

Programme Specification for Postgraduate Programme Leading to: Award Title(s): MSc Civil Engineering

Applicable for all postgraduate students starting in [2021-22]

Version No.	Date	Notes – QUALITY ASSURANCE USE ONLY	QA
2021-22 v0.2	March 2021	New programme to be approved by College Education Committee and Senate.	JP
2021-22 v0.3	7 July 2021	Programme recommended by College Education Committee to Senate for a January 2022 start and intakes thereafter each September and January.	JP

Postgraduate Taught Programme	
1. Awarding institution	Brunel University London
2. Teaching institution(s)	Brunel University London
3. Home College/Department/Division	College of Engineering, Design and Physical Sciences/ Dept of Civil and Environmental Engineering / Civil Engineering/
4. Contributing College/Department/Division/ Associated Institution	None
5. Programme accredited by	To be submitted for accreditation by the Joint Board of Moderators
6. Final award(s) and FHEQ Level of Award	MSc Civil Engineering FHEQ Level 7
7. Programme title	MSc Civil Engineering
8. Programme type (single honours/joint)	N/A
9. Normal length of programme (in months) for each mode of study	September Starters – 12 months January Starters – 14 months
10. Maximum period of registration for each mode of study	Normal or standard duration plus 2 years up to a maximum of 5 years.
11. Variation(s) to September start	January entry from 2022 (of length stated in row 9 above)
12. Modes of study	Full -Time
13. Modes of delivery	Standard
14. Intermediate awards and titles and FHEQ Level of Award	Postgraduate Certificate in Civil Engineering (FHEQ Level 7) Postgraduate Diploma in Civil Engineering (FHEQ Level 7)
15. UCAS Code	N/A
16. HECoS Code	100148
17. Route Code	To be allocated

18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design	UK Quality Code for Higher Education QAA Subject Benchmark Statement Brunel 2030 Brunel Placement Learning Policy, as published under the 'Placements' section of the ' Managing Higher Education Provision with Others ' page.
19. Admission Requirements	Details of PGT entry requirements are provided on the University's and College website. Levels of English for non-native speakers are outlined on Brunel International's language requirements pages.
20. Other relevant information (e.g. study abroad, additional information on placements)	N/A
21. Programme regulations not specified in Senate Regulation 3. Any departure from regulations specified in Senate Regulation 3 must be stated here and approved by Senate.	N/A
22. Further information about the programme is available from the College website.	Link to programme information on the College website

23. EDUCATIONAL AIMS OF THE PROGRAMME

This course offers a solid path towards continuing professional development to our students & engineering professionals which would help them to take up highly-skilled jobs in industry. From the perspective of needs of industry and government, graduates with a broader understanding of Civil Engineering problems would be able to contribute to Civil Engineering challenges that require more holistic knowledge such as fulfilling UN Sustainable Development Goals (<https://sdgs.un.org/goals>) and addressing climate emergency.

Some specific aims of this MSc course are:

- Offer postgraduate education in Civil Engineering with a broad knowledge/experience from all major sub-disciplines within Civil Engineering
- Provide advanced design capabilities and required versatilities for contributing to most complicated contemporary Civil Engineering tasks in industry
- Provide a solid pathway for graduates towards their continuing professional development and potential progression to the membership/chartership of appropriate institutions such as Institution of Civil Engineers (ICE), The Institution of Structural Engineers (IStructE) and The Chartered Institution of Water and environmental Management (CIWEM).

24. PROGRAMME AND INTERMEDIATE LEARNING OUTCOMES

The programme provides opportunities for students to develop and demonstrate knowledge and understanding (K) cognitive (thinking) skills (C) and other skills and attributes (S) in the following areas:

Masters FHEQ Level 7	Category (K = knowledge and understanding, C = cognitive (thinking) skills, S = other skills and attributes)	Learning Outcome	Masters Award Only	Associated Assessment Blocks Code(s)	Associated Study Blocks Code(s)	Associated Modular Blocks Code(s)
Masters and FHEQ level 7						
	K, C, S	Scientific and Engineering Principles: Apply a comprehensive knowledge of scientific and engineering principles to formulate and solve complex Civil Engineering problems.				CE5601 CE5xxx CE5615 CE5011/CE5509 CE5603 CE5607 CE5516 CE5606 CE5602/CE5652 CE5603 CE5607
	K, C, S	Analytical Tools and Techniques: Select and apply appropriate computational and analytical techniques to model complex Civil Engineering problems, while considering the limitations of the techniques employed.				CE5601 CE5xxx CE5011/CE5509 CE5516 CE5615 CE5602/CE5652 CE5603 CE5607
	K, C, S	Technical Literature: Select and critically evaluate technical literature and other sources of information to solve complex problems.				CE5606 CE5011/CE5509 CE5513 CE5516 CE5008/CE5508 CE5015/CE5518
	K, C, S	Design: Design solutions for complex problems that evidence some originality to meet societal and/or economical needs as appropriate.				CE5601 CE5606 CE5xxx CE5011/CE5509 CE5513 CE5516 CE5616 CE5615 CE5602/CE5652 CE5008/CE5508 CE5603 CE5607
	K, C, S	Project Management, Ethics, Quality Management and Risks. Apply knowledge of Civil Engineering management principles, commercial context and project management and relevant legal matters. Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. Discuss the role of quality				CE5015/CE5518 CE5513 CE5516 CE5012/CE5514 CE5615 CE5008/CE5508

