UNIVERSITY of BRADFORD

Faculty of Engineering and Informatics

MSc Construction and Project Management Programme Specification

Academic Year:	2020/21
Degree Awarding Body:	University of Bradford
Final and interim award(s):	[Framework for Higher Education Qualifications (FHEQ) level 7] MSc Construction and Project Management Postgraduate Diploma Construction and Project Management Postgraduate Certificate Construction and Project Management
Programme duration:	January and September intake 1 year full-time
QAA Subject benchmark statement(s):	Engineering Business and Management
Date last confirmed and/or minor modification approved by Faculty Board	December 2020

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.

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, in recent years, 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 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. 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. You will acquire a strong business acumen and a solid understanding of the legal issues surrounding construction management in addition to a variety of transferrable skills. 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 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. Postgraduates will be able to

move directly into responsible roles in employment with a minimum of additional training. They will achieve this aim by:

- Being provided with a supportive, structured environment in which they are encouraged to develop independent learning skills.
- Developing subject knowledge and understanding, developing discipline skills, and developing personal transferable skills, to enable them to pursue programmes of advanced study, or to move directly into responsible employment.

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. 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.

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.

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.

Programme Aims

The aims of the MSc programme are to:

- 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.
- 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.
- Enable students to carry out independently, but under supervision, a specific research project in construction and project management.

Programme Learning Outcomes

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

LO1 Evidence comprehensive understanding of the knowledge areas of construction and project management.

LO2 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.

LO3 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.

LO4 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.

LO5 Demonstrate an advanced knowledge of the core quality processes and explain the role of each process in planning and managing projects.

LO6 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.

LO7 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.

LO8 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.

LO9 Work effectively and professionally in a team in order to meet shared objectives.

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

LO10 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.

LO11 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.

LO12 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 award of Degree of Master at FHEQ level 7, students will be able to:

LO13 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.

LO14 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.

Curriculum

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 the MSc project in Semester 3.

FHEQ Level	Module Code	Module Title	Core/ Option	Credits	Semester	Sept intake	Jan intake
7	CSE7017-B	Management of Project Procurement and Construction Contract	C	20	1	Sept-Jan 2020-21	Sept-Jan 2021-22

7	ENB7008-B	Supply Chain Management and Production	C	20	1	Sept-Jan 2020-21	Sept-Jan 2021-22
7	CSE7016-B	Sustainability in the Built Environment	O	20	1	Sept-Jan 2020-21	Sept-Jan 2021-22
7	LAW7030-B	Sustainable Development Law in Contemporary Business Society	O	20	1	Sept-Jan 2020-21	Sept-Jan 2021-22

FHEQ Level	Module Code	Module Title	Core/ Option	Credits	Semester	Sept intake	Jan intake
7	CSE7008-B	Construction Management	C	20	2	Jan-May 2021	Jan-May 2021
7	ENB7007-B	Risk Assessment and Management	C	20	2	Jan-May 2021	Jan-May 2021
7	ENB7009-B	Project Management and Six Sigma*	O	20	2	Jan-May 2021	Jan-May 2021
7	LAW7036-B	Commercial Dispute Resolution	O	20	2	Jan-May 2021	Jan-May 2021

FHEQ Level	Module Code	Module Title	Core/ Option	Credits	Semester	Sept intake	Jan intake
7	ENG7002-E	MSc Project	C	60	3	May-Sept 2021	May–Sept 2021

*The module is compulsory for those who have not taken it during their UG degree.

Students who have not previously studied in the University of Bradford may choose one option from Sustainability in the Built Environment and Sustainable Development Law in Contemporary Business Society. However they must take Project Management and Six Sigma during Semester 2

Students who have completed their undergraduate Civil and Structural Engineering degree in the University of Bradford and have not previously taken Project Management and Six Sigma must take Sustainable Development Law in Contemporary Business Society and Project Management and Six Sigma.

Students who have completed their undergraduate Civil and Structural Engineering degree in the University of Bradford and have previously taken Project Management and Six Sigma must take Sustainable Development Law in Contemporary Business Society and Commercial Dispute Resolution.

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.

Learning and Teaching Strategy

Thus this MSc programme at the University of Bradford is designed to provide education on Construction and Project Management 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. Due to Covid-19, for many modules, the teaching and learning methods include a combination of online lectures/tutorials and seminars (synchronous or asynchronous), and workshop events etc.

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. 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 that 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

This Programme conforms to the standard University Regulations which are available at the following link: https://www.bradford.ac.uk/regulations/

Admission Requirements

The University welcomes applications from all potential students and most important in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The standard entry requirements for the programme are as follows:

In addition to satisfying the general admissions requirements of the University of Bradford, students must have a first degree in relevant discipline; normally a Second-class Honours degree or equivalent in Science, Engineering, or Technology. Candidates who do not fulfil

the normal entry requirements but have extensive industrial experience related to the Built Environment or Construction Management are considered on an individual basis.

Where English is not a first language, a test of written and spoken English normally needs to have been passed at grade 6.0 for IELTS or 550 for TOEFL (or 250 for the computer-based test) or above.

Applications are welcome from students with non-standard qualifications or mature students (those over 21 years of age on entry) with significant relevant experience.

Recognition of Prior Learning

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.

Minor Modification Schedule

Version Number	Brief description of Modification	Date of Approval (Faculty Board)
1	Updated January intakes	December 2020
2	Specification reformatted and made accessible	February 2021