Programme Specification MEng/BEng Civil Engineering

Date of Publication to Students: September 2015

NOTE: 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 s/he takes advantage of the learning opportunities that are provided. More detail on the specific learning outcomes, indicative content and the teaching, learning and assessment methods of each unit can be found (1) at http://moodle.bcu.ac.uk/tee/ (2) in the Module Document and (3) in the Student Course Guide.

The accuracy of the information contained in this document is reviewed by the University and may be checked within independent review processes undertaken by the Quality Assurance Agency.

Awarding Institution / Body:	**Birmingham City University**
Teaching Institution:	**Birmingham City University**
Programme accredited by:	**Joint Board of Moderators (pending)**
Final Award:	**MEng/BEng (Hons) Civil Engineering**
Programme Title:	**MEng/BEng (Hons) Civil Engineering**
Main fields of Study:	**Mathematics /Civil Engineering Design /Technology /Management /Project /Materials**
Mode of Study:	**Full Time, Part Time and sandwich option**
Language of Study:	**English**
UCAS Code:	**H200**

Professional Status of the programme:

This programme will be submitted to the Joint Board of Moderators (JBM) for accreditation towards the status if Incorporated Engineer.

Relevant subject benchmark statements and other external and internal reference points used to inform programme outcomes:

The subject benchmark statement is referenced from the UK-SPEC bench marking group for engineering that was published in 2013; requests for comment were sent by UK-SPEC to the principal professional bodies and the Higher Education Academy Subject Centre.

Programme philosophy and aims

The BCU Civil Engineering degree course prepares students for an exciting and challenging career in the construction industry. By working with our industrial partners and through a rigorous and coherent curriculum focusing on problem-solving, this course aims at developing students' intellectual and practical competence required by the professional bodies such as ICE and IStruct E. After completing this course, the students should have a broad range of knowledge of the technical, managerial, economic, theoretical and environmental aspects of civil engineering in its widest sense, and can confidently apply themselves both to the management and design of civil engineering projects.

With our strong links with the industry we support students by applying their learning to problem-based scenarios. Students are helped to develop competencies and skills that are transferrable to the full range of international and national civil engineering workplace environments.

The programme aims to provide learners with:

1. A curriculum that encourages students to seek solutions through problem based learning
2. A recognition of the needs of the wider development community
3. An ability to design structural elements in various materials
4. An understanding of the theories of geotechnics and hydraulics and their application
5. An understanding of costing and pricing techniques
6. A practical knowledge of topographic surveying and use of instruments
7. Knowledge of operational management and the construction process
8. Knowledge of civil engineering technology and innovation
9. An understanding of construction procurement
10. Knowledge and ability to work in teams and lead teams including the aptitude to work independently
11. A qualification accredited by the relevant professional bodies
12. Knowledge of all the roles in the industry and understanding the importance of being a reflective and innovative professional
13. The ability to synthesize complex information and communicate effectively

Intended learning outcomes and the means by which they are achieved and demonstrated:

Learning Outcomes

1. Knowledge and Understanding of:

KU1. Scientific principles and theories that underpin civil engineering disciplines;
KU2. Engineering materials and components;
KU3. Design processes and methods;
KU4. Analytical and mathematical modelling techniques used to create solutions to civil engineering problems;
KU5. Computer aided techniques for modelling, simulation and design of civil engineering elements;
KU6. Business, organisational, teamwork and management practices in industries based on civil engineering and the limitations thereof;
KU7. Commercial, ethical, regulatory and environmental factors that influence the choice of solutions to engineering problems.

