

MSc Construction and Project Management Programme Specification

<https://www.bradford.ac.uk/courses/pg/construction-and-project-management>

Academic Year:	2022/23
Degree Awarding Body:	The University of Bradford
Target Degree Award:	Master of Science in Construction and Project Management [Framework for Higher Education Qualifications (FHEQ) Level 7]
Interim/exit Awards:	Degree of Master of Science in Engineering (Construction and Project Management); Postgraduate Diploma in Construction and Project Management; Postgraduate Certificate in Construction and Project Management [FHEQ Level 7]
Programme Admissions:	September and January
Programme duration:	1 year full time
Subject Benchmark Statement:	Land, Construction, Real Estate, Surveying, Engineering (QAA 2019); Business and Management (QAA 2015)

Please note: This programme specification has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further detail about their course and any minor changes will be discussed and/or communicated at this point.

Minor Modification Schedule

1. August 2020: COVID-19 adaptations.
 2. January 2021: Specification made accessible. Added standard PG study abroad section.
 3. June 2021: Annual changes for 2021 academic year.
 4. July 2022: Annual changes for 2022 academic year.
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Introduction

Construction project management is a prudent mix between management methodologies on one hand, and construction engineering experience on the other. This is a crucial profession, involving the design, construction, maintenance, operation and decommissioning of infrastructure facilities upon which modern life depends, such as buildings, power plants, bridges, highways, industrial facilities and water and wastewater treatment stations.

The construction and management of these facilities is increasingly important in the modern world, as populations increase rapidly, placing a strain on our infrastructure, and amid mounting concerns about the environment. Since most undergraduate engineering degrees focus on developing the students' technical, analytical, and subject-specific knowledge, there is limited 'room' within these curricula to cover broader management skills, and many graduates end up learning these 'on the job' once they commence their employment. In recent years, the nature of engineering projects has become increasingly

complex, with many stakeholders, different specialities, subcontractors and disciplines interacting to produce a common deliverable.

Optimum use of resources is critical to produce cost-effective sustainable solutions to meet strict deadlines and client demands in a very competitive global context. Site engineers are increasingly required to manage procurement of construction materials and deal with suppliers, manufacturers and clients to resolve disputes. Engineers working in the Built Environment have to design, build, and operate sustainable and resilient infrastructures with greater consideration of the whole life cycle, ever-changing societal needs and depleting natural resources. Hence, there is a clear market demand for graduate engineers with holistic thinking and managerial skills in this field. Those entering the built environment fields are increasingly required to continue their education long after graduating from their bachelor's degrees and must increase their knowledge base to remain competitive.

The Programme

The MSc in Construction and Project Management places emphasis on the integration of key principles of sustainability, resilience, risk, construction project management, holistic thinking, safety, communication and circular economy, together with the latest trends in management of construction contracts. Utilising the combined expertise of our reputable School of Law, Department of Civil and Structural Engineering, and industrial experts, this programme thus enables engineers to practice holistic thinking and develop managerial skills that will allow them to take a leading role in decision making and management of construction projects. This programme is ideal for those with a first degree in Civil Engineering/the Built Environment, management and cognate disciplines e.g. architecture, electrical, chemical and mechanical engineering who are interested in pursuing a career in construction and project management.

This MSc programme will include a research project with an emphasis on application, experiential learning and real-world engagement. This will make a major contribution to the student's skill set, in the skills and attributes for enhanced employability.

The programme is delivered jointly by the Faculty of Engineering and Informatics and the Faculty of Management, Law and Social Sciences in the University of Bradford with a strong input from industry, adopting the integrated approach of the Project Management Institute (PMI). An emphasis is placed on providing a supportive working environment that will equip students with the knowledge and learning skills to tackle the challenges in industry. This MSc will be the first steppingstone in a fruitful career in construction management.

