

**Programme Specification**

**Title of Course:** BSc (Hons) Civil Engineering

**Date Specification Produced:** May 2013

**Date Specification Last Revised: J**uly 2018

This Programme Specification is designed for prospective students, current students, academic staff and potential employers. It provides a concise summary of the main features of the programme and the intended 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 teaching, learning and assessment methods, learning outcomes and content of each module can be found in Student Handbooks and Module Descriptors.

**SECTION 1: GENERAL INFORMATION**

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| **Title:** | BSc (Hons) Civil Engineering |
| **Awarding Institution:** | Kingston University |
| **Teaching Institution:** | Kingston University |
| **Location:** | Penrhyn Road, Kingston |
| **Programme Accredited by:** | Joint Board of Moderators (JBM) comprising The [Institution of Civil Engineers](https://www.ice.org.uk/) (ICE), the [Institution of Structural Engineers](http://www.istructe.org/Pages/SeDefault.aspx) (IStructE), the [Chartered Institution of Highways and Transportation](http://www.iht.org/) (CIHT), and the [Institute of Highway Engineers](http://www.ihie.org.uk/) (IHE) Accredited for Incorporated Engineer (IEng) |

**SECTION2: THE PROGRAMME**

**A. Programme Introduction**

The course is designed for undergraduate students who wish to study Civil Engineering to Honours Degree level and aspire to achieve the professional status of Incorporated Engineer (IEng). The course embraces recent developments in education and industry and the curriculum and teaching benefits from the research interests of the academic staff. The course design is based on the guidelines provided by the Engineering Council UK Standard for Professional Engineering Competence (UK-SPEC), the Quality Assurance Agency (QAA) Subject Benchmark Statement for Engineering, and the Joint Board of Moderators (JBM) Guidelines for IEng accredited degree programmes.

The course is intended to equip graduates with the knowledge, comprehension, intellectual ability and subject practical skills to become professional civil engineers or to follow careers in related professional areas. Employability is a key element of the course and hence the emphasis on communication and interpersonal skills that enhance employment prospects.

The course aims to cultivate technical proficiency in Civil Engineering including the ability to tackle a wide variety of practical problems. The course emphasises the development of a professional attitude to design, maintenance, sustainability, quality and safety. This BSc course emphasises the development of practical skills and experimentation through the extensive use of laboratories, site visits and field courses. Sustainability and ‘Health and Safety’ are threaded throughout the modules.

During the entire duration of the course, students are supported by a Personal Tutor Scheme (PTS) in which they are allocated a member of staff on their first day at university. Through one-to-one meetings, the staff member will assist and encourage students in their academic learning for duration of their degree.

Employment opportunities are stressed at every level of the course and students are actively encouraged to undertake a work placement between levels 5 and 6; students are supported in finding appropriate placements. Recent civil engineering placements include most major construction projects in London; High Speed 1, St Pancras Station, Heathrow Airport (e.g. terminals 5 and 2), Wembley Stadium, major sewage treatment works improvements, the Olympic Park and Crossrail. Our graduates are recognised as being thoroughly prepared for employment due to their acquisition of the broader competencies such as communication, group working, time and project management, computer literacy and problem solving skills.

The BSc (Hons) is offered as a three-year full-time degree course or a four-year sandwich course with an industrial placement taken before the final year (between level 5 and level 6).

**B. Aims of the Field/Course**

The general aims of the course are:

 To equip graduates with the engineering science, design, management, business and personal skills required to become a professional Civil Engineer, as well as enabling graduates to follow careers in professional disciplines where clear, logical, numerate skills are valued as well as the ability to solve problems and work in teams;

 To meet the academic requirements for Registration as an Incorporated Engineer, IEng, through accreditation by the Joint Board of Moderators, comprising the Institution of Civil Engineers and other Professional Engineering Institutions listed above.

More specific aims of the course are:

 To produce graduates with a breadth and depth of knowledge and a comprehension of the key aspects of Civil Engineering

 To allow graduates to communicate effectively orally and in writing and to use sketches and diagrams to convey engineering ideas and concepts

 To develop graduates with an aptitude for applying technology to engineering problems

 To prepare graduates with an ability to solve design problems and the technical skills needed to realise these solutions.

 To equip graduates with the research skills required for postgraduate study and employability skills required for work in the engineering/construction fields

 To furnish graduates with a firm grasp of sustainability and ‘Health and Safety’

principles

**C. Intended Learning Outcomes**

The field/course provides opportunities for students to develop and demonstrate knowledge and understanding specific to the subject, key skills and graduate attributes in the following areas. The programme outcomes are referenced to the QAA subject benchmarks for Engineering (2015) and the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (2008), and relate to the typical student.

