

Civil Engineering Technician: Standard ref: ST0091 30-week programme*
Framework delivery model

Subject	No. of weeks	Content
Pre-arrival, L2 to be complete prior to college enrolment		
Functional skills	–	L2 Literacy L2 Numeracy
Block 1: 2 weeks		
Induction, initial assessment and study skills	1	An introduction to working as an apprentice at NCC; initial assessment activities based around civil engineering practices to ensure that our delivery is consistent with your own style of learning; guidance in becoming an effective learner to aid you in achieving the qualification
Civil engineering processes 1	1	A look at some of the principles of civil engineering infrastructure, including bridges, tunnels and major sustainability projects
Blocks 2 to 7: 24 weeks (six blocks of 4-week duration encompassing BTEC Level 3 Diploma in Civil Engineering. The elements of the qualification are outlined below)		
Unit 1: Construction principles	4	<p>Construction materials Properties of materials; properties of construction materials; manufacturing and processing of construction materials; degradation of construction materials; effects of temperature changes on construction materials; behaviour of structural members under load</p> <p>Solving practical construction problems Application of mathematical and statistical methods and techniques used in practical construction contexts</p> <p>Human comfort Heat; acoustics; lighting</p>
Unit 2: Construction design	4	<p>The construction design process Stages and tasks involved in the design process; factors that influence the design process</p> <p>Project information and building design</p> <p>Production Project information; initial project brief; design production; computer-aided design</p> <p>Construction methods and techniques Forms of low- and medium-rise structures; sub-structure and super-structure construction; sustainability</p>
Unit 4: Construction technology	2	<p>Common forms of low-rise construction Forms of low-rise construction, including frames and traditional and modular construction</p> <p>Foundation design and construction</p>

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		<p>Subsoil investigation; subsoil improvement; design principles; types of foundation</p> <p>Superstructure design and construction Walls; floors; roofs; internal finishes</p> <p>External works associated with construction projects Foul and surface water drainage; utility services; roads and footpaths; sustainable urban drainage system</p>
Unit 5: Health and safety in construction	2	<p>Health and safety legislation Health and Safety at Work Act 1974; Construction (Design and Management) Regulations 2015; Management of Health and Safety at Work Regulations 1999; Work at Height Regulations 2005; Control of Substances Hazardous to Health Regulations 2002; training and education</p> <p>Safe systems of work Health and safety preparation; construction phase health and safety; health and safety file</p> <p>Review of safety systems Accident reporting procedures; reviewing safety systems; changes to systems and procedures; skills, knowledge and behaviours</p>
Unit 6: Surveying	2	<p>Methods and technologies Linear, levelling and angular measurement; equipment used to perform fieldwork surveys; sources of systematic errors</p> <p>Fieldwork surveys Linear surveys; levelling surveys; read and record horizontal angles of a closed traverse; basic arithmetic operations; application of applied mathematical techniques</p> <p>Develop survey drawings Conventions used in survey drawings; production of survey drawings; corrected close traverse drawing</p>
Unit 9: Management of a construction project	2	<p>Principles and applications of management in construction Principles of management; applications of construction management techniques</p> <p>Purchasing and cost management techniques Application of purchasing methods; cost management techniques</p> <p>Programmes of activity Production control systems</p>
Unit 11: Site engineering in construction	2	<p>Setting out of construction works Setting out terminology; basic setting out</p>

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		<p>processes; interpreting drawn information to set out construction works; site engineering equipment</p> <p>Setting out of infrastructure works Setting out drainage; setting out embankments and cutting profiles; interpreting drawn information to set out roads</p> <p>Maintain horizontal and vertical control Horizontal and vertical control of structures; horizontal and vertical control of excavations</p>
Unit 15: Further mathematics for construction	2	<p>Algebraic and trigonometric techniques Transposition techniques; trigonometric techniques; construction-related problems</p> <p>Calculus Differential calculus; integral calculus; numerical integration</p> <p>Statistical methods Use of statistical methods in construction contexts</p>
Unit 23: Construction in civil engineering	2	<p>Methods and activities in earthworks Earthwork activities; earthmoving and compaction equipment; concreting equipment; temporary works; dewatering equipment; piling operations</p> <p>Substructure design Foundations; design and drainage systems; utilities</p> <p>Superstructure design Structural frames; retaining walls</p>
Unit 35: Structural mechanics	2	<p>Principles of structural behaviour Concepts; simple structural behaviour from given data</p> <p>Solve structural mechanics problems Beams; columns; frames</p> <p>Design of structural elements Beam design; column design; retaining wall</p> <p>Use of computers in structural analysis and design Computer software packages for design calculations; benefits and drawbacks of using computing software</p>
Block 8: 4 weeks		
Civil engineering processes 2	1	Designed to give you an all-round overview of fundamental civil engineering projects, this will examine hydraulic structures, rail systems and marine structures
Highways construction techniques	2	An opportunity to embed more technical setting out principles in terms of highway construction, and an examination of highway construction and maintenance principles and procedures
Preparation and recap for assessments; Enrichment opportunity	1	Recap, practice and preparation; portfolio preparation; enrichment activities (higher study)

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Contingency (allocated for resits and reassessment)	2* (if required)	Resitting and/or reassessment of external examinations
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