The University

The University of Bradford has four key strategic objectives: excellence; internationalisation; equality and diversity; and sustainability. We believe in doing research and teaching to deliver career opportunities for our students as well as for economic development and job creation. The Faculty of Engineering and Informatics together with

the Faculty of Management, Law and Social Sciences strongly believe that each programme subscribes to these four objectives through the three key streams of the University vision:

- The creation of knowledge through fundamental and applied research.
- The dissemination of knowledge by teaching students from all backgrounds.
- The application of knowledge for the prosperity and wellbeing of people.

Lecturers at Bradford are active researchers in their fields of expertise, developing new knowledge, contributing to peer-reviewed journals and books. This research permeates their teaching practice giving students access to world leading professionals, equipment and ideas within the University's academic themes of Innovative Engineering, Advanced Healthcare and Sustainable Societies. Each year students will engage in enquiry-based projects allowing learning through research.

The Faculty welcomes and celebrates the diverse cultural and national backgrounds of our students and staff. We are committed to an educational experience that is inclusive, one where gender and ethnicity are central elements in developing engineering solutions that address the needs of a diverse society. The University currently holds Bronze Athena Swan accreditation from the Equality Challenge Unit.

We recognise that society benefits from the talents of all, and that the development of creative, collaborative engineers, skilled in communication and teamwork is vital. Diverse engineering teams are known to be more innovative. We help students to contribute to and learn from the varied perspectives of their tutors and peers. We want to equip our graduates with the knowledge and skills to respond to the many different and ever-changing needs of our societies and businesses.

Programme Aims

The aims of the MSc programme are to:

- A1 Provide students with the advanced theoretical knowledge, concepts and skills necessary for original thought, holistic thinking, and problem analysis related to construction and project management.
- A2 Equip students with deepened academic and technical skills necessary to apply their knowledge and understanding and to prudently tailor management tools to construction projects in different contexts.
- A3 Enable students to carry out independently, but under supervision, a specific research project in construction and project management.

During this 12-month, full-time MSc, you will study several core modules related to construction management, management of project procurement and construction contracts, project management, risk assessment, supply chain management, and will choose from a wide range of modules relating to areas such as sustainability in the built environment, sustainable development law in contemporary business society and commercial dispute resolution. You will also complete a dissertation relating to construction and project management in which you will use and apply construction and

project management tools and approaches to tackle unfamiliar project challenges. In addition to developing a variety of transferrable skills, the MSc programme aims to:

A4 Instil in students a strong business acumen and a solid understanding of the legal issues surrounding construction management.

The Faculties of Engineering and Informatics and Management, Law and Social Sciences aim to produce postgraduates who aspire to challenging careers in industry, commerce and the public sector or to developing their own enterprises. The MSc programme aims to:

A5 Develop graduates who may move directly into responsible roles in employment with a minimum of additional training.

You will achieve this aim by being provided with a supportive, structured environment in which you are encouraged to develop independent learning skills, developing subject knowledge and understanding, developing discipline skills and developing personal transferable skills; enabling you to pursue programmes of advanced study, or move directly into responsible employment.

Programme Learning Outcomes

To be eligible for the FHEQ Level 7 award of Postgraduate Certificate, students will be able to:

1. Evidence comprehensive understanding of the knowledge areas of construction and project management.
2. Evidence deep awareness of the Uniqueness and Temporary organisation of the Project, summarising the processes, documentation and deliverables that are associated with each phase in complex engineering projects.
3. Appreciate and describe in detail the fundamental types of time- and cost-estimating approaches and how these are best related to the timeline of a construction project.
4. Apply advanced skills in problem solving, communication and information retrieval, working effectively with general IT facilities to develop, monitor and update a plan for the solution of both technical and personnel contributions to meeting organisational need.
5. Demonstrate an advanced knowledge of the core quality processes and explain the role of each process in planning and managing projects.
6. Articulate how to competently monitor and control variances as they pertain to project cost, schedule, scope, and quality, and how to formally communicate such variances to the stakeholder.
7. Understand sources of conflict, and given a specific challenge, apply an advanced problem-solving process that focuses on confronting and resolving the problem, conceptualising new solutions through critical and lateral thinking.

