



UNIVERSITY OF OXFORD
Department of Statistics

Mathematics and Statistics
Undergraduate Handbook
2010–11

Welcome

Welcome to Oxford and to the Mathematics and Statistics course. We – the members of the Department of Statistics, and of the Faculty of Statistics – are very pleased to welcome you to Oxford.

The Mathematics and Statistics course combines the strengths of the traditional mathematics course with the ability to pursue probability and statistics in depth, and reflects the strong demand from employers for graduates with statistical knowledge. You join an expanding number of researchers, lecturers and graduate students in statistics at Oxford. We hope that, as the course progresses, we can show you the interest and excitement of statistics and its applications. We also hope that your enthusiasm for the subject increases as you develop your talents in this field, and that your education here will equip you well for your future, wherever that may be.

We hope you find your time in Oxford enjoyable, challenging and rewarding.

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Director of Studies
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If you think this handbook could be improved in some way, or if you find there is something misleading in it, please let us know by contacting the Academic Administrator in the Department of Statistics.

1 Sources of information

You will be given a lot of information in your first weeks in Oxford. The aim of what is included here is to add to that, not to repeat it nor replace it.

You will receive a copy of the *Handbook for the Undergraduate Mathematics Courses*. Although that handbook is intended primarily as a guide to the single subject Mathematics course, much of it is directly relevant for the Mathematics and Statistics course, in particular for the first year and general aspects of all the mathematics courses. You are referred to that handbook for the valuable information it contains, rather than that being included here.

1.1 The Grey Book

The *Examination Regulations*, often called ‘The Grey Book’, is the official and authoritative document on University examinations. You should receive a copy of the relevant part of this book through your college at the beginning of your first term. Changes to it are strictly regulated by the University to ensure that you are not disadvantaged by any changes to the syllabus which are made after you start your course.

The most up-to-date version of the Examination Regulations is available at

<http://www.admin.ox.ac.uk/examregs/>

The Examination Regulations do not contain full details of the syllabus for each lecture course. Those details are contained in the *Syllabus and Synopses* published by the Mathematical Institute (for the 1st year) and by the Department of Statistics (for the 2nd, 3rd and 4th years) – see Section 1.2.

1.2 Syllabus and Synopses

The first year examination is called Honour Moderations, and the first year is usually referred to as ‘Mods’. For the first four terms the Mathematics and Statistics course is identical to the single subject Mathematics course and the first year examination is *Honour Moderations in Mathematics*, there is not a separate Mods examination for Mathematics and Statistics students.

The second year examination is called Part A, the third year examination is called Part B, and the fourth year examination is called Part C. For Parts A, B and C, there are separate examinations for the Mathematics and Statistics course: however, many examination questions, and indeed some examination papers, are the same as those taken by students on the Mathematics course.

The syllabus and the lecture synopses for Mods are part of the Mathematics handbook, and are available on the Mathematical Institute website at

<http://www.maths.ox.ac.uk/current-students/undergraduates/handbooks-synopses>

The syllabus and the lecture synopses for Parts A, B and C are part of this handbook, and are available on the Department of Statistics website at

http://www.stats.ox.ac.uk/current_students/bammath/course_handbooks

The synopses of the lecture courses extend the official syllabus by giving more detail about the contents of each course, rather than just listing the topics to be covered. They also include details of recommended reading.

1.3 Email

You will be allocated a college email account. Important information about your course will be sent to this account. If you do not plan to read it regularly you should ensure that you arrange for mail to be forwarded to an account which you do read regularly. You are asked to bear in mind that lost email is your responsibility should you choose to forward email to a system outside the University.

2 Finding your way around

2.1 The Department of Statistics

The Department of Statistics, at 1 South Parks Road, houses a lecture theatre in which you will attend some lectures in the later years of your course. In fact, members of the Department are housed in both 1 and 2 South Parks Road, and also in the Peter Medawar Building for Pathogen Research, and the Oxford Centre for Gene Function (OCGF), on South Parks Road.