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Location: <https://intra.brunel.ac.uk/s/QSO/Team/Programmes/Templates and Proformas/Programme Specification Templates>

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		management systems and continuous improvement in the context of complex problems. Use a risk management process to identify, evaluate and mitigate risks.				
	K, C, S	Sustainability: Evaluate the environmental and societal impact of Civil Engineering solutions to complex problems and minimise adverse impacts.				CE5606 CE5011/CE5509 CE5518 CE5012/CE5514 CE5615 CE5008/CE5508 CE5015/CE5518 CE5616
	C, S	Teamwork: Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance.				CE5011/CE5509 CE5513 CE5015/CE5518 CE5615
	C, S	Communication: Communicate effectively on complex engineering matters with technical and non-technical audiences.				CE5011/CE5509 CE5008/CE5508 CE5513 CE5516 CE5015/CE5518 CE5012/CE5514
	C, S	Integrated/Systems Approach and ability to apply advanced knowledge of Civil Engineering and skills to solve complex problems				CE5513 CE5516

Learning/teaching strategies and methods to enable learning outcomes to be achieved, including formative assessments

This MSc is aimed at providing knowledge on the main sub-disciplines within Civil Engineering. All the main sub-disciplines offer modules to this MSc course. The optional modules give some flexibility to students in terms of pursuing their professional preferences. The arrangement of seven compulsory and two optional modules guarantees that the curriculum includes all four main sub-disciplines of Civil Engineering.

An integrated holistic approach is taken for delivering the teaching including classroom lectures/seminars, self-studies, individual research reports, laboratory experiments, field trips and/or field course. Numerous practicals (physical or computer labs) and field work are employed for delivering the module blocks. Some teaching innovations introduced in recent years improve the teaching and learning experiences including Team-Based Learning (TBL) and use of digital media for teaching and assessment including the university's VLE v, online communication and online assessment systems. The department's Industry Advisory Panel (IAP) facilitates speakers/guest lecturers from industry providing practical inputs towards making teaching/learning process more relevant to industry.

The teaching/learning strategy is aligned with nine attributes recommended by Institution of Civil Engineers (ICE) through addressing them in various study blocks. Although students are not expected to fully meet ICE attributes during their study or even a few years after graduation, it is important that they learn about the professional attributes and plan to fully comply with them.

The Department of Civil and Environmental Engineering has extensive experience of running MSc programmes and it is recognised that students entering MSc courses come from a broad background. It is important to support students entering this MSc course in order to enable them to succeed in their academic journeys. Therefore, all modules/learning blocks contain introductory/background lectures at the beginning of the teaching term.

Summative assessment strategies and methods to enable learning outcomes to be demonstrated.

The assessment strategy is aimed at covering all learning outcomes and helping students to achieve the programme aims. The assessment is arranged through a series of summative and formative assessment across different modules. Formative assessments include class quizzes, short comparative assessments and anonymous voting and polls. The summative assessments are final exams (from 50% to 70%), oral presentations (for CE5513 & CE5516), assignments and design projects. The final exams are time-limited (2-3 hours) and are normally held either in January or May. The assignments and/or design projects are planned across all modules and give students the opportunity to apply the knowledge to real-world structures and situations. Assignment briefs are prepared beforehand by module leaders and are communicated to students at least one month before assignments' due dates. Module leaders provide support to help student accomplish the tasks requested by assignments and design projects. Some of the design projects are individual while others are group works. The group projects provide opportunity for students to develop team work and management skills.

In summary, the planned summative assessments are:

- Final exams
- Design projects
- Coursework and assignments
- Group projects
- Laboratory and field reports on lab experiments and field observations
- Individual dissertations
- Presentations and posters

25. Programme Structure, progression and award requirements

The MSc in Civil Engineering follows the regulations from the JBM (Joint Board of Moderators) and the Brunel's senate Regulations SR3 (2013) and SR4 covering core engineering topics as well as breadth of knowledge. A group of compulsory and optional modules are planned which cover all main sub-disciplines of Civil Engineering.

