

CORE MODULES: BSc (Hons) Construction Management Top-up

You must take modules worth 120 credits at each level of the course. Each module is worth a specified number of credits.

Year one for full-time students (Level 5)

Project Administration (15 credits)

- *This module is designed for construction students with a general background in construction subjects and who wish to learn how to manage and administer a building contract from a legal and economic standpoint. Students will learn how contracts are constructed, be able to interpret their contents and manage the more routine legal and financial aspects through the completion of a contract and its final account. Students will learn through problem solving and case study activity that simulates a live project and the likely circumstances that arise. It is a module which has direct application to practice and will be of value in terms of the student employability.*

Construction Resource Management (30 credits)

- *Module is designed to allow students to study and acquire the theories, skills and competencies applicable to identify and manage the resources required to operate a construction organisation and in particular the development process. Students will develop a number of key management skills which enable efficient project and organisational situations to be changed. Students will be expected to appreciate and understand how the macro economic environment affects the way managers design micro economic systems and from this manage resources. Systems theory is used to help students understand how organisations function and is used to support organisational design decision making. Supply chain management is examined in some detail with case studies from other industries used as a focus for improving approaches adopted in construction. A broad understanding of financial management, in a construction context is developed. The way in which financial resources are measured, administered and reconciled in a systematic fashion will be studied by students. Students will be given the opportunity to evaluate the significance of how the human resource is procured, retained and motivated. An appreciation of the relative merits/demerits of the construction industry when compared to other industries will be developed with particular emphasis on employment and motivation. Employability Skills: Analytical skills will be developed via the use of financial appraisal techniques, budgetary control tools and cashflow forecasting systems. Risk management with particular focus on health and safety appraisal of business and project scenarios. Structured problem solving and decision making will be at the heart of studies in this module.*

Measurement (15 credits)

- *This module intends to introduce an understanding and appreciation of quantification and measurement through the various stages of the development process of a building project. The module seeks to develop skills in interpreting drawn and written information and of presenting that material in appropriate quantified descriptive form to facilitate the analytical processes necessary for accurately assessing the cost of construction works. The content of the module will cover the knowledge, skills and competences necessary to quantify a range of construction and civil engineering work in accordance with the relevant standard forms of measurement from project initiation through to design completion. The students will be expected to interpret and apply the principles and rules contained within the appropriate measurement rules and demonstrate an understanding of the need to quantify work at the various stages of design development.*

Advanced Construction Technology (15 credits)

- *This advanced technology module is designed to develop students' technical knowledge and the skills to apply that knowledge in the context of both new build and refurbishment work. The focus of this module leads on from domestic construction and provides a broad understanding of the way we build commercial and industrial buildings. The module will consider the functional requirements of single-storey industrial sheds and multi-storey framed structures in concrete and steel. In addition, the effects of the latest legislation in relation to fire and health & safety on the construction process are examined. A great deal of guidance is given to students on skill development. The application of Building Regulations and the associated Approved Documents to both commercial and industrial buildings will be explored. Students will compare different construction methods, and analyse suitable applications for each method. In particular, frames, cladding systems, internal walls, structural flooring and roofing will form key areas of the module. Environmental performance is a central part of this module and students will investigate how to ensure high levels of environmental performance through using insulation, maintaining airtightness and the installation of building services and controls. Students will have the opportunity to compare the installation requirements of natural and forced ventilation systems and different methods of heating and cooling commercial and industrial buildings. The provision of high quality IT and communications infrastructure systems will also be investigated.*

Analysis and Control of Production Costs (15 credits)

- *This module intends to introduce an understanding and appreciation of the production of costs associated with a range of construction operations and projects. Students will therefore study the principles and methodology in the computation of construction costs throughout a project's life cycle, including relevant commercial factors and risk etc. This will involve identifying and assessing all direct and indirect costs related to construction works as well as an understanding of the factors required to be considered at tender adjudication. Students will also gain an understanding of the measurement and pricing of maintenance and repair work involved in the running and upkeep of buildings using the relevant measurement rules and recognised good practice. Students will also consider the use of Building Information Modelling within project development.*

Environmental Building Performance (15 credits)

- *This module has been designed to give the students an insight into the scientific basis of the environmental performance and construction of buildings and their services. The main focus is on the introduction of modelling tools that can be used to simulate a building's performance and its effect on the environment. The main approach adopted is a scientific one, focusing on the analysis of a problem or set of problems, followed by the synthesis of a solution. Considerable emphasis is placed on the use of environmental criteria to assess a building's thermal, visual and aural performance. A number of scientific methods are explored and there will be a limited amount of practical experiment-based work. Various technical solutions for lighting, heating, ventilation and air conditioning a building will be explored. The passive design features of a building are also explored. Students will be introduced to standard methods of assessing and measuring the environmental performance of buildings, such as Passivhaus and BREEAM.*

Plus 15 credits of optional modules dependant on pathway

- *This module examines the process of production planning for construction works, analysing the use of production planning techniques and how they may aid the construction process. It analyses production planning techniques such as programming of the works using bar charts, method statements and resource scheduling. The module also enables the student to prepare cash flow forecasts based on their production programmes and the effect that such forecasts may have on the project. The module is project based and of a practical nature, which allows the student to use the above project planning techniques in a 'live situation' generated by the case study, where the student will be given the opportunity to react to simulated events during the project life cycle such as delays and disruptions to the works.*

Final year for full-time students (Level 6)

Undergraduate Major Project (30 credits)

