University of the West of England
BRISTOL

ACADEMIC SERVICES

PROGRAMME SPECIFICATION

Part 1: Basic Data		
Awarding Institution	University of the West of England, Bristol	
Teaching Institution	Northshore College of Business & Technology, Sri Lanka	
Delivery Location	Colombo, Sri Lanka	
Study abroad / Exchange / Credit recognition		
Faculty responsible for programme	Faculty of Environment &Technology	
Department responsible for programme	Department of Geography and Environment Management	
Modular Scheme Title	FET UG Modular Scheme	
Professional Statutory or Regulatory Body Links	NCBT will seek professional accreditation for the programme from Institute of Engineers, Sri Lanka (IESL) following approval.	
Highest Award Title	MEng Civil Engineering	
Default Award Title	BEng (Hons) Civil Engineering	
Fall-back Award Title	N/A	
Interim Award Titles	CertHE Civil Engineering DipHE Civil Engineering BEng Civil Engineering BEng (Hons) Civil Engineering	
UWE Progression Route		
Mode(s) of Delivery	Full-time, Sandwich	
Codes	**UCAS:**	**JACS:**
	ISIS2:	**HESA:**
Relevant QAA Subject Benchmark Statements		

CAP Approval Date	17 November 2015
Valid from	*November 2015*
Valid until Date	*November 2020*
Version	*1.1*

Part 2: Educational Aims of the Programme

The MEng Civil Engineering programme is designed to provide a thorough foundation in the science and practice of Civil Engineering. Systems thinking will be developed through the use of problem based learning focusing on increasingly complex design scenarios.

The programme aims to provide an academically rigorous and intellectually stimulating environment in which to develop graduates':

- Knowledge and understanding of engineering science necessary to develop engineering solutions and processes for an effective career in Civil Engineering.
- Knowledge and understanding of the engineering contribution to sustainable development.
- Creative and innovative ability in the synthesis of solutions to complex problems with a holistic systems approach.
- Ability to reflect critically upon their learning, as the foundation for continuing professional development and progression to Chartered Engineer.
- Skills in communicating effectively with other professionals from a variety of disciplines, clients and the public, with understanding and respect for the objectives and values of other stakeholders.

Programme requirements for the purposes of the Higher Education Achievement Record (HEAR)

The MEng Civil Engineering programme requires students to develop the essential skills in analysis, design, construction, maintenance and management of Civil Engineering infrastructure. A successful graduate is therefore expected to have a broad knowledge and understanding of engineering theory, practices and application and have the ability to use advanced techniques of analysis, synthesis and implementation. In addition, the programme requires graduates to demonstrate a capacity for innovative and creative design and be able to draw on knowledge of the fundamental principles and proven systems to further develop existing systems and to generate new systems which meet required specifications. The graduates are also expected to be provide leadership, communicate clearly, concisely and persuasively with individuals and groups, using a professional standard of English, both orally and in writing.

Part 3: Learning Outcomes of the Programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

Learning Outcomes	Teaching, Learning and Assessment Strategies
A: Knowledge and Understanding	
A: Knowledge and Understanding By the end of the programme, the student should be able to: 1. Demonstrate knowledge and understanding of scientific principles and methodology to underpin their education in Civil Engineering. 2. Appreciate the scientific and engineering context of Civil Engineering. 3. Understand historical, current and future developments and technologies in Civil Engineering. 4. Demonstrate knowledge and understanding of mathematical principles underpinning Civil Engineering. 5. Demonstrate knowledge and understanding of characteristics of particular civil and environmental materials, equipment and construction processes. 6. Understand the engineering principles appropriate to analyse key engineering processes in structures, fluid mechanics, hydrology, materials and geotechnics. 7. Demonstrate a competence in student's chosen specialist area (e.g. structural and building engineering, water engineering, environmental engineering, transportation engineering). 8. Understand systems approaches to the solution of civil engineering problems. 9. Demonstrate an appreciation of project management, through design, construction, operation and maintenance. 10. Demonstrate knowledge and understanding of principles of information technology and communication for Civil Engineers, 11. Understand the role of the Chartered Engineer within the broader requirements of sustainable development, to deliver aesthetic and ethical projects. 12. Demonstrate a technical and commercial awareness of client and user requirements of the civil engineering profession.	***Teaching/learning methods and strategies:*** Students will achieve these outcomes through lectures, tutorials, fieldwork, laboratory investigations, individual formative work and where appropriate, work-based learning. Their knowledge will be consolidated through a variety of techniques including tutorial and studio work, reading strategies and IT applications. The approach will include intensive technically based sessions and problem based learning. The problems posed will require elements of engineering judgement in developing solutions to design, construction and management problems. Health and Safety issues will be integrated into all aspects of the course and put into practice in the laboratory and site/field visits. Mathematics is developed in subject focused modules at Level 1 and 2 with techniques applied in core modules throughout the course. Students are encouraged to follow sessions on "Research Methodologies", which are necessary for project based modules at Level 3 and M-Level. ***Assessment:*** The knowledge base is tested by examination, oral presentations, experimental work in the lab and assessed coursework including portfolios, reports and drawings.

