MSc in Biometry
For students entering Part 1 in 2011/2

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	Mathematics, Statistics and Operational Research
Faculty:	Science Faculty
Programme length:	1 years
Date of specification:	23/Aug/2011
Programme Director:	Prof Sue Todd
Programme Advisor:	
Board of Studies:	School of MMP PG taught programmes
Accreditation:	Programme is accredited by the Royal Statistical Society

Summary of programme aims
The aim of the MSc in Biometry is to train students to work in scientific research teams in the medical, pharmaceutical, agricultural and biological sciences. The programme introduces students to a range of topics and skills and provides an appreciation of the link between statistical theory and applications.

The learning outcomes of the programme include the following:
- appreciation of the role of statistical inference in the practice of data analysis
- the ability to formulate and fit a variety of statistical models and to interpret the results
- expertise in data management and analysis
- familiarity with a number of computer software packages for data analysis
- awareness of issues relevant to the design of studies
- acquisition of a broad range of transferable employment-related skills
- competence in written and oral skills for communicating statistical ideas and the results of data analysis

Transferable skills
On completion of the programme, students will have developed and enhanced the following transferable skills:
- ability to use computers for data management, data analysis, report writing and communication
- skills in writing reports and summarising computer output
- ability to work as part of a team and to make oral presentations

Programme content
The profile which follows states which modules must be taken. The number of credits for each module is shown after its title.

Compulsory modules

Code	*Module title*	*Credits*	*Level*
STM10	Data Analysis	20	7
STM20	Linear Models and Practical Bayesian Data Analysis	20	7
STM30	Generalised Linear Models and Non-Linear Modelling	20	7
STM40	Multivariate Analysis and Structured Data	20	7
STM50	Sampling Methods and Study Design	20	7
ASM120	Clinical Trials	5	7
ASM130	Time-to-Event Analysis	5	7
ASM150	Statistical Genetics	5	7
ASM160	Epidemiology and Public Health	5	7
ASM00	Dissertation	60	7

Part-time or modular arrangements
The programme may be undertaken over two years on a part-time basis. Selection of modules between the two years will be agreed between the student and the Programme Director at the start of the programme.

Progression requirements
None.

Assessment and classification
Assessment of some modules is by examination only, taken early in the summer term. Other modules are assessed by a combination of open or closed book examinations, data analysis reports and theoretical or practical exercises completed during the module. The dissertation is assessed by a written report normally submitted by 31 August. Marks should be interpreted within the following framework:

Mark Interpretation
70% - 100% Distinction
60% - 69% Merit
50% - 59% Good standard (Pass)
Failing categories:
40% - 49% Work below threshold standard
0% - 39% Unsatisfactory work

Students will have one opportunity for re-assessment in any module that they have failed.

For Masters Degrees
To pass the MSc students must gain an average mark of 50 or more overall including a mark of 50 or more for the dissertation and have no mark below 40 in modules STM20, STM30, STM40 and STM50. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more overall including a mark of 60 or more for the dissertation, plus 50 or more for each of STM10, STM20, STM30, STM40, STM50 and have no mark below 40 will be eligible for a Distinction. Those gaining an average mark of 60 or more overall including a mark of 50 or more for the dissertation and have no mark below 40 will be eligible for a Merit.

Postgraduate Diploma in Applied Statistics
To be awarded a Postgraduate Diploma in Applied Statistics students may follow two routes:

1: Students must complete 120 credits of the masters course, excluding the dissertation component. Students must gain an average mark of 50 or more and have no mark below 40 in modules STM20, STM30, STM40, STM50. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

2: Students must complete at least 120 credits of the masters course including the dissertation component and at least two of the following modules STM20, STM30, STM40, STM50. Students must gain an average mark of 50 or more and have no mark below 40 in at least two of STM20, STM30, STM40, STM50, and a mark of at least 50 in ASM00. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more and have no mark below 40 will be eligible for the award of a Distinction. Those gaining an average mark of 60 or more and have no mark below 40 will be eligible for a Merit.

Postgraduate Certificate in Applied Statistics
To be awarded a Postgraduate Certificate in Applied Statistics students must complete 60 taught credits of the masters course. Students must gain an average mark of 50 or more and have no mark below 40 in more than 10 credits.

Admission requirements
Entrants to this programme are normally required to have obtained a first or second class honours degree in Statistics or Mathematics.