- *This module represents the culmination of each student's development through learning undertaken on their programme. It provides an opportunity for students to demonstrate their ability to undertake a substantial original study to investigate a subject, issue, or problem and to produce a usable outcome. Students carry out an original piece of work that may be either an expert study or a research study. Advice will be offered on choosing a research topic and producing a proposal in a briefing session delivered towards the end of the academic year prior to that in which students undertake the project. The project will be undertaken under the supervision of an academic member of staff but the early part of the module in semester one is also supported by taught classroom sessions. These taught sessions enable students to develop research and study skills in respect of reviewing and analysing literature, developing a research question, collecting, presenting and analysing data, and managing the research process.*

Construction Technology and Innovation (15 credits)

- *This module has been designed for stage 3 students, so as to capitalise on previous technology modules. It will consist of a series of lectures together with structured tutorial sessions. The lectures will focus on a particular topic whilst the tutorial sessions will be used to allow the students to work in small groups. These tutorial meetings will be formally conducted within accepted procedures, and their content will be properly recorded in minutes. In the lecture sessions the focus will be on current construction issues and trends of a technological nature. Methods of special construction will be critically reviewed. The module culminates in a formal presentation, during which the students are encouraged to use a variety of illustrative methods to support their work. This is backed up by written proposals containing elements of both group and individual work. Employability skills Students will acquire knowledge related to current construction issues and special forms of construction. They will also demonstrate an understanding of alternative forms of construction. The module will improve their communication, team building and intellectual skills as well as developing professional awareness.*

Project Evaluation and Development (15 credits)

- *The module provides the student with the opportunity to explore the various issues that need to be evaluated when considering a building development from inception until final completion and retention and / or disposal of the building. The context and content of this module integrates knowledge and skills obtained from previous management and design modules. It examines them in a holistic manner and explores their complex inter-relationships. Issues related to the client, the site, planning, financial appraisal, design technology, legal, health and safety and environment will all be examined within a theoretical and practical framework. The module develops the student's ability to comprehend the totality and implications of the development process and to make reasoned value judgements as to its potential feasibility. This is achieved by a detailed examination of local planning policies for the site coupled with a financial analysis of the proposed scheme by use of traditional and modern forms of valuation techniques. The module also focuses on project appraisal, pre construction processes, construction and post construction processes, marketing disposal and evaluation. Analytical skills will be developed through employment of financial appraisal and risk management strategies.*

Environmental Management for the Construction Industry (15 credits)

- *The growth in environmental awareness, at all levels from local to international, over recent decades is introduced and considered in the context of the construction industry. Legislation and other pressures for the protection of the environment are considered, including pollution control and environmental impact assessment. The advantages and disadvantages of formal and informal environmental management systems are examined. Design implications of concepts such as life cycle analysis are considered. It is intended that the student should, by the end of the module, look at environmental management, not as a burden, but as a fundamental part of the efficient management of the construction industry. Such an outlook is likely to enable the student to guide their present or future employers towards a sustainable future.*

The Strategic Construction Entrepreneur (15 credits)

- *This module aims to develop students' entrepreneurial skills within the context of the contemporary construction industry. The students will develop their knowledge and understanding of current industry contexts (e.g. relating to local and global markets, and wider political and economic climates), industry initiatives (e.g. Lean, BIM, digital construction, AI, collaborative cultures, ethics), and industry practices (e.g. H&S strategy, zero harm, corporate social responsibility, sustainability, supply chain integration). This module will be delivered in the form of 12 seminars with industry experts (which includes the lecturing team), with student-led debate and discussion strongly encouraged during the sessions. From their enhanced position, students will then be able to suggest strategic directions, new avenues of opportunity and potential markets for entrepreneurial development, from start-up, SME and larger organisational perspectives.*

Running a Construction Business (15 credits)

- *This module is designed to enable students to acquire the knowledge and competencies to run a contracting organisation in a highly volatile economic environment. Students will use a computer simulation package, which allows them to run a construction business using real world data. Students will work in teams when running the simulation, and will analyse organisational data, with each student required to produce an individual report. However, the key aim of this module will be to develop an understanding of how to make changes and decisions in a business strategy so to meet tactical organisational objectives. Students will need to also study financial management in some depth to gain an understanding of how financial data is converted into usable information identifying historical performance, which can be interpreted as part of a manager's decision-making toolkit. Students will become familiar with the statement of cash flows, the income statement and the statement of financial position and their usefulness in assessing the amount of wealth created and the accumulated within the business. It will be important to acquire a range of analytical skills which enable students to measure company performance from a number of standpoints and to be critical of the way a company has performed with reference to its desired objectives in the context of the prevailing economic climate. Ancillary to this aim will be the acquisition of a critical awareness of the way in which organisations function within an environment made up of threats, opportunities and constraints.*

Project Management (15 credits)

- *This module is designed to develop the students' knowledge of basic management theories, and to demonstrate their relevance and application in the planning, organisation and control of construction projects. Students will be encouraged to research appropriate theories, skills and competencies related to the life cycle of a project from the client's conceptual vision, through the project identification and definition stages, applying appropriate project implementation, execution and control processes to effect successful closure of a project. The module aims to change the students vision from a contract administration viewpoint to the broader perspective required in the project management approach. For many students this will involve standing back from their everyday role on a project, and to consider the holistic integrated nature of the project management role on a construction project. Thus, whilst recognising the value of many of the skills acquired by students in the contract administration modules, the module will develop the specialist techniques which question the usual functional and organisational boundaries. Students will be encouraged to develop an appreciation of the strategic relevance of project management, and the unique features of project management which distinguish it from other forms of management. Students will be required to research and develop operational techniques used in the planning, scheduling and control of projects to demonstrate that they understand the processes and mechanisms necessary to ensure the effective delivery of the project objectives.*