B: Intellectual Skills

B: Intellectual Skills

By the end of the programme, the student should be able to:

1. Apply an understanding of engineering principles to analyse key engineering processes in structures, geotechnics and specialisms within civil engineering.
2. Identify, classify and describe the performance of civil engineering and natural systems and components through the use of analytical methods and modelling techniques.
3. Source and use technical literature, codes of practice, industry standards and other information sources showing an appropriate awareness of intellectual property and contractual issues.
4. Analyse and evaluate information from a range of sources and communicate quantitative information effectively and objectively.
5. Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues.
6. Understand the application of engineering knowledge to technology development, design, operations and management.

Teaching/learning methods and strategies:

These skills are developed through individual and group project work, seminar discussions and individual tutoring for example, the dissertation and project modules.

Analytical and evaluation skills are developed by using projects based on real life development sites or case studies with client briefs. Students will consider spatial, structural and environmental design and management options to meet clients' requirements and discuss their conclusions with tutors or in peer groups. Tutors provide feedback on formative work (via oral tutoring, the virtual learning environment or written feedback based on criteria) and in group seminars.

Research skills are also developed in the project modules.

Projects develop students' awareness of the different objectives and values of the built environment professionals and give students the opportunity to evaluate issues and roles in small peer groups.

Assessment:

A variety of assessment methods are used which test intellectual skills including examination but the use of oral presentations, and project reports will be particularly important.

C: Subject, Professional and Practical Skills

C: Subject, Professional and Practical Skills

By the end of the programme, the student should be able to:

1. Apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.
2. Apply and integrate knowledge and understanding of other engineering disciplines to support the practice of Civil Engineering.
3. Use technical equipment (including surveying and laboratory equipment) competently in practical engineering activities.
4. Employ observation, measurement and experimental methods, in the field and the laboratory to enhance and demonstrate understanding of engineering principles.

Teaching/learning methods and strategies:

A number of practical skills can be learnt by the study of syllabus topic material and the completion of formative activities supported by feedback from staff. These include the effective use and manipulation of numbers and physical quantities; interpretation of plans and drawing of three dimensional objects; the use of surveying equipment; the use of laboratory equipment and experimental method; the appropriate use of Information & Communication Technology; the requirements needed for work in a professional environment; the production and evaluation of viable design solutions to technological problems.

Coursework tasks require the use of spreadsheets and specialist analytical software. All students receive instruction in the use of GIS and CAD with support for more specialist applications provided at

