

**Pearson BTEC Level 5 HND in Construction and the Built Environment (Civil Engineering) (QCF) 土木工程高級文憑 (Reg. No.: 252255)**

**1. Design Principles & Application for Construction & the Built Environment**

This module enables learners to develop their ability to evaluate the planning and design phases and consider the environmental impact of construction projects. Learners will explore the roles and legal responsibilities of all parties involved in construction projects.

**2. Science & Materials for Construction & the Built Environment**

This module introduces scientific principles relevant to the study of construction and the built environment and provides learners with a fundamental understanding of the properties and use of construction materials.

**3. Applied Mathematics for Construction & the Built Environment**

This module provides learner with an understanding of analytical techniques and the mathematical skills needed to solve construction and engineering problems. This module has been designed to enable learners to use mathematical processes to solve construction, civil engineering and building services engineering problems.

**4. Management Principles & Application for Construction & the Built Environment**

This module introduces learners to the principles and application of management as they relate to the technical and professional disciplines of construction, civil engineering and building services engineering. Learners will gain an understanding of how these principles may be applied to the management of construction, building services engineering or civil engineering activities through the application of recognized management techniques.

**5. Group Project in the Construction Industry**

This module will develop learner's skills in terms of the evaluation and resolution of realistic practical problems and the ability to work as part of a team. This module also enables the application of knowledge, understanding and skills developed in other units, and where possible experiences from work, to a major piece of work.

**6. Health, Safety & Welfare for Construction & the Built Environment**

On completion of this module, learners will understand current health, safety and welfare legislation applicable to the construction and built environment sector. Learners will understand how to identify and record hazards, assess risks and select appropriate control measures to prevent or mitigate ill health and injuries on site.

**7. Site Surveying Procedures for Construction & the Built Environment**

This module is designed to develop learners' skills in using modern surveying equipment to carry out a range of typical site surveying procedures in the construction and built environment sector. This module develops the understanding and skills required to perform surveying calculations.

**8. Engineering Geology & Soil Mechanics**

This module provides learners with skills to classify soil types and establish primary design parameters for soils. Learners will discuss the significance of the ground investigation element of site investigation. Learners will also gain a working understanding of the tests needed to classify soils and establish their design parameters.

**9. Civil Engineering Technology**

This module introduces learners to the methods and techniques used to create civil engineering structures. This module has a strong theoretical underpinning and learners will develop an understanding of the technical requirements for substructures and swiss replicas.

**10. Structural Analysis & Design**

This module focuses on the skills required to analyse construction designs and appraise statically determine structures. Learners will design common structural elements to the appropriate British Standard, code of practice or European Code of Practice.

**11. Hydraulic Principles and Applications**

This module focuses on the forces in fluids, predominantly water, both at rest and in motion. Learners will develop the skills needed to use measuring instrumentation under laboratory conditions and will have an opportunity to record, and analyse data, and present the results in an appropriate format. Learners will carry out calculations to analyse hydrostatic forces in relation to civil engineering

projects. This module explores fluid kinetics, and its application to the design of pipelines and channels. Learners will develop an appreciation of hydraulic machinery to enable them to understand pump and pipeline system problems. Learners will also investigate the use of hydraulic structures to measure and control the flow of fluids in channels.

**12. Contractual Procedures & Procurement for Construction & the Built Environment**

This module develops a working knowledge of the nature and purpose of the legal requirements and procurement arrangements used in the construction and built environment sector. Learners will also gain knowledge of the parties and organisations involved in construction projects and how current issues and best practice are applied to the procurement of contracts.

**13. Measuring, Tendering & Estimating for Construction & the Built Environment**

The principles and techniques of estimating form an integral part of the tender process. The identification and selection of contractors and the available methodology are contrasted in terms of their appropriateness for construction procurement. Learners will gain an understanding of the contract documentation required for the tender process along with the constraints on a tender both in the pre-stages and post-stages of procurement.

**14. Project Management for Construction & the Built Environment**

This module enables learners to demonstrate their understanding of project management and the role of project managers. Learners will have the opportunity to understand how the client's objectives affected the project and how these objectives can be achieved through successful project management.

**15. Applied Mathematics for Complex Engineering Problems**

This module will enhance learners' capabilities in respect of trigonometry, algebra, calculus and statistics. Trigonometric functions are explored largely as a foundation for their application to the understanding of waves. Additional techniques, including matrices and numerical methods, are introduced so learners are able to solve linear and non-linear algebraic equations. This module will enhance learners' capabilities in respect of trigonometry, calculus and statistics. Trigonometric functions are explored largely as a foundation for their application to the understanding of waves. Additional techniques, including matrices and

numerical methods, are introduced so learners are able to solve linear and non-linear algebraic equations.

**16. Advanced Civil Engineering**

This module provides learners with an understanding of specialised methods and techniques used in complex civil engineering activities. There is a strong theoretical understanding underpinning the study of this, and there will be considerable emphasis on learners understanding the selection of appropriate methods and resources through a variety of realistic case studies.