BSc Statistics   **UCAS code: G300**
For students entering Part 1 in 2012/3

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:	3 years
Date of specification:	14/May/2014
Programme Director:	Dr Karen Ayres
Programme Advisor:	Dr Karen Ayres
Board of Studies:	School of Mathematical and Physical Sciences
Undergraduate	
Accreditation:	Royal Statistical Society
Optional placement variation(s):	with Placement Experience

Summary of programme aims

The programme aims to provide a thorough degree-level education in statistics. This is achieved by providing modules which cover the basic principles of summarising, presenting and drawing conclusions from data, as well as those concentrating on statistical inference, modelling and the practical applications of the subject. A distinguishing feature of the programme is that it gives strong emphasis on the practical applications of statistics in a variety of areas, including business, biological sciences, economics and medicine, and emphasises the use of statistical software in data analysis.

Transferable skills

During the course of their studies at Reading, all students will be expected to enhance their academic and personal transferable skills. In following this programme, students will have had the opportunity to develop such skills, in particular relating to communication, interpersonal skills, learning skills, numeracy, self-management, use of IT and problem-solving and will have been encouraged to further develop and enhance the full set of skills through a variety of opportunities available outside their curriculum.

As part of this programme students are expected to have gained experience and show competence in the following transferable skills: IT (word-processing, spreadsheet, database and statistical software), scientific writing, oral presentation, team-working, problem-solving, use of library and internet resources, time-management, and career planning.

Programme content

The profile which follows states which modules must be taken (the compulsory part), together with one or more lists of modules from which the student must make a selection (the optional modules). Students must choose such additional modules as they wish, in consultation with their programme advisor, to make 120 credits in each Part. The number of credits for each module is shown after its title.

Part 1 (three terms)
Compulsory modules

Code	Module title	Credits	Level
ST1PD	Probability and Distributions	10	4
ST1ST	Statistical Techniques	10	4
ST1SIM	Statistical Inference and Methods	10	4
MA1CAL	Calculus Methods	20	4
MA1OD1	Ordinary Differential Equations I	10	4
MA1VM	Vectors and Matrices	10	4

Optional modules
Selected modules to the value of 50 credits from:

Code	Module title	Credits	Level
AS1D	Data Analysis	20	4
ST1DA	Data Analysis I	10	4
MA1AL1	Algebra I	20	4
MA1AN1	Analysis I	20	4

MA1LIN	Linear Algebra	10	4
MA1GEO	Geometry	10	4
MA1MMP	Modelling and Mathematical Physics	10	4
LA1XXX	Modern Language	20	4
EC104	Economics for Managers	20	4
AP1SB1	Introduction to Management	10	4
AP1EM1	Introduction to Marketing	10	4

OR *any other approved module(s)*

Part 2 (three terms)
Compulsory modules

Code	Module title	Credits	Level
ST2STM	Statistical Theory and Methods	20	5
AS2B	Linear Models	20	5
AS2G	Skills for Statisticians	20	5

Optional modules

At least 20 credits from:

ST2EPI	Epidemiology	10	5
ST2CT	Clinical Trials	10	5
ST2FS	Forensic Statistics	10	5

AND selected modules to make a total of 120 credits in Part 2 chosen from the following:

MA2AN2	Analysis II	20	5
MA2AL2	Algebra II	10	5
MA2PD1	Partial Differential Equations I	20	5
MA2VC	Vector Calculus	10	5
MA2OD2	Ordinary Differential Equations II	10	5
AP2SB1	Business Management	10	5
AP2SB2	Financial Management	10	5
AP2EM1	Marketing Management	10	5
EC203	Introductory Econometrics (BA)	20	5
MM270	The Practice of Entrepreneurship	20	5
LA1XX1	Institution Wide Language Programme	20	4

OR *any other approved module(s)*

Part 3 (three terms)
Compulsory modules

Mod Code	Module Title	Credits	Level
AS3A	Advanced Statistical Modelling	20	6
AS3F	Statistics Research Project	40	6

Optional modules
At least 40 credits from:

ST3BDA	Bayesian Data Analysis	10	6
ST3MVA	Multivariate Data Analysis	10	6
ST3MSD	Modelling Structured Data	10	6
ST3OR	Operational Research	10	6
ST3SM	Sampling Methods	10	6
ST3ED	Experimental Design	10	6

and selected modules to make a total of 120 credits of which at least 100 credits must be at level 6. This may include:

MA3VC	Vector Calculus	10	6
MA3IBP	Initial and Boundary-value Problems	10	6
MA3AGT	Applied Graph Theory	10	6
MA3ASP	Applied Stochastic Processes	10	7
MA3MB	Mathematical Biology	10	6
MA3WW	Water Waves	10	6
MA3DS	Dynamical Systems	10	6
AP3EM2	Marketing Research Methods	10	6
MM270	Practice of Entrepreneurship	10	5
LA1XX1	Institution Wide Language Programme	10	4

OR any other approved module(s)

Progression requirements

To gain a threshold performance at Part 1 a student shall normally be required to achieve an overall weighted average of 40% over 120 credits taken in Part 1, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1 and to obtain a weighted average of at least 40% in the three compulsory Statistics modules taken together, with at least 30% in each of these three modules (ST1PD, ST1ST, ST1SIM).

