The University Of Sheffield.

Programme Specification

A statement of the knowledge, understanding and skills that underpin a taught programme of study leading to an award from The University of Sheffield

1	**Programme Title**	Statistics
2	**Programme Code**	MAST01, MAST02
3	**JACS Code**	G300
4	**Level of Study**	Postgraduate
5a	**Final Qualification**	MSc
5b	**QAA FHEQ Level**	Masters
6a	**Intermediate Qualification(s)**	PG Diploma, PG Certificate
6b	**QAA FHEQ Level**	7
7	**Teaching Institution** (if not Sheffield)	Not applicable
8	**Faculty**	Science
9	**Department**	School of Mathematics and Statistics
10	**Other Departments providing credit bearing modules for the programme**	Not applicable
11	**Mode(s) of Attendance**	Full-time (MAST01), Part-time (DL) (MAST02)
12	**Duration of the Programme**	1 year (MAST01), 2 – 4 years (MAST02)
13	**Accrediting Professional or Statutory Body**	Royal Statistical Society
14	**Date of production/revision**	December 2019, July 2020

15. Background to the programme and subject area

The MSc in Statistics is designed primarily for graduates who wish to pursue careers in statistics and data science. The programme includes a mix of statistical theory, practical application and professional skills training. Students learn a variety of methods for modelling and analysing data, as well as programming and computational tools to support the application of these methods. It also provides a foundation for those wishing to pursue further research in statistics. It is available via distance learning (2-3 years, part time) as well as residential study (1 year full-time). The course has been running successfully for many years.

The MSc is accredited by the Royal Statistical Society. The Society accords GradStat status with one year's relevant experience towards CStat status to all students who pass the course. An Advisory Board, with representatives from the Government Statistical Service and various industries, meets annually with staff and students, and provides advice on the skills training and technical content covered in the MSc.

The School has an international reputation in research, with 89% of research activities being rated as world leading or internationally excellent in the 2014 Research Excellence Framework exercise. Students can be sure that the training in this programme is informed by the latest thinking in the subject.

Further information is available from the School web site:
http://www.sheffield.ac.uk/maths/prospectivepg/taughtpg/statistics

16. Programme aims

In the context of this programme the School aims:

(a) to provide a high quality thorough initial training for professional statisticians, offering good general coverage of the subject in an up-to-date way;

(b) to provide an intellectual environment conducive to learning;

(c) to prepare students for careers which use their mathematical and statistical training;

(d) to provide teaching which is informed and inspired by the research and scholarship of the staff;

(e) to provide students with assessments of their achievements and to identify and support academic excellence.

17. Programme learning outcomes

Knowledge and understanding:

On successful completion of the programme, students will be able to demonstrate knowledge and understanding of:

K1	statistical theory, including Bayesian and frequentist approaches for statistical inference;
K2	a wide variety of statistical modelling techniques;
K3	computational methods for implementing statistical analyses;
K4	at least one statistical computing language.

Skills and other attributes:

On successful completion of the programme, students will be able to:

S1	identify and implement an appropriate statistical modelling method, when presented with a data analysis problem;
S2	produce written reports which describe statistical analyses and present the findings;
S3	use appropriate software for analysing data, implementing statistical modelling methods, and preparing written reports;
S4	communicate the results of statistical analyses to non-expert audiences;
S5	plan and complete an extended individual study of a statistical problem and to present the results in a dissertation.

18. Teaching, learning and assessment

Development of the learning outcomes is promoted through the following teaching and learning methods:

MAST01 is a full-time residential programme, with lectures, MAST02 is a part-time distance learning programme. They are as closely integrated as possible within the constraints this difference imposes. The distance learning version is designed so that students study the same subjects as their residential counterparts essentially concurrently.

Blackboard
The course materials are made available through Blackboard (MOLE) and support is available from a designated personal tutor from the individual module lecturers and from the course's Course Director via email or telephone. Most communication within the course, particularly between residential and distance-learning students, takes place via Blackboard and so training in its use is given early in the MSc.

For all modules (except the dissertation module) students are provided with module notes, structured problems and a schedule of work. The Blackboard discussion board is the main vehicle for academic interaction. It also serves to keep distance-learning students exactly in step with the delivery of material in Sheffield. (K1-K4).

Independent Learning
This is the cornerstone of success in the programme. It is vital for the assimilation of the material provided, for the preparation of written reports, and other presentations, and for the proper use of sophisticated software (K1-K4).

Lectures
A 15-credit lecture-module generally comprises about 20 lectures. In lectures the important points in the lecture notes are explained and illustrated, with computer demonstrations when appropriate. The Blackboard discussion board is used to keep distance-learning students up-to-date with what has been covered and highlight any special points made during lectures. (K1-4, S1, S3). In every module, some lectures will include discussion and demonstration of presenting statistical concepts to non-expert audiences (S4).

Computing classes
A number of classes are held in computer labs, where students can learn and practise statistical computing. Demonstrators are available in the classes to help students with any questions or problems (K3, K4, S3).

Formative assessment
All modules (with the exception of the dissertation module) include sets of non-assessed exercises. Students can hand in their work and receive feedback on their solutions. Model solutions are provided for these exercises (K1, K2, S1).