The Department has an international reputation for its research profile and this University believes that there are many benefits to the teaching of its courses that are a consequence of this high level of research activity. The tutors and lecturers with whom you will interact during this course are not only employed to teach you, but are also (in nearly all cases) actively engaged in the direction of, or participation in, one or more of the wide range of research projects that contribute to the Department's research reputation. Many of the individual academic staff in this department are recognised internationally as leaders in their own field of specialisation. In the 2008 Research Assessment Exercise, 90% of research activity in Statistics at Oxford was judged to be 4* (world leading) or 3* (internationally excellent), the highest proportion of any UK university in the subject.

The impact of research on teaching in this department may take many forms: tutors and lecturers including their own data or ideas from research in their teaching; the regular updating of reading lists and curricula to reflect research developments; the topics provided as options in the 4th year; the development of research skills and research-based approaches to study through your participation in projects in the 4th year; experience of preparing project reports in the 4th year.

The main research interests of the Department fall into the following categories:

- Computer Intensive Statistics
- Complex Stochastic Systems
- Applied Probability
- Bioinformatics
- Mathematical and Statistical Genetics

- Discrete Mathematics and Operational Research.

The Head of Department is Steffen Lauritzen (Professor of Statistics), and there are four other statutory chairs, currently held by Peter Donnelly FRS FMedSci (Professor of Statistical Science), Jotun Hein (Professor of Bioinformatics), Brian Ripley (Professor of Applied Statistics) and Tom Snijders (Professor of Statistics in the Social Sciences).

The number of researchers, lecturers and graduate students in the Department has expanded rapidly in recent years. For example, this year there will be about 45 new graduate students in the Department, some on taught Masters courses (studying for MSc's in Applied Statistics or Bioinformatics), others starting research toward a doctorate (a DPhil). At undergraduate level, the four years of Mathematics and Statistics students add to that number.

You can find out more about the Department by visiting the Department's website:

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

2.2 The Mathematical Institute

The Mathematical Institute, on St Giles', provides a focus for mathematical activity in Oxford. Many of your lectures after your first year will take place in the Institute.

You can find out more about the Institute by visiting the Institute's website:

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

2.3 The University Museum

The Oxford University Museum of Natural History is on Parks Road. In addition to being a museum, it houses a large lecture theatre in which almost all first year lectures are held.

3 The Mathematics and Statistics course

This section outlines the contents of the Mathematics and Statistics course. The Syllabus and Synopses for each year of the course contain the details, and the formal details of which combination of papers you can offer in the examinations are published by the University in the Examination Regulations.

The course has been accredited by the Royal Statistical Society. This means that graduates of the course will be granted the Society's professional status of Graduate Statistician on application. This is a stepping stone on the way to the higher professional status of Chartered Statistician. You can find out more about accreditation by visiting the RSS website:

<http://www.rss.org.uk>

3.1 First year

In the first year, the Mathematics and Statistics course is identical to the single subject Mathematics course. The Mathematics handbook gives all of the details of the first year,

which includes both probability and statistics.

The topics on the syllabus are arranged into four first year examination papers, two on pure mathematics, two on applied mathematics. All students take these four papers at the end of the first year, as well as doing assessed practical work during the year for the computing course Exploring Mathematics with MuPAD.

3.2 Second year (Part A)

The second year consists of compulsory core material on

- Algebra
- Analysis
- Differential Equations
- Probability
- Statistics

plus options on Statistical Programming, Simulation, Graph Theory, Linear Programming, Introduction to Fields, Group Theory, Number Theory, Integration, Topology, Multivariable Calculus, Calculus of Variations, Classical Mechanics, Quantum Theory, Fluid Dynamics and Waves, Numerical Analysis.

The core material is arranged as follows: Algebra, Analysis and Differential Equations are in Michaelmas Term; Probability and Statistics are in Hilary Term. The options are in Hilary and the first half of Trinity Term.

The options on Statistical Programming, Simulation, Graph Theory and Linear Programming are only available to Mathematics and Statistics students, and if you take these then approximately half of your second year would be in statistical, or statistically related, subjects.

All students take the four examination papers:

- Paper AC1 Algebra, Analysis and Differential Equations I
- Paper AC2 Algebra, Analysis and Differential Equations II
- Paper AS1 Probability, Statistics and Options I
- Paper AS2 Probability, Statistics and Options II

3.3 Three or four years?

When you applied you will have been advised to assume that you are taking the four year course, and to inform your LEA accordingly. This precaution should be taken for funding reasons. At the beginning of your third year you should decide, taking into account the advice of your college tutors, whether you should choose the three or four year course. You will be asked to register this choice. We appreciate that students may change their plans and we allow some flexibility in changing between the three and four year courses.

