D201-WEM Master of Science in Water and Environmental Management

PROGRAMME DETAILS
Programme Code: D201-WEM
Department: Civil Engineering
Main Award: MSC - Master of Science
Full Award Title: Master of Science in Water and Environmental Management
Level: Postgraduate Taught

LOCATION OF STUDY
<table>
<thead>
<tr>
<th>Location</th>
<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></td>
<td>Malaysia</td>
<td>N</td>
<td>Approved Learning Partner</td>
<td>N</td>
</tr>
<tr>
<td>Independent Distance Learners</td>
<td>Y</td>
<td></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>D200-ZZZ</td>
<td>PGCERT</td>
<td>Postgraduate Certificate in Infrastructure and Environment</td>
</tr>
<tr>
<td>D201-WEM</td>
<td>MSC</td>
<td>Master of Science in Water and Environmental Management</td>
</tr>
<tr>
<td>D202-WEM</td>
<td>PGDIP</td>
<td>Postgraduate Diploma in Water and Environmental Management</td>
</tr>
</tbody>
</table>

ACCREDITATION

JBM - MSc

LEARNING OUTCOMES – SUBJECT MASTERY
Understanding, Knowledge and Cognitive Skills

Students should demonstrate an ability to:

1. Acquire advanced knowledge of a range of water and environmental specialist subjects these may include: Integrated water resources management, hydrology and water resources, environmental health and contamination, environmental and energy economics, environmental geotechnics, marine waste water discharges, urban drainage, computer simulation of river flows (one and two dimensional), water and waste water treatment, water conservation amongst others
2. Develop the applied mathematical skills required by professional water resource specialists
3. Gain a comprehensive understanding and knowledge of the concepts, principles and theories of specialist technical issues to meet to their professional aspirations
4. Transfer problem-solving skills to a variety of contexts and multidisciplinary scenarios
5. Apply engineering technical and management skills to solve practical problems in the water and environmental discipline

Scholarship, Enquiry and Research (Research Informed Learning)

Students should be able to:

1. Develop their abilities to research unfamiliar technical issues
2. Demonstrate an understanding of technical advances in their chosen field
3. Undertake personal management of complex project-based activities
4. Transfer technical knowledge to application in new and diverse situations and in the analysis of novel problems
5. Provide professional leadership when required by technical responsibility
6. Apply numerical and analytical problem-solving skills and engineering knowledge in a variety of water and environment related contexts

LEARNING OUTCOMES – PERSONAL ABILITIES

Industrial, Commercial and Professional Practice

Students should demonstrate an ability to:

1. Appreciate the variety of professional roles of water resources specialists within the Industry
2. Provide technical expertise and leadership within the working environment
3. Relate their work to international policy, standards and legislation
4. Progress towards Chartered Engineer or Environmentalist status, where appropriate
5. Develop an appreciation for sustainability and ethics issues associated with Water Industry

Autonomy, Accountability and Working With Others

Students should be able to:

1. Interact constructively with academic staff, tutors and with other students in the Built Environment and Management and Languages through different media including discussion boards, email, etc.
2. Take responsibility for setting objectives, planning and managing research projects in conjunction with an academic supervisor
3. Understand the implication of Water Resources activities within the sustainable development of society
4. Experience an international perspective on theory, practice and education in the water and environment discipline
5. Develop a professional attitude to the social, environmental and professional responsibilities of Water and Environmental specialists.

Communication, Numeracy & Information and Communications Technology

Students should be able to:

1. Solve mathematic problems relating to Water Resources problems – at least 60% of taught courses require a high level of numeracy to complete them successfully
2. Critically analyse more qualitative problems
3. Clearly and concisely report results from research activities
4. Apply IT and specialist software effectively in analysis, design and communication activities
5. Reach considered and justifiable decisions in a technical environment
6. Develop project and time management skills to an advanced level where appropriate

APPROACHES TO TEACHING AND LEARNING

The main teaching method for the on-campus students is a student-centred one, which is designed to encourage students to take responsibility for their own learning and development. The requisite competencies related to Subject Mastery are acquired and developed through lectures, tutorials, group work and industrial case studies. The practical component of the programme reinforces the development of subject-specific skills through a combination of projects, computer modelling.
exercises and site visits. Approaches to teaching and learning are continually reviewed and developed with the aim of matching them to the abilities and experiences of students, with regard for the subject area.