5. Apply a range of ICT tools and numerical analyses to the solution of engineering problems. 6. Communicate effectively using engineering sketches, drawings, papers and oral presentations. 7. Develop creative and innovative design solutions with regard to cost drivers and functionality throughout the whole life cycle. 8. Manage the design process and evaluate outcomes with awareness of quality management and technical uncertainty. 9. Practice health and safety risk management in both practical activities and the design process	the point of need. ***Assessment:*** The assessment of the use of equipment and the application of experimental method is undertaken through laboratory and field investigations and reports. Other skills are assessed through reports, observations of skills' demonstrations, examinations under controlled conditions and oral presentations.
D: Transferable Skills and other attributes	
D: Transferable Skills and other attributes By the end of the programme, the student should be able to: 1. Communicate information and ideas clearly and coherently and influence the views of others through written, graphical and oral means. 2. Bring creativity and innovation in identification and solution of problems. 3. Practice negotiation, team working and motivation of others. 4. Manage workloads, resources and time effectively. 5. Undertake self-appraisal and reflection and formulate plans for continuing professional development. 6. Identify, access, research and interpret data and information required to undertake engineering analysis. 7. Apply a range a range of ICT tools to the solution of engineering problems.	***Teaching/learning methods and strategies:*** Principles of ICT will be taught within core modules. IT applications are used throughout the course embedded in the modules starting with engineering analysis. Computing teaching and tutorials takes place in labs with dedicated software applications. People management skills and team working are taught in interactive seminars using indicators, role play and simulation as well as discussion to interpret outcomes. All projects have an element of group research, negotiation and oral presentation. Individual research and creative thinking is developed (through individual tutor) in final year project work. Data collection, including selection of appropriate statistical and, experimental methodology is developed through projects. ***Assessment:*** Project reports provide the opportunity to assess clarity of written presentation and ideas which is steadily more rigorous at each level. Assessed oral presentations and group work are used at all levels. Group team work is assessed in the group project. The use of IT will indirectly influence the quality of assessed work but will not be used as distinct assessment criteria.
Refer to Annex 1 for Learning Outcomes Map	

Part 4: Student Learning and Student Support

Teaching and learning strategies to enable learning outcomes to be achieved and demonstrated

At NCBT, Colombo there is a policy for a minimum average requirement of 18hours/week contact time over the course of the full undergraduate programme. This contact time encompasses a range of activities as described below. In addition, a range of other learning activities will be embedded within the programme which, together with the contact time, will enable learning outcomes to be achieved and demonstrated.

On the MEng Civil Engineering programme, teaching is a mix of scheduled, independent and placement learning.

These principles inform the curriculum design and underpin the wide range of teaching, learning and assessment approaches that have been adopted. The strategy emphasizes the value of variety in stimulating students and responding to their different preferred learning styles. Teaching teams are expected to be reflective about how chosen methods contribute to meeting the aims of the strategy. External examiners' comments confirm that this is generally well achieved.

The mode of delivery of a module is determined by its Module Leader, and typically involves a combination of one or more lectures, tutorials, 'lectorials', laboratory classes, group activities and individual and group project work. Academic advice and support is the responsibility of the staff delivering the module in question. Staff are expected to be available outside normal timetabled hours, either by appointment or during published "surgery" hours, in order to offer advice and guidance on matters relating to the material being taught and on its assessment.

The Faculty offers pastoral care through its Student Advisers, a team of staff who provide comprehensive, full-time student support service on a drop-in basis or by appointment. Student advisors are trained to provide advice on matters commonly of concern, including regulatory and other matters. The Adviser will, when necessary, advise the student to seek advice from other professional services including the university's Centre for Student Affairs or from members of academic staff.

In addition to the formally constituted Student Reps and Staff Forum, Student Representatives meet with the Programme Leader regularly to raise any matters of concern amongst their respective cohorts.

Scheduled learning includes lectures, seminars, tutorials, project supervision, demonstration, practical classes and workshops; fieldwork; external visits; work based learning; supervised time in studio/workshop. In addition, all MEng candidates are expected to participate in a resident survey camp.

Independent learning: includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc.

Placement learning: includes optional placement year at the end of Level 2 (only for candidates who are enrolled in the sandwich programme). All MEng candidates who are not enrolled in the sandwich programme are expected to undergo a minimum of 24 weeks of industrial training before the completion of the programme.

Description of the teaching resources provided for students

Through provision of specialised civil engineering laboratories equipped with the latest apparatus and equipment for testing plastic limits, in-situ density, permeability, consolidation, CBR value, shear strength parameters (tri-axial, vane shear, direct shear), particle size distribution of soil, properties of cement and fresh concrete (which can be used for research and consultancy) and characteristics of channel flow (which can be used for research).

