Course Specification

MSc Civil Engineering (Technical)
Course code: EECT023

Faculty of Engineering, Environment and Computing
School of Energy, Construction and Environment

March 2018

Please note: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

We regularly review our course content, to make it relevant and current for the benefit of our students. For these reasons, course modules may be updated.

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in the Module Information Directory (MID), student module guide(s) and the course handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.
PART A Course Specification (Published Document)
MSc Civil Engineering (Technical)

1. Introduction

In view of the United Nation projected global population of about 9 billion by 2050, it is evident that the demand for more construction professionals who will design, construct and maintain the required infrastructure to accommodate such a vast population will be on the increase. This therefore forms the basis for training and retraining more Civil Engineers in order to meet the present and the future demands.

The MSc Civil Engineering (Technical) course is aimed at holders of overseas bachelor's degree or UK bachelor's degree accredited as part of the educational base for an Incorporated Engineer (IEng) e.g. BSc. in civil engineering or cognate science/engineering disciplines seeking professional qualification as Chartered Engineers through a 'Technical route'. The course offered at Coventry University provides postgraduate technical learning, with in-depth analytical and professional skills across planning, designing, construction and legal framework within which civil engineering projects operate. In addition, the course will provide students with practical knowledge and innovative strides applicable to strategic management of construction and engineering projects, including relevant importance of Building Information Modelling (BIM) in construction project management. Technical focused MSc research project is mandatory for students enrolled on this course.

The course is designed as a block learning system, consisting of 5 days of tuition spanning over two weeks (Monday to Wednesday in the first week, and Thursday & Friday in the second week), followed by independent study and completion of assessments. The course will provide industry-focused postgraduate education to enhance career opportunities in civil engineering consulting and construction. Students will be equipped with a wide range of theoretical and practical know-how integral to the multi-disciplinary construction industry.

The high population of international participants mingled with home students, and the ability for such students with diverse backgrounds and cultures to integrate while developing and reaching their full potential remain a cardinal feature of the educational provision. Other distinctive and innovative features include:

- Course accreditation at Chartered level by the Joint Board of Moderators (JBM) on behalf of the Engineering Council (EC-UK).
- The positive interaction between students and staff through academic tutorials and seminars.
- Extensive laboratory-based activities, computer-based simulations and guest speakers from industry which support students in putting theory into practice.
- An ample number of part-time students who study with the full-time students.
- International field activities to enhance global experience.

In addition, postgraduate civil engineering places emphasis on engineering practice and its role within construction. Coventry University has a long-established reputation for the teaching of civil engineering and has excellent links with employers like Arcadis, Arup, Atkins, Balfour Beatty, BAM, Buro Happold, CGL, CPUK, Donaldson Associates, Galliford Try, Geotechnics Ltd, Interserve, Kier, Laing O'Rourke, Morgan Sindall, Mott MacDonald, Severn Trent Water, Warwickshire County Council and Willmott Dixon, many of whom provide direct input into course development as members of our civil engineering advisory board. Graduates from the course will be well-suited to working in a range of Civil Engineering consultancies, contractors or client organisations.

2 Available Award(s) and Modes of Study

<table>
<thead>
<tr>
<th>Title of Award</th>
<th>Mode of attendance</th>
<th>UCAS Code</th>
<th>FHEQ Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSc Civil Engineering</td>
<td>FT 1 year; PT normally 2 years</td>
<td>N/A</td>
<td>Level 7</td>
</tr>
<tr>
<td><strong>Fall-back Awards</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate Diploma in Civil Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate Certificate in Civil Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 Awarding Institution/ Body

