



UNIVERSITY OF OXFORD
DEPARTMENT OF STATISTICS

**MSc AND DIPLOMA IN APPLIED
STATISTICS**

2011-2012

STUDENT HANDBOOK

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MSc/ DIPLOMA IN APPLIED STATISTICS 2011/2012

1. Introduction

Overview

Welcome to the MSc and Diploma in Applied Statistics in the Department of Statistics, University of Oxford.

The Master of Science by Coursework in Applied Statistics is a 12-month programme running from October to September. It covers a wide range of statistical methods, and gives extensive hands-on experience of the analysis of real data from a wide variety of settings. Throughout the emphasis is on statistics as an applied subject, and a particular focus is the use of modern, computationally intensive methods.

The 9-month Diploma in Applied Statistics programme, running from October to June, is intended for students with a more practical background. There is no dissertation and greater weight is given to the basic parts of the course than in the case of the MSc. Both MSc and Diploma students attend a comprehensive set of lectures, example and practical classes and supervision meetings held in the Department of Statistics.

The initial registration for the MSc or Diploma may be changed either way up to the last day of Hilary Term, subject to approval by the Director of Graduate Studies.

The aims of the programme are that students:

- learn a wide range of statistical methods, especially modern, computer-intensive methods;
- gain extensive hands-on experience of the analysis of real data from a wide variety of fields;
- develop the skills to interpret and communicate their results.

Structure of Assessment

For **MSc students** the overall assessment is based on four parts:

Written Examination Paper I *Principles of Statistical Analysis*
Written Examination Paper II *Further Statistical Methodology*
Assessed Practical Work
Dissertation.

For **Diploma students** the overall assessment is based on three parts:

Written Examination Paper I *Principles of Statistical Analysis*
Written Examination Paper II *Further Statistical Methodology*
Assessed Practical Work

For both the MSc and the Diploma, candidates can pass, pass with distinction, or fail.

Written Examination Paper (i) *Principles of Statistical Analysis*

JAST 7120

This examination paper consists of compulsory questions taken from the core subject areas:

Statistical Methods
Statistical Theory
R Programming

Written Examination Paper (ii) *Further Statistical Methodology*

JAST 7121

This examination paper consists of questions taken from the core subject areas:

Further Statistical Methods
Statistical Data Mining

and also from the optional subjects:

Survival Analysis
Infectious Diseases
Stochastic Models in Mathematical Genetics
Actuarial Science

Please note that the above list has some changes from 2010/2011.

Changes to Statistical Methods Courses

The statistical methods courses have been re-arranged from 2011/2. In recent years there were courses:

Statistical Methods
Design of Investigations
Time Series

Computer-Intensive Statistics
MCMC and Applied Bayesian Statistics
Multivariate Analysis
Further Statistical Methods

The first group was examined by 2+1 questions on paper (i) and the second group by questions in the 'Core' section of paper (ii).

For this year most of the material in those courses has been re-arranged into a Statistical Methods course (3 questions on paper (i)) and a Further Statistical Methods course (5 half-length questions on paper (ii)). Note that material has been moved between papers (i) and (ii): for example the basic time series material is now on paper (i) and more advanced material on paper (ii).

A small amount of material has been excluded in the re-organization, for example factor and correspondence analysis and some of the theory of MCMC and other computer-intensive methods.

The stream within Statistical Methods on 'Principles' is new this year. The material was covered previously, but more emphasis is being given to the 'whys' (rather than 'hows') of applied statistics.

Assessed Practical Work

There are expected to be two computer-based practical assignments in Michaelmas Term and three practical assignments in Hilary Term. Group working will be introduced in non-assessed situations in Michaelmas Term and one practical will be assessed by group work in Hilary Term.

There is also a week-long practical assessment in Trinity Term and one for *Statistical Data Mining* over the Easter vacation.

Dissertation

MSc students must submit a dissertation of no more than 12,000 words. The dissertation project is mainly carried out over the summer period from late May to the dissertation submission date on 15 September but students will need to do preparatory work in the Spring.

2. Course Information

Term Dates and residence requirements

Lecturing is concentrated in three eight-week terms (weeks 1-8):

MICHAELMAS TERM

Sunday 9 October 2011 to Saturday 3 December 2011

HILARY TERM

Sunday 15 January 2012 to Saturday 10 March 2012

TRINITY TERM

Sunday 22 April 2012 to Saturday 16 June 2011.

Some supervision normally continues during vacations. Lectures and classes are often arranged in Week 9 of Michaelmas and Hilary Terms and the deadline for submission of assessed work may be in Week 9. There will also be a test in week 0 of Hilary Term whose test results do not count towards the final degree mark but are to help students and their supervisors assess progress. You are therefore expected to remain in Oxford at these times.

After the end of Trinity Term, MSc students should remain in Oxford during the summer to continue work on their project although a holiday may be taken during this period.

There are minimum residence requirements for the degree. Students must have lived in college-approved accommodation within the University for at least six weeks for three terms and having paid the appropriate fees. If you are unable to keep the required number of terms because of illness or other reasonable cause, the University Proctors may excuse you from part of statutable residence. Students living out of college must reside within 25 miles of Carfax in the centre of Oxford.

Dispensation from the residence limits will only be granted by the Proctors in very exceptional circumstances. Applications need to be made through your College Office. If you live outside the residence limits without permission, you will not fulfil the statutory requirements and may not be allowed to enter for examinations.

Course contacts

Dr Sofia Massa is the MSc Course Coordinator and makes the day-to-day arrangements for the course. There is also a formally constituted MSc Supervisory Committee.

MSc Course Coordinator	Dr Sofia Massa	massa@stats.ox.ac.uk
Head of Department of Statistics	Professor Steffen Lauritzen	steffen@stats.ox.ac.uk
Chair of MSc Supervisory Committee	Professor Brian Ripley	ripley@stats.ox.ac.uk
Director of Graduate Studies	Professor Colin McDiarmid	cmcd@stats.ox.ac.uk
Director of Studies	Dr Neil Laws	laws@stats.ox.ac.uk
Academic Administrator	Jan Boylan	boylan@stats.ox.ac.uk
Statistics library	c/o Jan Boylan	lib@stats.ox.ac.uk
Statistics Reception	Emma Bodger	bodger@stats.ox.ac.uk
IT support		ithelp@stats.ox.ac.uk

Lecture courses

The guidelines are 75 hours of lectures or equivalent work for each of the written examination papers. Students are expected to undertake 20-30 hours of lectures on the optional courses. Generally one examination question is set per 8–10 hour lecture course but a question would also usually be set for a 6 hour lecture course.

Lectures for the MSc/Diploma in Applied Statistics are shown on timetables available from the Department at the beginning of each term. Students should discuss with their departmental supervisor which lectures to attend. Students are expected to complement the contents of lecture courses by further independent reading from books suggested by lecturers or supervisors.

Lectures are normally given in the Lecture Room in the Department of Statistics, 1 South Parks Road. A few lectures are shared with other courses and may be held in other University buildings. A map can be found at http://www.ox.ac.uk/visitors_friends/maps_and_directions/science_area.html

Problem sheets are provided on the core topics and some of the options, and classes arranged to discuss the problems. Receiving comments from the tutor and marker about submitted problem sheets is one of the main sources of feedback to students about their work. Students are therefore strongly encouraged to submit the problem sheets and attend classes.

Mobile phones should be turned off when entering the Lecture Room. Food and drink may not be taken into the Lecture room.

