F713-STM Bachelor of Science in Statistical Modelling

PROGRAMME DETAILS
Programme Code: F713-STM
Department: Actuarial Maths & Statistics
Main Award: BSCH - Bachelor of Science Honours
Full Award Title: Bachelor of Science in Statistical Modelling
Level: Undergraduate

LOCATION OF STUDY

<table>
<thead>
<tr>
<th>Location</th>
<th>Edinburgh</th>
<th>Scottish Borders</th>
<th>Orkney</th>
<th>Orkney</th>
<th>Malaysia</th>
<th>Approved Learning Partner</th>
<th>Orkney</th>
<th>Independent Distance Learners</th>
<th>Collaborative Learning Partner</th>
<th>Independent Distance Learners</th>
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<td></td>
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ASSOCIATED AWARDS

| Programme Code | Award | Title
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<tr>
<td>F713-STM</td>
<td>BSCH</td>
<td>Bachelor of Science in Statistical Modelling</td>
</tr>
<tr>
<td>F713-ZZZ</td>
<td>BSCO</td>
<td>Bachelor of Science in Statistical Modelling</td>
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ACCREDITATION

N/A

LEARNING OUTCOMES – SUBJECT MASTERY

Understanding, Knowledge and Cognitive Skills

On completion of the course, students will be able to:

- demonstrate knowledge that covers many of the principal areas of contemporary statistics
- demonstrate a critical understanding of the main theories and concepts at the heart of contemporary statistics
- demonstrate a detailed knowledge and understanding of some specialised areas of contemporary statistics, including data analysis, statistical inference, stochastic processes, linear and generalised linear models, Bayesian inference, survival modelling, time series analysis, statistical computing and simulation.
- demonstrate expertise in formulating statistical models and using them to analyse data and make inferences in a wide range of applications

Scholarship, Enquiry and Research (Research Informed Learning)

On completion of the course, students will be able to:

- demonstrate problem solving skills
- demonstrate statistical skills of critically evaluating, modelling and analysing data and drawing appropriate conclusions
- report findings in a precise and efficient manner and communicate them effectively to peers and non-specialists
- use a wide range of statistical skills required in the modern professional workplace
- identify, formulate and analyse problems of importance to industry, the economy and the
LEARNING OUTCOMES – PERSONAL ABILITIES

Industrial, Commercial and Professional Practice

On completion of the course, students will have the knowledge and skills for the development, application and consequent analysis of suitable statistical models, as currently required in modern industrial sectors including the financial, medical, pharmaceutical and IT sector. They will be able to identify, analyse and solve problems, and discuss issues, at a professional level; they will also be able to critically review existing practices and will be in a strong position to move on to a professional environment, with sound knowledge, confidence and awareness of the nature of that environment and the demands it will make.

Autonomy, Accountability and Working With Others

On completion of the course students will be able to:

• plan and organise their own learning through self management and time management
• assess issues associated with working as part of a team
• communicate effectively at all levels and using a range of media
• interact effectively with professionals from a wide and diverse range of areas

Communication, Numeracy & Information and Communications Technology

On completion of the course, students will be able to make presentations on specialised topics and communicate well with peers and other colleagues. They will be in a position to make connections between practical problems and appropriate statistical methods of investigation. They will have extensive IT knowledge and skills and will be able to use them confidently. They will also have the necessary background and experience to enable them to be ready and able to communicate on technical and general matters with peers and senior colleagues.

APPROACHES TO TEACHING AND LEARNING

Course learning outcomes derive from the requirements of the wider economy for graduates with expertise in modern statistical modelling practices. Teaching on the course is student-focussed, with students encouraged to take responsibility for their own learning and development. Students have the opportunity to specialise in the fourth year of study in an area statistical application (e.g. ecology, financial statistics and time series analysis, risk analysis, applied probability, statistical computing).

Teaching approaches and techniques include traditional lectures and tutorial sessions, and innovative computer demonstrations and computer lab sessions. In addition, students learn through structured group work, collaborative student presentations, and independent study and technical project work.
EDUCATIONAL AIMS OF THE PROGRAMME

The principal aims of the course are to:

- provide intensive and high-quality education in an undergraduate context in a wide range of subjects in modern statistics and especially in statistical modelling
- enable students to develop detailed knowledge and critical understanding of both theoretical and applied elements of statistics and probability
- provide students with training and practical experience of modelling, analysing and interpreting real data
- enable students to communicate and work effectively with peers and academic staff, demonstrating appropriate levels of autonomy, initiative, and responsibility
- provide students at the undergraduate level with the opportunity to plan and write a dissertation requiring detailed and critical understanding in an area of study related to statistics
- equip students with the statistical modelling knowledge and skills required in the modern world.

ASSESSMENT POLICIES

The assessment policy for the course incorporates a range of assessment types. Continuous assessment during some courses and summative assessment at the conclusion of courses both contribute to the overall assessment and are used to formally measure achievement in specified learning outcomes. Understanding, knowledge and subject-specific skills are assessed by coursework assignments and written examinations. Formative assessment is used, especially in Stage 1 and Stage 2, to provide feedback and to inform student learning.

Stage 1 and 2 courses are assessed by end-of-term examinations and/or appropriate coursework (computer projects or assignments). Most Stage 3 courses are synoptically linked and are assessed at the end of the year. In addition, appropriate formative assessment (e.g. assignments or other coursework) is used throughout Stage 3. Assessment in Stage 4 includes research-led dissertation work and assessed student presentations as well as summative assessment by examination.

Approaches to assessment are continually reviewed. Specific details about methods of assessment are provided in the appropriate course descriptors.