2. Intellectual Skills

IS1. Argue rationally and draw independent conclusions based on a rigorous, analytical and critical approach;
IS2. Critically appraise the usefulness of new technologies and changes in civil engineering practice;
IS3. Design a system, element or network to meet a specification;
IS4. Develop innovative designs and solutions based on a broad range of scientific principles taking into account commercial risks and constraints, intellectual property rights and contractual issues, and environmental impact;
IS5. Apply mathematical and/or computer based modelling to analyse new designs and generate solutions to automotive/mechanical engineering problems;
IS6. Critically appraise the results of mathematical and computer based analyses

3. Practical Skills

PS1. Demonstrate practical engineering skills to use appropriate laboratory and workshop equipment;
PS2. Use computer based systems for modelling and design of civil engineering projects, recognising their limitations and having some awareness of their future development;
PS3. Apply primary and secondary research methods using a wide range of sources of information and appropriate methodologies in the management of engineering projects taking into account of a range of commercial and industrial constraints;
PS4. Apply industry codes of practice and standards.

4. Transferable/Key Skills

TS1. Participate effectively in group working activities in a leadership role being able to undertake most of the technical functions within the group and managing the delivery of a plan under changing circumstances.
TS2. Manage time and prioritise workloads showing high levels of independent learning
TS3. Integrate a wide range of data from a variety of sources to; solve a range of engineering problems, apply understandings to challenging situations and be aware of the limitations of the solution;
TS4. Integrate presentational techniques and the information to be presented for maximum effect;
TS5. Access and make appropriate use of numerical and statistical information and develop a deeper understanding and/or greater impact
TS6. Make effective use of information and communications technologies, including word and data processing packages, the internet and electronic information retrieval systems;
TS7. Research and use new methods required for novel situations and adapt to specific purposes if required

Learning Teaching, and assessment methods used

1. Knowledge and Understanding

Knowledge and understanding are acquired through formal lectures including presentations, seminars, tutorials, hands-on experience, learning sets and problem based scenarios, backed up by guest speakers, visits to construction sites, manufacturers and exhibitions when appropriate. High emphasis is given to student directed and student centred learning.

Knowledge and understanding is assessed formatively by work based learning and problem solving, in-class tasks, seminar work, peer assessment and learning sets.

Summative assessment is by way of assignments, projects, presentations, time-controlled assignments and end examinations, where appropriate to the unit.

Methods of summative assessment are accurately defined within each unit document. The matrix of assessment (Appendix A) gives an indicative overview.

Assessment criteria defined for a Pass are described within the module documents, clearly defined criteria for grades are issued with the assessment tasks.

2. Intellectual Skills

Use of real and scenario based case studies, self-directed learning facilitated by, problem-based learning scenarios and surveying, design, construction, budget, health & safety and management projects based upon a real project and its inherent problems.

Assessment includes, seminar and tutorial work, assignments, time controlled tasks, work based evidence and end of unit examination.

3. Practical Skills

Practical demonstration work, seminar, laboratory and tutorial work, use of ICT as a visual tool, problem-based scenarios and group project work.

Students are encouraged to plan their own work schedules, manage their time and extend their presentational skills in the application of their learning as they should be doing when working in industry.

Assessment methods include the use of ICT to demonstrate hands-on experience, formal drawing techniques, practical surveying exercises and group project work.

Formative assessment of peers through reviewing work in teamwork, written articles for reflection in learning sets or presentations.

Self evaluation of learning styles will be conducted through the course induction programme when reviewing the university electronic Moodle web pages.

Self appraisal of performance and the production of a Personal Development Plan which is produced at the induction stage of the course and reviewed within the second year so as to evaluate the student's present and life long learning strategy.

4. Transferable/Key Skills

Examples of teaching and learning strategies include: lectures, seminars and tutorials, self-directed learning facilitated by study packs and, where appropriate, the use of work based learning and research-based teaching materials and methods, also problem-based learning scenarios in small teams and larger groups.

Communication, team building skills, ICT and professional awareness within the industry are paramount to all subjects and will be demonstrated by the student within the framework of the course and across all subjects being studied.

Transferable/key skills are generally incorporated within the units and are related to various assessments as appropriate.

Whole school modules are used to provide realistic projects through which these skills can be demonstrated, particularly through team working with students studying other construction professions.

Production of evidence includes seminars, learning sets, group work and presentations.

This evidence may be compiled through the subjects being studied or through work based learning in the main, but is not restricted to these alone.