In making your choice you will have to consider the information about the two courses in this handbook, and also your preferred career. You may also like to get the views of those

in your college on their experience of the courses. The options in the fourth year contain more advanced material and your performance in tutorials, classes and examinations in earlier years will need to be taken into account.

For students starting Part C from October 2009, in order to proceed to Part C, they must have achieved at least Lower Second Class Honours standard in Parts A and B together, that is, in the classification at the end of Part B described in Section 5.5.

3.4 Third year (Part B)

In Part B, students take the equivalent of four 32-lecture units. The available units, and half units, are designated as either H-level (aimed primarily at third year students) or M-level (aimed at fourth year or MSc students). You can take up to one unit at M-level in Part B (though there is no requirement to take anything at M-level in Part B).

All Mathematics and Statistics students must take the unit on Applied Statistics, which includes assessed computer practicals. You must also take one full unit (and may take more) from the units and half-units offered on (i) Statistical Inference, (ii) Stochastic Modelling. There are further statistically-related units, for example on Actuarial Science and Mathematical Finance.

The Examination Regulations contains the formal details of which combinations of units you may take in Part B. These details are also summarised in the Syllabus and Synopses for Part B, which gives details of all of the units available in Part B.

All students take four examination papers (or the equivalent), that is, one paper (or the equivalent) for each 32-lecture unit.

3.5 Fourth year (Part C)

In Part C, students take the equivalent of three M-level 32-lecture units. One of these three units must be a statistics project, where statistics is understood in the broad sense including probability and operations research. All Mathematics and Statistics students must take a further half unit from the Statistics menu of options. See the Syllabus and Synopses for Part C, and the Examination Regulations for formal details.

For the examination all students must submit a dissertation on their project and take two further examination papers (or the equivalent), that is, one paper (or the equivalent) for each 32-lecture unit.

3.6 Changing course

Normally your college will have admitted you to study a specific course. Therefore you would need permission to change to another course. The structure of the Mathematics and Statistics course, particularly having the first four terms in common with Mathematics, means that changing to or from Mathematics and Statistics is feasible until at least Christmas in your second year. Again, your College Tutor will be able to give you advice.

4 Learning and teaching

As for the other mathematics courses, there are lectures each term, supported by problem sheets, plus tutorials organised by your college, and, in the later years of the course, intercollegiate classes.

4.1 Tutorials and classes

How your tutorials are organised will vary from college to college and subject to subject. Most colleges also run classes, especially to help with examination revision. During the first year and all or most of the second year, a normal amount of college teaching would be two tutorials or one tutorial and one class per week.

Instead of having tutorials, lecture courses in Part B are supported by intercollegiate problems classes. Each 16-lecture Statistics course is supported by six 1-hour problems classes, whereas in Mathematics each such course is supported by four $1\frac{1}{2}$ -hour classes. There are similar arrangements for the 8-lecture Part A courses on Graph Theory, Simulation and Linear Programming – these are each supported by three 1-hour classes – and the Part A course on Statistical Programming also has problems classes which support its integrated programme of lectures and practical sessions. In Part C, each 16-lecture course is supported by seven 1-hour classes.

4.2 Practicals

In statistics, there are practical classes associated with the second year course on Statistical Programming, the third year unit on Applied Statistics, and the fourth year half unit on Statistical Data Mining. In addition to the theoretical work which you will do in statistics, we are keen as a Department that you acquire practical experience. The Applied Statistics unit is compulsory because we think it is essential that all students have experience of the application of statistical methods to the analysis of data.

For some other units there is also a component of compulsory practical work, for example for the first year MuPAD computing course.

4.3 Project

We also think there are many things to be gained from doing a statistics project, which is why all fourth year students must do a statistics project and write a dissertation on it. Firstly, in terms of your statistical education, we think a project is an excellent opportunity to do a substantial and sustained piece of statistical work (and, for example, to develop further the skills learned in doing the third year practical work). In addition, the general skills of organising material and explaining it are important to learn, and we also recognise that some students might show their abilities better in doing a project than on an examination paper.