Lecture Courses by Term

	<u>Michaelmas</u>	<u>Hilary</u>	<u>Trinity (Weeks 1-4)</u>
Paper I	Statistical Methods Statistical Theory R Programming	Statistical Methods R Programming	
Paper II core		Further Statistical Methods	
Paper II optional	Actuarial Science	Statistical Data Mining Actuarial Science Survival Analysis Stochastic Models in Mathematical Genetics Infectious Diseases	
Skills	Introduction to LaTeX Report Writing Case Studies		Dissertation Preparation

Course material and timetables

Important course material, timetables and notices can be found on the MSc in Applied Statistics section of the University's WebLearn system using the login at <https://weblearn.ox.ac.uk/portal> or via the link at http://www.stats.ox.ac.uk/current_students/msc_and_diploma_in_applied_statistics.

General University information for students can be found via the University's student gateway at http://www.ox.ac.uk/current_students/index.html

Noticeboard

The graduate student noticeboard can be found near the common room in 1 South Parks Road.

Lecture Synopses

Examination Paper I *Principles of Statistical Analysis*

Statistical Methods (30 hrs)

- Principles (6): Simulation-based inference (including introduction to MCMC, bootstrap), model selection, model checking, robustness, missing data and imputation, splines.
- Visualization (3): plots, including multivariate plots, mosaic plots. Use of density estimation and smoothing functions.
- Basics (3): summary statistics and goodness-of-fit tests. One- and two-sample tests. Robustness and robust summaries.
- Linear Models (5) : linear and multiple linear regression. Regression diagnostics and resistant regression. Classical applications to ANOVA.
- Autocorrelation (4): ideas, ARIMA models, MCMC output analysis.
- Hierarchical models (5): Classical and Bayesian approaches.
- Logistic and Log-linear models (4): Both classical and Bayesian approaches.

Relevant books

Ramsey, F.L. & Schafer, D.W. (2002) *The Statistical Sleuth. A Course in Methods of Data*. Duxbury Press.

Venables, W.N. & Ripley, B.D. (2002) *Modern Applied Statistics with S*. Springer.

Davison, A.C. (2003) *Statistical Models*. Cambridge University Press.

Cryer, J.D. and Chan, KS (2008) *Time Series Analysis with Applications in R*, Springer

Kutner, M., Nachtsheim, C., Neter, J. and Lee, W. (2005) *Applied Linear Statistical Models* - McGraw-Hill

Snijders, T.A.B. & Bosker, R.J. (1999) *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. Sage.

Statistical Theory (12 hrs)

- Introduction: statistical inference, statistics and probability, some typical problems (estimation, hypothesis testing, prediction).
- Likelihood: likelihood and profile likelihood, sufficient statistics, exponential families.
- Point estimation: estimates and estimators, bias, method of moments, estimating equations, maximum likelihood estimates, Fisher information, efficiency.
- Hypothesis Testing: significance tests, test statistic, level of significance, power of a test, likelihood ratio test and tests related to the likelihood, Neyman-Pearson Lemma, multiple testing.
- Interval estimation: confidence regions (pivotal quantities, general procedure), prediction regions.
- Asymptotic theory: properties of maximum likelihood estimator, properties of likelihood ratio tests, approximate methods for confidence regions.
- Bayesian Inference: Bayesian method (frequentist-, objective-, personalistic-Bayes), priors (flat, improper, informative, non-informative, conjugate), Bayes factors, credibility regions and highest posterior density regions, prediction.

Relevant books

Davison, A.C. (2003) *Statistical Models*. Cambridge University Press.

Wasserman, L. (2004) *All of Statistics. A concise course in Statistical Inference*. Springer.

Further Reading

- Casella, G. and Berger, R.L. (2002) *Statistical Inference*. Thomson Learning.
Cox, D.R. (2006) *Principles of Statistical Inference*. Cambridge University Press.
Cox, D.R. and Donnelly, C. A. (2011) *Principles of Applied Statistics*. Cambridge University Press.
Young, G.A. and Smith, R.L. (2005) *Essentials of Statistical Inference*. Cambridge University Press.

R programming

- Installing, starting and basic use of R.
- Representation of numbers in computers, representation and rounding errors.
- Input and output of data.
- Manipulating and plotting numeric and character data.
- Simulation and optimization.
- Writing, debugging and tuning R functions.
- Using objects and functions. object-orientated R

Relevant books

- Venables, W. N. and Ripley, B. D. (2002) *Modern Applied Statistics with S*. Springer.
Braun, W. J. and Murdoch, D. J. (2007) *A First Course in Statistical Programming with R*. CUP.
Crawley, M. (2007) *The R Book*. Wiley.
Dalgaard, P. (2009) *Introductory Statistics with R*. Second Edition. Springer.
Fox, J. (2002) *A R and S-PLUS Companion to Applied Regression*. Sage.
Ligges, U. (2009) *Programmieren mit R*. Third edition. Springer.
Maindonald J. and Braun, W. J. (2003) *Data Analysis and Graphics using R* Second or third edition CUP.
Rizzo, M. L. (2008) *Statistical Computing with R*. CRC/Chapman & Hall.
Spector, P. (2008) *Data Manipulation with R*. Springer.

Examination Paper II *Further Statistical Methodology*

Core Topics

Further Statistical Methods (15 hours)

- Further time series (4): Spectral analysis, state-space models.
- Sampling and design (3): Introduction to sampling methods, observational studies and design of experiments.
- Contingency tables (3): Proportional-odds logistic regression, graphical models, special methods (for example for symmetric tables).
- MCMC schemes (2): ideas, Gibbs sampler, Metropolis-Hasting schemes, slice sampler.
- Non-linear models (3): Non-linear regression, additive and generalized additive models.

Relevant books will be recommended by the lecturers

Statistical Data Mining (12 hrs)

- Fundamentals of pattern recognition, machine learning and data mining.
- Exploratory methods: principal components analysis, biplots, independent component analysis, multidimensional scaling.
- Cluster Analysis: K-means, hierarchical methods, vector quantisation, self-organising maps.
- Linear discriminant analysis, logistic discrimination, linear separation.
- Feed-forward neural networks, Classification trees, ensemble methods, V-fold cross-validation, tree ensembles.

Relevant reading

C. Bishop, (1995) *Neural Networks for Pattern Recognition*, Oxford University Press.

D. Hand, H. Mannila, P. Smyth, (2001) *Principles of Data Mining*, MIT Press.

T Hastie, R Tibshirani, J Friedman, (2009) *Elements of Statistical Learning*, Springer.

Further reading

B. D. Ripley, (1996) *Pattern Recognition and Neural Networks*, Cambridge University Press.

Optional Courses

Survival Analysis (6 hrs)

- Survivor and hazard functions; censoring. Nonparametric analysis; life tables; product-limit estimator; Greenwood's formula; actuarial estimator. Parametric models, medical and industrial applications.
- Parametric analysis for a single sample.
- Regression models for data in continuous time; accelerated life; proportional hazards; model fitting and checking. Partial likelihood. Log-rank tests.

Relevant books

Venables, W.N. and Ripley, B.D. (2002) *Modern Applied Statistics with S*. Springer. (Chapter 13).

Klein, J.P. & Moeschberger, M.L. (1997) *Survival Analysis*. Springer.

Collett, D.A. (1994) *Modelling Survival Data in Medical Research*. Chapman & Hall.

