F130-ADS Postgraduate Certificate in Advanced Mathematics and Statistics for Engineers

PROGRAMME DETAILS
Programme Code: F130-ADS
Department: Mathematics
Main Award: PGCERT - Postgraduate Certificate
Full Award Title: Postgraduate Certificate in Advanced Mathematics and Statistics for Engineers
Level: Postgraduate Taught

LOCATION OF STUDY

<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>Y</th>
<th>Scottish Borders</th>
<th>N</th>
<th>Orkney</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dubai</td>
<td>N</td>
<td>Malaysia</td>
<td>N</td>
<td>Approved Learning Partner</td>
<td>N</td>
</tr>
<tr>
<td>Independent Distance Learners</td>
<td>N</td>
<td>Collaborative Learning Partner</td>
<td>N</td>
<td>Other</td>
<td>N</td>
</tr>
</tbody>
</table>

ASSOCIATED AWARDS

<table>
<thead>
<tr>
<th>Programme Code</th>
<th>Award</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>F130-ADS</td>
<td>PGCERT</td>
<td>Postgraduate Certificate in Advanced Mathematics and Statistics for Engineers</td>
</tr>
</tbody>
</table>

ACCREDITATION
N/A

LEARNING OUTCOMES – SUBJECT MASTERY
Understanding, Knowledge and Cognitive Skills

- Extensive detail and critical understanding of the core areas and issues in mathematical sciences
- Crucial comprehension of central topics in computational mathematics, statistics and areas of applied mathematics

Scholarship, Enquiry and Research (Research Informed Learning)

- Expertise in range of techniques in applied and computational mathematics and statistics
- Extensive skills in use of computers to solve problems in mathematics and statistics

LEARNING OUTCOMES – PERSONAL ABILITIES
Industrial, Commercial and Professional Practice

- Develop critical awareness of current practices within the applied mathematical sciences
- Develop a capability for critically reflecting on roles and responsibilities.

Autonomy, Accountability and Working With Others

- Communicate effectively at all levels using a range of media.
- Plan and organise through self management and time management, assess issues associated with working as part of a team.
- Proficient skills in computer environments to present and communicate and problem solve.

Communication, Numeracy & Information and Communications Technology
F130-ADS Postgraduate Certificate in Advanced Mathematics and Statistics for Engineers

- Develop and demonstrate skills in writing and giving presentations
- Develop and demonstrate skills in computer environments to present and communicate and problem solve

APPROACHES TO TEACHING AND LEARNING

The approach in the programme is student focussed and is designed to encourage students to take responsibility for their own development and learning. Students interaction with the material is through a number of different methods. Within the timetable courses offer traditional lecture based material and a variety of laboratory based practicals. All the courses have a measure of coursework ranging from traditional solution to mathematics problems, use of specialized software, to discursive type assignments and interpretation of mathematical results to real-life problems.

Approaches to teaching and learning are continuously reviewed with regard to the students and the subject area. Specific details are provided in the appropriate course descriptors.

EDUCATIONAL AIMS OF THE PROGRAMME

The aims of the programme are to enable students to:

- Develop detailed knowledge and understanding into the central areas of mathematical sciences
- Cultivate skills in key areas of computational, applied mathematics and statistics
- Develop solutions to problems in the applied mathematical sciences
- Communicate and work effectively with peers and academic staff demonstrating appropriate levels of autonomy and responsibility
- Plan and execute investigations in mathematical sciences demonstrating critical understanding of the area.

ASSESSMENT POLICIES

Student performance is determined by separate elements of assessment within the programme. Coursework assessment takes place throughout. Assessment contains summative and formative components to enable students to achieve learning outcomes which cannot be appropriately tested in traditional examinations.

Each course will have an examination (normally two hours) and the examination mark will be combined with the coursework mark to produce a single mark for the course. Approaches to assessment are continually reviewed.