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| **Programme Learning Outcomes** | | | | | |
|  | **Knowledge and Understanding**  On completion of the course students will be able to: |  | **Intellectual skills**  On completion of the course students will be able to: |  | **Subject Practical skills**  On completion of the course students will be able to: |
| A1 | Demonstrate knowledge of the core civil engineering subjects of materials,  structures and geotechnics | B1 | Apply the basic principles that underpin engineering and specifically civil  engineering | C1 | Use safely laboratory and workshop equipment for experimental  investigation and evaluate data to produce practically valuable results |
| A2 | Demonstrate knowledge of hydraulics, surveying, construction, transportation  and environmental engineering | B2 | Use mathematics as a tool for solving civil engineering problems and  communicating results | C2 | Undertake fieldwork and analyse the data obtained for use in planning and  design |
| A3 | Show a knowledge of broader technical  and non-technical engineering subjects | B3 | Solve standard practical engineering  design problems | C3 | Use a range of equipment, gaining a  basic appreciation of the application of the technology |
| A4 | Relate management and business applications to civil engineering | B4 | Manage projects, people, resources and time taking account of legal and statutory requirements, risk, safety,  quality and reliability | C4 | Use appropriate industry-standard computer software in the solution of practical problems |
| A5 | Demonstrate their understanding of the  importance of Health and Safety in the engineering industry | B5 | Demonstrate a positive attitude to  learning that encourages continuing professional development throughout their careers | C5 | Comply with Health and Safety  regulation and procedure in practical engineering situations |
| A6 | Relate all their studies to a knowledge  and holistic understanding of sustainability and environmental assessment | B6 | Recognise the importance of  professional bodies and the professional conduct expected of Incorporated Engineers |  |  |

In addition to the programme learning outcomes identified overleaf, the programme of study defined in this programme specification will allow students to develop a range of Key Skills as follows:

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| **Key Skills** | | | | | | |
| **Self Awareness Skills** | **Communication Skills** | **Interpersonal Skills** | **Research and**  **information Literacy**  **Skills** | **Numeracy Skills** | **Management &**  **Leadership Skills** | **Creativity and Problem**  **Solving Skills** |
| Take responsibility for own learning and plan for and record own personal development | Express ideas clearly and unambiguously in writing and the spoken work | Work well with others in a group or team | Search for and select relevant sources of information | Collect data from  primary and secondary sources and use appropriate methods to manipulate and analyse this data | Determine the scope of a task (or project) | Apply scientific and  other knowledge to analyse and evaluate information and data and to find solutions to problems |
| Recognise own academic strengths and weaknesses, reflect on performance and progress and respond to feedback | Present, challenge and defend ideas and results effectively orally and in writing | Work flexibly and respond to change | Critically evaluate information and use it appropriately | Present and record data in appropriate formats | Identify resources needed to undertake the task (or project) and to schedule and manage the resources | Work with complex ideas and justify judgements made through effective use of evidence |
| Organise self effectively,  agreeing and setting realistic targets, accessing support where appropriate and managing time to achieve targets | Actively listen and respond appropriately to ideas of others | Discuss and debate with others and make concession to reach agreement | Apply the ethical and legal requirements in both the access and use of information | Interpret and evaluate data to inform and justify arguments | Evidence ability to successfully complete and evaluate a task (or project), revising the plan where necessary |  |
| Work effectively with limited supervision in unfamiliar contexts |  | Give, accept and respond to constructive feedback | Accurately cite and reference information sources | Be aware of issues of  selection, accuracy and uncertainty in the collection and analysis of data | Motivate and direct others to enable an effective contribution from all participants |  |
|  |  | Show sensitivity and  respect for diverse values and beliefs | Use software and IT  technology as appropriate |  |  |  |

**D. Entry Requirements**

From A levels: 96 UCAS Tariff points to include A2 mathematics or AS mathematics at Grade C

BTEC: Merit, Merit, Merit (MMM) from an engineering-related BTEC Extended

Diploma including Merit for Mathematics.

Plus: GCSE (A\*-C) minimum of 5 subjects including English Language and

Mathematics

A minimum International English Language Testing System (IELTS) score of 6.0 (min 5.5 in Speaking, Writing, Listening and Reading) or equivalent is required for those for whom English is not their first language. Students who have alternative or non-standard qualifications or have experience that needs to be credited on an APL or APEL basis are considered on an individual basis.

**E. Programme Structure**

This programme is offered in full-time and sandwich modes, and leads to the award of BSc (Hons) Civil Engineering. Entry is normally at level 4 with A-level or equivalent qualifications (See section C). Transfer from a similar programme is possible at level 5 with passes in comparable level 4 modules; this is at the discretion of the Course Team. Intake to all modes of study is normally in September. Students with an excellent performance at level 4 have the opportunity to proceed to level 5 of the BEng (Hons) course following the satisfactory completion of a bridging module.