4.4 Feedback

There is plenty of opportunity, both formal and informal, for you to comment on the course. The informal ways are through the members of the Faculty who teach you in classes, lectures and tutorials and also through your personal tutors in college. They will all encourage you to make your views known to them and will give you opportunity to comment on syllabus content and any other issues about the delivery of the course.

For each lecture course there is a questionnaire for you to complete. Once the termly questionnaire results are processed, each course lecturer receives the comments and statistical analysis from their own course and in addition consolidated information is made available to relevant committees for discussion, and where necessary, action. One of the key committees which considers this information is the *Joint Consultative Committee with Undergraduates*, which deals with matters over the whole range of Mathematics, Statistics and Computer Science courses, and the action taken as a result of questionnaire comments is made known to your representatives through this channel. A similar monitoring of intercollegiate problems classes takes place termly.

4.5 Student representation

As described in the Mathematics handbook, the Mathematics Undergraduate Representative Committee (known as ‘MURC’) is a student body representing the interests of mathematics, statistics and computer science students. There is a student representative on the Mathematics Teaching Committee and also on the Statistics Academic Committee.

5 Examinations and assessment

In addition to the information below, each year you can expect to receive information about examinations from examiners in the form of ‘Notice(s) to Candidates’. Also, the *Examination Conventions* for each examination contain more information than is included in this section, but this section includes a substantial summary of information about examinations.

As described in Section 1.2, Mathematics and Statistics students take *Honour Moderations in Mathematics* at the end of their first year. Full details of this examination are in the *Handbook for the Undergraduate Mathematics Courses* and Examination Conventions published by the Mathematical Institute

<http://www.maths.ox.ac.uk/current-students/undergraduates/examinations>

For the Examination Conventions for Parts A, B and C see

http://www.stats.ox.ac.uk/current_students/bammath/examinations

5.1 Examinations

It is by passing the University’s ‘public’ examinations that you qualify for your degree.

The first public examination, called Honour Moderations (or ‘Mods’), is at the end of the first year. You have to pass Mods, or a later re-sit examination called Prelims, to enter the second year of the course.

The second public examination is the Final Honour School (or ‘Finals’). In contrast to Mods, there is a separate Final Honour School for Mathematics and Statistics students (i.e. it is different to that for single subject Mathematics). If you take the three year BA course, you will take Part A of the examination at the end of your second year and Part B at the end of your third year. If you take the MMath course, the second and third year will be the same as the BA, and you will also take Part C at the end of your fourth year.

For students starting Part C from October 2009, in order to proceed to Part C, they must have achieved at least Lower Second Class Honours standard in Parts A and B together, that is, in the classification at the end of Part B described in Section 5.5.

5.2 Classification

The possible classes are: First (I), Upper Second (Iii), Lower Second (Iii), Third (III), Pass, Fail.

5.2.1 Mods

Following the Mods examination you will be awarded a classification. In Mods the Second Class is not split into Upper and Lower Seconds, so the possible classes are: First (I), Second (II), Third (III), Pass, Fail.

5.2.2 Parts A, B and C

Following the Part B examination you will be awarded a classification based on your performance in Parts A and B together. So if you take the three year course, your classification for the BA is the one that you are awarded after Part B.

If you continue to Part C, following the Part C examination you will be awarded a second classification based on your performance in Part C only. So if you take the four year course, you have two classifications for the MMath: one classification for your performance in Parts A and B together, and a second classification for your performance in Part C.

A Pass will not be awarded in Part C. If you do not achieve at least Third Class in Part C, then you are not eligible for an MMath but instead you should be eligible for a BA with the appropriate class as determined by your performance on Parts A and B.

Note that your Mods performance does not contribute to your classification after Parts A and B, or Part C.

5.2.3 Qualitative descriptors

The qualitative descriptions of the classes are as follows:

Class I 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.

Class III 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.

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

Class III 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 the questions attempted are likely to be fragmentary only.

5.3 Standardised marks

For each examination paper you take, and each mini-project/dissertation, your performance will be reported in the form of a university standardised mark in the range 0–100. The correspondence between the standardised mark ranges and classes is as follows:

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

In order to arrive at such standardized marks for each paper, the examiners will mark and assess papers in the way described in the Examination Conventions, which are published separately from this handbook.

