

Programme Specification

Programme Title: BEng (Hons) Civil Engineering

Awarding Institution: University of Bolton

Teaching Institution: University of Bolton

Division and/or Faculty/Institute: Faculty of Advanced Engineering & Sciences

Professional accreditation	Professional body	Professional body URL	Status of graduates
	The Institution of Civil Engineers (ICE)	www.ice.org.uk	Graduate Membership
	The Institution of Structural Engineers (IStructE)	www.istructe.org	Graduate Membership
	The Institute of Highway Engineers (IHE)	www.theihe.org	Graduate Membership
	The Chartered Institution of Highways & Transportation (CIHT)	www.ciht.org.uk	Associate Membership

- The BEng (Hons) Civil Engineering will partially satisfy the educational base for a Chartered Engineer (CEng) in relation to the Engineering Council. A programme of accredited Further Learning will be required to complete the educational base for CEng; see www.jbm.org.uk for further information and details of Further Learning programmes for CEng.
- The BEng (Hons) Degree in Civil Engineering will fully satisfy the educational base for an Incorporated Engineer (IEng) in relation to the Engineering Council. See www.jbm.org.uk for further information.
BEng (Hons) graduates can apply for Incorporated Engineer (IEng) professional status after the necessary practice in industry.

Final award(s): BEng (Hons)

Interim award(s) None

Exit or Fallback award(s)	Certificate of Higher Education Civil Engineering(120 credits) Diploma of Higher Education Civil Engineering (240 credits)
Programme title(s)	Civil Engineering
UCAS Code	H206
JACS Code	H200
University Course Code(s)	Full time CIE0005 Part time CIE5027
QAA Benchmark Statement(s)	Engineering
Other internal and external reference points	The QAA subject benchmark statements are those that define the Engineering Council as the academic standards expected of graduates with an engineering BEng degree. QAA Academic Infrastructure, including the Framework for Higher Education Qualifications and the Code of Practice. UK Quality Code for Higher Education University of Bolton awards framework
Language of study	English
Mode of study and normal period of study	Full time – 3 years Part time – 4 years (with exemptions for prior learning at Level HE4)

Admissions criteria

Full Time

Five GCSEs at grade C or above (or equivalent) including English, mathematics and science with at least two A2 levels (or equivalent) including Mathematics with the minimum number of UCAS points currently specified by our *Recruitment and Admissions* department.

General Studies does not contribute to the UCAS points requirement; points gained from a subject at AS level can contribute to the points total except where the subject has also been counted at A2 level.

AVCE Double Award equivalent to the minimum number of UCAS points currently specified by our *Recruitment and Admissions* department; typically in Engineering including Mathematics and Science/Mechanics

Edexcel-BTEC Nationals: Certificate/Diploma, typically in Civil Engineering, Construction or Engineering. Grades equivalent to the minimum number of UCAS points currently specified by our *Recruitment and Admissions* department, to include additional Mathematics and an analytical subject such as Structural Mechanics or Environmental Science.

Scottish National Certificate Qualifications: the minimum number of UCAS points currently

specified by our *Recruitment and Admissions* department from the following: passes in four subjects, two at advanced higher and two at higher level, to include Mathematics and a Science at advanced higher level.

Irish Leaving Certificate: the minimum number of UCAS points currently specified by our *Recruitment and Admissions* department from the following: passes in minimum of four subjects at higher level, to include Mathematics and a science.

Successful completion of the Faculty's Foundation Year.

Non Standard Entry

Cases dealt with by admissions tutor on individual basis

Part-Time

A UK HNC, HND, foundation degree or honours degree in an appropriate subject (or equivalent).

Applicants holding a higher education qualification in a subject area such as mathematics, geology or physics will be considered for entry to Year 1 (Level HE4) of the course. Such applicants should be a confident user of mathematics, but do not need to have studied construction or engineering previously.

Applicants may be admitted to Year 2 (Level HE5) of the part-time BEng (Hons) Civil Engineering if they can demonstrate an academic credit rating that warrants exemption from modules at Year 1. Direct entry to Year 2 is typically available to applicants holding a good HNC or HND in Civil Engineering.

Applicants may be invited for interview as part of the selection process.

It is expected that Part-Time students will be employed in the Civil Engineering industry.