**E1. Professional and Statutory Regulatory Bodies**

The Joint Board of Moderators (JBM) comprising The [Institution of Civil Engineers](https://www.ice.org.uk/), the [Institution of Structural Engineers](http://www.istructe.org/Pages/SeDefault.aspx), the [Chartered Institution of Highways and Transportatio](http://www.iht.org/)n, and the [Institute of Highway Engineers](http://www.ihie.org.uk/)

**E2. Work-based learning, including sandwich programmes**

Work placements are actively encouraged, with sandwich students generally taking an Industrial Placement year after level 5. It is the responsibility of individual students to source and secure such placements, but the Faculty offers considerable assistance in finding placements and organising student interviews. Industrial placements allow students to reflect upon their own personal experience of working in an applied setting. This opportunity enables students to focus on aspects that can clearly relate theoretical concepts to practice. Historically many sandwich placements are reasonably well remunerated.

**E3. Outline Programme Structure**

Each level comprises four modules worth 30 credits. A student must complete 120 credits at each level. All students will be provided with the University Regulations and specific additions that are sometimes required for accreditation by outside bodies (e.g. professional or statutory bodies that confer professional accreditation). Full details of each module will be provided in module descriptors and student module guides.

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| **Level 4** (all core) | | | | |
| **Compulsory modules** | **Module code** | **Credit**  **Value** | **Level** | **Teaching**  **Block** |
| Fluid and Soil Mechanics | CE4011 | 30 | 4 | 1&2 |
| Technology Mathematics and  Computing | CE4112 | 30 | 4 | 1&2 |
| Engineering Materials and  Structural Mechanics | CE4113 | 30 | 4 | 1&2 |
| Sustainable Construction and  Design | CE4014 | 30 | 4 | 1&2 |

Progression to level 5 requires passes in all four modules to give 120 credits at level 4. Students exiting the programme at this point, who have successfully completed 120 credits, are eligible for the award of Certificate of Higher Education.

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| **Level 5** (all core) | | | | |
| **Compulsory modules** | **Module code** | **Credit**  **Value** | **Level** | **Teaching**  **Block** |
| Geotechnics and Hydraulics | CE5111 | 30 | 5 | 1&2 |
| Site and Engineering Surveying | CE5112 | 30 | 5 | 1&2 |
| Construction Materials and  Structural Analysis | CE5113 | 30 | 5 | 1&2 |
| Project and Business  Management | CE5014 | 30 | 5 | 1&2 |

Progression to level 6 requires passes in all four modules to give 120 credits at level 5. Students exiting the programme at this point, who have successfully completed 120 credits, are eligible for the award of Diploma of Higher Education.

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| **Level 6** (all core) | | | | |
| **Compulsory modules** | **Module code** | **Credit**  **Value** | **Level** | **Teaching**  **Block** |
| Civil Engineering Design | CE6111 | 30 | 6 | 1&2 |
| Sustainable Infrastructure and  Environment | CE6012 | 30 | 6 | 1&2 |
| Building and Environmental  Engineering | CE6113 | 30 | 6 | 1&2 |
| Individual Project and  Research Methods | CE6014 | 30 | 6 | 1&2 |

Completion of Level 6 requires passes in all four modules to give 120 credits and qualify for

BSc (Hons)

**F. Principles of Teaching Learning and Assessment**

This BSc course has been designed taking into account the Kingston University Curriculum Design Principles to help develop student learning from dependent to independent learning and encourage lifelong learners. A wide range of teaching and learning methods is utilised, allowing students to be fully engaged throughout the course. Teaching, learning and assessment methods are constructed to suit the learning outcomes and syllabus content of the modules. The assessment regime of a module is designed to provide formative opportunities that allow students to improve their performance following feedback in preparation for later summative assessment. Key skills are developed throughout the course; these skills are assessed formatively and summatively. Students also have access

to SASC (SEC Academic Success Centre) for additional support on a drop-in basis giving students the opportunity to take responsibility for their own achievements and consequent learning. Generally the course will be delivered by instructional lectures whilst associated tutorials, laboratory practicals, fieldwork, site visits and design classes are used to enhance the lecture material. The course is devised to encourage and develop students with confident interpersonal and communication skills, as well as emphasising group work, data analysis and ICT skills. The contact hours associated with a module depend on the module type, but typically a module would comprise four hours per week lecture/tutorial and one hour per week for a design/practical session.

The teaching and learning strategies utilised in this course are formulated to cultivate key transferable skills considered central to academic, vocational and personal development. These skills underpin how students learn, their ability to recognise their own achievement and ability to review and evaluate that achievement and identify future learning requirements.

The academic team recognises the importance of the relationship between teaching and research in enhancing the student’s learning experience. The team delivers the specific learning outcomes required of a civil engineering degree with the detailed curriculum and teaching informed by staff professional experience and research interests.

*Lectures*

Lectures are formal staff-led sessions designed to introduce new topics and materials or provide an overview of a topic for further student study. Lectures would make use of various media, supplemented by material uploaded to the University’s virtual learning environment (VLE). The School’s academics are convinced that students learn better through active participation and hence lectures would generally overlap with tutorials in expecting students to be actively involved in sketching, designing and calculating.

