

## MSc Applied Statistics

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### Programme Specification



<b>1. Programme title</b>	MSc Applied Statistics
<b>2. Awarding institution</b>	Middlesex University
<b>3. Teaching institution</b>	Middlesex University
<b>4. Details of accreditation by professional/statutory/regulatory body</b>	
<b>5. Final qualification</b>	MSc Applied Statistics / PgDip Applied Statistics
<b>6. Academic year</b>	2014/15
<b>7. Language of study</b>	English
<b>8. Mode of study</b>	Full-time

#### **9. Criteria for admission to the programme**

An Honours degree normally classified 2.2 or above, or equivalent, with a significant mathematical element in its curriculum.

Successful applicants must have competence in English language. For international applicants whose first language is not English the requirement is that they have IELTS 6.5 (with minimum 6.0 in all four components) or TOEFL internet based 87 (with at least 21 in listening & writing, 22 in speaking and 23 in reading).

**10. Aims of the programme**

The programme aims to:

- develop awareness and understanding, at an advanced level, of mathematical and statistical concepts and techniques in order to apply them to cross-sectional, time-series, longitudinal, multi-level, spatial and event-oriented data sets;
- develop an advanced knowledge of probability, distributions, inference and stochastic processes, statistical modelling and analysis in order to solve problems in engineering, computing and communications sciences, natural and environmental sciences, health and social sciences, economics and finance;
- develop the ability to work independently and as part of a team on highly technical problems requiring statistical techniques and to communicate the results to a wide range of audiences.

**11. Programme outcomes**

**A. Knowledge and understanding**

On completion of this programme the successful student will have knowledge and understanding of :

- A1 advanced techniques in statistics;
- A2 various types of data;
- A3 theories and methods for modelling and analysing complex data sets and their relative merits;
- A4 core concepts and theories of probability and stochastic processes;
- A5 core concepts and theories of advanced techniques inference;
- A6 research methods and techniques.

**Teaching/learning methods**

Students gain knowledge and understanding through a combination of lectures, directed reading and guided independent study, including use of online resources, case studies, guest/visiting speakers, group work, coursework, critical reflection, facilitated discussion, workshops and the project.

**Assessment methods**

Students' knowledge and understanding are assessed by individual and group coursework, seen exams and tests, and the project.

**B. Cognitive (thinking) skills**

On completion of this programme the successful student will be able to:

- B1 explain and evaluate methods for analysing and modelling complex data sets;
- B2 explain and critically compare competing methods for modelling data;
- B3 use advanced methods of stochastic analysis and applied probability to formulate and solve practical problems;
- B4 identify suitable techniques and justify their appropriateness to solve technical applied problems;
- B5 effectively organise, structure and

**Teaching/learning methods**

Students learn cognitive skills through seminar discussion and debate, and independent study including the use of online resources supported by guidance from tutors.

**Assessment methods**

Students' cognitive skills are assessed by individual and group coursework, and by the project.

produce a project at an advanced level.	
<p><b>C. Practical skills</b>                  On completion of the programme the successful student will be able to:                  C1 obtain and critique data from a range of sources including electronic databases;                  C2 analyse data using both programming and computer packages;                  C3 use a variety of advanced statistical techniques to model data;                  C4 formulate and solve practical problems;                  C5 apply advanced statistical theory to practice in a variety of settings.</p>	<p><b>Teaching/learning methods</b>                  Students learn practical skills through workshops, reinforced and extended through seminar presentations and discussion, individual and group work, and independent study.</p> <p><b>Assessment methods</b>                  Students' practical skills are assessed by individual and group coursework, and by the project.</p>

**12. Programme structure (levels, modules, credits and progression requirements)**

**12.1 Overall structure of the programme**

Term 1	MSO4314 Statistical modelling [30]	MSO4311 Probability and stochastic processes [30]	MSO4312 Inference theory [15]	MSO4313 Descriptive statistical analysis [15]
Term 2			MSO4351 Time series and forecasting [15]	Option [15]
Term 3	MSO4991 Project [60]			
Options:				
	MSO4315	Survival analysis		
	MSO4345	Data mining		

**12.2 Levels and modules**

Starting in academic year 2010/11 the University is changing the way it references modules to state the level of study in which these are delivered. This is to comply with the national Framework for Higher Education Qualifications. This implementation will be a gradual process whilst records are updated. Therefore the old coding is bracketed below.