Through provision of apparatus and equipment for practical demonstrations of buckling, bending and shear in beams, behaviour of frames and arches, flow over weirs, hydrostatic pressure forces on flat and curved surfaces, stability of floating bodies, Bernoulli's theorem, pipe friction, cavitation, characteristics

Part 4: Student Learning and Student Support

pumps and turbines, hydraulic jump, backwater curve, wave propagation.

Through provision of civil engineering surveying laboratory equipped with the latest surveying equipment.

Through provision of frequently available, computer laboratories that provide currently practised software packages and access to a wealth of knowledge through the Internet;

Description of any Distinctive Features

1. Links with Industry

The programme benefits from close links with local industry including:

* The support of an Industrial Advisory Board.
* The scope to undertake an industrial training or work based learning modules.
* Input from local professional engineers as visiting lecturers
* Student visits and field courses to examine engineering practice.
* Industrial input into the work based learning modules since all students are in employment at civil engineering practices.

2. Underpinned by staff consultancy, research and professional practice

Staff responsible for the teaching of structures, environmental and management subjects have an established research and consultancy base. This allows them to bring latest issues into the syllabus.

3. Understanding of Systems Thinking in Design.

Students design solutions to a range of increasingly complex problems as they progress through the course.

4. Student choice

At M Level, students have a choice of technical and contextual options allowing them to select a specialist route way. Routes available will include a selection from Building & Structures, Transportation Engineering, Water and Environmental Engineering.

Part 5: Assessment

Approved to University Regulations and Procedures

Assessment Strategy

The mixture of examination/practical/coursework tasks to reflect the Outcome Based Evaluation (OBE). These evaluation methods also reflect the broad and specific aims/objectives of the programme to introduce key concepts and domain knowledge and to develop skills in the selection and application of relevant tools and methods. The OBE techniques are designed to ensure the intended aims and objectives of the programme are successfully achieved.

Assessment Map

The programme encompasses a range of **assessment methods** including reports, presentations, practical examinations, written examinations. These are detailed in the following assessment map:

Assessment Map for MEng Civil Engineering

		Type of Assessment*									
		Unseen Written Exam	Open Book Written Exam	In-class Written Test	Practical Exam	Practical Field Work Skills, Record and Report	Oral assessment and/or presentation	GIS / IT	Written Assignment Essay / Report	Project / Case Study /Dissertation	Portfolio
Compulsory Modules Level 1	UFMFYG-15-1	A(75)		B(25)							
	UBGLW9-15-1	A(75)		B(25)							
	UBGLWD-30-1				A(60)			B(28)			B(12)
	UBGMYD-15-1					A(75)			B (6.25)		B (18.75)
	UBGMXU-15-1	A(50)							B (50)		
	UBGMKD-15-1	A(50)									B(50)
	UBGLXH-15-1	A(40)							B (42)		B(18)
Compulsory Modules Level 2	UBGMJD-30-2	A(35)							A (15)		B(50)
	UBGMNU-30-2	A(70)							B (30)		
	UBGLWX-30-2						A(25)		B (75)		
	UFMFF7-15-2	A(50)		B(10)						B(40)	
	UBGMLU-15-2						A(75)			A(25)	
Compulsory Modules Level 3	UBMFY8-30-3								A(100)		
	UBGMQD-30-3						A(10)			A(90)	
	UBGMHA-30-3	A(50)									B(50)
	UBGMM3-15-3	A(50)									B(50)
	UBGMS7-15-3	A(50)							B (50)		
Compulsory Modules M Level	UFMERY-30-M						A(25)			A(75)	
	UFMFXC-15-M						A(20)		A (80)		
	UBGMFX-15-M	A(50)									B(50)
	UBGMSN-15-M	A(50)							B (50)		
	UBGMT7-15-M	A(75)							B (25)		
Optional Modules Level 3	UBGMJC-30-3						A(50)		B (50)		
	UBGLVX-15-3								A(100)		
	UBGMGR-15-3						A(40)		B(60)		
	UBGMPD-15-3						A(50)			B(50)	
	UBGMLD-15-3								A(100)		
Optional Modules M Level	UBPMLK-15-M	A 50)							B(50)		
	UBGMTN-15-M	A(50)							B(50)		
	UBGMU7-15-M	A(50)								B(50)	
	UBGMUN-15-M	A(50)							B(50)		

*Assessment are shown in terms of either Written Exams, Practical Exams, or Coursework as indicated by the colour coding above.