If English is not the first language, achieve an IELTS score of at least 6.0 (or equivalent)

Additional admissions matters

None

Fitness to practise declaration

Not applicable

Aims of the programme

The principal aims of the programme are:

- To develop a deep understanding of engineering principles by providing a balance between technical knowledge and practical application of the core civil engineering subjects.
- The development of the skills of engineering analysis and design

- To provide the foundation for leadership, social and business awareness
- To develop an understanding of the ethical and legal responsibilities of the engineer.
- To identify hazards and manage risk in environmental and health & safety issues and to address political aspects of civil engineering. To embed an awareness of the social, economic and environmental pillars of sustainability in engineering applications.
- To produce graduates who are articulate, numerate and literate.
- To instil imagination, reflection, versatility, confidence and inquisitiveness.
- To develop excellence in written, verbal and visual communications.
- To provide the appropriate educational base and inspire an ethos for the pursuit of professional membership.
- To encourage a commitment to lifelong learning and Continuing Professional Development.

Distinctive features of the programme

- There is a residential combined Surveying and Geotechnics field course at Level HE5 for all full-time students.
- Part-time students have the option to undertake a Professional Development module at Level HE6. It is planned that formal links with the Institution of Civil Engineers (ICE), the Institution of Structural Engineers (IStructE) and the Chartered Institution of Highways and Transportation (CIHT) will be pursued.
- The programme makes widespread use of site visits and guest speakers from industry regularly provide specialist lectures.
- The programme benefits from its close relationship with the undergraduate programmes in Construction and Surveying as this facilitates an Interdisciplinary Project module at Level HE6 where Civil Engineers work in teams comprising of Architectural Technologists, Building Surveyors, Construction Managers and Quantity Surveyors. Typically using a 'live' brief, this module is subsequently assessed by a team including representatives from industry.
- The programme makes extensive use of laboratory and field based work to underpin theoretical concepts.
- Full-time students are expected to seek work placements during their Summer Vacations and are assisted in this by a dedicated Work Placement Tutor.
- All students qualify for free student membership with the ICE and the IStructE. At final year, high performing student members are entered for the ICE and IStructE awards for student excellence.

- The programme curricula and design benefits from consultation with the Industrial Advisory Board (IAB) that comprises representatives from Consulting Engineers, Contractors, Local Government and Government Agencies. The IAB meets at least twice yearly.

Programme learning outcomes

The General and Specific learning outcomes are in accordance with the QAA Subject Benchmark Statement for Engineering (2010) and the UK Standard for Professional Engineering Competence (UK-SPEC) - 2010 for BEng programmes.

General Learning Outcomes:

To gain the qualification the learner will have demonstrated: i) subject knowledge and understanding ii) intellectual skills iii) discipline-related practical and professional skills and iv) other general skills and capabilities (e.g. key/transferable/common).

The General Outcomes i), ii) and iii) are evidenced through assessment and development of the Specific Learning Outcomes whilst other general skills and capabilities are fostered throughout the modules of the programme (see “Bolton Key Core Curriculum requirements” mapping matrix).

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Specific Learning Outcomes

Underpinning science and mathematics

- Knowledge and understanding of scientific principles and methodology necessary to underpin their education in Civil Engineering, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies.
- Knowledge and understanding of mathematical principles necessary to underpin their education in Civil Engineering and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.
- Ability to apply and integrate knowledge and understanding of other engineering disciplines to support their study of Civil Engineering.

Engineering Analysis

- Understanding of civil engineering principles and the ability to apply them to analyse key civil engineering processes.
- Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.
- Ability to apply quantitative methods and computer software relevant to civil engineering, in order to solve civil engineering problems.
- Understanding of and ability to apply a systems approach to civil engineering problems.

Design

- Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues.
- Understand customer and user needs and the importance of considerations such as aesthetics.
- Identify and manage cost drivers.
- Use creativity to establish innovative solutions.
- Ensure fitness for purpose for all aspects of the problem including production,

- operation, maintenance and disposal.
- vi. Manage the design process and evaluate outcomes. Economic, social, and environmental context.

Economic, social, and environmental context

- i. Knowledge and understanding of commercial and economic context of civil engineering processes
- ii. Knowledge of management techniques which may be used to achieve civil engineering objectives within that context;
- iii. Understanding of the requirement for civil engineering activities to promote sustainable development;
- iv. Awareness of the framework of relevant legal requirements governing civil engineering activities, including personnel, health, safety, and risk (including environmental risk) issues;
- v. Understanding of the need for a high level of professional and ethical conduct in civil engineering.