Programme structure and requirements, levels, modules, credits and awards

The MEng/BEng (Hons) programme is normally available on a full and part-time study basis. Students may, in certain circumstances, move between full and part-time modes of attendance The course is divided into study units called modules, and these are either double (30 credits) or single (15 credits). Students complete 120 credits at each of Level 4, Level 5, Level 6 and Level 7. Each 15 credit module represents150 hours of student learning and assessment. Students follow a scheme of compulsory study with a choice of Honours Research Project (options, and choice of topic).

The structure of the course, the modules, levels and credit ratings, and the awards which can be gained are shown below.

Notes on the Course Structure Diagrams and Awards

1. Interim awards of DipHE, CertHE and FY are included for clarity, as is the optional Sandwich Placement Year.
2. Credit values shown are (BCU/ECTS).
3. Semesters when modules are expected to run are denoted by S1 and S2. Project Modules running all year are denoted by AYR.
4. In order to progress from Level 6 to Level 7 and hence study MEng modules, the student must achieve a minimum of a Lower Second (2:2) classification.

MEng/BEng (Hons) Civil Engineering – Full Time

MEng Civil Engineering

BNV7044 Innovation in Construction (15/7.5) S2	BNV7080 Construction Law and Contract (15/7.5) S1	BNV7106 Building Information Theory (15/7.5) S2	BNV7027 Development Management & Systems (15/7.5) S2	BNV7086 Sustainable Construction (15/7.5) S1	BNV7108 Civil Engineering Project Management (15/7.5) S1	BNV7109 Group Design Project (15/7.5) AYR

BEng (Hons) Civil Engineering

BNV6118 Structural Design and Analysis 2 (15/7.5) S1	BNV6114 Inter-Professional Project (15/7.5) S1	BNV6101 Contract Practice (15/7.5) S1	BNV6117 Geotechnical Engineering (15/7.5) S1	BNV6099 Civils measurement and Costing (15/7.5) S2	ENG6063 Advanced Materials (15/7.5) S2	ENG6044 Undergraduate Project (30/15) AYR

Optional Sandwich Placement Year

Dip HE Civil Engineering

BNV5103 Civil Engineering Materials and Soil Mechanics (30/15) S1	BNV5102 Structural Design and Analysis 1 (15/7.5) S1	ENG5052 Numerical Analysis (15/7.5) S1	BNV5084 Operational Management (15/7.5) S2	BNV5101 Hydraulics and Drainage (15/7.5) S2	BNV5097 Professional Practice Project 2 (30/15) S2

Cert HE Civil Engineering

ENG4082 Mathematics and Mechanics (30/15) S1	ENG4066 Materials and Processes (15/7.5) S1	BNV4098 Topographic Surveying (15/7.5) S2	BNV4100 Civil Engineering Technology and Design (30/15) S2	BNV4095 Professional Practice Project 1 (30/15) S2

Foundation Year in Engineering

ENG3007 Mathematics for Engineering 1 (30/15)	CMP3009 Information and Communication	ENG3008 Mathematics for Engineering 2 (15/7.5)	CMP3004 Electrical Science (30/15)	ENG3003 Mechanical Science (30/15)

MEng/BEng (Hons) Civil Engineering – Part Time

Year 5

ENG6063 Advanced Materials (15/7.5) S2	BNV6118 Structural Design and Analysis 2 (15/7.5) S1	ENG6044 Undergraduate Project (30/15) AYR	BNV6101 Contract Practice (15/7.5) S1

Year 4

ENG5052 Numerical Analysis (15/7.5) S1	BNV6114 Inter-Professional Project (15/7.5) S1	BNV5102 Structural Design and Analysis 1 (15/7.5) S2	BNV6117 Geotechnical Engineering (15/7.5) S1	BNV6099 Civils measurement and Costing (15/7.5) S2

Year 3

BNV5097 Professional Practice Project 2 (30/15) S2	BNV5103 Civil Engineering Materials and Soil Mechanics (30/15) S1	BNV5101 Hydraulics and Drainage (15/7.5) S2