Part 6: Programme Structure

This structure diagram demonstrates the student journey from Entry through to Graduation for a full time student, including: level and credit requirements, interim award requirements, module diet, including compulsory and optional modules

<table>
<tr><td rowspan="3">ENTRY
  </td><td>Year 1</td><td>Compulsory Modules

UFMFYG-15-1 Mathematics for Civil and Environmental Engineering

UBGLW9-15-1 Engineering Principles for Civil Engineering

UBGLWD-30-1 Surveying, Drawing, GIS and CAD

UBGMYD-15-1 Environmental Engineering Field Study

UBGMXU-15-1 Engineering and Environmental Materials

UBGMKD-15-1 Civil Engineering Technology and Design

UBGLXH-15-1 Engineering Hydrology</td><td>Optional Modules

N/A</td><td>Interim Awards

CertHE Civil Engineering (exit award)

120 credits with at least 100 at level 1 or above</td></tr>
<tr><td>Year 2</td><td>Compulsory Modules

UBGMJD-30-2 Structural Design and Soil Mechanics

UBGMNU-30-2 Hydraulics and Engineering Applications

UBGLWX-30-2 Project Management, Health and Safety Risk Management

UFMFF7-15-2 Applications of Mathematics for Civil and Environmental Engineering

UBGMLU-15-2 Engineering Geology</td><td>Optional Modules

N/A</td><td>Interim Awards

DipHE Civil Engineering (exit award)

A total of 240 credits are required with at least 100 credits at Level 2 or above and at least 220 at level 1 or above.</td></tr>
<tr><td colspan="3">Year out: Optional placement year.
UBGLVX-15-3 Placement

Students who select to study through a placement are not required to study the module UBGMGR-15-3 Strategic Issues in Engineering</td></tr>
</table>

	Year 3	Compulsory Modules **UBGMHA-30-3** Structural Analysis and Geotechnics **UBGMM3-15-3** Advanced Structural Modelling **UBGMS7-15-3** Design of Structural Elements BEng candidates to follow **UBGMQD-30-3** Final Year Project MEng candidates to follow **UFMFY8-30-3** Individual Project MEng A	Optional Modules 30 Credits to be selected from <u>Pool A</u> OR 30 credits to be selected comprising 15 credits from Pool B **<u>and</u>** 15 credits from Pool C. <u>Pool A:</u> **UBGMJC-30-3** Advanced Geographical Expedition <u>Pool B:</u> **UBGLVX-15-3** Placement <u>OR</u> **UBGMGR-15-3** Strategic Issues in Engineering <u>Pool C:</u> **UBGMPD-15-3** Environmental Assessment <u>OR</u> **UBGMLD-15-3** Coastal Management <u>OR</u> **UBGLXP-15-3** Traffic Safety & Management	Interim Awards **BEng Civil Engineering** 300 credits with at least 60 at level 3 or above, at least 100 at level 2 or above and at least 280 at level 1 or above. **BEng (Hons) Civil Engineering** 360 credits with at least 100 at level 3 or above, at least 200 at level 2 or above and at least 340 at level 1 or above.
	Year 4	Compulsory Modules **UFMERY-30-M** MEng Individual Project Part B **UFMFXC-15-M** Masters Group Project **UBGMFX-15-M** Transport Infrastructure Engineering **UBGMSN-15-M** Design of Structures **UBGMT7-15-M** Construction Management & MIS	Optional Modules Students must select 30 credits from the following modules **UBGMLK-15-M** Traffic Engineering (15) **UBGMTN-15-M** Water & Wastewater Engineering (15) **UBGMU7-15-M** Coastal & Port Engineering (15) **UBGMUN-15-M** Building& Bridge Engineering (15)	Interim Awards BEng (Hons) Civil Engineering 360 credits with at least 100 at level 3 or above, at least 200 at level 2 or above and at least 340 at level 1 or above. ***Highest Award*** **MEng (Hons) Civil Engineering** 480 credits with at least 120 at M level, at least 220 at level 3 or above, at least 320 at level 2 or above and at least 460 at level 1 or above

Part 7: Entry Requirements

The University's Standard Entry Requirements apply with the following additions:

All applicants for entry to Level 1 of the full time programme must have

- A-level (UK or Sri Lanka) in Mathematics grade C or above equivalent.
- at least 240 UCAS tariff points from UK A-levels or three passes from Sri Lanka G.C.E A-levels not including General Studies.
- satisfy the 'UK-SPEC' requirements for CEng accredited programmes.

