that you should undertake the research process unaided.

- Autoplagiarism. You must not submit work for assessment which you have already submitted (partially or in full) to fulfil the requirements of another degree course or examination.

**Not just printed text!**

The necessity to reference applies not only to text, but also to other media, such as computer code, illustrations, graphs etc. It applies equally to published text drawn from books and journals, and to unpublished text, whether from lecture handouts, theses or other students essays. You must also attribute text or other resources downloaded from web sites.

All matters relating to plagiarism are taken very seriously and would lead to a Disciplinary matter.

See for example, The Proctors and Assessor booklet **Essential Information for Students** Section 9, also available on-line at
http://www.admin.ox.ac.uk/proctors/info/pam/section9.shtml

## 1.2 Policy on Intellectual Property Rights

The University of Oxford had in place arrangements governing the ownership and exploitation of intellectual property generated by students and researchers in the course of, or incidental to, their studies. These arrangements are set out in the University's *Statutes* 2000 (page 121 refers) under which the University claims ownership of certain forms of intellectual property which students may create. The main provisions in the *Statutes* are as follows.

**Section V. Of intellectual property generated by students**

1. Subject to clause 2 below and to the provisions of the Patents Act 1977, and unless otherwise agreed in writing between the student concerned and the University in relation to any particular piece of intellectual property, the University claims ownership of the following forms of intellectual property; in the case of (*c*), (*d*), (*e*) and (*f*) (and(*g*) as it relates to (*c*)-(*f*)) the claims are to intellectual property devised, made, or created but students in the course of or incidentally to their studies:

(*a.*) works generated by computer hardware or software owned or operated by the University;

(*b.*) films, video's, multimedia works, typographical arrangements, and other works created with the aid of University facilities

(*c*) patentable and non-patentable inventions;

(*d.*) registered and unregistered designs, plant varieties, and topographies;

(*e.*) university-commissioned works not within *(a)*, *(b)*, *(c)* or *(d)*;

(*f*). databases, computer software, firmware, courseware, and related material not within *(a)*, *(b)*, *(c)* *(d)*, or *(e)*, but only if they may reasonably be considered to possess commercial potential; and

*(g.)* know-how and information associated with the above

2. Not withstanding clause 1 above, the University shall not assert any claim to the ownership of copyright in:

(*a.*) artistic works, books, articles, plays, lyrics, scores, or lectures, apart from those specifically commissioned by the university

(*b.*) audio or visual aids to the giving of lectures; or

(*c.*) computer-related works other than those specified in clause 1 above .

3. For the purpose of clauses 1 and 2 above:

(*a.*) a 'student' is a person reading and registered for a degree, diploma, or certificate of the University;

(*b.*) 'commissioned works' are works which the University has specifically requested the student concerned to produce, whether in return or a special payment or not. However save as may be separately agreed between the University Press and the student concerned, works commissioned by the University Press in the course of its publishing business shall not be regarded as 'works commissioned by the University'.

## 1.3 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 below, and the Mathematics Departmental Disability Statement in VIII.2.1.

**University Equal Opportunities Statement: students**

The University of Oxford and its colleges aim to provide education of excellent quality at undergraduate and postgraduate level for able students, whatever their background. In pursuit of this aim, the University is committed to using its best endeavours to ensure that all of its activities are governed by principles of equality of opportunity, and that all students are helped to achieve their full academic potential. This statement applies to recruitment and admissions, to the curriculum, teaching and assessment, to welfare and support services, and to staff development and training.

**Recruitment and admissions**

Decisions on admissions are based solely on the individual merits of each candidate, their suitability for the course they have applied to study (bearing in mind any requirements laid down by any professional body), assessed by the application of selection criteria appropriate to the course of study. Admissions procedures are kept under regular review to ensure compliance with this policy.

We seek to admit students of the highest academic potential. All colleges select students for admission without regard to marital status, race, gender, ethnic origin, colour, religion, sexual orientation, social background or other irrelevant distinction.