Stochastic Models in Mathematical Genetics (8 hrs)

- Evolutionary models in Mathematical Genetics
- The Wright-Fisher model. The Genealogical Markov chain describing the number ancestors back in time of a collection of genes.
- The Coalescent process describing the stochastic behaviour of the ancestral tree of a collection of genes. Mutations on ancestral lineages in a coalescent tree. Inferring the time to the most recent common ancestor in a sample of genes from the number of mutations occurring to the genes. Models with a variable population size.
- The frequency spectrum and age of a mutation. Ewens' sampling formula for the probability distribution of the allele configuration of genes in a sample in the infinitely-many-alleles model. Hoppe's urn model for the infinitely-many-alleles model.
- The infinitely-many-sites model of mutations on DNA sequences. Gene trees as perfect phylogenies describing the mutation history of a sample of DNA sequences. Graph theoretic constructions and characterizations of gene trees from DNA sequence variation. Gusfield's construction algorithm of a tree from DNA sequences. Examples of gene trees from data. The probability distribution of a gene tree.

Relevant books

R Durrett, (2008) *Probability Models for DNA Sequence Evolution*, 2nd ed, Springer.

W. J. Ewens, (2004) *Mathematical Population Genetics*, 2nd ed, Springer.

J. R. Norris, (1999) *Markov Chains*, Cambridge University Press.

M. Slatkin and M. Veuille, (2002) *Modern Developments in Theoretical Population Genetics*, Oxford Biology.

S. Tavaré and O. Zeitouni, (2004) *Lectures on Probability Theory and Statistics, Ecole d'Eté de Probabilités de Saint-Flour XXXI -- 2001*, Lecture Notes in Mathematics 1837. Springer.

Infectious Diseases (6 hrs)

- Models for the spread of infectious diseases in large populations and small groups.
- H1N1 Pandemic Influenza, SARS, Bovine spongiform encephalopathy (BSE), new variant Creutzfeldt-Jakob disease (vCJD), and foot-and-mouth disease (FMD) will be examined as case studies.

Relevant books and papers:

Anderson RM, Donnelly CA, Ferguson NM, *et al.* (1996) *Transmission dynamics and epidemiology of BSE in British Cattle*. Nature 382, 779-788.

Anderson, R.M. and May, R.M. (1991) *Infectious Diseases of Humans: Dynamics and Control*. OUP.
Bailey, N.T.J. *The Elements of Stochastic Processes with Applications to the Natural Sciences*. Wiley. (Chapters 1-8, 12)

Bailey, N.T.J. (1975) *The Mathematical Theory of Infectious Diseases and its Applications*. Griffin.

Donnelly CA and Ferguson NM. (1999) *Statistical Aspects of BSE and vCJD: Models for Epidemics*, Monographs on Statistics and Applied Probability, Chapman & Hall/CRC Press.

Donnelly CA, Ghani AC, Leung GM, *et al* (2003) *Epidemiological determinants of the spread of the causal agent of severe acute respiratory syndrome in Hong Kong*. Lancet 361, 1761–1766.

Ferguson NM, Donnelly CA and Anderson RM. (2001) *The foot-and-mouth epidemic in Great Britain: Pattern of spread and impact of interventions*. Science, 292, 1155-1160.

Ferguson NM, Donnelly CA and Anderson RM., (2001) *Transmission intensity and the impact of control policies on the foot and mouth disease epidemic in Great Britain*. Nature 413, 542-548.

Fraser C, Donnelly CA, Cauchemez S, *et al.*, (2009) *The WHO Rapid Pandemic Assessment Collaboration. Pandemic Potential of a Strain of Influenza A (H1N1): Early Findings*. Science 324, 1557-1561.

Ghani AC, Ferguson NM, Donnelly CA and Anderson RM. (2000) *Predicted vCJD mortality in Great Britain*. Nature 406, 583-584.

Actuarial Science (16 hours)

- Term structure of interest rates, deterministic and stochastic interest rate models
- Effect of changes in interest rates: effective duration, convexity, immunisation
- No arbitrage models: valuation and hedging of forward contracts
- Theories of value, expected present value with/without asset sale, revealed preference, market value, no arbitrage value.
- Expected Utility Theory (EUT), EUT axioms, St Petersburg Paradox, risk aversion, risk premium, certainty equivalent, EUT justification for insurance, changes in risk, first and second order stochastic dominance.

Relevant books and papers:

Subject CT1 [102]: *Financial Mathematics*. Core reading . Faculty & Institute of Actuaries

McCutcheon, J.J. and Scott, W.F. (1986) *An Introduction to the Mathematics of Finance*, Heineman.

Gollier, C, (2004) *The Economics of Risk and Time*, The MIT Press.

Eeckhoudt, L. and Gollier, C. and Schlesinger, H (2005) *Economic and financial decisions under Risk*, Princeton University Press, Princeton and Oxford.

Further reading

Gerber, H.U., (1997) *Life Insurance Mathematics*. 3rd edition, Springer.

Bowers, N.L. et al (1997) *Actuarial mathematics*. 2nd edition, Society of Actuaries

Non-examined Material

There will be a number of courses which will not be formally examined. These will include:

Case Studies

Statistical critique
Presentation skills

Introduction to Operational Research

Statistical Computing

Introduction to LaTeX.

Report writing

Dissertation preparation

Links to further sources of skills and study resources can be found on the website at http://www.stats.ox.ac.uk/current_students/msc_and_diploma_in_applied_statistics

Research-Teaching Nexus

The Department of Statistics has an international reputation for its research profile. In the Research Assessment Exercise (RAE) in 2008, Oxford Statistics had the highest proportion of any Statistics Department in the UK of research judged to be world leading or internationally excellent. The University of Oxford 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 many cases, actively engaged 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.

The impact of research on teaching in this department may take many forms: tutors and lecturers include their own data or ideas from research in their teaching; the regular updating of reading lists and curricula to reflect research developments; the development of research skills and research-based approaches to study through participation in the MSc research project; access to research seminars; opportunities to meet with research students and members of the faculty, particularly at the research project stage; experience of preparing research reports for external publication in some cases. In general you will be encouraged to develop the ability to interpret and critically appraise new data and to critically appraise research literature.

Seminars

The Department of Statistics organises seminars in statistics on Thursdays during term at 2:15 p.m. These are held at 1 South Parks Road. Many speakers are distinguished researchers from Oxford and beyond. The seminars provide a useful opportunity to hear about current research problems in statistical theory and applications. Those attending normally continue discussion over tea and biscuits afterwards.

Further information can be found at http://www.stats.ox.ac.uk/news_and_events/weekly_seminars

Students are also welcome to attend the Graduate Lectures at 3.45 pm on Thursdays.

The Mathematical Genetics and Bioinformatics group hold seminars at 4.30 pm on Tuesday afternoons in the Henry Wellcome Building of Gene Function or the Peter Medawar Building for Pathogen Research. MSc students are welcome to attend.

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

Other seminar series may be of interest to particular students. Supervisors will be able to offer advice.

General Books

We recommend that you purchase the following book for the course:

Modern Applied Statistics with S, WN Venables and BD Ripley, Springer, 2002

You may also wish to own some of the following books for further study. This is in addition to any books recommended for a particular course.