8. Demonstrate advanced knowledge and skills in procurement, supply-chain management, finance, cost management, legal solutions and other business aspects of projects, synthesising theory and practice to implement effective solutions.
9. Work effectively and professionally in a team in order to meet shared objectives.

Additionally, to be eligible for the FHEQ Level 7 award of Postgraduate Diploma, students will be able to:

10. Evidence awareness of the need for a high level of professional and ethical conduct in engineering, evidencing business and management practices relevant to engineering and engineers.
11. Plan self-learning to improve performance as a foundation for lifelong learning/CPD, and exercise initiative and personal responsibility in professional practice, which may be as a team member or leader Evidence good negotiation, written and oral communication skills in addition to self-reliance and critical reflection.
12. Demonstrate a personal and critical understanding of sustainability and circular economy and to be able to make business decisions, taking into account the complexity of the sustainability agenda in its broadest sense.

Additionally, to be eligible for the FHEQ Level 7 Degree award of Master, students will be able to:

13. Plan, implement, monitor and adjust on an on-going basis, a self-directed individual research programme of work, evidencing collection and critical analysis of research data, use or adaptation of appropriate analysis tools to tackle unfamiliar problems (e.g. those with uncertain or incomplete data or specification), innovation, and application of relevant skills, reflection, and research methodologies in the production of an advanced report.
14. Apply holistic thinking and PMI project processes approach throughout the project lifecycle and phases, Tailor the project management approach, concepts, tools, and processes, including project success, risk allocation and procurement strategy, considering the context, the Enterprise Environmental Factors, and the Organisational Process Assets.

Learning and Teaching Strategy

The MSc Construction and Project Management programme at the University of Bradford is designed to provide education to produce 'fit-for-purpose' graduates and to enable them to meet their career aspirations. The programme is designed to achieve a balanced between subject knowledge and transferable skills. Optional modules are also included to offer students more choices and meet their interests. In future, this programme will seek accreditation from the Joint Board of Moderators (JBM) as meeting the requirements for

Further Learning for a Chartered Engineer, and as a non-technical MSc for holders of a BEng degree that partially meets the educational base requirement for Chartered Engineering status. Some parts of the programme will also seek certification from the Project Management Institute.

The teaching and learning strategy takes into consideration the learning outcomes, the nature of the subject and the student intake, and the need for students to take greater responsibility for their own learning as they progress through the Programme. Our strategy begins with the end in mind. We want students to become great construction and project managers who are able to provide holistic and creative solutions, and who are great problem solvers and great team-workers with a strong business acumen and leadership skills. This should mean that by the end of their study with us they can move seamlessly into the world of work, academic research or become an entrepreneur.

The teaching and learning methods have been selected to engage students in developing their fundamental knowledge and understanding through formal learning opportunities such as lectures, seminars and tutorials and informal and social learning through team-working in projects and competitions. Multiple means of engagement will be used to keep students purposeful and motivated, with a sustained effort throughout their learning journey. Team-working will be used to foster collaborations and a sense of community between the students. Opportunities will also be provided for self-evaluation and reflection, so that students can learn to self-regulate.

Study with us will include formal lectures (including those from the Visiting Professor and guest speakers from industry), but these will always be interactive and two way. We want to develop students' understanding of the vast array of opportunities open to today's professional engineer and therefore we look to incorporate aspects of real-world engineering problems and solutions where possible. To this end we make use of case studies, practical demonstrations, and also provide an array of resources and background information from which students can deepen their comprehension. Several opportunities will be provided for students to engage with industrial experts, through activities such as visiting guest lectures and organised site visits. The Department of Civil and Structural Engineering also liaises closely with professional institutions such as the IStructE and ICE, providing many networking and development opportunities for our students.

Most teaching material is provided online in advance of the teaching sessions, allowing students to customise the display of information and their learning experience as a whole. Throughout the programme, lots of opportunities are provided for students to design their own solutions and to express their own ideas, choosing from a variety of tools and methodologies. Our students will actively participate in the processes of knowledge acquisition and creation through research-enriched teaching and research-engaged learning. An emphasis is also placed on the importance of planning and goal setting, allowing students to forge a learning pathway that is suitable for their needs, while respecting the requirements of programme, and the needs of others, when working within a team.