*Tutorials*

Academic tutorials are provided where lecturers assist students in solving design problems and in discussing lecture material. In many modules the tutorials and lectures will be

integrated as described above.

*Design workshops*

Workshops may be staff-led or student-led where students participate in group design work emphasising the need for effective oral communication and planning. Design classes, case

studies and workshops often integrate material from different academic areas and would include a practical real-world emphasis. Three dimensional model building also forms part of

these sessions where students are expected to produce a physical model of their planned designs e.g. a bridge, a platform or building.

*Practical sessions*

Practical sessions in the laboratories are designed to enable students to acquire practical and analytical skills through the application of theory. Sessions are run throughout the

course utilising the full range of laboratories: hydraulic, geotechnical, structural and

materials. Each session includes some form of data collection, analysis, presentation and reporting. Practical work will generally be carried out in small groups where students are encouraged to cooperate and assist their fellow students. The outcome of the practical work is formative assessment or summative assessment based on individual or group reports depending on the nature of the activity. The overarching aim is that a student’s ability in carrying out practical work and producing technical reports will improve throughout the three years of study.

*Technology enhance learning (TEL)*

Computer aided practical sessions are also a fundamental part of the course, enabling students to apply the design process through practical application and offering another form

for communicating ideas. Throughout the three levels of study students are given computer

based training in design and analysis of specific real world problems. TEL is also offered during the course through the use of video as a tool for presentation; clickers for immediate

formative feedback; wiki/group discussion as an online platform for groups to provide and

receive feedback from peers; smart pen and tablet to show step-by-step tutorial questions;

computer software for structures and highway engineering.

*Field work and site visits*

The academics are committed to practical fieldwork, encouraging students to acquire fieldwork skills, including health and safety, group coordination and management. The BSc

course includes an engineering surveying field course (currently held at Sussex University)

at the conclusion of level 4 and a field course associated with geotechnical and hydraulic engineering at level 5 (currently to the Isle of Wight). Site visits are arranged for groups of

students whenever possible, important in understanding the practical application of their

academic work and in the enhancement of students’ employability.

*Group work*

Good team-working skills are an essential skill for graduates aspiring to work in the construction industry; hence, teamwork plays an important role in the academic development of a Civil Engineering undergraduate. Group work projects throughout all three levels illustrate the value of team work, developing interpersonal skills and fostering cooperation and supportive peer relationships. In general group membership is selected by the students and group activities are student-led with staff monitoring progress. Where group work is assessed summatively a peer assessment form is submitted indicating the contribution of each member. This exercise of peer assessment is well recognised as an essential employability skill.

*Individual project*

A fundamental element of level 6 is the individual capstone project allowing students to integrate material from their course in an independent study of a research topic. A student’s

research skills will be developed with the assistance of targeted lectures, as well as an

assigned supervisor, encouraging students to work effectively independently, communicating their findings clearly and succinctly through oral and written presentation. The expertise of the academic team members and their research activities are commonly utilised by students during this final year project.

*Assessment*

Assessment methods are adopted in each module to enable students to demonstrate their acquisition of knowledge and skills as outlined in the module learning outcomes. The

assessment regime for each module has been designed to provide formative opportunities that allow students to improve their performance, following feedback, in preparation for

summative assessment. For example, a number of modules utilise a portfolio of work where typically short pieces of work are required, but final grades selected from the best. The

development of skills is threaded through the course and assessed both formatively and summatively. The methods of assessment used comprise:

 Report writing

 Individual and group project reports

 Individual and group designs

 Investigation of case studies

 Model building

 Short in-class tests

 Online assessments

 Computer software and output analysis

 Unseen and seen formal written examinations

 Individual and group practical laboratory reports

 Individual and group oral presentations

 Posters

 Portfolio

**G. Support for Students and their Learning**

Students are supported by:

 A Module Leader for each module

 A Field Leader to help students understand their programme structure and provide academic support

 A Personal Tutor (PT) to provide academic and personal support

 A Student Support Officer (SSO) who provides additional pastoral and practical advice and support, especially to students with difficulties

 A dedicated Undergraduate Course Administrator

 An induction programme and study skills sessions at the start of each academic year

 An Academic Study Centre to provide support and advice to students on a daily

‘drop-in’ basis

 VLE is a versatile on-line interactive intranet and learning environment accessible both on-site and remotely

 A Staff Student Consultative Committee with student Course Representatives for each level

 A University Careers and Employability Service

 Comprehensive university support systems including the provision of advice on finance, regulations, legal matters, accommodation, international student support,

disability and equality support.

 The Students’ Union

 An Academic Team that seek to maintain an open door policy in the spirit of supporting students.