Candidates will be admitted to Level 2 with,

- Higher National Diploma (HND) in Civil Engineering (or equivalent)

Candidates will be admitted to Level 2.2 with,

- National Diploma in Technology (NDT) in Civil Engineering offered by University of Moratuwa, Sri Lanka
- National Diploma in Engineering Studies (NDES) in Civil Engineering offered by Institute of Engineering Technology, Sri Lanka.
- Higher National Diploma in Engineering (HNDE) in Civil Engineering offered by Sri Lanka Institute of Advanced Technological Education, Sri Lanka.
- Diploma in Technology in Civil Engineering offered by Open University of Sri Lanka.

Tariff points as appropriate for the year of entry - up to date requirements are available through the courses database.

Part 8: Reference Points and Benchmarks

Description of ***how*** the following reference points and benchmarks have been used in the design of the programme:

QAA UK Quality Code for HE
National qualification framework
Subject benchmark statements

University strategies and policies
Staff research projects
Any relevant PSRB requirements
Any occupational standards
Reference should be made to the graduate outcomes identified in the QAA-HEA Guidance

QAA subject benchmark statements
The programme draws on the benchmark statements in Engineering (QAA).

University strategies and policies
Faculty and University policies on teaching, leaning and assessment including a strong emphasis on formative work, skills development and innovative approaches to teaching and learning.

Staff research projects
The programme is underpinned by staff consultancy, professional practice and research.

The programme is to be assessed for accreditation by Institute of Engineers, Sri Lanka.

Employer interaction and feedback
The course team has excellent links with local employers who advise the course team on the content and structure of the programme through an Industrial Advisory Board.

Part 8: Reference Points and Benchmarks

Awareness in sustainability issues
In level 1 the knowledge on sustainable materials and sustainable construction technology can be gained through UBGMXU-15-1 and UBGMKD-15-1. Sustainable design practices are introduced in level 2 and level 3 through UBGMJD-30-2 and UBGMS7-15-3 based on optimum structural designing. Application of the sustainability principles is incorporated in all the design project modules, UBGMQD-30-3 and UFMFXC-15-M.

Ethics
Students are exposed to civil engineering ethics in level 2 and level 3 through an industrial placement of three months in each year. Ethics in civil and construction industry is specifically addressed under the module UBGMGR-15-3 in level 3. In level M students are required to practice the ethics as they have to work on a design project as a team.

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of individual modules can be found in module specifications, available on the University's website.