For the Independent Distance Learning (IDL) students, course delivery will be purely by distance, with the learning resources provided within Vision; however, these learning resources will be deliberately made more comprehensive than those available for on-campus students. The nature of Vision is such that it is possible to handle different groups of students differently. Thus for a typical IDL course with substantial numerical aspects to it, the DL learning materials will have numerous exercises with solutions that demonstrate the methodological approach. Vision also has e-discussion boards where students can post comments, ask questions or seek clarifications on any aspects of a course. All groups, both on-campus and IDL, can partake in the discussion forum which is one useful way of engendering interactions among the students. For the computer modelling and simulation aspects, in order to cater for the IDL students, tested open-source, free ware tools will be used.

All registered students have access to the University Library's stocks of electronic journals, books and other learning materials; so, IDL students will not be disadvantaged in any way. Further specific information about teaching and learning methods for each course will be provided in the respective course descriptors.

Approaches to teaching and learning are continually reviewed and developed with the aim of matching them to the abilities and experiences of students, with regard also for the subject area. Industry feedback on course content is also used in the updating and improvement of all courses. Specific details about teaching and learning methods are provided in the appropriate course descriptors.

**EDUCATIONAL AIMS OF THE PROGRAMME**

**Overview**

The overall programme aim is to provide the necessary academic training, knowledge, skills and personal qualities to allow graduate engineering students to work within the Water and Environmental Management discipline at the highest possible technical levels and facilitate their career progression towards Chartered Engineer or Environmentalist status. The programme gives graduates the inter-disciplinary knowledge necessary to undertake complex engineering and management tasks in a broad range of general and specialised Water and Environmental Management topics of direct relevance to industry. The broad educational aims of this programme may be defined within the context of the educational requirements of UKSPEC (2013 ed.) as detailed below.

**Knowledge & Understanding**

1. Ensure students have an advanced and specialist knowledge of their chosen area of expertise in the field of Water and Environmental management
2. Ensure students have an understanding of the legislative framework within which they operate at a national and international level
3. Provide students with a sound understanding of the relationship between their professional activities and the sustainability of society in the future
4. Equip students with critical awareness of current problems relevant to the field of Water and Environmental Management and provide them with the necessary understanding and experience of complex multidisciplinary concepts of direct relevance to industry practice

Intellectual Abilities

1. Ensure students have the creative and innovative skills to synthesise theory when formulating solutions.
2. Equip students with a critical awareness of, and exposure to, current practices within the water and environmental discipline, as well as an appreciation of the most recent trends in its development.
3. Ensure students have the ability to transfer problem solving skills in a variety of contexts.
4. Equip students with the ability to apply knowledge and understanding over a range of scales to an appropriate level of detail, and ensure that they can integrate theory and practice.
5. Ensure students can apply numerical, scientific and management skills to a variety of problems

Practical Skills

1. Provide students with the ability to undertake personal research into a variety of general and specialised topics within the water and environmental disciplines.
2. Provide students with the technical, computational and management skills required by modern professionals
3. Build upon the abilities of the students to work as part of a team.
4. Ensure all students demonstrate the ability to undertake a major individual project
5. Ensure students develop an awareness of the industry and facilitate development of their own professional competencies within this industry

General Transferrable Skills

1. Match a professional and technical education to the needs and aspirations of individuals
2. Provide professionals with a qualification that enables them to progress their careers (e.g. towards Chartered Engineer or Environmentalist status)

ASSESSMENT POLICIES

The programme uses a range of assessment types.
Continuous assessment during 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 a variety of means such as coursework assignments, written examinations, modelling exercises, group and individual projects and presentations. Examinations make up the majority of summative assessment as these are the best way to be certain of testing the capabilities of the individual student against the course aims.