- Coventry University
<table>
<thead>
<tr>
<th><strong>4 Collaboration</strong></th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5 Teaching Institution and Location of delivery</strong></td>
<td>Coventry University</td>
</tr>
</tbody>
</table>
| **6 Internal Approval/ Review Dates** | Date of latest review: March 2018  
Date for next review: (Academic year 2027/2028) |
| **7 Course Accredited by** | The course specification is accredited by Joint Board of Moderators (JBM) up to the intakes 2021-22. |
| **8 Accreditation Date and Duration** | To be confirmed. |
| **9 QAA Subject Benchmark Statement(s) and/ or other external factors** | This course has been developed using the QAA’s Framework for Higher Education Qualifications and the Masters subject benchmark statement for engineering.  
[http://www.qaa.ac.uk/AssuringStandardsAndQuality/AcademicInfrastructure/Pages/default.aspx](http://www.qaa.ac.uk/AssuringStandardsAndQuality/AcademicInfrastructure/Pages/default.aspx)  
Both the MSc Civil Engineering (including Technical Route) and MSc Civil and Structural Engineering must satisfy the requirements for accreditation of the following Professional Bodies:  
The Institution of Civil Engineers (ICE).  
Institution of Structural Engineers (IStructE).  
The Chartered Institution of Highways and Transportation (CIHT).  
The Institute of Highway Engineers (IHE). |
| **10 Date of Course Specification** | March 2018 |
| **11 Course Director** | Dr Sam Ngambi |
12 Outline and Educational Aims of the Course

The course is designed to equip graduates and professionals to develop high-level engineering knowledge, wide-ranging understanding of analytical and professional skills in civil engineering practice, with a complete skill set necessary to plan, analyse, design, and maintain civil engineering projects. The overall aim, in line with the University’s mission statement is to:

- ensure Coventry University maintains its established position in offering high quality educational provision in civil engineering and construction project management;
- provide an educational experience that meets students’ and employers’ needs and expectations;
- provide an up-to-date curriculum that articulates the current challenges and good practice in civil engineering;
- make use of the state-of-the-art computational and simulation tools to promote activity-based technical learning through solving real-life civil engineering problems;
- develop an in-depth understanding of the social, technological, legal and environmental influences on sustainable civil engineering practice;
- support students’ capacity to evaluate, review and improve approaches and systems and apply learning effectively at an appropriate level using relevant methodologies, ensuring continuous improvement;
- prepare students for future challenges;
- develop personal, technical and management skills to enable graduates to contribute with a high level of competence in a global context;
- develop abilities in rigorous and valid independent technical investigation and research.

13 Course Learning Outcomes

On successful completion of the course students should be able to:

1. Apply knowledge and wide-ranging understanding of health, safety & environment principles and legal framework within which the construction industry operates, and undertake full ethical and professional responsibilities in the discharge of their duties;
2. Apply in-depth knowledge and detailed understanding of structural and hydrological analysis, hydraulic design, innovative construction and maintenance techniques to civil engineering infrastructure;
3. Apply innovative and advanced computational methods and simulation tools to model and analyse complex civil engineering and environmental systems;
4. Apply wide-ranging understanding of experimental, analytical & numerical techniques for investigative studies in hydrological, environmental & geotechnical engineering;
5. Apply detailed understanding in proposal development and writing; use innovative knowledge in sourcing, analysing and presenting data; and apply research methodologies to undertake independent technical investigation and academic writing of a specialised topic;
6. develop personal abilities in teamwork, leadership and communication;
7. apply corporate strategy and systems theory to the management of projects in engineering and construction industry.
8. Demonstrate knowledge & understanding of the principles of consultancy and the theories and practices found in leadership.

14 Course Structure and Requirements, Levels, Modules, Credits and Awards

14.1 Course Structure

All modules within the course, their status and credit value are identified in Table 1 below. The MSc in Civil Engineering (Technical) conforms to the University’s regulations for lab-based taught post graduate degree courses. Within the parameters set by these regulations, the course has been designed to equip graduates with the core knowledge, skills and expertise within the field of Civil Engineering.

The Civil Engineering course may be studied via the following modes of attendance: full-time and part-time. Part-time students study alongside full time. Each module consists of 5 days of tuition spanning over two weeks (Monday to Wednesday in the first week, and Thursday & Friday in the second week), followed by independent study and completion of assessments. Part-time participants study alternate modules requiring, in total, seven weeks of formal class attendance over a period of two academic years. (Part-time participants who wish to extend
their study over a longer period may do so subject to University regulations). Following the two weeks of tuition, part-time participants will have a period of at least five weeks for study and assessment.