Annex: Learning Outcomes Map

Learning Outcomes:	**UFMFYG-15-1** Mathematics for Civil & Environmental Engineering/	**UBGLW9-15-1** Engineering Principles for Civil Engineering	**UBGLWD-30-1** Surveying, Drawing, GIS and CAD	**UBGMYD-15-1** Environmental Engineering Field Study	**UBGMXU-15-1** Engineering and Environmental Materials	**UBGMKD-15-1** Civil Engineering Technology and Design	**UBGLXH-15-1** Engineering Hydrology	**UBGMJD-30-2** Structural Design and Soil Mechanics	**UBGMNU-30-2** Hydraulics and Engineering Applications	**UBGLWX-30-2** Project Management, Health and Safety Risk Management	**UFMFF7-15-2** Applications of Mathematics for Civil and Environmental Engineering	**UBGMLU-15-2** Engineering Geology	**UBGMHA-30-3** Structural Analysis and Geotechnics	**UBGMM3-15-3** Advanced Structural Modelling	**UFMFY8-30-3** Individual Project MEng A	**UBGMS7-15-3** Design of Structural Elements	**UBGMQD-30-3** Final Year Project	**UFMERY-30-M** MEng Individual Project Part B	**UFMFXC-15-M** Masters Group Project	**UBGMFX-15-M** Transport Infrastructure Engineering	**UBGMSN-15-M** Design of Structures(15)	**UBGMT7-15-M** Construction Management & MIS (15)
A) Knowledge and understanding																							
Demonstrate knowledge and understanding of scientific principles and methodology to underpin their education in Civil Engineering.	X	X	X		X	X	X	X	X			X	X	X		X				X	X	
Appreciate the scientific and engineering context of Civil Engineering.				X				X	X	X						X					X	
Understand historical, current and future developments and technologies in Civil Engineering			X			X				X					X		X					
Demonstrate knowledge and understanding of mathematical principles underpinning Civil Engineering.	X	X									X											
Knowledge of characteristics of particular civil and environmental materials, equipment and construction processes.				X	X	X																
Understand the engineering principles appropriate to analyse key engineering processes in structures, fluid mechanics, hydrology, materials and geotechnics.	X	X			X		X	X	X		X	X	X	X		X			X		X	
Demonstrate a competence in student's chosen specialist area (e.g. structural and building engineering, water engineering, environmental engineering, transportation engineering).																						
Understand systems approaches to the solution of civil engineering problems.						X	X		X		X		X		X		X	X	X			
Demonstrate an appreciation of project management, through design, construction, operation and maintenance.										X					X		X	X	X			X
Demonstrate knowledge and understanding of principles of information technology and communication for Civil Engineers.			X												X		X	X	X			X
Understand the role of the Chartered Engineer within the broader requirements of sustainable development, to deliver aesthetic and ethical projects.																				X		X
Demonstrate a technical and commercial awareness of client and user requirements of the civil engineering profession.			X						X	X						X			X	X	X	X

Learning Outcomes:	**UFMFYG-15-1** Mathematics for Civil & Environmental Engineering/	**UBGLW9-15-1** Engineering Principles for Civil Engineering	**UBGLWD-30-1** Surveying, Drawing, GIS and CAD	**UBGMYD-15-1** Environmental Engineering Field Study	**UBGMXU-15-1** Engineering and Environmental Materials	**UBGMKD-15-1** Civil Engineering Technology and Design	**UBGLXH-15-1** Engineering Hydrology	**UBGMJD-30-2** Structural Design and Soil Mechanics	**UBGMNU-30-2** Hydraulics and Engineering Applications	**UBGLWX-30-2** Project Management, Health and Safety Risk Management	**UFMFF7-15-2** Applications of Mathematics for Civil and Environmental Engineering	**UBGMLU-15-2** Engineering Geology	**UBGMHA-30-3** Structural Analysis and Geotechnics	**UBGMM3-15-3** Advanced Structural Modelling	**UFMFY8-30-3** Individual Project MEng A	**UBGMS7-15-3** Design of Structural Elements	**UBGMQD-30-3** Final Year Project	**UFMERY-30-M** MEng Individual Project Part B	**UFMFXC-15-M** Masters Group Project	**UBGMFX-15-M** Transport Infrastructure Engineering	**UBGMSN-15-M** Design of Structures(15)	**UBGMT7-15-M** Construction Management & MIS (15)
B) Intellectual Skills																							
Apply an understanding of engineering principles to analyse key engineering processes in structures, geotechnics and specialisms within environmental engineering.	X	X			X		X	X	X				X	X						X		
Identify, classify and describe the performance of civil engineering and natural systems and components through the use of analytical methods and modelling techniques.							X		X		X			X	X		X					
Source and use technical literature, codes of practice, industry standards and other information sources showing an appropriate awareness of intellectual property and contractual issues.						X		X		X					X	X	X	X	X	X	X	X
Analyse and evaluate information from a range of sources and communicate quantitative information effectively and objectively.			X			X					X		X		X	X	X	X	X		X	
Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues.						X				X		X							X	X		
Understand the application of engineering knowledge to technology development, design, operations and management.			X			X				X			X						X			X