As part of our focus on building a learning experience which will prepare students for the world of work, our curriculum has been developed using the CDIO framework. This means that our learning strategy will be to encourage students to work in teams to Conceive potential solutions, Design new products processes or services, Implement (or model) and

test those designs, and Operate the product or solution. In line with the CDIO philosophy students will have numerous opportunities to be an active learner, to work as an engineer on real-world projects.

The University recognises the importance of providing pastoral support, taking into consideration all aspects of our students' journeys and development. All students are allocated a personal academic tutor, with whom they meet regularly to receive guidance on their learning and development. The University also operates a wide range of support services covering areas such as disability, counselling, faith advisors and careers.

The University of Bradford is well known for attracting students from a wide variety of backgrounds, experiences and countries. The University of Bradford encourages and supports women in engineering, celebrating events such as International Women in Engineering Day. Some of the staff in the Faculty of Engineering and Informatics are also STEM ambassadors, who actively promote science and engineering subjects to wider audiences. Female staff and students are an integral part to the University of Bradford's Faculty of Engineering and Informatics and Faculty of Management, Law and Social Sciences. The University has held Bronze Athena Swan accreditation on an institutional level since 2015, demonstrating our commitment to striving for gender equality. The University of Bradford's modus operandi, Making Knowledge Work, is embedded in the philosophy of this programme. The Civil Engineering Society at the University of Bradford provides a social as well as academic platform for all students and staff to socialise, interact, share experience and run extra curriculum activities.

Assessment Strategy

In the same way that our teaching and learning strategy is designed to prepare students for the world of work, academic research or entrepreneurship, our assessment methods incorporate a wide range of different methods designed to meet the needs of industry, the accrediting bodies as well as prepare students for a potential academic research career.

Assessment is a key part of the learning process of our students. It is only through challenging themselves to express what they have learned or put it to practical use, that they can complete the learning journey and assess for themselves if they have understood what they have been taught and are able to apply and use those skills and knowledge. There are two forms of assessment, formative and summative assessments. Formative assessment provides an opportunity for our staff to give students feedback during their learning. This feedback is designed to help and guide their learning. All of the modules will have some formative assessment, and this may be in various forms, including discussions or questioning from their supervisor, tests, practical activities, et cetera. These formative activities are crucial if students are to make best use of their learning experience and they are designed to prepare students for their summative assessment. Summative assessment is how we grade the work on a module and the details of this assessment will be available from the beginning of the module so that students understand how their grade will be determined.

Assessment will mostly be by a combination of formal written examinations, individual/group coursework and presentations, depending on the module. The methods

of assessment of transferable skills are built into the structure of the various assessment methods.

Assessment Regulations

Whilst this Programme conforms to the general principles set out in the standard University Taught Postgraduate Assessment Regulations which are available at the link www.bradford.ac.uk/regulations the following exception(s) apply to these regulations **while the University is in the process of seeking accreditation:**

- To be eligible for an accredited MSc award, 160 credits must have a minimum mark of 50% with the remaining 20 credits with marks at a minimum of 40%.
- Students who achieve a mark between 40%-49% in up to 60 credits worth of modules will be permitted one supplementary assessment attempt to support them to remain eligible for the accredited MSc with no more than 2 attempts in any module.
- If the above requirements are not met, but the University's postgraduate regulations are complied with, then a non-accredited degree will be awarded with the title of MSc Engineering (Construction and Project Management).

Curriculum

Students will complete 60 credits in each semester, taking 3 20-credit modules during Semesters 1 and 2, and completing the MSc project in Semester 3. They may commence the programme in either September (studying in the order S1, S2, S3) or January (studying in the order S2, S3, S1).

The suitability of options for a Construction and Project Management programme according to professional bodies such as the Project Management Institute is determined by your previous studies or recognised prior learning. Most students should expect to study the core modules and the Project Management option unless an exception applies.