Each student progressing to the MSc research projects will be required to demonstrate good research skills and a deeper level of critical thinking and analysis than can be assessed by exam.

An academic supervisor will be assigned to each student throughout the duration of their project.

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

### PROGRAMME STRUCTURE

#### Mandatory Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>D21EH</td>
<td>Environmental Hydrology and Water Resources</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>D21UD</td>
<td>Urban Drainage and Water Supply</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>D21WW</td>
<td>Water and Wastewater Treatment</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>A11GC</td>
<td>Innovative Technologies and Global Water Challenges</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>D21RZ</td>
<td>Research Dissertation (Civil Engineering)</td>
<td>60</td>
<td>11</td>
</tr>
</tbody>
</table>

**Edinburgh**

- X

**SBC**

- X

**Orkney**

- X

**Dubai**

- X

**HWUM**

- X

**IDL**

- X

**Coll. Partner**

- X

**ALP**

- X

**Other**

- X

### Optional Courses
<table>
<thead>
<tr>
<th>Edinburgh</th>
<th>SBC</th>
<th>Orkney</th>
<th>Dubai</th>
<th>HWUM</th>
<th>IDL</th>
<th>Coll. Partner</th>
<th>ALP</th>
<th>Other</th>
<th>Stage</th>
<th>Semester</th>
<th>Phase</th>
<th>Course Code</th>
<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D21EG</td>
<td>Environmental Geotechnics</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D21RV</td>
<td>Computer Simulation of River Flows</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D21MS</td>
<td>Statistical Modelling of the Environment</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D41PE</td>
<td>Environmental Planning</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D21WC</td>
<td>Water Supply and Drainage for Buildings</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D21CE</td>
<td>Coastal Engineering</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D21FM</td>
<td>Flood Inundation Modelling</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D21IW</td>
<td>Irrigation Water Management</td>
<td>15</td>
<td>11</td>
</tr>
</tbody>
</table>

**COMPOSITION NOTES(PG)**

8 taught courses – 4 mandatory + 4 optional - (plus research dissertation)

- Mandatory Credits: 60
- Optional Credits: 60
- Elective Credits: 0
- Dissertation Credits: 60
- Total: 180

**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**

<table>
<thead>
<tr>
<th>Award Requirements</th>
<th>Total Course Passes</th>
<th>Overall Mark</th>
<th>Overall Grade</th>
<th>Basis of Overall Mark/Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master (Distinction)</td>
<td>8+ Research Dissertation</td>
<td>70</td>
<td>A</td>
<td>Credit Weighted Average greater than or equal 70% over 8 courses at grades A-C plus a Research Dissertation at grade A.</td>
</tr>
<tr>
<td>Master</td>
<td>8+ Research Dissertation</td>
<td>50</td>
<td>C</td>
<td>Credit Weighted Average greater than or equal 50% over 8 courses at grades A-D plus a Research Dissertation at minimum grade C.</td>
</tr>
<tr>
<td>Diploma (Distinction)</td>
<td>8</td>
<td>70</td>
<td>A</td>
<td>Credit Weighted Average greater than or equal 70% over 8 courses at grades A-C</td>
</tr>
<tr>
<td>Diploma</td>
<td>8</td>
<td>40</td>
<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over 8 courses at grades A-E</td>
</tr>
<tr>
<td>Certificate</td>
<td>4</td>
<td>40</td>
<td>D</td>
<td>Credit Weighted Average greater than or equal 40% over 4 courses at grades A-E</td>
</tr>
</tbody>
</table>

**DURATION OF STUDY**

<table>
<thead>
<tr>
<th>IN MONTHS</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

Average >=50% over 8 courses at grades A – D