**Personal Tutor Scheme (PTS) in the School of Civil Engineering and Construction**

The following provides the aims and structure of the Personal Tutor Scheme (PTS) for the School of Civil Engineering and Construction. It is intended that the PTS is embedded within the provision of the BSc course.

**Aims**

 To build a rapport between staff and students and contribute to personalising

students’ experience within the School of Civil Engineering and Construction

 To support students in the development of their academic skills providing appropriate advice and guidance to students throughout their time at Kingston, while monitoring

their progress, helping to identify individual needs and referring students to other

University services as appropriate

 To help students to develop the ability to be self-reliant and confident self-reflective learners who use feedback to their best advantage

 To encourage students to reflect on how their learning relates to a wider context and their personal career progression

**Allocation of Personal Tutors**

 Personal tutors will be allocated during induction week

 Tutors will be allocated on a course basis where appropriate with student numbers being equally divided amongst the staff within the school

 Students will keep the same tutor throughout their course of study

**Assessment**

The PTS is embedded in core curriculum modules at each level of undergraduate study: Level 4 – CE4014 Sustainable Construction and Design

Level 5 – CE5014 Project and Business Management

Level 6 – CE6014 Individual Project and Research Methods

There are specific aims and outcomes for each level that will be assessed, as the PTS is a progressive and cumulative scheme building on the skills developed in previous levels. Formative assessment will be provided in the form of regular feedback during meetings when the student will be able to put forward draft assignments for evaluation. The summative assessment will comprise 3 credits at each level.

**Level 4: Settling in and building confidence**

**Aims and Learning Outcomes**

 To assist students in making the transition to Higher Education and to generate a sense of belonging to the School of Civil Engineering and Construction with an emphasis on widening participation issues

 To help students to develop good academic habits and to gain the confidence to operate successfully in a university context

 To prepare students to make the most of feedback throughout their course

**Contact:**

 Teaching block 1: three one-to-one meetings during induction week, weeks 2 and 7

 Teaching block 2: two one-to-one meetings during week 1 and week 7

 End of academic year individual ‘wrap up’ email

**Embedded Module: CE4014 Sustainable Construction and Design**

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| **Learning Outcome:** | **Assessment** |
| To assist students in making the transition to  Higher Education and to generate a sense of belonging to the School of Civil Engineering and Construction | Formative (one to one meetings) |
| To help students’ to develop good academic  habits and to gain the confidence to operate successfully in a university context | Formative and Summative  (one-to-one meetings, plus three concise exercises covering email etiquette, report writing and graphic analysis) |
| To prepare students to make the most of  feedback throughout their course | Formative (one-to-one meetings) |

**Level 5: Stepping it up and broadening horizons**

**Aims and Learning Outcomes**

 To help students comprehend and plan for the academic demands of level 5 and to support increasing independence

 To encourage students to look forward, to take up opportunities to develop wider skills and to take responsibility for their personal development

 To foster students’ ability to build on and respond proactively to the feedback they have received

 To assist students in reflecting on the skills that they are developing and consider how they relate to employability

**Contact:**

 One-to-one meeting in week 1

 Email contact at the end of teaching block 1

 Individual ‘wrap up’ email at end of academic year

**Embedded Module: CE5014 Project and Business Management**

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| **Learning Outcome:** | **Assessment** |
| To help students comprehend and plan for  the academic demands of level 5 and to support increasing independence | Formative (one-to-one meetings) |
| To encourage students to look forward, to  take up opportunities to develop wider skills and to take responsibility for their personal development | Formative and Summative  (one-to-one meetings and preparation of a dissertation proposal for level 6) |
| To foster students’ ability to build on, and  respond proactively to the feedback they have received | Formative (one-to-one meetings) |
| To assist students in reflecting on the skills  that they are developing and consider how they relate to employability | Formative and Summative  (one-to-one meetings and preparation of a  Curriculum Vitae) |

**Level 6: Maximising success and moving on**

**Aims and Learning Outcomes**

 To support students with the planning necessary to maximise success in their final undergraduate year

 To encourage students to reflect on the employability skills they have developed and be proactive in moving towards a professional life and/or further study

 To help students to make best use of the feedback they have received so that they can build on their strengths and take steps to address any weaknesses

**Contact:**

 One-to-one meeting in week 1

 Email contact at the end of teaching block 1

 Individual ‘wrap up’ email at end of academic year

**Embedded Module: CE6014 Individual Project and Research Methods**

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| **Outcome:** | **Assessment** |
| To support students with the planning  necessary to maximise success in their final undergraduate year | Formative (one to one meetings) |
| To encourage students to reflect on the  employability skills they have developed and be proactive in moving towards a professional life and/or further study | Formative and Summative  (one to one meetings, along with the preparation and oral presentation of their Individual Project) |
| To help students to make best use of the  feedback they have received so that they  can build on their strengths and take steps to address any weaknesses | Formative (one to one meetings) |

**H. Ensuring and Enhancing the Quality of the Course**

The University has several methods for evaluating and improving the quality and standards of its provision. These include:

 External Examiners

 Boards of Study with student representation

 Annual review and development

 Periodic review undertaken at the subject level

 Student evaluation

 Moderation policies

Quality is also assured by the requirement for professional body (JBM) reaccreditation, generally at a five year interval.

