D2J7-CEC Master of Science in Civil Engineering and Construction Management

PROGRAMME DETAILS
Programme Code: D2J7-CEC
Department: Civil Engineering
Main Award: MSC - Master of Science
Full Award Title: Master of Science in Civil Engineering and Construction Management
Level: Postgraduate Taught

LOCATION OF STUDY
Edinburgh Y Scottish Borders N Orkney N
Dubai Y Malaysia Y Approved Learning Partner Y
Independent Distance Learners Y Collaborative Learning Partner N Other N

ASSOCIATED AWARDS
Programme Code | Award | Title
--- | --- | ---
D2J0-ZZZ | PGCERT | Postgraduate Certificate in Civil Engineering and Construction Management
D2J5-CEC | PGDIP | Postgraduate Diploma in Civil Engineering and Construction Management
D2J7-CEC | MSC | Master of Science in Civil Engineering and Construction Management

ACCREDITIATION
JBM - MSc

LEARNING OUTCOMES – SUBJECT MASTERY
Understanding, Knowledge and Cognitive Skills

Students should demonstrate an ability to:

1. Acquire advanced knowledge of modern civil engineering practice including project management and construction management skills
2. Acquire expert knowledge in their chosen field of specialisation within Civil Engineering
3. Develop the applied mathematical skills required by professional engineers
4. Gain a comprehensive understanding and knowledge of the concepts, principles and theories of specialist technical issues to meet to their professional aspirations
5. Transfer problem-solving skills to a variety of contexts and multidisciplinary scenarios
6. Apply engineering technical and management skills to solve practical Civil Engineering and Construction Management problems

Scholarship, Enquiry and Research (Research Informed Learning)

Students should be able to:

1. Develop their abilities to research unfamiliar technical issues
LEARNING OUTCOMES

PERSONAL ABILITIES

Industrial, Commercial and Professional Practice

Students should demonstrate an ability to:

1. Appreciate the professional roles of the Civil Engineer in the construction of the Built Environment
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 status, where appropriate
5. Develop and provide the project management leadership skills required through their professional activities in the field of Civil Engineering
6. Develop an appreciation for sustainability and ethics issues associated with the Civil Engineering industry

Autonomy, Accountability and Working With Others

Students should be able to:

1. Work effectively remotely, plan and execute their learning programme, and decide when to take courses and examinations
2. Interact constructively with academic staff, IDL tutors and with other students in the Built Environment through discussion boards, email, etc.
3. Take responsibility for setting objectives, planning and managing research projects in conjunction with an academic supervisor
4. Understand the implication of Civil Engineering activity for the sustainable development of society
5. Experience an international perspective on engineering and engineering education
6. Develop a professional attitude to the social, environmental and professional responsibilities of Civil Engineers

Communication, Numeracy & Information and Communications Technology

Students should be able to:
1. Solve mathematic problems relating to Civil Engineering – the majority 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

APPROACHES TO TEACHING AND LEARNING

This Civil Engineering and Construction Management postgraduate programme provides students with a higher degree in Civil Engineering and Construction Management. The programme is based on a mix of Construction Management and Civil Engineering course options designed to provide the student flexibility in gaining in depth knowledge of a relatively broad range of topics within Civil Engineering and Construction Management. Students must complete 2 Construction Management courses and at least five technical courses related to structural, water and geotechnical engineering themes. In addition to this, the students must complete a technical research project (dissertation). All students on this programme are either studying on-campus or by distance learning. On Campus students are provided with lectures, tutorials, laboratory sessions and seminar activities wherein personal knowledge and team working activities can be undertaken. Distance learning students rely on the provision of practical study guides, detailed course texts (or a required text book) and/or comprehensive lecture notes, tutorial examples and fully worked solutions through the Virtual Learning Environment (VLE). Communication with academic staff, dedicated IDL tutors and other students is either provided through the VLE in the form of email, discussion groups, or other tools (e.g. blogs, wikis). Students are also encouraged to participate in discussion with other students and more experienced work colleagues. Courses will usually include objectives, theory, applications in the real world, worked examples and exercises that usually form part of the formative assessment and feedback for the individual courses. Some courses also have a coursework component to address a deeper level of understanding of more complex and lengthy problems or where practical software applications are required.