Engineering Practice

- i. Knowledge of characteristics of particular materials, equipment, processes, or products used in civil engineering.
- ii. Civil engineering workshop and laboratory skills.
- iii. Understanding of contexts in which civil engineering knowledge can be applied (eg operations and management, technology development, etc).
- iv. Understanding use of technical literature and other information sources.
- v. Awareness of nature of intellectual property and contractual issues.
- vi. Understanding of appropriate codes of practice and industry standards.
- vii. Awareness of quality issues.
- viii. Ability to work with technical uncertainty.

Programme structure

Module Code	Module title	Core/ Option/ Elective (C/O/E)	Credits	Length (1, 2 or 3 periods)
CIE4007	Communications Technology	C	20	1
CIE4008	Construction & Materials Technology 1	C	20	1
CIE4009	Ground & Water Studies 1	C	20	1
CIE4010	Site Surveying & Site Practice	C	20	1
CIE4011	Mathematics & Structural Analysis	C	20	1
CIE4012	Mathematics & Structural Design	C	20	1
CIE5002	Construction Management	C	20	1
CIE5003	Construction & Materials Technology 2	C	20	1
CIE5004	Engineering Mathematics and Structures	C	20	1
CIE5005	Ground & Water Studies 2	C	20	1
CIE5006	Highway Design & Control	C	20	1
CIE5007	Research Methods & Professional Practice	C	20	1
CIE6001	Advanced Structural Analysis & Design	C	20	1
CIE6002	Dissertation	C	40	2
CIE6003	Geotechnical Eng. & Ground Improvement	C	20	1
CIE6004	Interdisciplinary Project	C	20	1
CIE6005	Advanced Surveying Procedures	O	20	1
CIE6006	Concrete Technology & Practice	O	20	1

CIE6007	Construction Management	O	20	1
CIE6008	Professional Development Module	O	20	1
CIE6009	Project & Environmental Management	O	20	1
CIE6010	Structural Planning	O	20	1
CIE6011	Transport Studies	O	20	1
CIE6012	Water Engineering & The Environment	O	20	1

Learning and teaching strategies

Learning and Teaching Methods

The diverse nature of the civil engineering programme necessitates the deployment of a variety of teaching and learning methods in order to ensure the acquisition and development of the appropriate concepts, knowledge and skills. Many of these will be experienced during formally timetabled classes whilst others will be appropriate to student centred learning.

Whilst there are significant opportunities to spend time with the tutors and technicians during timetabled classes, practical work and tutorials, there is an expectation that students will devote an equivalent amount of time to personal study. This personal study time might be spent, for example, engaging in general background reading, revisiting practical work, attending technical meetings and lectures provided by the professional bodies, preparing for seminar activities, working on assignments or revising for examinations. During the early stages of studies, guidance will be provided on how students can make the best use of their personal study time. However, as students progress through the programme, this guidance will become less structured and prescriptive.

The learning and teaching methods described below are those most commonly adopted by the programme during the formally timetabled sessions. However, individual module tutors are free to introduce techniques that they view as especially suitable in aiding learning in their specialist area. (Each Module Guide will identify specific teaching and learning strategies)

Lectures: Lectures play an important part throughout the course and will feature in all modules at levels HE4 & HE5 and the majority of the modules at level HE6 of the programme. They involve the dissemination of theoretical and empirical information by a lecturer and provide a basic framework that students can build upon through their reading and through other classroom activities. Guest Lectures by specialists from industry, the professional bodies and other academic institutions, enhance the learning experience.

Practical Sessions: Tutor-led practical sessions which can take place in laboratories, be field based or located in computer suites or studios, are a key aspect of this programme. These may comprise demonstrations by staff members, hands-on practical activities or project work. These activities help develop subject specific practical skills; specifically, the ability to: effectively deploy the methods and tools used in the development of a product, solve practical problems by making and testing prototypes; and make effective use of specialist software. During practical sessions, there is also an opportunity to develop time management and communications skills as well as the ability to work as part of a team.

A key feature of this programme is the 6-day residential combined Surveying and

Geotechnics field course at level HE5. This important learning opportunity, which takes place in an unfamiliar and often challenging environment, is ideally suited to developing those skills appropriate to civil engineering.