PROGRAMME STRUCTURE

Mandatory Courses
# F130-ADS Postgraduate Certificate in Advanced Mathematics and Statistics for Engineers

<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>SBC</th>
<th>Orkney</th>
<th>Dubai</th>
<th>HawUM</th>
<th>IDL</th>
<th>Coll. Partner</th>
<th>ALP</th>
<th>Other</th>
<th>Stage</th>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 1 F11MT Modelling and Tools</td>
<td>15</td>
<td>11</td>
</tr>
</tbody>
</table>

## Optional Courses

<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>SBC</th>
<th>Orkney</th>
<th>Dubai</th>
<th>HawUM</th>
<th>IDL</th>
<th>Coll. Partner</th>
<th>ALP</th>
<th>Other</th>
<th>Stage</th>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 1 F11AM Mathematical Ecology</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 1 F11MM Optimisation</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 1 F11ST Special Topics 1</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 1 F71SM Statistical Methods</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 2 F11AN Mathematical Biology and Medicine</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 2 F11AS Numerical Systems</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 2 F11ND Numerical Analysis (PDEs)</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 2 F11SU Special Topics 2</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>1 2 F71PT Portfolio Theory</td>
<td>15</td>
<td>11</td>
</tr>
</tbody>
</table>

## COMPOSITION NOTES(PG)

4 courses

- Mandatory Credits: 15
- Optional Credits: 45
- Elective Credits: 0
- Dissertation Credits: 0
- Total: 60

### AWARDS, CREDITS AND CRITERIA(PG)

<table>
<thead>
<tr>
<th>Awards, Credits and Levels</th>
<th>Overall Credits</th>
<th>Specific Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters Degree</td>
<td>180</td>
<td>180 SCQF credits including a minimum of 150 credit at Level 11</td>
</tr>
<tr>
<td>Postgraduate Diploma</td>
<td>120</td>
<td>120 SCQF credits including a minimum of 90 credit at Level 11</td>
</tr>
<tr>
<td>Postgraduate Certificate</td>
<td>60</td>
<td>60 SCQF credits including a minimum of 40 credit at Level 11</td>
</tr>
</tbody>
</table>

### Award Requirements

- **Master (Distinction)**
  - Total Course Passes: 8+Dissertation
  - Overall Mark: 70
  - Overall Grade: A
  - Basis of Overall Mark/Grade: Credit Weighted Average greater than or equal 70% over 8 courses at grades A-C plus a Dissertation at grade A.

- **Master**
  - Total Course Passes: 8+Dissertation
  - Overall Mark: 50
  - Overall Grade: C
  - Basis of Overall Mark/Grade: Credit Weighted Average greater than or equal 50% over 8 courses at grades A-D plus a Dissertation at minimum grade C.

- **Diploma (Distinction)**
  - Total Course Passes: 8
  - Overall Mark: 70
  - Overall Grade: A
  - Basis of Overall Mark/Grade: Credit Weighted Average greater than or equal 70%
F130-ADS Postgraduate Certificate in Advanced Mathematics and Statistics for Engineers

<table>
<thead>
<tr>
<th></th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Diploma</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Certificate</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

**RE-ASSESSMENT (PG)**

1. A student who has been awarded a Grade E or F in a course may be re-assessed in that course. A student who has been awarded a Grade D in a course may be re-assessed in that course in order to proceed to or be eligible to receive the award of Masters.

2. A student shall be permitted only one re-assessment opportunity in a maximum of three taught courses. The opportunity for re-assessment in four or more taught courses shall be at the discretion of the Progression Board.

3. Any further re-assessment opportunities in a course will require the approval of the Postgraduate Studies Committee.

4. A student may be permitted, at the discretion of the Progression Board, to be re-assessed in the dissertation, project or other supervised research component of the course of study.

**PROGRESSION TO DISSERTATION/PROJECT**

In accordance with University Regulations, to progress to Masters level a minimum of Grade C is required.