5.4 Double marking

For the mathematics and statistics examination papers that you take, there is a precise model solution and marking scheme approved by the examiners for every question. Your answers will be marked by an examiner or assessor. Your answers will also be checked independently (not necessarily by an examiner or assessor) to ensure that all parts have been marked and the marks and part-marks have been correctly totalled and recorded.

Dissertations are not covered by the above paragraph: these will be marked independently by two examiners or assessors. If a mini-project has a precise model solution, it will be marked by an examiner or assessor and also checked independently (as for examination papers); otherwise it will be marked independently by two examiners or assessors.

5.5 Classification after Part B

Your classification after Part B is based on your four Part A papers and your four Part B papers (or their equivalent).

5.5.1 Weight given to each paper

Your Part A performance is 40% of the classification after Part B and your Part B performance is the other 60%, as follows.

Each Part A paper has a weight of 2 and each Part B paper has a weight of 3 (and each half paper in Part B has a weight of 1.5). So the total weight of the eight papers over the two years is $4 \times 2 + 4 \times 3 = 20$. If A_1, A_2, A_3, A_4 are your four standardised marks on the Part A papers, and B_1, B_2, B_3, B_4 are your four marks on four Part B papers, then your average university standardised mark is

$$AvUSM = \frac{2(A_1 + A_2 + A_3 + A_4) + 3(B_1 + B_2 + B_3 + B_4)}{20}.$$

If in Part B you take two half papers and get marks B_5 and B_6 (both in the range 0–100) in place of B_4 , then your $AvUSM$ is given by replacing B_4 in the above formula by $\frac{1}{2}(B_5 + B_6)$ (with similar modifications if you take further half papers).

5.5.2 Classification conventions

From the 2009 examinations and onwards, the classification after Part B is not determined solely by your $AvUSM$: there is also a *Strong Paper rule*.

In Parts A and B you take 8 papers (or their equivalent). To satisfy the n th class strong paper rule:

- you need at least 3 papers (or their equivalent) to have a mark of the n th class standard or above,
- and you also need at least one of these papers (or the equivalent) to be in Part B.

For example, to satisfy the First class strong paper rule you need at least 3 papers with marks of 70 or above with at least one of these papers being in Part B.

Classifications are determined as follows:

- First Class: $AvUSM \geq 70$ and the first class strong paper rule is satisfied.
- Upper Second Class: EITHER $AvUSM \geq 70$ and the first class strong paper rule is not satisfied
OR $60 \leq AvUSM < 70$ and the upper second strong paper rule is satisfied.
- Lower Second Class: EITHER $60 \leq AvUSM < 70$ and the upper second strong paper rule is not satisfied
OR $50 \leq AvUSM < 60$ and the lower second strong paper rule is satisfied.
- Third Class: EITHER $40 \leq AvUSM < 50$
OR $50 \leq AvUSM < 60$ and the lower second strong paper rule is not satisfied.

- Pass: $30 \leq AvUSM < 40$.
- Fail: $AvUSM < 30$.

5.6 Part C classification

Your Part C classification is based on Part C alone.

5.6.1 Weight given to each paper

The dissertation has a weight of 1 and each half unit has a weight of $\frac{1}{2}$. If C_D is your dissertation standardised mark and C_1, C_2, C_3 and C_4 are your standardised marks on your four further half units (all of C_D, C_1, \dots, C_4 being in the range 0–100), then your average university standardised mark in Part C is

$$AvUSMC = \frac{C_D + \frac{1}{2}(C_1 + C_2 + C_3 + C_4)}{3}.$$

5.6.2 Classification conventions

Classifications are determined as follows:

- First Class: $AvUSMC \geq 70$.
- Upper Second Class: $60 \leq AvUSMC < 70$.
- Lower Second Class: $50 \leq AvUSMC < 60$.
- Third Class: $40 \leq AvUSMC < 50$.

A Pass will not be awarded in Part C. If you achieve $AvUSMC < 40$ then you are not eligible for an MMath but instead you should be eligible for a BA with the appropriate class as determined by your performance on Parts A and B.

5.7 Plagiarism

The following information applies to all aspects of assessment during the course.