Site Visits: Site visits are an important aspect of the programme as they provide the opportunity for students to view state-of-the-art projects. Such events also help to promote a synthesis between academic and professional based activities.

Seminars: Seminars involve groups of students who meet with a tutor to discuss further reading, issues and problems arising from lecture material, or to undertake case studies or problem-solving exercises. It is common for further reading on a particular topic to be assigned, and one student may be required to present an oral synopsis to provide a basis for discussion. Seminars play an important part in encouraging students to think critically about the subject, to analyse theory and information in a systematic fashion, and to enhance understanding of conceptual issues.

Workshops: Workshops are also employed in some modules and may involve the development of skills, e.g. research methods, the application of statistics, presentations etc, as well as problem solving through the evaluation of case-study material. Assistance with assignment work may be offered in workshops, and they play an important part in increasing students' confidence in dealing with the subject matter.

Tutorials: These are usually individually based but may be shared with students who are studying a similar area/issue. Students should prepare for tutorials, which are usually associated with an assignment, by bringing any plans for discussion.

Informal Group Study Sessions: Laptops can be booked out from the library issue desk and used for group work in the Social Learning Zone. Furthermore, there are a number of group study rooms in the library which can also be booked for meetings and/or presentation practice.

Learning activities (KIS entry)

	Course Year		
	1st	2nd	3rd
Scheduled learning and teaching activities	34%	34%	26%
Guided independent study	66%	66%	74%
Placement/study abroad	0%	0%	0%

Assessment strategy

Assessment Methods

The assessment strategy for the programme is designed to ensure that students achieve the overall aims and learning outcomes of the programme, as well as the learning outcomes for individual modules; they may take the form of assessment of individual performance during practical work, time constrained examinations, essays, making presentations, writing up of laboratory work, analytical or design assignments, research assignments, design submissions, personal development plans, dissertation.

Assessment serves several functions. The obvious and primary function is to evaluate student achievement. However, assessment also serves to help students to organise and develop their learning. Feedback from assessment serves an important educational function and can help develop skills and understanding of personal strengths and weaknesses. To this end, several modules will adopt “formative” assessment methods in the early stages which will result in qualitative feedback and does not contribute to the mark for the module; this enables students to gain understanding and development of knowledge, skills and abilities that can then be applied to the “summative” assessment to provide the definitive mark for the module.

The various assessment methods deployed by the programme are described below.

Essay: For a number of modules, students will be required to produce a coursework essay or essays. Essays assess understanding of the thrust of the question set, whether students have introduced and appreciate the relevance of appropriate material to the topic in hand and understand its implications, whether they can analyse and evaluate information and whether they can communicate ideas clearly. Coursework essays are typically set to assess the learning outcomes related to understanding key concepts, demonstrating critical evaluations, and demonstrating the capacity to think independently. The required length of coursework essays can vary depending upon the purpose of the assignment for which the work is assessed. Students will be given guidance by the teaching staff on any specific requirements.

Reports: A number of modules require the student to write reports, which are sometimes based on a given case-study. These reports identify published background research and rationale for their study, the way in which the study was carried out, and the results and analysis of information. Usually, a standard format is used to aid clear, precise and unambiguous expression. Students are given explicit guidance on the format required for the report.

Presentations: Students are required to make oral presentations (e.g. from notes or from an essay, using presentational aids where appropriate) in a number of modules. Some modules may specify such a presentation as part of their assessment, whilst seminar presentations in other modules may not be part of the formal assessment. To augment the tutor’s assessment; some modules will also make use of “peer review” where fellow students assess their peers against pre-determined assessment guidelines.

Project Work: Many modules make use of project work for assessment. Project work may be undertaken by individuals or groups of students working together. Project briefs may be set by the tutor, an external company or by students themselves, depending on the requirements of the module. Live project work is a key feature of this course, with

many project briefs being set by external companies, addressing real-life problems and issues. Some of the products developed as a result of these live projects have been successful in getting to market. In the final year dissertation, the student is expected to design and conduct an investigation into a selected topic area, setting their own aims and objectives, and critically appraising the outcomes.