Programme structures and features: levels, assessment blocks, credit and progression and award requirements

- **Compulsory block:** one which all students registered for the award are required to take as part of their programme of study. These will be listed in the left hand column;
- **Optional block:** one which students choose from an 'option range'. These will be listed in the right hand column;
- A **core assessment** is an assessment identified within an assessment block or modular block (either compulsory or optional) which must be passed (at grade C- or better) in order to be eligible to progress and to be eligible for the final award. All core assessments must be specified on the programme specification next to the appropriate assessment or modular block:

Where students are expected to pass the block at C- or better, but not necessarily all elements, then the block itself is core.

e.g. AB5500 Project (40)
Core: Block

Where only some elements of assessments are required to be passed at C- or better, these will be identified by listing each element that is core

e.g. ABXXX1 Title (XX credits)
Core: 1 & 4

Where students are expected to pass all assessments in a block then this will be identified. By setting the assessment this way, students are also required to pass the block by default. This will be identified thus:

e.g. ABXXXX Title (XX credits)
Core: All, Block

- A **non-core assessment** does not have to be passed at grade C- or better, but must D- or better in order to be eligible for the final award.

Full-Time Masters and FHEQ Level 7 – FOR FULL-TIME ROUTES ONLY	
Compulsory assessment block codes, titles and credit	Optional assessment block codes, titles and credits
Compulsory study block codes, titles and credit volume	Optional study block codes, titles and credit volume
Compulsory modular block codes, titles and credits	Optional modular block codes, titles and credits
<p><u>September Start</u></p> <p><u>Autumn Term</u> (CE5601) Nonlinear Structural Analysis & Finite Element Method (CE5xxx) Advanced Geotechnical Engineering (CE5011/CE5509) Water Infrastructure Engineering (CE5513) Research Methods and Professional Development (CE5516) MSc Civil Engineering Dissertation - 60 credits – Core Block.</p> <p><u>Spring Term</u> All modules are 15 credits unless otherwise specified. (CE5606) Advanced Construction Materials and Structural Retrofitting Technology (CE5015/CE5518) Project Management (CE5513) Research Methods and Professional Development (CE5516) MSc Civil Engineering Dissertation - 60 credits – Core Block.</p> <p>=====</p> <p><u>January Start</u></p> <p><u>Spring Term</u> All modules are 15 credits unless otherwise specified. (CE5606) Advanced Construction Materials and Structural Retrofitting Technology (CE5015/CE5518) Project Management (CE5513) Research Methods and Professional Development (CE5516) MSc Civil Engineering Dissertation - 60 credits – Core Block.</p> <p><u>Autumn Term</u> (CE5601) Nonlinear Structural Analysis & Finite Element Method (CE5xxx) Advanced Geotechnical Engineering (CE5011/CE5509) Water Infrastructure Engineering (CE5513) Research Methods and Professional Development (CE5516) MSc Civil Engineering Dissertation - 60 credits – Core Block.</p>	<p><u>September Start</u></p> <p><u>Autumn Term</u> (CE5012/CE5514) Risk and Financial Management (CE5008/CE5508) Geo-Environmental Management for Civil Engineers (CE5603) Advanced Steel Design (CE5607) Advanced Reinforced and Prestressed Concrete Design</p> <p><u>Spring Term</u> (CE5616) Water and Wastewater Treatment Engineering (CE5615) Contemporary Structures and Sustainable Construction (CE5602/CE5652) Structural Dynamics and Seismic Design</p> <p>=====</p> <p><u>January Start</u></p> <p><u>Spring Term</u> (CE5616) Water and Wastewater Treatment Engineering (CE5615) Contemporary Structures and Sustainable Construction (CE5602/CE5652) Structural Dynamics and Seismic Design</p> <p><u>Autumn Term</u> (CE5012/CE5514) Risk and Financial Management (CE5008/CE5508) Geo-Environmental Management for Civil Engineers (CE5603) Advanced Steel Design (CE5607) Advanced Reinforced and Prestressed Concrete Design</p>

Masters and FHEQ Level 7 Progression and Award Requirements

As per [Senate Regulation 3](#)

A PGDip may be awarded by the substitution of the dissertation (CE5516) for up to 30 credits of modular/assessment blocks in the taught part of the programme, provided the learning outcomes have been met.

Please note: this specification provides a concise summary of the main features of the programme and the learning outcomes that a student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods can be found in the modular block, assessment and study block outlines and other programme and block information. The accuracy of the information contained in this document is reviewed by the University from time to time and whenever a modification occurs.