Applications from students with disabilities are considered on exactly the same academic grounds as those from other candidates. We are committed to making arrangements whenever practicable to enable such students to participate as fully as possible in student life. Details of these arrangements can be found in the University's Disability Statement, and information will be provided on request by colleges or by the University Disability Co-ordinator.

In order to widen access to Oxford, the University and colleges support schemes which work to encourage applicants from groups that are currently under-represented. The undergraduate Admissions Office can provide details of current schemes.

None of the above shall be taken to invalidate the need for financial guarantees where appropriate.

**The curriculum, teaching and assessment**

Unfair discrimination based on individual characteristics (listed in the statement on recruitment and admissions above) will not be tolerated. University departments, faculties, colleges and the central quality assurance bodies monitor the curriculum, teaching practice and assessment methods. Teaching and support staff have regard for the diverse needs, interests and backgrounds of their students in all their dealings with them.

**Welfare and Support Services**

Colleges have the lead responsibility for student welfare and can provide details of arrangements made to support their students. The University, in addition, provides for all students who require such support:

a counselling service;

childcare advice;

disability assessment and advice, and

a harassment advisory service.

Further details of these services are included in the Proctors' and Assessor's handbook 'Essential Information for Students', which is updated annually.

**Staff Development and Training**

The University, through its Institute for the Advancement of University Learning, will provide appropriate training programmes to support this equal opportunities statement.

**Complaints**

A candidate for admission who considers that he or she has not been treated in accordance with this equal opportunities policy, should raise this with the college concerned (or department in the case of graduate admission). Students in the course of their studies may use the student complaints procedure, and should, in the first instance, lodge their complaint with the Proctors, who will advise on the procedure to be followed thereafter. The Committee on Diversity and Equal Opportunity monitors complaints made by students.

# 2 Departmental policy documents

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

The Academic Administrator will notify those directly involved with teaching and scheduling lectures. For instance, students with visual impairment might have lectures in rooms with whiteboards; students who are hard of hearing might have their lectures scheduled in a room with an induction loop. 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.

## 2.2 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 reception in The Mathematical Institute.

## 2.3 Mathematical Institute Complaints—Complaints within the Department

Undergraduates with a complaint should first normally discuss it with their college tutor.

If the concern or complaint relates to teaching or other provision **made by the faculty/department** then the student should raise it with the Director of Undergraduate Studies. Within the faculty/department the officer concerned will attempt to resolve your concern/complaint informally and as speedily as possible.

Students may also contact their student representatives for informal support on MURC and the Joint Consultative Committee for Undergraduates.

In thinking about causes of concern/complaint, please bear in mind that the first step if at all possible is to raise the matter that is troubling you with the person who is immediately responsible. If this is difficult, then many sources of advice are available within colleges, within faculties/departments and from bodies like OUSU or the Counselling Service, which have extensive experience in advising students. General areas of concern about provision affecting students as a whole should, of course, continue to be raised through Joint Consultative Committees via student representation on the faculty/department's committees.

If your concern or complaint relates to teaching or other provision **made by your college**, then you should raise it with your tutor or with one of the college officers, e.g. Senior Tutor. Your college will also be able to explain how to take your complaint further if you are dissatisfied with the outcome of its consideration.

In the rare instances where you are dissatisfied with the outcome of a complaint, and all other avenues listed above have been explored, then you may take your concern further by making a formal complaint to the University Proctors. A complaint may cover aspects of teaching and learning (e.g. teaching facilities, supervision arrangements etc), and non-academic issues (e.g. support services, library services, university accommodation, university clubs and societies, etc.) A complaint to the Proctors should be made only if attempts at informal resolution have been unsuccessful.

Further information can be obtained from the Proctors Memorandum.

## 2.4 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 the Administrator, presently in Room F13, telephone 73542, who keeps the accident book. First aid boxes are located in the hallway on each floor.

Each lecture theatre has its own regulations for procedures to be followed in the case of fire or other emergency; you are urged to familiarise yourself with the proper escape routes. The escape routes from the Mathematical Institute lecture and seminar rooms, where most of your lectures will be held, are set out in the emergency exit procedure which is displayed in the Mathematical Institute. In the case of evacuation of the lecture theatre give heed to the instructions of the lecturer.