Learning Outcomes:	**UFMFYG-15-1** Mathematics for Civil & Environmental Engineering/	**UBGLW9-15-1** Engineering Principles for Civil Engineering	**UBGLWD-30-1** Surveying, Drawing, GIS and CAD	**UBGMYD-15-1** Environmental Engineering Field Study	**UBGMXU-15-1** Engineering and Environmental Materials	**UBGMKD-15-1** Civil Engineering Technology and Design	**UBGLXH-15-1** Engineering Hydrology	**UBGMJD-30-2** Structural Design and Soil Mechanics	**UBGMNU-30-2** Hydraulics and Engineering Applications	**UBGLWX-30-2** Project Management, Health and Safety Risk Management	**UFMFF7-15-2** Applications of Mathematics for Civil and Environmental Engineering	**UBGMLU-15-2** Engineering Geology	**UBGMHA-30-3** Structural Analysis and Geotechnics	**UBGMM3-15-3** Advanced Structural Modelling	**UFMFY8-30-3** Individual Project MEng A	**UBGMS7-15-3** Design of Structural Elements	**UBGMQD-30-3** Final Year Project	**UFMERY-30-M** MEng Individual Project Part B	**UFMFXC-15-M** Masters Group Project	**UBGMFX-15-M** Transport Infrastructure Engineering	**UBGMSN-15-M** Design of Structures(15)	**UBGMT7-15-M** Construction Management & MIS (15)
C) Subject, Professional and Practical Skills																							
Apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.	X	X			X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	
Apply and integrate knowledge and understanding of other engineering disciplines to support the practice of Civil Engineering.			X		X																		
Use technical equipment (including surveying and laboratory equipment) competently in practical engineering activities.			X		X			X	X			X	X										
Employ observation, measurement and experimental methods, in the field and the laboratory to enhance and demonstrate understanding of engineering principles.			X	X	X			X	X			X	X										
Apply a range of ICT tools and numerical analyses to the solution of engineering problems.			X				X							X					X				X
Communicate effectively using engineering sketches, drawings, papers and oral presentations.			X			X				X					X	X	X	X	X		X		
Develop creative and innovative design solutions with regard to cost drivers and functionality throughout the whole life cycle.						X													X	X			
Manage the design process and evaluate outcomes with awareness of quality management and technical uncertainty.										X									X	X			X
Practice health and safety risk management in both practical activities and the design process.										X													

Learning Outcomes:	**UFMFYG-15-1** Mathematics for Civil & Environmental Engineering/	**UBGLW9-15-1** Engineering Principles for Civil Engineering	**UBGLWD-30-1** Surveying, Drawing, GIS and CAD	**UBGMYD-15-1** Environmental Engineering Field Study	**UBGMXU-15-1** Engineering and Environmental Materials	**UBGMKD-15-1** Civil Engineering Technology and Design	**UBGLXH-15-1** Engineering Hydrology	**UBGMJD-30-2** Structural Design and Soil Mechanics	**UBGMNU-30-2** Hydraulics and Engineering Applications	**UBGLWX-30-2** Project Management, Health and Safety Risk Management	**UFMFF7-15-2** Applications of Mathematics for Civil and Environmental Engineering	**UBGMLU-15-2** Engineering Geology	**UBGMHA-30-3** Structural Analysis and Geotechnics	**UBGMM3-15-3** Advanced Structural Modelling	**UFMFY8-30-3** Individual Project MEng A	**UBGMS7-15-3** Design of Structural Elements	**UBGMQD-30-3** Final Year Project	**UFMERY-30-M** MEng Individual Project Part B	**UFMFXC-15-M** Masters Group Project	**UBGMFX-15-M** Transport Infrastructure Engineering	**UBGMSN-15-M** Design of Structures(15)	**UBGMT7-15-M** Construction Management & MIS (15)
D) Transferrable Skills and Other Attributes																							
Communicate information and ideas clearly and coherently and influence the views of others through written, graphical and oral means.			X			X				X					X	X	X	X	X		X	
Bring creativity and innovation in identification and solution of problems.						X									X		X	X	X			
Practice negotiation, team working and motivation of others.			X	X		X			X	X									X			
Manage workloads, resources and time effectively.				X						X					X		X	X	X			X
Undertake self-appraisal and reflection and formulate plans for continuing professional development.															X		X	X				
Identify, access, research and interpret data and information required to undertake engineering analysis.							X	X	X						X		X	X	X			
Apply a range a range of ICT tools to the solution of engineering problems.			X											X	X		X	X	X			X