A First Course in Probability, Sheldon Ross, Pearson Higher Education, 2005

- Simple basic book giving introduction to probability

Probability and Random Processes, Geoffrey Grimmett and David Stirzaker, OUP, 2001

- More in depth presentation of probability theory

Probability and Statistics, Mark Schervish and Morris Degroot, Pearson Higher Education, 2001

- Covers both probability and statistics

The Statistical Sleuth, Fred L Ramsay and Schafer - Textbook with lots of worked examples of how to apply statistics in practice

Mathematical methods for Science Students (Stephenson)

- General mathematics

A Guide to LaTeX, Helmut Kopka and Patrick Daly, Pearson Professional Education, 2003

Practical Classes and Assessment

There are weekly practical classes on Friday afternoons at 2pm or 4 pm depending on which group students are assigned to. Group A will have classes at 2 pm in Michaelmas Term and 4 pm in Hilary Term and vice versa for Group B. **The practical classes are compulsory and all students must attend them.** They take place in the MSc Computing Laboratory in 1 South Parks Road.

Most classes will use R. Students are recommended to buy a copy of the book *Modern Applied Statistics with S* by W N Venables and B D Ripley, Springer, (2002), which is used extensively throughout the course.

The practical assessment is made up of a major assignment in Trinity Term, the assessment of five specific pieces of coursework in Michaelmas and Hilary Terms and a *Statistical Data Mining* mini-project. The assignments in Michaelmas and Hilary Terms are normally based on exercises done in the weekly practical classes. The assignments are submitted in the Department on the Monday morning, following the Friday practical class. The week-long practical assessment in Trinity Term took place in from Friday week 1 to Friday week 2 in 2011. The assessment comprises a number of exercises involving the analysis of datasets. A complete report is required at the end of the week. The *Statistical Data Mining* mini-project will be distributed on Friday week 8, Hilary Term. The mini-project will involve the application of relevant techniques from *Statistical Data Mining*, and will need to be submitted before Monday week 1, Trinity Term.

Group working will be introduced in non-assessed situations in Michaelmas Term and there will be one practical assessed by group work in Hilary Term.

For the group work assessed practical, students will be allowed to choose their own groups of 4-5 people. Because students will form their own groups, in exceptional circumstances small groups will be allowed. Each group is expected to submit a group report and each student in the group will receive the same mark for the group report.

Declaration of authorship forms must be completed for each piece of coursework submitted. **Students should pay particular attention to the University's policies on plagiarism including collusion <http://www.admin.ox.ac.uk/epsc/plagiarism>.** All assessed practicals must be submitted to the Receptionist in 1 South Parks Road.

Interim marks given for the practical assignments in Michaelmas and Hilary terms are provisional and may be subject to further moderation. The assessed practicals contribute 25% to the overall mark for the MSc and 37.5% for the Diploma.

Further information on writing up practicals and the marking guidelines can be found on the course Weblearn site.

A smaller Computing Laboratory, with 10 computers is available in room 2.201 in 2 South Parks Road.

Supervision

Each student is allocated a supervisor. Your supervisor will arrange regular meetings with you throughout the course of the year to discuss your progress. These meetings should be held about four times a term but this will vary depending on the amount of work needing to be covered. Each student should see his or her supervisor at the beginning of each term to arrange convenient times. It is very important to keep appointments wherever possible, and if not to let your supervisor know the situation, for example by phone or email if possible.

It is important to note that your supervisor may not be an expert in every subject covered by the course. You should not expect your supervisor to mark your individual work or be necessarily able to answer detailed questions about particular aspects of the course. For specific queries you should contact the subject lecturer in the first instance.

Special supervision and/or classes may be arranged for the optional topics for Paper II. Please do keep your supervisors informed about other classes (rather than lectures) you wish to attend, as the Department may be charged for these.

Each term students are encouraged to write a short report on their progress on the Graduate Supervision System (GSS) <http://www.gss.ox.ac.uk/>. GSS is open for student reporting in weeks 6 and 7 each term. From week 8 onwards each term, the supervisor is responsible for writing a report about the student on GSS. Reports can be viewed by the student, supervisor, Director of Graduate Studies and College Advisor. Unsatisfactory progress will usually lead to discussion with appropriate college officers.

In the rare event of any dissatisfaction, a student should contact the Course Co-ordinator or Director of Graduate Studies to discuss changing supervisor.

The MSc dissertation project

MSc students are required to submit a dissertation of no more than 12,000 words. The dissertation project is mainly carried out over the summer period from late May to the dissertation submission date at noon on 15 September.

Dissertations can be carried out on a variety of statistical topics. They are generally supervised by members of the Department. Students are welcome to suggest their own topics and should discuss their ideas with potential supervisors or with Dr Sofia Massa, the MSc Course Co-ordinator.

Towards the end of Hilary Term, students wishing to suggest their own dissertation topic must submit the title and a brief statement of the form and scope of their project, together with the name the person who has agreed to act as their supervisor for the dissertation. Alternatively the Department also provides a list of possible projects from which students can state a preference although students cannot be guaranteed to be allocated to a particular choice of project. Students will usually be able to maintain contact with the project supervisor during at least part of the summer. The supervisor of the project will usually not be the supervisor of the course work.

The dissertation is expected to include evidence that a student is capable of applying statistical research methods to realistic problems. Most dissertations will therefore contain an account of the analysis of some body of real data. Students are expected to find out most things by themselves by independent reading. Students should expect a **maximum of six meetings** in which progress is discussed, and for the supervisor to read one or two drafts of the dissertation. Please be reasonable, and allow a week or so for work to be read; this is particularly important in planning final writing.

It is not the supervisor's job to undertake computer programming for the student, and it is not part of the department's function to provide detailed advice on statistical programming. Courses are provided to give students sufficient background, and students are expected to be able to write R functions for the project. It is a student's responsibility when choosing a project to ensure that the computing needed is within the skills they feel able to learn. There may be rare projects of a computational nature in which the supervisor agrees in advance to provide specialist software development.

Students may examine selected dissertations from previous years in the Statistics library. These dissertations are for reference only and **must not** be removed from the library.

The dissertation should be typed and soft bound. Computer output should not be presented without pruning and annotation where necessary. The work should be a minimum 12pt and at least 1 ½ line spaced. It should include:

- 1) The title page

Title, author, college and year of submission. Include the following at the bottom of the page, "A dissertation submitted in partial fulfilment of the requirements for the degree of Master of Science in Applied Statistics"

- 2) An abstract

- 3) Acknowledgements

- 4) A contents page

- 5) A bibliography

A good summary should be provided. The style of writing should be appropriate for a scholarly work: colloquialisms should be avoided. The dissertation must be carefully proof-read.

Candidates should make every effort to provide the appropriate references relating the work to the scientific literature, both in the subject matter under investigation and for the statistical and any other techniques used. References to published papers should be made carefully, with format similar to that used in standard journals. Particular emphasis should be given to the statistical aspects of the problem but the dissertation should show evidence of a reasonable understanding of the non-statistical features of the problem (e.g. the reasons for a particular scientific study).