To gain a threshold performance at Part 2, a student shall normally be required to achieve:
(i) a weighted average of 40% over 120 credits taken at Part 2;
(ii) marks of at least 40% in individual modules amounting to not less than 80 credits; and
(iii) marks of at least 30% in individual modules amounting to not less than 120 credits.
In order to progress from Part 2 to Part 3, a student shall normally be required to achieve a threshold performance at Part 2.

Students are required to pass the professional/placement year in order to progress on the programme which incorporates the professional/placement year. Students who fail the professional/placement year transfer to the non-placement year version of the programme.

Assessment and classification
The University's honours classification scheme is:

Mark	Interpretation
70% - 100%	First class
60% - 69%	Upper Second class
50% - 59%	Lower Second class
40% - 49%	Third class
35% - 39%	Below Honours Standard
0% - 34%	Fail

For the University-wide framework for classification, which includes details of the classification method, please see: www.reading.ac.uk/internal/exams/Policies/exa-class.aspx.

The weighting of the Parts/Years in the calculation of the degree classification is

Three-year programmes
Part 2 one-third
Part 3 two-thirds
Teaching is organised in modules that typically involve both lectures and practicals. The assessment is carried out within the University's degree classification scheme, details of which are in the programme handbook. The pass mark in each module is 40%. Modules are normally assessed by a mixture of coursework and formal examination, although some are assessed wholly by coursework. The Part 3 project is essentially self-study,

supported by a series of tutorials, and is assessed as coursework. Part 2 contributes one third of the overall assessment, and Part 3 the remaining two thirds.

Admission requirements
Entrants to this programme are normally required to have obtained:
UCAS Tariff: A Level: 320 points including at least grade B in A-level Mathematics; *or*
International Baccalaureate: 6, 6, 5 including 5 in Higher Mathematics or equivalent.

Admissions Tutor: Dr Steve Langdon

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 Careers, Placement and Experience Centre (CPEC), 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, academic issues (eg problems with module selection) and exam related queries. 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

Within the providing departments additional support is given though practical classes, and the development of problem-solving skills is assisted by provision of model solutions to exercises. Advice on statistical computing is available from lecturing staff. There is a Programme Adviser to offer advice on the choice of modules within the programme.

Career prospects
In recent years, students who have followed this programme have entered careers as statisticians in the pharmaceutical industry, financial institutions, insurance companies, government and university medical schools. Graduates from this programme will automatically be granted Graduate Statistician status on application to the Royal Statistical Society, provided that at least Second Class Honours have been achieved.

Opportunities for study abroad or for placements
The BSc Applied Statistics programme contains the same academic material as this one and includes a placement year which may be spent abroad.

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 fundamental concepts and techniques of data summary and presentation, statistical inference and linear modelling 2. The application of statistics in a variety of areas 3. A selection of more specialist optional topics 4. The use of statistical software in data analysis.	The knowledge required for the basic topics is delineated in formal lectures supported by problem sets for students to tackle on their own. In Part 1 these are supported by tutorials and practical classes through which students can obtain additional help and feedback on their work. In the programme students are expected to work on practical problems on their own and seek help when required. Where appropriate, model solutions are

provided for problems set.

Assessment
Most knowledge is tested through a combination of coursework and unseen formal examinations. Dissertations and oral presentations also contribute in other parts of the programme.

Skills and other attributes

B. Intellectual skills - *able to:*

1. Think logically
analyse and solve problems
2. Organise tasks into a structured form
3. Transfer appropriate knowledge and methods from one topic within the subject to another
4. Recognise and use appropriate statistical methods in data analysis
5. Plan, conduct and write a report on an independent project.

Teaching/learning methods and strategies

Logic is an essential part of the understanding of statistical techniques, and the use of statistical software for data analysis is embedded throughout the programme. The quality of solutions to a problem is substantially determined by the structure of that response; analysis, synthesis, problem solving, integration of theory and application, and knowledge transfer from one topic to another are intrinsic to high-level performance in the programme.

Assessment
Skills 1-3 are assessed indirectly in most parts of the programme, while 4 contributes to the more successful work. Skills 5 and 6 are assessed in practical work in Parts 2 and 3.

C. Practical skills - *able to:*

1. Plan, conduct and report on the results of statistical investigations
2. Formulate and solve statistical problems
3. Use statistical software in an effective manner
4. Write and defend a report on a chosen topic.

Teaching/learning methods and strategies

Lectures, practical work and assignments are designed to enhance skills 1-4.

Assessment
Skills 1 and 2 are tested both formatively in coursework and summatively in examin-ations. Skills 3 and 4 are assessed in coursework that involves computer based analysis.

D. Transferable skills - *able to:*

1. Use IT (word-processing, spreadsheets and statistical software)
2. Communicate scientific ideas
3. Give oral presentations
4. Work effectively as part of a team
5. Use library and internet resources
6. Manage time
7. Plan their career.

Teaching/learning methods and strategies

The use of IT is embedded throughout the programme, and in the packages Minitab and SAS taught in Parts 1 and 2. Team work and career planning are part of the module *Skills for Statisticians*. Communication skills are enhanced in Part 2, and are deployed in modules in Parts 2 and 3. Time management is essential for the timely and effective completion of the programme. Library and internet resources are required for certain assignments and contribute to the best performances throughout.

Assessment
Skills 1 and 2 are assessed through coursework. Skills 2-5 contribute assessed coursework towards the module *Skills for Statisticians*. Effective use of these skills will enhance performance in later modules.