PROGRAMME STRUCTURE

Mandatory Courses
### F17CA Calculus A
15 7

### F17CC Introduction to University Mathematics
15 7

### F77SA Introduction to Statistical Science A
15 7

### F17CB Calculus B
15 7

### F77PD Professional Development Planning
15 7

### F77SB Introduction to Statistical Science B
15 7

### F18CD Multivariable Calculus and Real Analysis A
15 8

### F18CF Linear Algebra
15 8

### F78AA Actuarial and Financial Mathematics A
15 8

### F78PA Probability and Statistics A
15 8

### F18CE Multivariable Calculus and Real Analysis B
15 8

### F78AB Actuarial and Financial Mathematics B
15 8

### F78PB Probability and Statistics B
15 8

### F79MA Statistical Models A
15 9

### F79PS Statistics for Social Science
15 9

### F79SP Stochastic Processes
15 9

### F79BI Bayesian Inference & Computational Methods
15 9

### F79MB Statistical Models B
15 9

### F79SU Survival Models
15 9

### F10M Optimisation
15 10

### F70DA Statistics Dissertation A
15 10

### F70DB Statistics Dissertation B
15 10

### F70TS Time Series
15 10

### Optional Courses
### Electives (UG)

#### Stage 1

Any SCQF Level 7 course, which must be approved by the 1st year Director of Studies.

#### Stage 2

**a. Edinburgh campus**

**Semester 2**

Students can choose:
- C18OP Operations Management (SCQF level 8) – HWU (15 credits).

**b. Malaysia campus**

As for the Edinburgh campus.

#### Stage 3

**a. Edinburgh campus**

**Semester 1**

Students can choose:
- C18HM Human Resource Management (SCQF level 8) – HWU (15 credits)

**b. Malaysia campus**
Stage 4

**a. Edinburgh campus**

*Semester 1*

Students can choose:

- C19PT Project Management (SCQF level 9) – HWU (15 credits)

**b. Malaysia campus**

As for the Edinburgh campus.

Stage 5

N/A

<table>
<thead>
<tr>
<th>COMPOSITION AND STAGE NOTES (UG)</th>
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<tbody>
<tr>
<td><strong>Stage 1</strong></td>
</tr>
<tr>
<td>8 taught courses (6 mandatory &amp; 2 optional or elective)</td>
</tr>
<tr>
<td>Students wishing to choose an elective course in either Semester 1 or Semester 2 must have the elective course approved by the 1st year Director of Studies.</td>
</tr>
</tbody>
</table>

| | Mandatory Credits 1 | 90 |
| | Optional Credits 1 | 30 |
| | Elective Credits 1 | |
| | Total 1 | 120 |

| **Stage 2** | 8 taught courses (7 mandatory and 1 optional or elective). |

| | Mandatory Credits 2 | 105 |
| | Optional Credits 2 | 15 |
| | Elective Credits 2 | |
| | Total 2 | 120 |

| **Stage 3** | **a. Edinburgh campus** |
| 8 taught courses (6 mandatory & 2 optional or elective). |
### b. Malaysia campus
8 taught courses (6 mandatory & 2 optional or elective).

<table>
<thead>
<tr>
<th>Credit Type</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Mandatory</td>
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<tr>
<td>Optional</td>
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<tr>
<td>Elective</td>
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<td><strong>Total</strong></td>
<td><strong>120</strong></td>
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</table>

#### Stage 4

**a. Edinburgh campus**
8 taught courses (4 mandatory & 2 optional or elective).
Students can choose at most two optional courses and at most one elective each semester.

<table>
<thead>
<tr>
<th>Credit Type</th>
<th>Credits</th>
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<td>Elective</td>
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<td><strong>Total</strong></td>
<td><strong>120</strong></td>
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</table>

### a. Malaysia campus
8 taught courses (4 mandatory & 2 optional or elective).
Students can choose at most two optional courses and at most one elective each semester.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Mandatory</td>
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<tr>
<td>Optional</td>
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<tr>
<td>Elective</td>
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<tr>
<td><strong>Total</strong></td>
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### ASSESSMENT AND PROGRESSION (UG)

**Reassessment Opportunities**

1. A student who has been awarded a Grade E or a Grade F in a course may be re-assessed in that course.
2. A student shall be permitted only one re-assessment opportunity to be taken at the Resit diet of examination following the first assessment of the course.
3. A student shall not be re-assessed in any qualifying course taken in the final stage of a course of study.
4. The Progression Board may permit a student to be re-assessed in any qualifying course not taken in the final stage in order to gain credits for the course, provided that the mark or grade obtained in the first assessment of any such course is used in determining the classification of the degree to be awarded.

**Progression Requirements**

Part A. The minimum number of credits required to progress through each stage are as follows

<table>
<thead>
<tr>
<th>Stage</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2</td>
<td>120 SCQF</td>
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<tr>
<td>2 to 3</td>
<td>240 SCQF</td>
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</table>
Part B. The minimum grade of D is required in the following courses

Stage 1

Minimum of Grade D, at the first attempt, in all courses.

The Board of Examiners has discretion to allow progression at each stage with 1 or 2 Grade Es in non-continuing subjects.

Stage 2

Minimum of Grade D, at the first attempt, in all courses.

The Board of Examiners has discretion to allow progression at each stage with 1 or 2 Grade Es in non-continuing subjects.

Stage 3

Minimum of Grade D, at the first attempt, in all courses.

The Board of Examiners has discretion to allow progression at each stage with up to 2 Grade Es in non-continuing subjects.

Stage 4

N/A
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>Ordinary or General Degree</td>
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<tr>
<td>Diploma of Higher Education</td>
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<tr>
<td>Certificate of Higher Education</td>
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