In marking dissertations, the assessors will use the following criteria and weightings:

Criterion	Weighting
STRUCTURE <ul style="list-style-type: none"> • Understanding of aims • Quality of general approach 	10%
LITERATURE AND THEORY <ul style="list-style-type: none"> • Quality of scrutiny of literature • Understanding of relevant theory 	10%
EXPOSITION <ul style="list-style-type: none"> • Quality of exposition of source materials • Quality of elaborations of source materials • Quality of statistical reasoning 	20%
METHODOLOGY <ul style="list-style-type: none"> • Appropriateness of choice of techniques • Quality of data-collection and/or handling • Quality of computer work • Accuracy 	30%
CONCLUSIONS <ul style="list-style-type: none"> • Appropriateness of conclusions drawn • Understanding of implications and limitations 	20%
PRESENTATION <ul style="list-style-type: none"> • Clarity of style • Quality of diagrams and tables • Proper referencing to the literature 	10%

The length of the dissertation should be no more than is required to present the project in a satisfactory manner and in any case **no more than 12,000 words**. Inordinately lengthy dissertations may lose marks. **Two** copies of the soft-bound dissertation are to be submitted to the Examination Schools, High Street, **by noon** on a date to be announced by Examinations Schools, no later than 15 September 2012.

Details of submitting work to the Examination Schools can be found at <http://www.admin.ox.ac.uk/schools/oxonly/submissions/index.shtml>

A declaration of authorship form must also be completed and submitted with the dissertation. Students should pay particular attention to the University's policies on plagiarism <http://www.admin.ox.ac.uk/epsc/plagiarism>

The examiners also require students to send a PDF copy of their dissertation to the Academic Administrator by email (academic.administrator@stats.ox.ac.uk).

**MSc in Applied Statistics
DECLARATION OF AUTHORSHIP**

Please submit the completed form to the Department of Statistics with your dissertation.

Name (in capitals):

Candidate number:

College (in capitals):

Supervisor:

Title of dissertation (in capitals):

Please tick to confirm the following:

I am aware of the University's disciplinary regulations concerning conduct in examinations and, in particular, of the regulations on plagiarism.

The dissertation I am submitting is entirely my own work except where otherwise indicated.

It has not been submitted, either wholly or substantially, for another degree of this University, or for a degree at any other institution.

I have clearly signalled the presence of quoted or paraphrased material and referenced all sources.

I have acknowledged appropriately any assistance I have received in addition to that provided by my supervisor/adviser.

I have not sought assistance from any professional agency.

I agree to retain an electronic version of the work and to make it available on request from the Chair of Examiners should this be required to check for plagiarism.

Candidate's signature:

Date:

.....

3. Examination Procedures

General University information on examinations can be found at

<http://www.ox.ac.uk/students/exams/>

There are two written examination papers:

Paper I	Principles of statistical analysis	JAST 7120
Paper II	Further statistical methodology	JAST 7121

The written examination is usually held in the Examination Schools in the High Street in recent years in week 5, Trinity Term. The dates and times will be available at

<http://www.admin.ox.ac.uk/schools/oxonly/timetables/index.shtml> nearer the time.

Academic dress with *subfusc* clothing is worn. As the two examination papers and assessed practicals, and dissertation (for the MSc only) are compulsory, there is no entry form to be completed. The examiners may summon any candidate for an oral examination, but rarely do so.

Calculators, statistical tables and bilingual dictionaries

During the written examinations, electronic calculators may be used, subject to certain conditions set out in the *Examination Regulations* [http://www.admin.ox.ac.uk/examregs/08-](http://www.admin.ox.ac.uk/examregs/08-13)

[13 Part 13 Dictation of Papers and the Use of WordProcessors.shtml](http://www.admin.ox.ac.uk/examregs/08-13)

The Cambridge Elementary Statistical Tables will also be provided. These are available for viewing from 9 am – 12 noon, Monday-Friday, week 4, Trinity Term in 1 South Parks Road. Bilingual dictionaries, in book form only, may be used in the examination if required by candidates. These must not be marked in any way or contain any notes etc.

Examiners and assessors

There are three or four internal examiners and one external examiner appointed each year to examine the MSc and Diploma in Applied Statistics. The internal examiners are members of the Faculty of Statistics. One will act as the Chairman of Examiners. Assessors, who are usually the course lecturers, will be appointed to first mark examination scripts. A number of members of the Faculty of Statistics will also be appointed as assessors to mark the dissertations.

Communication between examiners and candidates

Prior to the examinations, the Examiners will send out a notice to candidates outlining the examination arrangements. This will also be posted on the MSc Weblearn site.

The results for Diploma students will be known after the Examiner's Meeting which takes place a few weeks after the examination. The results for MSc students are known in mid-October following submission of the dissertation in mid-September; although an indication of the quality of the examination performance will be available, via supervisors, after the June Examiners' Meeting. After the Examiners meeting in June for the Diploma or October for the MSc, students should log on to Student Self Service at http://www.ox.ac.uk/current_students to obtain their final results.

Students are not permitted to contact the Examiners directly on any matter. Queries on examination matters should be directed to College Advisors, Departmental Supervisors or the Academic Administrator as appropriate.

Past examination papers

Students are strongly advised to work through past papers to familiarise themselves with the form of the examinations. Past examination papers can be found online at

<http://missun29.offices.ox.ac.uk/pls/oxam/main> . Copies of outline solutions to examination papers from 2004 onwards can be borrowed on daily loan from the Reception at 1 South Parks Road. These must not be removed from the Department but may be photocopied. During Trinity Term, students are also advised to attend revision classes or consultation sessions on individual courses

Past examiners' reports on the examinations are available at http://www.stats.ox.ac.uk/current_students/msc_and_diploma_in_applied_statistics

Special examination needs

Students with special examination needs should refer to the guidance at <http://www.admin.ox.ac.uk/schools/oxonly/special.shtml>

Illness during examinations

Advice on illness during examinations can be found in the Proctors and Assessors Memorandum at <http://www.admin.ox.ac.uk/proctors/info/pam/section9.shtml> . Students should contact their College Office as a matter of urgency should this situation arise. Medical certificates will be required.

Resitting examinations

If the examiners decide that a candidate's work is not of sufficient merit to qualify for the MSc but of sufficient merit to qualify for the Diploma in Applied Statistics, the candidate is given the option of re-taking the MSc examination on one further occasion, not later than one year after the initial attempt, or of being issued with a Diploma. In the event of a candidate's work not being of sufficient merit to qualify for the award of the MSc, the examiners will specify which of the components of the course may or must be redone. The results following a resit examination are only available in October of the year in which the resit examination was held.

Course regulations and syllabus

The regulations for the course can be found in the University of Oxford *Examination Regulations*, (http://www.admin.ox.ac.uk/examregs/Applied_Statistics.shtml and http://www.admin.ox.ac.uk/examregs/32-69_DIPLOMA_IN_APPLIED_STATISTICS.shtml). The *Examination Regulations* should be consulted for regulations concerning conduct of examinations and general regulations for graduate students. The *Lecture Synopses* defines the detailed content of the course for each year.

The examination conventions for 2011/2012 will be available via the course Weblearn site.

Prize

The Gutierrez Toscano Prize in Applied Statistics, value £150, may be awarded by the examiners, if there is a candidate of sufficient merit, to the candidate whose performance in that examination they judge to be the best.

The prize is named in memory of Pablo Gutiérrez Toscano, who was awarded a distinction in the MSc in Applied Statistics in 1996. In 1998 he was tragically killed in a road accident. His family and friends offered a donation to establish the annual prize.

DRAFT
EXAMINATION CONVENTIONS: MSc IN APPLIED STATISTICS
(Subject to amendment in Michaelmas Term 2011)

1. Assessment

For MSc candidates the overall assessment is based on:

1. Paper I Principles of Statistical Analysis
2. Paper II Further Statistical Methodology
3. Assessed Practical Work
4. Dissertation.