Table 1: Module structure

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Credits</th>
<th>Semester*</th>
<th>Course Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7023EXQ</td>
<td>Connection Design</td>
<td>15</td>
<td>1</td>
<td>2,3,4,6</td>
</tr>
<tr>
<td>7024EXQ</td>
<td>Soil-Structure Interaction</td>
<td>15</td>
<td>2</td>
<td>3,4</td>
</tr>
<tr>
<td>7025EXQ</td>
<td>Construction Contract &amp; Law</td>
<td>15</td>
<td>2</td>
<td>1,6</td>
</tr>
<tr>
<td>7026EXQ</td>
<td>Bridge Engineering</td>
<td>15</td>
<td>2</td>
<td>2,3</td>
</tr>
<tr>
<td>7027EXQ</td>
<td>Applied Finite Element Analysis</td>
<td>15</td>
<td>1</td>
<td>2,3,4,6</td>
</tr>
<tr>
<td>7028EXQ</td>
<td>Catchment Hydrology, Hydraulic &amp; Flood Modelling</td>
<td>15</td>
<td>2</td>
<td>2,3,4</td>
</tr>
<tr>
<td>7030EXQ</td>
<td>Integrated Project</td>
<td>15</td>
<td>1</td>
<td>1,2,3 (depending on cohort)</td>
</tr>
<tr>
<td>7032EXQ</td>
<td>Technical Research Project</td>
<td>50</td>
<td>1</td>
<td>1,2,3 (depending on cohort)</td>
</tr>
<tr>
<td>7112EXQ</td>
<td>Strategic Management for Construction &amp; Engineering</td>
<td>15</td>
<td>1</td>
<td>1,2,3,6,7</td>
</tr>
<tr>
<td>7043EXQ</td>
<td>Civil Engineering Postgraduate Skills</td>
<td>0**</td>
<td>1</td>
<td>1,2,3 (depending on cohort)</td>
</tr>
<tr>
<td>7044EXQ</td>
<td>Civil Engineering Research Skills</td>
<td>0**</td>
<td>1</td>
<td>1,2,3 (depending on cohort)</td>
</tr>
<tr>
<td>7002CRB</td>
<td>Global Professional Development (Consultancy)</td>
<td>10</td>
<td>1</td>
<td>1,2,3 (depending on cohort)</td>
</tr>
</tbody>
</table>

Students will study eight mandatory modules and undertake one mandatory research project and one mandatory integrated (group) project.

** Credit bearing modules are supplemented by two zero credit modules which act as support for the technical content and for academic and professional skills. These may not be deferred or repeated. Failure will not stop progression/completion or affect degree classification, but it will be listed on the degree transcript.

Cascade of Awards:

- MSc Civil Engineering
  - Postgraduate Diploma in Civil Engineering
  - Postgraduate Certificate in Civil Engineering
15 Criteria for Admission and Selection Procedure

Normally, the entrance requirement is a 2.2 honours degree in Civil Engineering or cognate science/engineering disciplines. Applicants with an overseas bachelor’s degree or a UK bachelor’s degree accredited as the educational base for a Chartered Engineer (e.g. BEng.) or an Incorporated Engineer (BSc.) in civil engineering or cognate science/engineering disciplines may apply. The course provides a recommended chartership pathway for both UK and overseas graduates seeking professional qualification as Chartered Engineers.

Applicants are normally invited to visit the University as part of the postgraduate open days in the Faculty of Engineering, Environment and Computing. This offers an opportunity for either party to evaluate each other and to ask questions. It also offers the applicant an opportunity to view the facilities on offer at the University.