Practical Work: Individual performance is assessed during field-based practical work. Assessment guidelines are issued at the start of a module and these can include the assessment of motivational skills, theoretical knowledge, the ability to work in a group, communication skills as well as practical skills associated with carrying out a particular task. There is also an emphasis on the assessment of ability to perform the work safely in accordance with the appropriate risk assessment. At level HE5, students will have the opportunity to engage in peer review.

The assessment methods for each module are identified in the Module Guides given out at the beginning of the teaching period. Furthermore, the Programme Handbook provides information on assignment submission dates in the “Assessment Timing Matrix” and this allows students to plan their work load effectively.

Assessment methods (KIS entry)

	Course Year		
	1st	2nd	3rd
Written exams	39%	28%	30% [†]
Coursework	49%	62%	70% [†]
Practical exams	12%	10%	0%

[†] These figures are based on the average assessment method from the eight option modules.

Assessment regulations

The programme uses the Assessment Regulations for the Undergraduate Modular Framework.

The overall pass mark for all modules is 40 percent. The mark awarded will be made up, where specified, of the weighted average of the examination and coursework assessment marks.

Normally, students will be expected to have achieved an overall module mark of 40 percent, with no item defined in the assessment pattern for the module having a mark below 35 percent, in order to be awarded the credit for a module.

For the full and current version of the Assessment Regulations, refer to the document “*Assessment Regulations for Undergraduate Modular Programmes (Main Document)*” at

the following university intranet site:

<http://www.bolton.ac.uk/Quality/QAECContents/APPR/Home.aspx>

Grade bands and classifications

Honours Classification

1. Undergraduate Honours Degrees

Grade Description	Mark %	Honours Degree Classification
Work of exceptional quality	70+	i
Work of very good quality	60-69	ii.i
Work of good quality	50-59	ii.ii
Work of satisfactory quality	40-49	iii
Borderline fail	35-39	
Fail	Below 35	

Honours classification

You will normally be awarded the honours classification resulting from the application of either Rule ACM20 or Rule ACM6.

Rule ACM20

A weighted average of the marks from modules worth a total of 200 credits at Levels HE5 and HE6 combined, including the marks from modules worth no more than 80 credits at least at Level HE5 (weighted 30 percent) and marks from modules worth at least 120 credits at Level HE6 (weighted 70 percent), which represent the best marks achieved by you at those Levels.

Where the average falls unequivocally into one of the following bands: 48.00 - 49.99, 58.00 - 59.99, 68.00 - 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 110 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by your average.

Rule ACM6 (an alternative if you do not have sufficient marks at Levels HE5 and 6 to apply ACM20)

A simple average of the equally weighted marks from modules worth 120 credits at Level HE6 which represent the best marks achieved by you at that Level.

Where the average falls unequivocally into one of the following bands: 48.00 – 49.99, 58.00 – 59.99, 68.00 – 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 70 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by their average.

Where you have marks available for fewer than 120 credits at Level HE6, honours classification shall normally be based **solely** on a simple average of the available marks for modules at Level HE6, subject to there being marks for a **minimum of 60 credits awarded by the University. Upgrading of the honours classification will not normally be available where there are marks available for fewer than 120 credits at Level HE6**, unless this is explicitly approved.

Role of external examiners

External examiners are appointed for all programmes of study. They oversee the assessment process and their duties include: approving assessment tasks, reviewing assessment marks, attending assessment boards and reporting to the University on the assessment process.

Support for student learning

- The programme is managed by a programme leader
- Induction programme introduces the student to the University and their programme
- Each student has a personal tutor, responsible for support and guidance
- Personal Development Planning (PDP) integrated into all programmes
- Feedback on formative and summative assessments
- A Student Centre providing a one-stop shop for information and advice
- University support services include housing, counselling, financial advice, careers and a disability
- A Chaplaincy
- Excellent library and IT services
- Student Liaison Officers attached to each Faculty
- The Students' Union advice services
- Faculty and Programme Handbooks which provide information about the programme and University regulations
- The opportunity to develop skills for employment
- Specialist teaching facilities/resources
- Support for placement learning including mentors
- Support from professional bodies

Methods for evaluating and enhancing the quality of learning opportunities

- Programme committees with student representation
- Module evaluations by students
- Students surveys, e.g. National Student Survey (NSS), Postgraduate Taught Experience Survey (PTES)
- Annual quality monitoring and action planning through Programme Quality Enhancement Plans (PQEPs), Data Analysis Report (DARs) Subject Annual Self