2. Weighting

Each of (1)–(4) has equal weight, i.e. each contributes 25% to the overall MSc assessment.

The guidelines are 75 hours of lectures or equivalent work for each of (1) and (2), with 1 question per 8–10 hours work.

The assessed practical work (3) will be made up of two practical assignments in Michaelmas Term, three practical assignments in Hilary Term, a week-long practical assessment in Trinity Term and a Statistical Data Mining mini-project to be submitted early in Trinity Term.

The relative weightings of the practical assignments are as follows:

practical assessments in Michaelmas and Hilary Terms	40%
practical assessment in Trinity Term	40%
Statistical Data Mining mini-project	20%

Indications of marks given for the practical work in Michaelmas and Hilary Terms are provisional.

Candidates can pass, pass with distinction or fail. In order to pass, a candidate must achieve an average of at least 40% on (1) and (2), a mark of at least 40% on (4), and an overall average of at least 50% on (1)–(4). An overall average of at least 70% is required for a distinction. Distinction candidates will also show excellence over a wide range of topics including the dissertation and assessed practical work. Passing candidates will at least show good or very good work over a reasonable range of topics. These descriptions are of overall performance: weaker performance in part of the overall assessment can be compensated for, if the overall performance merits it. Candidates who just fail the MSc can be allocated a pass on the Diploma if they show, in the view of the examiners, understanding and competence equivalent to passing the Diploma.

The examination rubric on Paper (i) will state that ‘All questions should be attempted.’

The examination rubric for paper (ii) is subject to discussion between the MSc Supervisory Committee and the examiners, but will be similar in spirit to 2010/2011.

MSc in Applied Statistics qualitative descriptors

Distinction The candidate shows excellent skills in modelling, reasoning and problem-solving. He/she demonstrates an excellent knowledge of the material, and is able to use it innovatively in unfamiliar contexts. The candidate has also shown the ability to tackle a large piece of applied statistics and write it up clearly and effectively.

Pass The candidate shows good or very good skills in modelling, reasoning and problem-solving. He/she demonstrates a good or very good knowledge of much of the material. The candidate has also shown the ability to tackle a large piece of applied statistics and write it up effectively.

Fail The examiners consider that the candidate is not worthy of an MSc/Diploma. There is little evidence of competence in the topics examined; the work is likely to show major misunderstanding and confusion, coupled with inaccurate calculations. The candidate either leaves without a degree or may retake the examination the following year.

(If a candidate fails the MSc but nevertheless shows sufficient merit to pass the Diploma, the candidate has the option of retaking the examination the following year or of being issued with a diploma.)

Double marking

For the examination papers, there is a precise model solution and marking scheme approved by the examiners for every question. Answers will be double-blind marked by the examiners or assessors. Each dissertation will also be marked independently by two examiners or assessors (neither of who will be the dissertation supervisor).

Reconciliation procedures

When the two marks for a dissertation differ by less than 10%, the two marks will be averaged. In the other cases, there will be a discussion between the two examiners or assessors concerned, after which it will normally be possible for a mark to be agreed. In any exceptional cases a third examiner or assessor will normally read the dissertation before the Examiners agree a mark. The dissertations of borderline candidates are reviewed by the Examiners who will agree the final dissertation mark. A similar procedure applies to the marking of examination questions.

Scaling

If the marks on the part of the assessment appear not to be in line with the qualitative descriptions of a distinction or a pass, then this will be taken into account and candidates' marks may be moderated accordingly.

Late or non-submission of coursework

Under the provisions permitted by the Examination Regulations, late submission of coursework (ie practical reports and dissertations) will normally result in the following penalties.

Where permission for late submission has been granted by the Proctors, no penalty will be imposed

Where permission for late submission has not been granted by the Proctors, but the Proctors have given leave for the candidate to remain in the examination, the Examiners may impose a penalty not exceeding the credit available for that piece of work. The Examiners should take into account such factors as:

1. The evidence forwarded to them by the Proctors and (insofar as the following matters are not dealt with by such evidence)
2. The degree of advantage gained by the extra times made available to the candidate relative to the time that was available to complete coursework by the original deadline
3. The weight to be attached to the reason given, if any, for late submission.

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.

Note that late submission of the dissertation may result in the Examiners deferring consideration to the following year.

[Dissertation marking –see page 17]

DRAFT
EXAMINATION CONVENTIONS: DIPLOMA IN APPLIED
STATISTICS
(Subject to amendment in Michaelmas Term 2011)

For Diploma candidates the overall assessment is based on:

1. Paper (i) Principles of Statistical Analysis
2. Paper (ii) Further Statistical Methodology
3. Assessed Practical Work

The guidelines are 75 hours of lectures or equivalent work for each of (1) and (2), with 1 question per 8–10 hours work.

The assessed practical work (3) will be made up of two practical assignments in Michaelmas Term, three practical assignments in Hilary Term, a week-long practical assessment in Trinity Term and a Statistical Data Mining mini-project to be submitted early in Trinity Term.

The relative weightings of the practical assignments are as follows:

practical assessments in Michaelmas and Hilary Terms	40%
practical assessment in Trinity Term	40%
Statistical Data Mining mini-project	20%

Indications of marks given for the practical work in Michaelmas and Hilary Terms are provisional.

Candidates can pass, pass with distinction, or fail. In order to pass, a candidate must achieve an average of at least 40% on (1) and (2), weighted in the proportion 3:2, and an overall average of at least 50% on (1), (2) and (3), weighted in the proportion 3:2:3. An overall average of 70%, weighted in the proportion 3:2:3, is required for a distinction.

Distinction candidates will show excellence over a wide range of topics. Passing candidates will at least show good or very good work over a reasonable range of topics. These descriptions are of overall performance: weaker performance in part of the overall assessment can be compensated for, if the overall performance merits it.

The examination rubric on Paper (i) will state that 'All questions should be attempted.' The examination rubric for paper (ii) is subject to discussion between the MSc Supervisory Committee and the examiners, but will be similar in spirit to 2010/2011.

[Sections on qualitative descriptors, double marking, reconciliation, scaling, late or non-submission of coursework as for the MSc above]

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 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. Within the department the officer concerned will attempt to resolve your concern/complaint informally.
- 6.2 If you are dissatisfied with the outcome, then you may take your concern further by making a formal complaint to the University Proctors (<http://www.admin.ox.ac.uk/proctors/complaints.shtml>). 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 and the relevant Council regulations (<http://www.admin.ox.ac.uk/statutes/regulations/>).
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.

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 taught graduate courses, a 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 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/statutes/regulations/>).

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.

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.

Academic Integrity and the avoidance of Plagiarism

Academic integrity

The University's code of practice concerning academic integrity in research is set out on the website at <http://www.admin.ox.ac.uk/ps/staff/codes/air.shtml>, and, while the code's principles relate specifically to the conduct of research, *all* graduate students are advised to make themselves aware of the document's contents. The University code of practice on Public Interest Disclosure can be found at <http://www.admin.ox.ac.uk/ps/staff/codes/pid.shtml>

Plagiarism

University Definition – see <http://www.admin.ox.ac.uk/epsc/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.

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.

Cases of apparently deliberate plagiarism are taken extremely seriously, and where examiners suspect that this has occurred, they bring the matter to the attention of the Proctors. Your attention is drawn to the Proctors' and Assessor's Memorandum, Section 9.5, 'Conduct in Examinations', and in particular to sections 4 and 5 and the concluding paragraph of the section:

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.