Admissions Tutor: Dr Sue Todd

Support for students and their learning

University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, the Student Employment, Experience and Careers Centre (SEECC), In-sessional English Support Programme, the Study Advice and Mathematics Support Centre teams, IT Services and the Student Access to Independent Learning (S@il) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and advisers in the Student Services Centre. The Student Services Centre is housed in the Carrington Building and offers advice on accommodation, careers, disability, finance, and wellbeing. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions and runs workshops and seminars on a range of topics. For more information see www.reading.ac.uk/student

Support for graduate students in Mathematics and Statistics is similarly aimed at both learning and pastoral support. Pastoral support augments the University's care systems, with the Programme Director acting as Personal Tutor to each student.
A comprehensive handbook is available for the programme. A wealth of other resources are available via the University intranet. There is an active Student-Staff Liaison Committee with postgraduate representation.

Career prospects
Careers talks are offered by employers anxious to attract graduates from the programme. Given the range of possible applications of Statistics, students completing an MSc in Biometry have a wide choice of careers. In recent years, students who have followed this programme have entered careers as statisticians in the pharmaceutical industry, university medical schools, medical research centres and agricultural research institutes, in the UK and overseas.

Opportunities for study abroad or for placements
None at present, although the dissertation may involve collaboration from outside the UK.

Programme Outcomes
The programme provides opportunities to develop and demonstrate knowledge and understanding, skills, qualities and other attributes, in the following areas:

Knowledge and Understanding

A. Knowledge and understanding of:	**Teaching/learning methods and strategies**
1. The role of statistical inference in data analysis 2. The formulation, fitting and interpretation of a variety of statistical models 3. The issues relevant to the design of studies 4. The use of statistical software packages	The knowledge required for topics is generally delineated in formal lectures supported by problem sets of questions for students to tackle on their own. Some modules seek to re-enforce the understanding of this material through supervised practical classes. Data analysis assignments and solutions to problem sheets provide feedback on progress. *Assessment* Knowledge is assessed through coursework, unseen examinations or a combination of the two. Assessment is also through the MSc dissertation.

Skills and other attributes

B. Intellectual skills - *able to:*	**Teaching/learning methods and strategies**
1. Think logically 2. Translate scientific questions into statistical hypotheses 3. Analyse and solve problems 4. Organise tasks into a well-structured form 5. Transfer appropriate knowledge and methods	Skills 1-6 are developed through examples given in lectures, and analysing problems posed in practicals, exercises and the Data Analysis module. Skills 7 and 8 are developed through a series of formative assessments on the Data Analysis module and the feedback they get on these. Students are also

from one topic or application area within the subject to another
6. Recognise and use appropriate statistical methods in data analysis
7. Produce well-structured and well-argued accounts of work in both written and oral forms
8. Plan, organise and carry out independent project work

required to give oral presentations for some parts of this module. The MSc dissertation provides a further opportunity to develop these skills, supported by the project supervisor.

Assessment
Skills 1-6 are assessed indirectly through the examinations and coursework associated with the modules contributing to the programme.
Skills 7 and 8 are assessed through the coursework in the Data Analysis module and the MSc dissertation.

C. Practical skills - *able to:*

1. Formulate and solve statistical problems: both theoretical and application based
2. Use statistical software in an effective manner, for both analysis and data management
3. Interpret statistical output and be able to describe the implications to a non-statistician
4. Plan and carry out, with supervision, statistical research

Teaching/learning methods and strategies

The combination of lectures, supporting exercises, assignments and assessments in the Data Analysis module are designed to develop skills 1-3.
Skill 4 is developed and consolidated by the MSc dissertation.

Assessment
Skills 1-3 are formally assessed by coursework. In addition, skills 1 and 3 are assessed by examination.
Skill 4 is assessed by the quality of the MSc dissertation produced at the end of the research period.

D. Transferable skills - *able to:*

1. Communicate scientific ideas in writing
2. Give oral presentations
3. Work effectively as part of a team
4. Synthesise relevant information from a wide range of sources
5. Manage time
6. Use IT (word-processing, spreadsheets, and statistical software)

Teaching/learning methods and strategies

Transferable skills are integrated into all parts of the programme.
Development of communication and teamwork skills (skills 1-3) is particularly prominent in the Data Analysis module.
Time management (skill 5) is essential for the effective completion of the programme, and specifically the MSc dissertation. Skill 4 develops during the programme while skill 6 develops throughout the course.

Assessment
Skills 1-6 are all assessed through coursework.
Skills 4-6 are further assessed through the dissertation.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.