Applications from those not possessing the equivalent of an honours degree will be considered on individual merit and decisions will be based on careful evaluation of the capacity of the applicant to complete the course successfully. Applicants whose first language is not English or who have not completed a first degree in which English was the main language of tuition must provide evidence of English language ability. An IELTs score of 6.5 or higher (and at least 5.5 in each component) or equivalent qualification is the criterion for admission.

Recognition for prior learning and experience is in accordance with the University regulations for taught postgraduate courses. This recognition will only be granted for achievements equivalent to master’s level. Module exemptions can be given where a student demonstrates that their knowledge and skills achieved through previous study or experience meet all intended learning outcomes of a module. However, appropriate alternative modules may be substituted, subject to the approval of the Programme Manager, who must ensure that the aim and learning outcomes of the named award are achieved by any variations in the programme of study. Evidence may include some or all of the following as required:

- Transcript from previous level 7 study stating ILOs and mark
- 2 page analysis of professional experience and knowledge against module ILOs
- CPD non-assessed course (content detailed)

In calculations for an award these modules will be handled in accordance with University Academic Regulations for Taught Postgraduate Courses.
16 Academic Regulations and Regulations of Assessment

This Course conforms to the standard University Regulations.

The programme is managed by the School of Energy, Construction and Environment Board of Study of the Faculty of Engineering, Environment and Computing.

The Programme Assessment Board (PAB) for the Faculty of Engineering, Environment and Computing is responsible for considering the progress of all students and making awards in accordance with both the university and course-specific regulations.

The assurance of the quality of modules is the responsibility of the Boards of Study which contribute modules to the programme.

External Examiners report annually on the programme and their views are considered as part of the Course Quality Enhancement Monitoring report (CQEM). Details of the CQEM process can be found on the Registry’s web site.

https://share.coventry.ac.uk/staff/ps/Registry/geu/Pages/Process%20Landing.aspx

Students are represented on the Student Forum, Boards of Study and Faculty Board, all of which normally meet two or three times per year.

Student views are also sought through module and course evaluation questionnaires.

17 Indicators of Quality Enhancement

The following are key indicators of quality and standards:

1. The course has been designed in accordance with the QAA Subject Benchmark Statement for Engineering, UK-Spec of Engineering Council and the guidance of Joint Board of Moderators representing the Institution of Civil Engineers, Institution of Structural Engineers, Chartered Institute of Highways Engineers and Institute of Highways and Transportation.

2. The School has a strong portfolio of industry-related research, particularly in the areas of low carbon building technology and sustainable construction materials, and engineering education. In Civil & Engineering, MSc and PhD student projects supported by industry are available – to name a few: "Increasing the early age strength of High Volume Fly Ash (HVFA) concrete" by the UK Quality Ash Association, "GEM-Tech novel cementitious material" by Aer-Tech Developments Ltd. and "Innovative High Temperature Pipe connections" by Tata Steel.

3. The QAA’s Higher Education Review undertaken in February 2015 confirmed that Coventry University meets the UK expectations regarding the:
   a. setting and maintenance of the academic standards of awards;
   b. quality of student learning opportunities;
   c. quality of the information about learning opportunities;
   d. enhancement of student learning opportunities

4. All staff who teach on the course are active in scholarship/research and have a range of professional experience in civil and structural engineering and construction practice. 34% of the staff are Chartered Structural Engineers or equivalent status in their profession. The rest have either a PhD in a relevant subject or years of teaching experience in higher education.

5. The School has excellent links with local employers through our Civil Engineering Industry Advisory Board. These local employers provide input to course management, delivery and development.

6. Alumni have gained graduate employment in a wide variety of private and public firms around the world.
18 Additional Information
Enrolled students have access to additional, key sources of information about the course and student support including:

- Student Handbook
- Course Handbook
- Module Guides
- Moodle Course & Module Webs
- Module Information Directory https://webapp.coventry.ac.uk/MidWebNext/Main.aspx
- EEC Student Portal https://share.coventry.ac.uk/students/EC/Pages/Home.aspx
- Coventry University Student Portal https://share.coventry.ac.uk/students/Pages/Index.aspx