5.7.1 University definition of plagiarism

The University definition of plagiarism is as follows.

“Plagiarism is the copying or paraphrasing of other people’s 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.”

So in all aspects of assessment during the course, plagiarism is something that you must avoid.

See Appendix A for a further general information on plagiarism and on the seriousness of plagiarism.

5.7.2 Subject specific advice

Dictionaries typically describe plagiarism as a form of theft. Remember that plagiarism is cheating.

It is worth highlighting three places where plagiarism could occur and where you should be particularly careful to avoid it:

- in Part B assessed practical assignments
- in Part C dissertations
- in Part C mini-projects.

As some issues about practicals are different from some issues about dissertations, and as these are in the 3rd and 4th years of the course, you will be issued with more detailed guidance about practicals and dissertations separately. But some important general points are relevant to mention here:

- The practical work or dissertation or mini-project that you hand in must be your own.
- Do not copy any other person’s practical report (and do not allow your own work to be copied). Although you may discuss the practicals with other students during practical classes for example, the report you hand in must be all your own work.
- You will need to sign a statement confirming that the work you have handed in is all your own.
- You must not copy chunks of text from lecture notes, books, websites, etc, unless unless you clearly acknowledge and adequately reference what you have used. For example in a practical you need to give your own explanation of what you have found, not somebody else’s.
- Throughout a dissertation, you must make sure that other people’s work is adequately referenced.
- If you are found guilty of plagiarism, the penalties are severe: for example a five mark deduction from your *overall* final marks; or possibly failure of your degree or expulsion from the university as mentioned in Section 5.7.1.

5.7.3 Style guide

You may be unsure of how you should reference the work of others. The University webpage at

<http://www.admin.ox.ac.uk/epsc/plagiarism/electrores.shtml>

mentions that Blackwell's Publishing provides a referencing style guide available on its 'Author Services' website at

http://www.blackwellpublishing.com/authors/reference_text.asp?site=1

In particular the guide describes the Harvard and Vancouver reference systems: the Harvard system references via name and year (e.g. 'Smith (1998) showed that...'), whereas the Vancouver system references via name and number (e.g. 'Smith [12] showed that...'). Either of these systems is perfectly acceptable for you to use.

The above University webpage contains other writing and skills information that you might find useful, particularly when writing a Part C dissertation for example.

6 Submission deadlines for BS1 practicals

It is important that Part B year students observe the deadlines for submitting BS1 practicals. Failure to meet the deadlines may mean that your work will not be taken into account.

For 2010–11 the deadlines are:

- 1st practical: 12 noon Tuesday week 8, Michaelmas Term 2010
- 2nd practical: 12 noon Tuesday week 2, Hilary Term 2011
- 3rd practical: 12 noon Tuesday week 7, Hilary Term 2011
- 4th practical: 12 noon Friday week 1, Trinity Term 2011.

Candidates who miss the above deadlines may ask their college to apply to the Head of the Department of Statistics for permission to submit late. Where there is a valid reason, the Head of Department would normally approve the late submission without penalty. Where it is deemed that there is no valid reason, the Head of Department will advise the Examiners to apply a penalty of at least 5% of the marks available for that practical.

7 Academic good practice

The University's advice on academic good practice is available at

<http://www.admin.ox.ac.uk/epsc/plagiarism/acadgdprac.shtml>

There are two pieces of subject specific advice well worth mentioning here.

- 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 on the web at

<http://www.maths.ox.ac.uk/files/study-guide/index.shtml>

This is an entire booklet about studying mathematics (including probability and statistics) at university.

- You are also recommended to read Tom Körner's advice on *How to listen to a Maths lecture* which is available on the web at

<http://www.dpmms.cam.ac.uk/~twk>

This contains much useful advice.

8 If you need help

It is not unusual for students to experience a difficulty of one kind or another. There are a number of ways to handle such situations.

Establish good work habits. The notes *How do Undergraduates do Mathematics?* and advice *How to listen to a Maths lecture* mentioned in the previous section should help.

Go and talk to somebody. There are a number of people that are ready and willing to help you. Often the best advice is to go and talk to your College Tutor.

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 are included in the Proctors' and Assessor's handbook *Essential Information for Students*.