Please note: the curriculum may change, subject to availability and the University's programme monitoring and review processes.

Table 1: Core Modules

Study Period	Code	Title	Credit	Level
Semester 1	CSE7017-B	Management of Project Procurement and Construction Contracts	20	FHEQ 7
Semester 1	ENB7008-B	Supply Chain Management and Production	20	FHEQ 7
Semester 2	CSE7008-B	Construction Management	20	FHEQ 7
Semester 2	ENB7007-B	Risk Assessment and Management	20	FHEQ 7
Semester 3	ENG7002-E	MSc Project	60	FHEQ 7

Table 2: Optional Modules (pick 2 from 5)

Study Period	Code	Title	Credit	Level
Semester 1	CSE7016-B	Sustainability in the Built Environment	20	FHEQ 7
Semester 1	LAW7030-B	Sustainable Development Law in Contemporary Business Society	20	FHEQ 7
Semester 2	LAW7047-B	International Commercial Dispute Resolution	20	FHEQ 7
Semester 2	ENB7009-B	Project Management and Six Sigma	20	FHEQ 7
Semester 2	CSE7018-B	Building Information Modelling	20	FHEQ 7

Module Selection Criteria:

If you completed an undergraduate Civil and Structural Engineering degree at the University of Bradford:

- but have not previously studied a module covering Project Management and Six Sigma, you must take LAW7030-B and ENB7009-B to be eligible for the target (accredited) award.
- including Project Management and Six Sigma, you will study LAW7030-B in Semester 1 and may select either of LAW7047-B or CSE7018-B in Semester 2 to be eligible for the target (accredited) award.

If you have no prior study at the University of Bradford:

- you will study ENB7009-B in Semester 2 and may select either of CSE7016-B or LAW7030-B in Semester 1 to be eligible for the target (accredited) award.

Achievable Awards

Students will be eligible to exit with the award of **Postgraduate Certificate** if they have successfully completed 60 credits and achieved the award learning outcomes.

Students will be eligible to exit with the award of **Postgraduate Diploma** if they have successfully completed at least 120 credits and achieved the award learning outcomes.

Students will be eligible for the award of **Degree of Master** if they have successfully completed at least 180 credits and achieved the award learning outcomes.

Admission Requirements

We take into consideration a number of factors when assessing your application. It's not just about your grades; we take the time to understand your personal circumstances and make decisions based on your potential to thrive at university and beyond.

In addition to the standard requirements of the University of Bradford, we specifically require that all applicants have at least a second-class Bachelor's degree with Honours or equivalent in a relevant discipline such as Science, Engineering, or Technology.

Students may commence the programme in either September or January. They will complete 60 credits in each semester, taking 3 20-credit modules during Semesters 1 and 2, and completing an MSc project in Semester 3.

International students are welcome to apply and should check their country page website for details of equivalent qualifications: <https://www.bradford.ac.uk/international/country/>

For all students whose first language is not English, the standard postgraduate English language requirements for the University apply and these are listed at:
<https://www.bradford.ac.uk/international/entry-requirements/>

Access and Recognition of Prior Learning

Applications are welcome from students with non-traditional qualifications, and/or significant personal/professional experience. Candidates who do not fulfil the normal entry requirements but have extensive industrial experience related to Civil Engineering are considered on an individual basis. However, please be aware that the programme is not suitable for candidates solely with business and management study/experience.

The University of Bradford has always welcomed applications from disabled students. To discuss adjustments or to find out more about support and access, you may wish to contact the Disability Service before you apply at www.bradford.ac.uk/disability/before .

Applications are particularly welcomed from women, returners to study (those aged 26+ at the start of the programme), armed forces families, carers and care leavers, estranged or orphaned learners, refugees and asylum seekers, and Romani or Traveller families.

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme: www.bradford.ac.uk/teaching-quality/prior-learning/

Please note: the admission requirements may have changed since this document was published. For entry information relating to the current cycle please check the course website:
<https://www.bradford.ac.uk/courses/pg/construction-and-project-management/>