The University employs 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.

4. Sources of advice and help

Welfare

Students are always welcome at any time to discuss their concerns with their Departmental Supervisor, the MSc Course Co-ordinator, the Director of Graduate Studies, the Head of Department or the Academic Administrator as appropriate. Support is also available via College Advisors and College Offices.

Other sources of advice and help include:

Student Counselling Service <http://www.admin.ox.ac.uk/shw/counsersv.shtml>

Oxford University Student Union Advice Service <http://www.ousu.org/welfare>

Nightline <http://users.ox.ac.uk/%7Enightln/>

Current information for students – equality, health and welfare
<http://www.ox.ac.uk/students/shw/>

Harassment

The Departmental advisor on matters of harassment is Mrs Christine Stone (room 1.208), tel ext 72866, email cstone@stats.ox.ac.uk

The University's *Policy on Harassment including Bullying* can be found at <http://www.admin.ox.ac.uk/eop/harassmentadvice/>

Disability

The Disability contact is Mrs Jan Boylan (room 1.101), tel. ext 72870, email boylan@stats.ox.ac.uk . For University guidance and support please refer to <http://www.admin.ox.ac.uk/eop/disab/>

University policies

Access to University policies on a wide range of issues can be found via the Student portal at http://www.ox.ac.uk/current_students/index.html

Financial hardship

Information on fees and funding matters can be found at http://www.ox.ac.uk/students/fees_funding_living_costs/

The Careers Service

The University Careers Service can be found at 56 Banbury Road with a website at www.careers.ox.ac.uk . It is a free service for all Oxford University students including postgraduates. It provides one to one guidance, support and advice; information on occupations, vacancies and further study, feedback on CVs and application forms; and skills coaching for preparing for interviews and making applications.

Information about studying for a DPhil in Statistics at the University of Oxford can be found at http://www.stats.ox.ac.uk/prospective_students/research_degrees

University Language Centre

International students whose first language is not English are strongly advised to visit the University Language Centre to find out more about the courses on topics such as Academic Writing and Advanced English which run during term time. These have a registration fee for graduate students. Details are available at <http://www.lang.ox.ac.uk/courses/english.html> .

Student feedback and representation

At the end of each term students are invited to complete a short feedback questionnaire covering the lecture courses, practical sessions and supervisory sessions. We encourage students to complete and return these. The overall results are discussed by the MSc Supervisory Committee and are important part of our quality assurance procedures as part of the continuing review and development of the course. All comments are anonymous.

Students are also invited to take part in the National Student Survey (<http://www.unistats.com/>) at the appropriate time of the year.

The MSc and Diploma students are invited to elect, soon after the beginning of the academic year, two representatives who can act as a link with the staff, and in particular bring to light and discuss any problems that might arise. The representatives will be invited to attend the Graduate Liaison Committee which meets once a term in week 5.

See http://www.stats.ox.ac.uk/current_students/research_degrees/graduate_liaison_committee

Suspension of status or withdrawal from course

Should you find that you need to apply to suspend your status on the course or wish to withdraw, you should discuss this with the Course Co-ordinator and also your College Office or College Tutor. The relevant forms to be completed can be found at <http://www.admin.ox.ac.uk/gso/forms/> .

After the course

At the end of the course, students should ensure that they have completed a Departmental leaver's form and returned all library books and locker keys.

Students should contact their supervisor if a reference is required.

5. Departmental Facilities

Computing

Students have access to all the public computing facilities of the Department of Statistics. The principal computing resources for the MSc are the PC laboratories. Students can use these to run software packages such as R and MATLAB, as well as to prepare documents and reports. Printers are attached to each network.

The practical sessions will introduce students to the use of the departmental computing systems and to the main statistics packages. Other courses, particularly those on high-level programming languages, which are provided by the Oxford University Computing Services (OUCS) in Banbury Road may be of interest to students <http://www.oucs.ox.ac.uk/>. Project work in the summer will normally require the use of a computer.

MSc Students will be allocated 1000 prints/photocopies consisting of 900 black & white and 100 colour. Additional print allocation can be bought from the IT staff at a cost of £10.00 per 500 prints (450 B&W 50 colour).

You should also make yourself aware of the following departmental documents:

Guide to Computing Services
Guidelines for Examining Users' Data
Security and Privacy of Files
Policy Statement on Computer Use, Monitoring and Surveillance.

These are available at http://www.stats.ox.ac.uk/about_us/it_information/generalaccess/new_users_start_here along with details of how to use your laptop on the Oxford Wireless LAN.

Libraries

The Department of Statistics has its own library of books and journals. Further details of the Statistics library facilities are to be found later in this handbook.

The University Card also serves as a library card and will allow access to the Radcliffe Science Library (RSL) in Parks Road, and also the Social Studies Library, Manor Road. A map can be found at http://www.ox.ac.uk/visitors_friends/maps_and_directions/museums_libraries.html

The Physical Sciences Librarian with responsibility for the statistics collection in the RSL is Ljilja Ristic (email ljilja.ristic@bodley.ox.ac.uk). A specific training session for statistics research is held in Hilary Term.

College libraries may also be useful although access is usually restricted to members of that college.

Links to the University's e-resources, including electronic journals can be found at <http://www.ouls.ox.ac.uk/eresources>

Department of Statistics Library - Rules and Information

1. Admittance to the Library

The library can be found on the first floor at 1 South Parks Road. All new readers must register with the Academic Administrator, (Room 1.101, email lib@stats.ox.ac.uk). A current University card is required for registering and for entry to the library.

2. To find a book

Most of the departmental books and journals are catalogued on SOLO, the University's on-line catalogue. SOLO can be accessed through the library terminal.

The library sections are as follows:

- 100. White spine labels
Main statistics lending section
Sections also on introductory statistics; history of statistics; and general study skills.
- 200. Yellow
Probability and operational research
- 300. Green
Genetics and Biology
- 400. Orange
Mathematics and computation
- 700. Gold
Reference only. These books may not be borrowed.

There is also a lending stack area in the farthest room. These books may be borrowed. Copies of some popular core texts may be held in room 1.101. This is recorded in the catalogue. To borrow these books you must contact the Academic Administrator, who will ensure the loan is properly recorded. Periodicals, dissertations and theses are for reference only.

The books in each of the main sections are in alphabetical order of the surname of the first author or editor.

3. To borrow a book

Books are borrowed on a self-issue basis by scanning into the self-issue computer firstly the barcode from the reader's University card, and then the barcode sticker inside the front cover of the book to be borrowed.

Each book borrowed **must be recorded** on the self-issue computer in the library. The department is small and so is the library budget. Stolen books have to be replaced, reducing the budget for new books. Reference books, journals, dissertations and theses and any items without barcodes **cannot be borrowed**.

4. To return a book

Books should be left in the **returns box** in the library. If books are overdue then reminder notices will be sent out by email. If a book is reserved by another reader or needs to be recalled then a reader may receive a notice, again by email.

5. To reserve a book

Reservation requests can be made via SOLO, the University's library catalogue. Reserved books can be collected from room 1.101.

6. Loan periods

MSc students can borrow books for one week and then can be renew them on a further three occasions unless recalled by the library.

Loans may be renewed either by using SOLO before the due date, by checking them out again, or by e-mailing lib@stats.ox.ac.uk

7. Rules of conduct

These rules apply to all library readers. Breaches of library rules may lead to suspension of borrowing privileges, fines or suspension from the use of the library.