**I. Employability Statement**

This curriculum embeds the development of employability skills throughout the course and is designed to equip students with the ability to relate the knowledge and skills that they have learnt to real world contexts in which they may work in the future. Students are required to produce a CV early at level 5 and to improve this following feedback. The School strongly encourages and supports all students in applying for positions in industry for an Industrial Placement year between levels 5 and 6. The School emphasises the benefits to be obtained from an approved placement in industry.

An Industrial Placement comprises a period of at least 36 weeks with an approved employer. Students are required to produce quarterly reports on their placement and are supported throughout the period by their personal tutor, who will visit them at their place of work on at least one occasion. The tutor will discuss progress with the student and employer and will recommend any improvements to the learning opportunities, if appropriate. Students fulfilling the requirements for an Industrial Placement will be awarded a BSc (Hons) Sandwich Degree on the completion of level 6.

This course has been designed to fulfil the core curriculum requirements for Incorporated Engineer (IEng) status. Most graduates will aspire to careers in the engineering/construction industry and to becoming Incorporated Engineers. Graduates develop careers in all branches of the Civil Engineering industry, in the UK and throughout the world; as contractors and consulting engineers, and within local authorities, water authorities, government organisations and the defence industry. In many cases, students taking an industrial placement are able to secure employment with the placement organisation following graduation. The academic and key skills developed throughout an engineering course allow graduates to follow careers in other professions such as ICT, finance, accountancy and teaching. In addition, a number of graduates will progress to MSc courses in Civil Engineering and related specialist areas or other fields before continuing their career in industry or research.

**J. Approved Variants from the Undergraduate Regulations**

Compensation

Compensation is not permitted for the following modules:

 CE6014 Individual Project and Research Methods.

Reassessment of Level 6 modules

Reassessment of CE6014 will normally be by

 retake to improve the dissertation for marginal failure (Grade F5 or marks of 35-39)

and the mark will be capped,

 repeat only with a new project brief and the mark will be capped.

**K. Other sources of information that you may wish to consult**

Engineering subject benchmark:

<http://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-engineering-15.pdf?sfvrsn=f99df781_10>

Professional bodies: [www.ice.org.uk/](http://www.ice.org.uk/) [www.istructe.org/](http://www.istructe.org/)

[www.](http://www/)[theihe.org/](http://theihe.org/)

[www.ciht.org.uk/](http://www.ciht.org.uk/)

Professional accreditation:

[www.jbm.org.uk/](http://www.jbm.org.uk/)

School Website:

https://www.kingston.ac.uk/faculties/science-engineering-and-computing/about/schools/engineering/

**Development of Field/Course Learning Outcomes in Modules**

This map identifies where the field/course learning outcomes are summatively assessed across the modules for this field/course. It provides an aid to academic staff in understanding how individual modules contribute to the field/course aims, a means to help students monitor their own learning, personal and professional development as the field/course progresses and a checklist for quality assurance purposes.

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|  | | | **Level 4** | | | | **Level 5** | | | | **Level 6** | | | |
|  | **Module Code** |  | CE4011 | CE4112 | CE4113 | CE4014 | CE5111 | CE5112 | CE5113 | CE5014 | CE6111 | CE6012 | CE6113 | CE6014 |
| **Programme Learning Outcomes** | **Knowledge & Understanding** | A1 | SF |  | SF | SF |  |  | SF |  | SF |  | F | SF |
| A2 |  |  |  |  | SF | SF |  |  | F | F | SF | SF |
| A3 |  | SF | F | SF | F | F |  | SF | F | SF | SF | SF |
| A4 | F |  |  | F |  |  |  | SF | F | F | SF | F |
| A5 | SF |  | F | SF | SF | F | F | SF | SF | F | SF | F |
| A6 | SF |  | F | SF | SF |  | F | SF | SF | SF | SF | SF |
| **Intellectual Skills** | B1 | SF | SF | SF |  | SF | SF | SF |  | S | F | SF | F |
| B2 | SF | SF | SF |  | SF | F | SF | F | F | F | F | F |
| B3 | F |  | F | F | F | F | SF | F | SF | SF | SF | SF |
| B4 |  |  |  | F | F | F |  | SF | SF | SF |  | F |
| B5 | F |  | F | F | F |  |  | F | F | SF | SF | F |
| B6 |  |  |  | F |  |  | F | F | SF | F | F | F |
| **Practical Skills** | C1 | SF |  | SF | SF | SF | SF | SF |  | F | F | F | F |
| C2 |  |  |  | F | SF | SF |  |  |  |  |  | F |
| C3 | F |  | F | F | F | SF | SF |  | F | F | F | F |
| C4 | F | SF | F | F | SF | SF | SF | SF | SF | F | SF | F |
| C5 | F |  | F | F | F | F | SF | SF | SF | F | SF | F |

