

# CORE MODULES: HNC Construction

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

## Level 4 (HNC)

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### Individual Project (15 credits)

- The ability to define, plan and undertake a project is a critical set of skills needed in various roles within the construction industry. Identifying appropriate information and analysing this, to formulate clear results or recommendations, is required to underpin many of the processes that inform construction projects. The aim of this unit is to support students in using and applying the knowledge and skills they have developed through other areas of their studies to complete and present an individual project. In addition, this unit will provide students with key study skills that will support them in further study. Students will be able to identify, define, plan, develop and execute a successful project by working through a clear process. They will develop a project brief; outlining a problem that requires a solution, as well as a project specification, the specific requirements of which the final outcome must meet. They will research the problem, undertaking a feasibility study, and consider a range of potential solutions using critical analysis and evaluation techniques to test, select and contextualise their preferred solution. Students will provide a work and time management plan, keeping a diary of all activities, reflecting on their process and their learning throughout the project.*

### Construction Technology (15 credits)

- The basic principles of construction technology have not changed for hundreds of years. However, the materials and techniques used to achieve these basic principles are constantly evolving; to enable the construction industry to deliver better quality buildings. Scarcity of resources and the continuing demand of more sophisticated clients, end users and other stakeholder interests, are driving the construction industry to provide buildings which facilitate enhanced environmental and energy performance, and greater flexibility, in response to ever increasing financial, environmental, legal and economic constraints. This unit will introduce the different technological concepts used to enable the construction of building elements; from substructure to completion, by understanding the different functional characteristics and design considerations to be borne in mind when selecting the most suitable technological solution. Topics included in this unit are: substructure, superstructure, finishes, building services and infrastructure components. On successful completion of this unit a student will be able to analyse scenarios and select the most appropriate construction technology solution.*

### Science & Materials (15 credits)

- Science and material performance are intrinsically linked through the need to create structures and spaces that perform in both mechanical operation and in providing human comfort. This unit aims to support students to make material choices to achieve the desired outcomes of a brief. This is approached from the perspective of materials being fit for purpose; as defined by testing standards and properties, but also by consideration of the environmental impact and sustainability. Awareness of health & safety is considered alongside the need to meet legislative requirements. The topics covered in this unit include: health & safety; storage and use of materials; handling, and problems associated with misuse and unprotected use; environmental and sustainable consideration in material choices; and human comfort performance parameters. Material choice is developed through the understanding of testing procedures to establish conformity to standards and define performance properties. The performance of materials to satisfy regulations and provide appropriate comfort levels is addressed through design and calculations. Upon successful completion of this unit students will be able to make informed decisions regarding material choices; based on understanding the structural behaviour of materials established through recognised testing methods, sustainability, context of build, and health & safety. Students will also be able to perform the calculations necessary to establish anticipated performance of the materials in-use and therefore determine their compliance with regulations and suitability.*

## **Construction Practice and Management (15 credits)**

- *The aim of this unit is to develop and provide students with a holistic understanding of construction practice and management processes. Students will investigate and research the modern construction industry, both from the practical skills embedded within the industry through to its linkage with development on-site and the connection with construction management; including roles within the industry. The unit compares and investigates small, medium and large construction companies within the market place and how construction processes, for development, have evolved. Students will also explore how health & safety has evolved within the industry, including how the major stakeholders, from companies to site operatives, have embedded health & safety into their preferred areas of development and careers. In addition, students will explore Building Information Modelling and how it fits into construction processes/sequences ranging from domestic to large-scale and design and build projects. The knowledge from this unit will provide students with the understanding of modern construction and management; the skills, management of people and projects, and how health & safety have changed the perception of the construction industry.*

## **Legal and Statutory Responsibilities in Construction (15 credits)**

- *The construction industry is perceived to be a dangerous, noisy and disruptive area of work which impacts on the use of land and buildings. It is, however, governed by a range of areas of law to ensure that professionals; such as architects, quantity surveyors and contractors, comply with legal and statutory requirements to design, construct and deliver buildings and alterations using safe working practices and utilising land appropriately. This unit will introduce the different areas of law that are relevant to the construction industry throughout the development process. This includes applying for planning approval to undertake construction activities and using building control regulations to evaluate building design and alterations at the preconstruction stage. The unit will explore the laws of occupiers' liability, trespass and nuisance to manage construction activities on-site, and the legal aspects of the sale and leasing process involved in the disposal of buildings; using the law of contract and land law. Topics included in this unit are: planning law, building control regulations, insurance, the law of tort and the law of contract and land law. On successful completion of this unit students will be able to apply legal and statutory requirements and processes common to the construction sector.*

## **Construction Information (Drawing, Detailing, Specification) (15 credits)**

- *To achieve successful projects in the built environment requires a range of different types of information: to describe the project, quantify the materials, provide clear instructions for assembly and erection, and to allow for accurate costing and management. Throughout the process of design, construction and post-occupancy management, information is critical. Through this unit students will develop their awareness of different types of construction information and their uses in the process. Students will engage in the production, reading and editing of construction information, in order to understand how this information informs different stages of the process. Using industry standard tools and systems, students will consider the ways that information may be shared and, through this, the value of collaboration in the information process. Topics included in this unit are: construction drawing, detailing, Computer Aided Design (CAD), Building Information Modelling (BIM), schedules (door, window, hardware, etc.), specifications, schedules of work, bills of quantities and information distribution and collaboration.*

## **Surveying, Measuring and Setting Out (15 credits)**

- *Infrastructure and new buildings are essential requirements of modern life. In both construction and civil engineering there is a need to conduct initial surveys to assist the design team in establishing a clearly defined starting point. Once designed, the priority becomes to 'set out' the structures to the required accuracy to facilitate the construction process. Finally, 'as built' surveys are necessary to assist future maintenance and improvements to the built asset. This unit explores the techniques used to set up controls and conduct topographic surveys. It also covers communication of results and methods of setting out structures. On successful completion of this unit students will be able to set up and assess the accuracy of control points. From these or any other control points the students will be able to complete a topographic survey or set out a structure. The students will also be able analyse errors in setting out and surveying.*

## **Site Supervision and Operations (15 credits)**

- *The construction of buildings and infrastructure involves many different types of work and many different people. The skills required to successfully manage the diverse groups of people on a building site, and to monitor and assess their work, is critical to both the success of the project and to ensure the safety of those working. Through this unit students will develop the skills and techniques necessary to manage the people and processes of a building site, ensuring the quality of work, safe working practices and the interactions of different 'trades'. Topics covered in this unit include: evaluating construction information, monitoring quality, identifying and notifying of defects, sustainable methods of construction, site safety regulations, health & safety regulations, people management, performance management, site meetings, contractor and sub-contractor relations.*