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 Civil Engineering industry at the highest possible technical levels and facilitate their career progression towards Chartered Engineer 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 Civil Engineering and Construction Management topics of direct relevance to industry. The broad educational aims of the civil and structural engineering programmes 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 Civil Engineering
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 Civil Engineering and Construction 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 field of Civil Engineering and Construction Management, as well as an appreciation of how this practice is evolving.
3. Improve the student's problem-solving and conceptual skills and their ability to apply such skills to solve real design and decision problems
4. Equip students with the ability to apply knowledge and understanding over a range of scales to an appropriate level of detail
Practical Skills

1. Provide students with the ability to undertake personal research into a variety of general and specialised topics within the field of Civil Engineering and Construction Management
2. Provide students with the management skills required by modern built environment professionals
3. Build upon the abilities of the students to undertake complex engineering projects of a multidisciplinary nature and of direct relevance to industry
4. Ensure all students demonstrate the ability to undertake a major individual project
5. Ensure students develop an awareness of the Civil engineering 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 professional engineers with a qualification that enables them to progress their careers (e.g. towards Chartered Engineer status)
3. Produce high quality graduate students with the personal and communication skills necessary to succeed in their profession at the highest technical level
4. Equip students with the opportunity to apply and improve their problem solving abilities, as well as in the effective use of general IT and information retrieval skills.
5. Give students experience of data collection and analysis, the use of tools to support analysis and consideration of uncertainty.

ASSESSMENT POLICIES

The programme uses a range of assessment types.

Coursework is used to develop problem solving skills, to demonstrate mastery of techniques taught as part of the course that would be too lengthy to undertake as exam questions or where software applications are required. Coursework also helps develop professional report writing skills with emphasis on correct report structure, writing style, resume, and referencing. All courses have some form of formative assessment that provide self, peer or staff feedback as required.
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 dissertation 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>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>
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<td>D21RZ</td>
<td>Research Dissertation (Civil Engineering)</td>
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#### Optional Courses

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<th>Semester</th>
<th>Phase</th>
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<th>Course Title</th>
<th>SCQF Cr</th>
<th>SCQF Lvl</th>
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<td>D21GG</td>
<td>Ground Engineering</td>
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<td>Project Management: Theory and Practice</td>
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<td>D21FE</td>
<td>Foundation Engineering</td>
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</table>
COMPOSITION NOTES (PG)

8 taught courses - all optional - (plus Research Dissertation for MSc)

The following are listed as technical options – the students must select a minimum of 5:

D21GG, D21EQ, D21EH, D21FE, D21SR, D21UD, D20DT, D21WW, D21MW, D21WA & D21SB

The following are listed as non-technical CPM options – the students can select a minimum of 2: D31CG, D31PT, D31VR & D31PS

The following are listed as non-technical options – the students can select a maximum of 1: D21EG & D21ST

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>D21SB</td>
<td>Design and Analysis of Tall Steel Buildings</td>
<td>15</td>
</tr>
<tr>
<td>D21SR</td>
<td>Safety, Risk and Reliability</td>
<td>15</td>
</tr>
<tr>
<td>D21UD</td>
<td>Urban Drainage and Water Supply</td>
<td>15</td>
</tr>
<tr>
<td>D21WA</td>
<td>Water Supply System Analysis</td>
<td>15</td>
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<tr>
<td>D31CG</td>
<td>Construction Financial Management</td>
<td>15</td>
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<td>D21EG</td>
<td>Environmental Geotechnics</td>
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<td>D21EH</td>
<td>Environmental Hydrology and Water Resources</td>
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<td>D21EQ</td>
<td>Earthquake Engineering</td>
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<td>D21ST</td>
<td>Sustainability in Civil Engineering</td>
<td>15</td>
</tr>
<tr>
<td>D31VR</td>
<td>Value and Risk Management</td>
<td>15</td>
</tr>
<tr>
<td>D20DT</td>
<td>Analysis of Indeterminate Structures</td>
<td>15</td>
</tr>
<tr>
<td>D21MW</td>
<td>Marine Wastewater Discharges</td>
<td>15</td>
</tr>
<tr>
<td>D21WW</td>
<td>Water and Wastewater Treatment</td>
<td>15</td>
</tr>
<tr>
<td>D31PS</td>
<td>Project Management: Strategic Issues</td>
<td>15</td>
</tr>
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</table>

AWARDS, CREDITS AND CRITERIA (PG)

<table>
<thead>
<tr>
<th>Degree</th>
<th>Overall Credits</th>
<th>Specific Requirements</th>
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<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>
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</table>
**Award Requirements**

<table>
<thead>
<tr>
<th>Degree Type</th>
<th>Required Course Passes</th>
<th>Overall Mark</th>
<th>Overall Grade</th>
<th>Basis of Overall Mark/Grade</th>
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</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>
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<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>
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**DURATION OF STUDY**

<table>
<thead>
<tr>
<th>Degree Type</th>
<th>Full-time</th>
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<tr>
<td>Masters</td>
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<tr>
<td>Diploma</td>
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<td>15</td>
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<tr>
<td>Certificate</td>
<td>6</td>
<td>12</td>
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</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.