**S** indicates where a summative assessment occurs.

**F** where formative assessment/feedback occurs.

**Students will be provided with formative assessment opportunities throughout the course to practise and develop their proficiency in the range of assessment methods utilised.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | **Level 4** | | | | **Level 5** | | | | **Level 6** | | | |
|  | **Module Code** |  | CE4011 | CE4112 | CE4113 | CE4014 | CE5111 | CE5112 | CE5113 | CE5014 | CE6111 | CE6012 | CE6113 | CE6014 |
| **Programme Learning Outcomes (Key Skills)** | **Self Awareness** | AK1 | F |  |  | SF | F | F |  | SF | S | S | F | S |
| AK2 | SF | F | F | F | SF | F | F | F | F | SF | F | S |
| AK3 | F |  |  | F | F | F |  | F | SF | SF |  | SF |
| AK4 |  |  |  |  | F | F | F |  | SF | S | SF | S |
| **Communication** | BK1 | F |  | F | F | SF | F |  | F | SF | S | SF | SF |
| BK2 |  |  | F | F | F |  |  | F | F | F | SF | SF |
| BK3 | F |  | F | F | F | F |  | F | F | S | F | S |
| BK4 | SF |  | SF | SF | SF | SF | SF | SF | SF | SF | SF | SF |
| **Interpersonal** | CK1 | SF | F | F | SF | SF | SF | SF | SF | SF | SF | SF |  |
| CK2 | F |  |  | F | F | F | F | F | F | SF | F | S |
| CK3 | F |  | F | F | F |  | F | F | SF | F | F |  |
| CK4 | SF |  | F | F | SF | F | SF | F | SF | SF | F | S |
| CK5 |  |  |  | F |  | F | F | F | F | F | F | SF |
| **Research and Information Literacy** | DK1 | F | F | F | SF | SF | SF | SF | SF | S | S | SF | SF |
| DK2 | SF | SF | SF | F | SF | SF | SF | F | S | S | SF | SF |
| DK3 |  |  |  | F | F |  | F | F | F | F | F | SF |
| DK4 | SF |  | SF | F | SF | F | SF | F | S | S | S | SF |
| DK5 | SF | SF | F | F | SF | SF | SF | F | S | S | S | S |
| **Numeracy** | EK1 | SF | SF | SF | F | SF | SF | SF | F | SF | SF | S | SF |
| EK2 | SF | SF | SF | F | SF | SF | SF | F | SF | S | S | SF |
| EK3 | F | SF | SF | F | SF | SF | SF | F | SF | SF | S | SF |
| EK4 | SF | SF | F |  | SF | SF | F |  | S | S | S | SF |
| **Management and Leadership** | FK1 |  |  |  | F | F | F | F | F | F | F | SF | S |
| FK2 |  |  | F | F | F | F | F | F | F | F | SF | SF |
| FK3 | F |  |  | F | SF | SF | F | F | SF | SF | S | S |
| FK4 | F |  | F | F | F | SF | F | F | F | F | S |  |
| **Creativity and Problem Solving** | GK1 | SF | SF | SF | F | SF | SF | SF | F | SF | SF | S | S |
| GK2 |  | F | SF | F |  | F | SF |  | SF | SF | S | S |

**Mapping of Learning Outcomes for Accreditation**

EC UK-SPEC

Output Standards for a Bachelors (Honours) Degree for IEng

**Specific Learning Outcomes in Engineering**

In relation to the specific learning outcomes, the focus on the application of developed technology and the attainment of know-how means that the accredited honours degree programmes leading to IEng registration will have a different emphasis to those intended for CEng. In particular, they are likely to give a greater weighting to developing knowledge and understanding of engineering practice and processes, and to have less focus on analysis. Design will still comprise a significant component, especially in the integration of a range of knowledge and understanding, but the emphasis will be on the design of products, systems and processes to meet defined needs.

**Underpinning science and mathematics, and associated engineering disciplines, as defined by the relevant engineering institution**

• Knowledge and understanding of scientific principles underpinning relevant technologies, and their evolution;

• Knowledge and understanding of mathematics necessary to support application of key engineering principles;

**Engineering Analysis**

• The ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement;

• The ability to apply quantitative methods and computer software relevant to their engineering technology, frequently within a multidisciplinary context;

• An ability to use the results of analysis to solve engineering problems, apply technology and implement engineering processes;

• The ability to apply a systems approach to engineering problems through know-how of the application of the relevant technologies;

**Design**

Graduates will need the knowledge, understanding and skills to:

• Define a problem and identify constraints;

• Define solutions according to customer and user needs;

• Use creativity and innovation in a practical context;

• Ensure fitness for purpose (including operation, maintenance, reliability etc.);

• Adapt designs to meet their new purposes or applications;

**Economic, social and environmental context**

• Knowledge and understanding of commercial and economic context of engineering processes;

• Knowledge of management techniques which may be used to achieve engineering objectives within that context;

• Understanding of the requirement for engineering activities to promote sustainable development;

• Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues;

• Understanding of the need for a high level of professional and ethical conduct in engineering.