Year 2

BNV4095 Professional Practice Project 1 (30/15) S2	BNV5084 Operational Management (15/7.5) S1	ENG4066 Materials and Processes (15/7.5) S1

Year 1

BNV4082 Mathematics and Mechanics (30/15) S1	BNV4100 Civil Engineering Technology and Design (30/15) S2	BNV4098 Topographic Surveying (15/7.5) S2

13 Support for Learning including Personal Development Planning (PDP)

Students are encouraged to identify and, with guidance, to reflect on their own learning needs and are offered the following support as appropriate to those needs:

- An initial induction programme dealing with orientation and the dissemination of essential information including a programme of study skills, library use, essay-writing, problem-solving and information technology;
- Extra sessions on revision and examination techniques for those needing additional support;
- A University Student Course Guide, containing information relating to the University, Birmingham School of the Built Environment, the course and the modules;
- A Module Document containing details of content, programme and assessment for each module studied
- Options guidance session on the choice of Honours Research Project;
- Access to administrative staff and to academic staff, including the Year Tutors, Programme Leader, Associate Head of School (Academic) and Head of School, at reasonable times;
- A Year Tutor to advise on pastoral and academic issues, and to offer support and;
- Access to University resources, including the Learning Resources Centres, and a range of supported IT equipment;
- Access to the services of the Liaison Librarian team;
- A programme of careers advice;
- Assistance and support for learning skills from specialist University staff;
- Access to the University's Student Services, including those offered by the careers service, financial advisers, medical centre, disability service, crèche, counselling service and chaplaincy.

Criteria for admission

Candidates must satisfy the general admissions requirements of the programme, which are as follows:

Applicants must:

Entry Requirements:
5 GCSEs at grade A*-C including English Language and Mathematics, or specified equivalents.

Typical Offers
A-Levels: BBC to include Mathematics and one from Physics, Chemistry, Design Technology, Further Mathematics, Geology, Geography, Environmental Science or Engineering. Excludes General Studies.

BTEC Level 3 Extended Diploma: DMM - 280 UCAS points. A Distinction in Mathematics or Analytical Methods unit.

Access: The Access Diploma to include 30 Level 3 credits in Mathematics or Physical Science units. Access applicants can meet the GCSE requirements through their current studies and do not need to have these qualifications separately.

International Baccalaureate Diploma: 30 points overall (minimum grade 5 in Higher Level Mathematics).

HNC/D in an appropriate engineering or construction discipline with overall Merit performance. Please contact us for specific entry points.

English as a Foreign Language: IELTS 6.0.

For details of other acceptable qualifications please email us.

Accreditation of Prior Learning & Accreditation of Prior Experiential Learning

Candidates may be given credit for prior learning **for specific modules** providing they can demonstrate that their prior learning is current and meets the learning outcomes of the units in question. The prior learning of a candidate will be assessed by interview and certification or other tests of competence as appropriate and in accordance with the Faculty scheme and university regulations.

Methods for evaluation and improvement of quality and standards of learning

The following Faculty committees are involved in evaluation and enhancement of quality, standards and student experience:

- Student Feedback Forums,
- Student Academic Boards,
- Faculty Academic Board, and the
- University's Academic Board.

These are supported by the

- Student Experience, Learning and Teaching Committee
- Student Voice Committee
- Technology Enhanced Learning and Teaching Committee
- Student Complaints, Appeals and Discipline Committee
- Academic Standards and Quality Enhancement Committee, including sub-Boards and Panels

The complete structure can be seen below.

Review and evaluation processes in which students are involved include annual course and module reviews, course review and re-approval events, professional body accreditation visits and external examiner visits.

Mechanisms for student input include meetings with course tutors, feedback questionnaires, faculty and university student satisfaction surveys and representation on the faculty committees referred to above.

External examiners are members of examination boards and their remit includes meeting students and monitoring and reporting on academic standards.

THE ACADEMIC BOARD (FORMERLY SENATE) COMMITTEE STRUCTURE – (V16 – 13.11.14)