Evaluation Report (SASERs), Faculty Quality Enhancement Plans (FQEPs), University Quality Enhancement Plan (UQEP)

- Peer review/observation of teaching
- Professional development programme for staff
- External examiner reports
- Industrial Advisory Board
- Professional body reports

Other sources of information

Student portal

<http://www.bolton.ac.uk/Students/Home.aspx>

Students Union

<http://www.ubsu.org.uk/>

Faculty Handbook (available via the following webpage)

<http://www.bolton.ac.uk/Students/Home.aspx>

Programme Handbook

<http://data.bolton.ac.uk/staff/djp1/BScCivil.html#Handbook>

Student Entitlement Statement (available via the following webpage)

<http://www.bolton.ac.uk/Students/AdviceAndSupport/StudentServices/>

Module database

<http://data.bolton.ac.uk/academicaffairs/index.html>

External examiners reports

<http://www.bolton.ac.uk/Quality/QAECContents/ExternalExaminersReports/Home.aspx>

Document control

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PROGRAMME LEARNING OUTCOMES
UK-SPEC 2010 (For BEng Programmes)

Key

a = assessed
d = developed
t = taught

		LEVEL HE4						LEVEL HE5						LEVEL HE6											
		CORE		OPTIONS (Chose ONE from EIGHT)																					
		CIE4007 COMMS TECHNOLOGY	CIE4008 CONST & MATLS TECH 1	CIE4009 GRND & WATER STUDIES 1	CIE4010 SITE SURVEYING & SITE PRAC.	CIE4011 MATHS & STRUCT ANALYSIS	CIE4012 MATHS & STRUCT DESIGN	CIE5002 CONSTRUCTION MANAGEMENT	CIE5005 GROUND & WAER STUDIES 2	CIE5006 HIGHWAY DESIGN & CONTROL	CIE5007 RES. METHS. & PROF PRAC	CIE5004 ENG. MATHS & STRUCTURES	CIE5003 CONST & MATLS TECH 2	CIE6001 ADV STRUCT ANAL & DESIGN	CIE6002 DISSERTATION	CIE6003 GEOT. ENG. & GRND IMPROVE.	CIE6004 INTERDISCIPLINARY PROJECT	CIE6005 ADV SURVEYING PROCEDURES	CIE6006 CONCRETE TECH & PRACTICE	CIE6007 CONSTRUCTION MANAGEMENT	CIE6008 PROF DEVELOPMENT MODULE	CIE6009 PROJ & ENV MANAGEMENT	CIE6010 STRUCTURAL PLANNING	CIE6011 TRANSPORT STUDIES	CIE6012 WATER ENG & THE ENV.
Underpinning Science & Mathematics	Knowledge and understanding of scientific principles and methodology necessary to underpin their education in civil engineering, to enable appreciation of its scientific and engineering context, and to support their understanding of historical, current, and future developments and technologies.	d	dt	dta				dt	dta	dt		dt	d	d	dta	d	dt			d					dt
	Knowledge and understanding of mathematical principles necessary to underpin their education in civil engineering and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.	d	d	dta	dt	dta	dta	d	dta	dt		dta	dta	d	dta	d	dt	d		d					dt
	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support their study of civil engineering.	dta	dt	d		dta	dta					d		d	dt	da				d					
Engineering Analysis	Understanding of civil engineering principles and the ability to apply them to analyse key civil engineering processes		d			dta	d	dt	dt	dt		d	dt		d	dt	da		d			dt		dta	
	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.	d	dt		dt		dt	dt		dt		dta	dta	da			dta	dta		d		dta	dta		
	Ability to apply quantitative methods and computer software relevant to civil engineering, in order to solve civil engineering problems.	dta			dt	dta	dta	dta	dt	dta	dt	dt	dta	dta	d		dta	d		d		dt		dta	
	Understanding of and ability to apply a systems approach to civil engineering problems.	d	da		dt			dt						da	d	d			dta	d	dta	d			
Design	Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues.	dt	dt						d	dt	dta		dta		da		d		dta		dta	dta		dt	
	Understand customer and user needs and the importance of considerations such as aesthetics;		dta					d		dt					dt	da			d		dt				
	Identify and manage cost drivers.						dta	t		dt		dta	dt	dta		d	d		d		d	dta	d		
	Use creativity to establish innovative solutions.	da							dt	dta	dta	d	d	d	d	dta	d	dta	d		d	dta	dta	d	
	Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal.		d		dt								d		d		da		d		d		d	dt	
	Manage the design process and evaluate outcomes. Economic, social, and environmental context.		dta						dt	dt			dt		d	dta	d			d					
Economic, social, and environmental context	Knowledge and understanding of commercial and economic context of civil engineering processes.		dt		dta			dta				dt		da		d		dt	dta	dta	dta	d			
	Knowledge of management techniques which may be used to achieve civil engineering objectives within that context.							dta		dt		dt		da		d			dta	dta	dta				
	Understanding of the requirement for civil engineering activities to promote sustainable development.		d		dta							dt		da	dt	d		d	d	d	dta		dta	dta	
	Awareness of the framework of relevant legal requirements governing civil engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.	d			dta			dta		dta				d	dt	da			dta	dta	dta			d	
	Understanding of the need for a high level of professional and ethical conduct in civil engineering.	dta			dt						dta			da	dt	d			d	dta	d				
Engineering Practice	Knowledge of characteristics of particular materials, equipment, processes, or products used in civil engineering.		dta	dta		dt	dt		dta			dt	d	da		d	d	dt		d		dt			
	Civil engineering workshop and laboratory skills.		dta	dta		dt			d	dta		d		d			d	d						dta	
	Understanding of contexts in which civil engineering knowledge can be applied (eg operations and management, technology development, etc).							dt	dta		dt			da		d				d					
	Understanding use of technical literature and other information sources.	d	d				dt				dta	dta	dt	dta	d		d		dta		d		dta	dt	
	Awareness of nature of intellectual property and contractual issues.	d	d											da		d				d					
	Understanding of appropriate codes of practice and industry standards.	d	dt	dta		dt	dta		dt	dta		dt	dt	dta	d	dt	d		dta		d		dt	dta	dta
	Awareness of quality issues.		dt		dta			dt		dta		dt		d		d	dta	dt	dta	d					
	Ability to work with technical uncertainty.		dt		dta			dt			dt	dta		d	d	dta	d	dta		d		dt		d	