**Engineering Practice**

• An understanding of and ability to use relevant materials, equipment, tools, processes, or products;

• Knowledge and understanding of workshop and laboratory practice

• Knowledge of contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology etc);

• The ability to use and apply information from technical literature;

• The ability to use appropriate codes of practice and industry standards

• An understanding of the principles of managing engineering processes;

• An awareness of quality issues and their application to continuous improvement;

**Engineering Council Specific Learning Outcomes - BSc (Hons) Civil Engineering**

Contribution of Module Learning Outcomes (numbered in the Module Descriptors) to the specific IEng Learning Outcomes listed in UK-SPEC

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Module**  **Code** | **Module Title** | **Science and**  **Mathematics** | **Engineering**  **Analysis** | **Design** | **Economic,**  **Social and**  **Environmental**  **Context** | **Engineering**  **Practice** |
| CE4011 | Fluid and Soil Mechanics | 2,3,5,6 | 2,3,5,6 | 3 | 4 | 4 |
| CE4112 | Technology Mathematics and Computing | 1,2,3,4,5,6 | 1,2,3,4,5 | 5 |  | 6 |
| CE4113 | Engineering Materials and  Structural Mechanics | 1,2,3,4,5 | 4,5 | 4 |  | 1,2 |
| CE4014 | Sustainable Construction and Design | 4,5 | 3,4,5 | 1,3,4,6 | 1,2,3,4,6 | 3,4,6 |
| CE5111 | Geotechnics and  Hydraulics | 1,2,4,5 | 1,2,3,4,5 | 1,2,4,5 | 6 | 6 |
| CE5112 | Site and Engineering  Surveying | 2,4,5 | 1,2,4,5 | 5 |  | 6 |
| CE5113 | Construction Materials and  Structural Analysis | 1,2,4,5,6 | 1,2,4,5,6 | 2,3,5 | 1,2,3 | 1,2,3,4,5 |
| CE5014 | Project and Business  Management | 2 | 2 |  | 1,3,4 | 1,2,3,4,5 |
| CE6111 | Civil Engineering Design |  | 1 | 1,2,3,4,5 | 1,2,3 | 1,2,3,4,5 |
| CE6012 | Sustainable Infrastructure  and Environment | 4 | 2,4,5 | 1,2,3,4 | 1,2,3,5 | 1,3,4,5 |
| CE6113 | Building and Environmental  Engineering |  |  | 1,2,3,5 | 1,2,3,4,6 | 2,3,4,5,6 |
| CE6014 | Individual Project and  Research Methods | 1,3,4,5 | 1,3,4,5 | 1,2 | 1,6 | 1,6 |

**Technical Annex**

**Final Award(s):** BSc (Hons) Civil Engineering

**Intermediate Award(s):** Cert HE in Civil Engineering Dip HE in Civil Engineering BSc Civil Engineering

**Minimum period of registration:** FT - 3 years SW - 4 years **Maximum period of registration:** FT - 6 years SW – 7 years **FHEQ Level for the Final Award:** Level 6

**QAA Subject Benchmark:** Engineering

**Modes of Delivery:** Full-time and Sandwich

**Language of Delivery:** English

**Faculty:** SEC

**School:** Civil Engineering and Construction

**JACS code:** H200

**UCAS Code:** H202/205 (full-time, sandwich)

**Course Code:** NCEKUDH3F (full-time) NCEKUDH4S (sandwich)

**Route Code:** NFCEB (full-time) NWCEB (sandwich)

**Level 4**

**Level 5**

**Level 6**

CE4011

Fluid and Soil Mechanics

Coursework(cw)–40%, exam(ex)–60% CE4112

Technology Mathematics and

Computing cw–50%, ex–50%

CE4113

Engineering Materials and Structural

Mechanics cw–50%, ex–50%

CE5111

Geotechnical Engineering and

Hydraulics cw–100%

CE5112

Site and Engineering Surveying cw–100%

CE5113



Construction Materials and Structural

Analysis

cw–50%, ex–50%

CE6111

Civil Engineering Design cw–100%



CE6012

Sustainable Infrastructure and

Environment cw–40%, ex–60%

CE6113

Building and Environmental

Engineering cw–40%, ex–60%

CE4014

Sustainable Construction and Design

cw-100%

CE5014

Project and Business Management

cw–40%, ex–60%

CE6014

Individual Project and Research

Methods cw-100%

**Field Diagram BSc(Hons) Civil Engineering – Full-time and Sandwich Route**