## Paper 4f – MSc Applied Statistics Programme Spec

Level 7 (4)		
COMPULSORY	OPTIONAL	PROGRESSION REQUIREMENTS
Students must take all of the following:  MSO4311 MSO4312 MSO4313 MSO4314 MSO4351 MSO4991	Students must also choose one from the following:  MSO4315 MSO4345	Students must pass 120 credits to progress to the project

### 12.3 Non-compensatable modules (note statement in 12.2 regarding FHEQ levels)

Module level	Module code
N/A	

### 13. Curriculum map

See attached.

### 14. Information about assessment regulations

Middlesex University Assessment Regulations apply to this programme, without exception.

### 15. Placement opportunities, requirements and support (if applicable)

N/A

### 16. Future careers (if applicable)

Graduates of the programme will be equipped as a statistician and a data analyst for careers in engineering, computing and communications sciences, natural and environmental sciences, health and social sciences, economics and finance.

### 17. Particular support for learning (if applicable)

- Specialise software and database resources
- Induction and orientation programme
- English Language Support
- Access to student counsellors

## **Paper 4f – MSc Applied Statistics Programme Spec**

- Virtual Learning Environment

<b>18. JACS code (or other relevant coding system)</b>	G310
<b>19. Relevant QAA subject benchmark group(s)</b>	Mathematics, Statistics and Operational Research

<b>20. Reference points</b>
<ul style="list-style-type: none"><li>• QAA Guidelines for programme specifications</li><li>• QAA Qualifications Framework</li><li>• Middlesex University Regulations</li><li>• Middlesex University Learning Framework – Programme Design Guidance, 2012</li></ul>

<b>21. Other information</b>

Please note programme specifications provide a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve if s/he takes full advantage of the learning opportunities that are provided. More detailed information about the programme can be found in the rest of your programme handbook and the university regulations.

**Paper 4f – MSc Applied Statistics Programme Spec**

**Curriculum map for MSc Applied Statistics**

This section shows the highest level at which programme outcomes are to be achieved by all graduates, and maps programme learning outcomes against the modules in which they are assessed.

**Programme learning outcomes**

Knowledge and understanding	A1	advanced techniques in statistics;
	A2	various types of data;
	A3	theories and methods for modelling and analysing complex data sets and their relative merits;
	A4	core concepts and theories of probability and stochastic processes;
	A5	core concepts and theories of advanced techniques inference;
	A6	research methods and techniques.
Cognitive skills	B1	explain and evaluate methods for analysing and modelling complex data sets;
	B2	explain and critically compare competing methods for modelling data;
	B3	use advanced methods of stochastic analysis and applied probability to formulate and solve practical problems;
	B4	identify suitable techniques and justify their appropriateness to solve technical applied problems;
	B5	effectively organise, structure and produce a project at an advanced level
Practical skills	C1	obtain and critique data from a range of sources including electronic databases;
	C2	analyse data using both programming and computer packages;
	C3	use a variety of advanced statistical techniques to model data;
	C4	formulate and solve practical problems;
	C5	apply advanced statistical theory to practice in a variety of settings.

**Paper 4f – MSc Applied Statistics Programme Spec**

Programme outcomes															
A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
Highest level achieved by all graduates															
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

Module Title	Module Code by Level	Programme outcomes															
		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
<i>Core</i>																	
Probability and stochastic processes	MSO4311	✓		✓	✓	✓			✓	✓				✓		✓	✓
Inference theory	MSO4312	✓				✓	✓		✓					✓	✓	✓	✓
Descriptive statistical analysis	MSO4313	✓	✓	✓			✓	✓	✓		✓		✓	✓	✓	✓	✓
Statistical modelling	MSO4314	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Time series and forecasting	MSO4351	✓		✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Project	MSO4991	✓	✓				✓				✓	✓	✓				
<i>Options</i>																	
Survival analysis	MSO4315	✓		✓		✓	✓	✓	✓		✓	✓		✓	✓	✓	✓
Data mining	MSO4345	✓		✓			✓	✓			✓			✓	✓	✓	