Module listing

Module title	Mod Code	New? ✓	Level	Credits	Type	Core/Option C/O	Pre-requisite module	Assessment 1		Assessment 2**		Assessment 3	
								Assessment type	Assessment %	Assessment type	Assessment %	Assessment type	Assessment %
Communications Technology	CIE4007	✓	HE4	20	STAN	C		PRE	50	CWK	50		
Construction & Materials Technology 1	CIE4008	✓	HE4	20	STAN	C		CWK	50	EXAM	50		
Ground & Water Studies 1	CIE4009	✓	HE4	20	STAN	C		CWK	25	EXAM	75		
Site Surveying & Site Practice	CIE4010	✓	HE4	20	STAN	C		CWK	30	PRA	70		
Mathematics & Structural Analysis	CIE4011	✓	HE4	20	STAN	C		CWK	40	EXAM	60		
Mathematics & Structural Design	CIE4012	✓	HE4	20	STAN	C		CWK	50	EXAM	50		
Construction Management	CIE5002	✓	HE5	20	STAN	C		CWK	50	ICA	50		
Ground & Water Studies 2	CIE5005	✓	HE5	20	STAN	C	CIE4009*	CWK	30	EXAM	70		
Highway Design & Control	CIE5006	✓	HE5	20	STAN	C	CIE4010*	CWK	40	PRA	60		
Research Methods & Professional Practice	CIE5007	✓	HE5	20	STAN	C		CWK	50	CWK	50		
Engineering Mathematics and Structures	CIE5004	✓	HE5	20	STAN	C	CIE4011* CIE4012*	CWK	50	EXAM	50		