9 Contact points

You could, of course, contact any member of the Statistics Department for information about the course. The following is a list of more official points of contact.

9.1 Department of Statistics

Director of Studies

Dr Neil Laws laws@stats.ox.ac.uk

Academic Administrator

Mrs Jan Boylan boylan@stats.ox.ac.uk

Head of Department

Professor Steffen Lauritzen hod@stats.ox.ac.uk

9.2 Mathematical Institute

Director of Undergraduate Studies

Dr Audrey Curnock curnock@maths.ox.ac.uk

Academic Administrator

Mrs Charlotte Turner-Smith rigdon@maths.ox.ac.uk

9.3 MURC

Website

<http://www.maths.ox.ac.uk/~murc>

Appendices

A Syllabus and Synopses

A.1 Moderations

The Syllabus and Synopses for Moderations are part of the Mathematics handbook and are also available at

<http://www.maths.ox.ac.uk/current-students/undergraduates/handbooks-synopses>

A.2 Parts A, B and C

The Syllabus and Synopses for Mathematics and Statistics Parts A, B and C are part of this handbook, as supplementary booklets, and are available at

http://www.stats.ox.ac.uk/current_students/bammath/course_handbooks

B Examination Regulations

You should receive a copy of the relevant part of the Examination Regulations through your college at the beginning of your first term. You should always check with a current copy of the regulations, which can be consulted on the University website at

<http://www.admin.ox.ac.uk/examregs/>

C Examination Conventions

C.1 Moderations

Mathematics and Statistics students take *Honour Moderations in Mathematics* and the Examination Conventions are published by Mathematical Institute

<http://www.maths.ox.ac.uk/current-students/undergraduates/examinations>

C.2 Parts A, B and C

For the Examination Conventions for Parts A, B and C see

http://www.stats.ox.ac.uk/current_students/bammath/examinations

A Plagiarism

The following information applies to all aspects of assessment during the course.

A.1 Disciplinary regulations

In their Memorandum, *Essential Information for Students*, the Proctors and Assessors draw attention to the disciplinary regulations relating to plagiarism that must be observed by both undergraduate and graduate students:

- “3. No candidate shall cheat or act dishonestly, or attempt to do so, in any way, whether before, during or after an examination, so as to obtain or seek to obtain an unfair advantage in an examination.
4. No candidate shall present for an examination as his or her own work any part or the substance of any part of another person’s work.
5. In any written work (whether thesis, dissertation, essay, coursework, or written examinations) passages quoted or closely paraphrased from another person’s work must be identified as quotations or paraphrases, and the source of the quoted or paraphrased material must be clearly acknowledged.”

See the Proctors’ and Assessor’s Memorandum, Section 9.6, at

<http://www.admin.ox.ac.uk/proctors/info/pam/index.shtml>.

Also, in the preceding Section 9.5, the Proctors and Assessor write:

“All undergraduate and graduate students must carefully read regulations 3, 4 and 5 in the Proctors’ Disciplinary Regulations for University Examinations below. These make it clear that you must always indicate to the examiners when you have drawn on the work of others; other people’s original ideas and methods should be clearly distinguished from your own, and other people’s words, illustrations, diagrams etc. should be clearly indicated regardless of whether they are copied exactly, paraphrased, or adapted. Failure to acknowledge your sources by clear citation and referencing constitutes *plagiarism*. The University reserves the right to use software applications to screen any individual’s submitted work for matches either to published sources or to other submitted work. In some examinations, all candidates are asked to submit an electronic copy of essays, dissertations etc. for screening by ‘Turnitin’. Any matches might indicate either plagiarism or collusion. Although the use of electronic resources by students in their academic work is encouraged, you should remember that the regulations on plagiarism apply to on-line material and other digital material just as much as to printed material.”

A.2 University information on plagiarism

The text of this section is taken from

<http://www.admin.ox.ac.uk/epsc/plagiarism/index.shtml>.

Please see that webpage for further information.

What is plagiarism?

Plagiarism is the copying or paraphrasing of other people's 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 another's 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 people's 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 else's 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 author's 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.