Project work and feedback
Students will complete a number of projects over the MSc, and will receive feedback on both technical aspects particular to the project, and presentation themes that are common to all projects (S1-S4).

Dissertation
Teaching for the dissertation is through supervision by one or more members of School staff. Students will experience the key phases of a relatively large piece of work: planning to a deadline; researching background information; acquisition and validation of data; problem specification; carrying out of relevant analyses; and reporting at length through the dissertation. Dissertation topics may be provided by external clients, and learning to communicate with, and relate to, these clients is an extra benefit of the dissertation; for distance learning students, projects based in the workplace in co-operation with an employer are encouraged. (K1-K4, S4, S5)).

Personal Tutorials
The Department runs a personal tutorial system conforming to the guidelines in the University's Students' Charter. The system is essentially pastoral; tutors are available to provide personal support and general academic guidance.

Opportunities to demonstrate achievement of the learning outcomes are provided through the following assessment methods:

Project work, requiring report-writing and statistical computing K1-K4, S1-S4. K1, SK1, S1-2.

Examinations, which are held in May/June, K1-K3, S1.

Dissertation K1-K4, S1, S3-5.

19. Reference points

The learning outcomes have been developed to reflect the following points of reference:

Subject Benchmark Statements
https://www.qaa.ac.uk/quality-code/subject-benchmark-statements

Framework for Higher Education Qualifications (2014)
https://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf

University Strategic Plan
http://www.sheffield.ac.uk/strategicplan

Learning and Teaching Strategy (2016-21)

https://www.sheffield.ac.uk/polopoly_fs/1.661828!/file/FinalStrategy.pdf

The research interests and scholarship of the staff.

The European Mathematical Society Mathematics Tuning Group report "Towards a common framework for Mathematics degrees in Europe" at www.maths.soton.ac.uk/EMIS/newsletter/newsletter45.pdf pages 26-28.

The Royal Statistical Society's accreditation framework.

Contacts with employers, mainly through the programme's Advisory Board

The University of Sheffield Students' Charter at
http://www.shef.ac.uk/ssid/ourcommitment/charter/

The University's coat of arms, containing the inscriptions *Disce Doce* (Learn and Teach) and *Rerum Cognoscere Causas* (To Discover the Causes of Things; from Virgil's *Georgics* II, 490), at
http://www.sheffield.ac.uk/about/arms

20. Programme structure and regulations

All students must take:

1. The Statistician's Toolkit (30 credits, year long)
2. Bayesian Statistics and Computational Methods (30 credits, year long)

Students will take at least two of the following:

1. Machine Learning (15 credits, Semester 1)
2. Medical Statistics (15 credits, year long)
3. Time Series (15 credits, Semester 2)
4. Sampling Theory and Design of Experiments (15 credits, Semester 2)

With approval from the MSc Course Director, and the host department, up to two of the above may be replaced by unrestricted F7 modules.

All students complete a Dissertation (60 credits).

For residential students the dissertation is mainly prepared during the summer. The arrangement for part-time students is more flexible but it is expected that they too will do most of the work during the summers or in the year after they have completed all the other modules.

Successful completion of the programme leads to the award of the MSc with either 'pass', 'pass with merit' or 'pass with distinction' grade.

Detailed information about the structure of programmes, regulations concerning assessment and progression and descriptions of individual modules are published in the University Calendar available on-line at http://www.sheffield.ac.uk/calendar/.

21. Student development over the course of study

The two compulsory modules form a 'core', and will equip students with essential modelling, computational and professional skills. These will include linear and generalised linear modelling, exploratory data analysis and statistical computing using R, Bayesian inference and Monte Carlo methods, and presentation skills. Students will have the knowledge and confidence to tackle a wide range of data analysis problems, and, when confronted with 'non-standard' problems, make use of computational methods and/or simple exploratory approaches as appropriate.

The remaining modules enable the students to develop specialised knowledge of particular topics, as well as further developing their professional skills in communication and report-writing. The dissertation draws on the knowledge and skills acquired in the remainder of the programme.

22. Criteria for admission to the programme

The minimum entrance requirement for the course is:

either a Second Class Honours Degree, from a three or four year course at a UK university, with substantial mathematical and statistical components; or any comparable qualification of equivalent standard. The School also offers a Graduate Certificate which can be used as an entry qualification for the programme.

In addition, students whose first language is not English will need to demonstrate English language proficiency (even if their education has been chiefly in English). Our usual minimum requirements are: TOEFL 232 (computer-based) or 575 (paper-based), IELTS 6.5, or equivalent.

Detailed information regarding admission to the programme is available at http://www.shef.ac.uk/study/Detailed information regarding admission to programmes is available from the University's On-Line Prospectus at http://www.shef.ac.uk/courses/.

23. Additional information

There is an active RSS local group that organises regular talks. These talks are accessible to and interesting for students on this programme.

This specification represents a concise statement about the main features of the programme and should be considered alongside other sources of information provided by the teaching department(s) and the University. In addition to programme specific information, further information about studying at The University of Sheffield can be accessed via our Student Services web site at http://www.shef.ac.uk/ssid.