Construction & Materials Technology 2	CIE5003	✓	HE5	20	STAN	C	CIE4008*	CWK	50	PRE	50		
Advanced Structural Analysis & Design	CIE6001	✓	HE6	20	STAN	C	CIE5004*	CWK	50	EXAM	50		
Dissertation	CIE6002	✓	HE6	40	STAN	C		CWK	100				
Geotechnical Eng. & Ground Improvement	CIE6003	✓	HE6	20	STAN	C	CIE5005*	CWK	40	EXAM	60		
Interdisciplinary Project	CIE6004	✓	HE6	20	STAN	C		CWK	100				
Advanced Surveying Procedures	CIE6005	✓	HE6	20	STAN	O	CIE5006*	CWK	100				
Concrete Technology & Practice	CIE6006	✓	HE6	20	STAN	O		PRE	50	ICA	50		
Construction Management	CIE6007	✓	HE6	20	STAN	O		CWK	25	EXAM	75		
Professional Development Module	CIE6008	✓	HE6	20	STAN	O		CWK	50	CWK	50		
Project & Environmental Management	CIE6009	✓	HE6	20	STAN	O		PRE	50	EXAM	50		
Structural Planning	CIE6010	✓	HE6	20	STAN	O	CIE5004*	CWK	40	ICA	60		
Transport Studies	CIE6011	✓	HE6	20	STAN	O		CWK	100				
Water Engineering & The Environment	CIE6012	✓	HE6	20	STAN	O		CWK	30	EXAM	70		

* or equivalent

** In ALL cases Assessment 2 is the final assessment

Bolton Key Core Curriculum requirements

Module Title	Module Code	C/O	Employability											Bolton Values		
			PDP	Communication	Team work	Organisation & Planning	Numeracy	Problem solving	Flexibility & adaptability	Action planning	Self awareness	Initiative	Personal impact & confidence	Inter-nationalisation	Environmental sustainability	Social, public and ethical responsibility
Communications Technology	CIE4007	C	dta	dta	da	dta	dta	dta	da	da	da	da	d			d
Construction & Materials Technology 1	CIE4008	C		da	da	dta	dta	dta	da	da	da	da	d		dta	d
Ground & Water Studies 1	CIE4009	C		dta	dta	dta	dta	dta					d			
Site Surveying & Site Practice	CIE4010	C		da	da	da	dta	dta	da	da	da	da	da		dt	d
Mathematics & Structural Analysis	CIE4011	C		dta	d	dta	dta	dta	d	d	d	d	d	dta	d	d
Mathematics & Structural Design	CIE4012	C		dta		dta	dta	dta	dta	d		d	d	dta	d	d
Construction Management	CIE5002	C		da		dta	d	dta	dta	dta		da	d		dta	
Ground & Water Studies 2	CIE5005	C		dta	dta	dta	dta	dta					d		da	
Highway Design & Control	CIE5006	C		da	da	da	dta	dta	da	da	da	da	da			d
Research Methods & Professional Practice	CIE5007	C	dta	dta		da	dta	dta	da	dta	da	da	da	da		dta
Engineering Mathematics and	CIE5004	C		dta		d	dta	dta	dta	d		d	d	dta	d	d

Structures																
Construction & Materials Technology 2	CIE5003	C		da	da	da	dta	dta	d	d	d	d	da	d	dta	d
Advanced Structural Analysis & Design	CIE6001	C		d	d	da	dta	dta	d	d		d	d	d	d	d
Dissertation	CIE6002	C		da		da	da	da	da	da	da	da	da			da
Geotechnical Eng. & Ground Improvement	CIE6003	C		da			dta	dta	da			dta	da		dta	dta
Interdisciplinary Project	CIE6004	C		da	dta	da	da	da	da	da	da	da	da	da	da	da
Advanced Surveying Procedures	CIE6005	O		da	da	da	dta	dta	da	da	da	da	da	d		d
Concrete Technology & Practice	CIE6006	O		da	da	da	dta	dta	d	d	d	d	d	dt	dta	d
Construction Management	CIE6007	O	dt	da	da	dta	d	dta	d	dt	d	d	da		d	d
Professional Development Module	CIE6008	O	dta	da	d	da	d	d	d	d	d	da	d	d	da	da
Project & Environmental Management	CIE6009	O		dta	dta	da	dta	dta	d	d	dta	d	da	dta	dta	dta
Structural Planning	CIE6010	O		dta		d	dta	dta	d	d	dt	dta		d	d	d
Transport Studies	CIE6011	O		da		da	dta	dta	d	d	d	da	d	d	d	d
Water Engineering & The Environment	CIE6012	O		da	d	dta	dta	dta	d	d	d	d	d	d	dta	dt

Complete the grid using the following (Developed = D, Taught = T, Assessed = A)