- Eating and drinking are **not permitted** in the library.
- Personal belongings should not be left unattended in the library at any time. Any such items will be removed. The Department will not be responsible for personal belongings which are stolen or damaged.
- The use of mobile phones is not permitted in the library.
- The library door should be kept locked at all times. Only the Librarian or Academic Administrator may give access to non-members of the Department.
- Reference books and journals may only be removed for photocopying within the Department and must be returned immediately.
- Photocopies may only be made in compliance with copyright law. Details are displayed by the Departmental printers/photocopiers.
- Every book borrowed must be recorded on the self-issue computer in the library. Books must be returned by the due date or renewed. Any book recalled by the library must be returned as soon as possible.
- No reader may have more than **nine** books in their possession.
- Returned books must be replaced in the returns box. A reader is responsible for a book until it is returned to the library.
- Replacement costs will be charged for lost, damaged or defaced books.
- The library computers must not be unplugged or switched off.
- Please be considerate to other users and keep noise to a minimum.

Department of Statistics - General Information

Access to the Department's Buildings

The Department's buildings at 1 and 2 South Parks Road (SPR) are accessible by the University card 24 hours a day, 7 days a week including bank holidays; administrative staff are on duty from 8.30 am to 5.30 pm (Monday to Thursday) and 8.30 am to 4.30 pm (Friday) (except from 1 – 2 pm Monday to Friday). **All occupants working in these buildings after 7 pm** or at any time on weekends or public holidays **must record their presence by signing the *In and Out* book** (found in 1 SPR by the pigeonholes in the foyer and in 2 SPR on top of the safe, underneath the stairs in the foyer).

Care of Buildings

As there is no caretaker for 1 and 2 SPR, we ask all users of the buildings to help with security. Please leave windows and doors secure; and follow the security notices posted in the buildings. Please report any infringements, lighting failures or problems needing the attention of the surveyors or cleaners, etc. to buildings@stats.ox.ac.uk.

Please do not switch off hall/stairway lighting at any time.

It is illegal to smoke in any of the buildings.

The lift in 1 South Parks Road is not to be used by students other than disabled students.

Computing Manager

The Computing Manager [Room2.108] will ask to see all personal computing equipment brought on to the premises. Any use of the Department's fixed computing/electrical facilities must be arranged first with the Computing Manager or designated representatives or email ithelp@stats.ox.ac.uk.

Department Library

The library is located on the first floor in 1 South Parks Road. All new readers must register with the Academic Administrator in room 1.101. Items lodged in the Library may be photocopied (within copyright law).

Printing/Photocopying

Individual photocopying/printing accounts are set up by the IT staff. Access to the machines in the buildings is then available by means of your university card number. MSc Students will be allocated 1000 prints/photocopies. Additional print allocation can be bought from the IT staff at a cost of £10 per 500 prints. Copyright law applies. A comb binding machine is available on the second floor in 1 South Parks Road.

Post

Pigeonholes in the entrance hall of 1 South Parks Road are appropriately marked for incoming post, items outgoing by University Messenger or Royal Mail post and for Department Members.

University Messenger Service collects and delivers mail for the departments and colleges of the University.

Royal Mail is franked and sent out by the administration staff each afternoon. Where Departmental business is not involved, you should make your own arrangements. Non-staff business items will be franked if approved by an academic member of staff.

Telephones

Currently all telephones in public areas have access for internal University use and 999 calls only.

Lockers

A limited number of lockers are available on the top floor in 1 South Parks Road. A deposit of £5 is charged for the key to the lockers; this is refundable on leaving the department. If you lose a key the deposit is void and another deposit will be charged for the replacement key.

Kitchen facilities and Common Rooms

Facilities and provisions for making tea and coffee are available in the kitchen in both 1 and 2 South Parks Road. Tea and coffee are free. The fridges are kept stocked with milk, but otherwise are available for use for storage of small quantities of perishable food. You will need to provide your own mug. Please keep the kitchens tidy. If reheating food in the microwave in 1SPR, it would be appreciated if you would bear in mind that some smells may offend.

A Common Room is available next to the kitchen in 1 SPR and there is a daily newspaper available. Please do not remove newspapers or magazines from the Common Room. In 2 SPR, room 2.113 is available as a Common Room when it is not in use for meetings, as indicated on the door.

Please do not take food or drink into the Computer Labs or the Lecture Room.

Lost property

Items which have been found in 1 and 2 South Parks Road are lodged with the Administrative Assistant in 1.109. The items are disposed of at the end of each term.

Emergencies, Security and Safety

The safety officer is Dr Matthias Winkel.

Fire:

Please read the blue fire-action notices posted in the buildings and familiarise yourself with the escape routes. If there is a fire emergency, immediately break the glass on the nearest fire alarm point and then call both Security Services (89999) and the Fire Brigade ((9)999). Operate extinguishers only if this does not put you at risk and otherwise vacate the building immediately.

On hearing the fire alarm ringing please leave the building immediately. **DO NOT** stop to pick up your belongings. If you are the last person to leave the room please close the door. The assembly points are outside 1 South Parks Road if the fire is in 2 South Parks Road, and 2 South Parks Road if the fire is in no 1. Do not re-enter the building until told by someone in authority that it is safe to do so. Someone in authority means either the Head of Department, the Administrator or the Health & Safety Officer, or in their absence a fire officer.

Security:

Theft of personal items does occur from time to time. It is important to remain aware of this and help maintain the security of the buildings. The entrance doors, library door and computer room doors should remain locked at all times. All windows should be closed and latched outside normal working hours. Security blinds in the Lecture Room and Common Room should be locked outside normal working hours. Personal belongings should not be left unattended at any time.

The University Security Service can be reached by phone on 89999.

First Aid: lists of qualified First Aiders are posted in the entrance hall to each building and First Aid Kits are in the kitchens of 1 and 2 South Parks Road. For an ambulance phone (9)999.

Fires, security alerts and serious accidents must be reported to the Senior Administrator and the scene of report must remain undisturbed. Safety information is filed in the Senior Administrator's room and the latest Departmental reports are on the notice board in 1 SPR.

Administrative Staff

1 South Parks Road:

Jennie McKenzie	<i>Administrator</i>	Room 2.209	mckenzie@stats.ox.ac.uk
Jan Boylan	<i>Academic Administrator</i>	Room 1.101	boylan@stats.ox.ac.uk
Christine Stone	<i>Professorial PA</i>	Room 1.208	cstone@stats.ox.ac.uk
Emma Bodger	<i>Receptionist/ Administrative Assistant</i>	Room 1.109	bodger@stats.ox.ac.uk

Henry Wellcome Centre for Gene

Function:

Maddy Mitchell	<i>Administrative Officer/ PA and Group Secretary</i>	Room 40.80	mitchell@stats.ox.ac.uk
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Peter Medawar Building for Pathogen Research:

Beverley Lane	<i>Administrative Assistant</i>	Room 50.08	lane@stats.ox.ac.uk
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Computing Staff

2 South Parks Road: Stuart McRobert Susan Hutchinson David del Campo Hill Saffron Greenwood	<i>Computing Manager</i> <i>Computing Consultant</i> <i>Computing Officer</i> <i>Computing Officer</i>	Room 2.108 Room 2.109 Room 2.109 Room 2.107	Please direct all IT enquiries to ithelp@stats.ox.ac.uk
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