B Complaints and Academic Appeals within the Department of Statistics

1. The University, the Mathematical, Physical and Life Sciences Division and the Department of Statistics all hope that provision made for students at all stages of their programme of study will make the need for complaints (about that provision) or appeals (against the outcomes of any form of assessment) infrequent.
2. However, all those concerned believe that it is important for students to be clear about how to raise a concern or make a complaint, and how to appeal against the outcome of assessment. The following guidance attempts to provide such information.
3. Nothing in this guidance precludes an informal discussion with the person immediately responsible for the issue that you wish to complain about (and who may not be one of the individuals identified below). This is often the simplest way to achieve a satisfactory resolution.
4. Many sources of advice are available within colleges, within departments and from bodies like Oxford University Students' Union or the Counselling Service, which have extensive experience in advising students. You may wish to take advice from one of these sources before pursuing your complaint.
5. General areas of concern about provision affecting students as a whole should, of course, continue to be raised through the Graduate Liaison Committee, the Mathematics Undergraduate Representative Committee or via student representation on the department's committees.

Complaints

- 6.1 If your concern or complaint relates to teaching or other provision made by the Department, then you should raise it with the Director of Graduate Studies (Professor Colin McDiarmid) for graduate students, or the Chair of the Academic Committee (Dr Neil Laws) for undergraduate students. Within the department the officer concerned will attempt to resolve your concern/complaint informally.
- 6.2 If you are dissatisfied after your complaint has been dealt with locally, then you may take your concern further by making a written complaint to the University Proctors (<http://www.admin.ox.ac.uk/proctors/complaints.shtml>). You can take confidential advice from the Clerk to the Proctors before submitting your written complaint.

A complaint may cover aspects of teaching and learning (eg teaching facilities or supervision arrangements), or non-academic issues (eg support services, library services, university accommodation or university clubs and societies). A complaint to the Proctors should be made only if attempts at informal resolution have been unsuccessful. The procedures adopted by the Proctors for the consideration of complaints and appeals are described in the Proctors and Assessor's Memorandum (<http://www.admin.ox.ac.uk/proctors/info/pam/section13.shtml>) and the relevant Council regulations (<http://www.admin.ox.ac.uk/statutes/regulations/247-062.shtml>).

7. If your concern or complaint relates to teaching or other provision made by your college, then you should raise it either with your tutor or with the Senior Tutor or Tutor for Graduates as appropriate. Your college will also be able to explain how to take your complaint further if you are dissatisfied with the outcome of its consideration. Proctors cannot intervene in internal college matters.

Academic appeals

8. An appeal is defined as a formal questioning of a decision on an academic matter made by the responsible academic body.
9. For undergraduate or taught graduate courses, a query or concern which might lead to an appeal should be raised with your college authorities and the individual responsible for overseeing your work. It must not be raised directly with examiners or assessors.

If it is not possible to clear up your concern in this way, you may put your concern in writing and submit it to the Proctors via the Senior Tutor of your college. As noted above, the procedures adopted by the Proctors in relation to complaints and appeals are on the web (<http://www.admin.ox.ac.uk/proctors/complaints.shtml>). Appeals must be submitted to the Proctors as soon as possible and not later than three months after the notification of the results of the examination concerned. (The time-limit is necessary because after three months relevant records may cease to be available.)

10. For the examination of research degrees, or in relation to transfer or confirmation of status, your concern should be raised initially with the Director of Graduate Studies. Where a concern is not satisfactorily settled by that means, then you, your supervisor, or your college authority may put your appeal directly to the Proctors at the Proctors' Office, University Offices, Wellington Square, OX1 2JD.
11. Please remember in connection with all the cases in paragraphs 8–10 that:
 - (a) The Proctors are not empowered to challenge the academic judgement of examiners or academic bodies.
 - (b) The Proctors can consider whether the procedures for reaching an academic decision were properly followed; i.e. whether there was a significant procedural administrative error; whether there is evidence of bias or inadequate assessment; whether the examiners failed to take into account special factors affecting a candidate's performance.
 - (c) On no account should you contact your examiners or assessors directly.
12. The Proctors will indicate what further action you can take if you are dissatisfied with the outcome of a complaint or appeal considered by them.
13. A taught-course student who is dissatisfied with the Proctors' decision about a request for a special examination arrangement has a right of appeal to the Council's Educational Policy and Standards Committee (details are available from Senior Tutors).

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