

Beamont Collegiate Academy Curriculum Map



Year: 11

Subject: Engineering (Constructing the Built Environment)

Intent	Implementation	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Clarity around knowledge	Theme / topic	Unit 2 – Controlled Assessment Task (Accommodation Scheduled issued to students to complete), 60% overall mark.				Unit 1 - Exam revision topics/units:	Course Complete
	Key substantive knowledge	<p>2.1 Identifying and calculating information:</p> <ul style="list-style-type: none"> Area volume length angles levels high-level design requirements <p>2.2 Writing and setting success criteria:</p> <ul style="list-style-type: none"> interpreting the client brief accuracy of the design work quality of presentation <p>2.3 Drawing plans:</p> <ul style="list-style-type: none"> block plans floor plans cross-sections scale drawings. <p>2.4 Drawing elevations:</p> <ul style="list-style-type: none"> internal external – rear (north); front (south); left (east); right (west). <p>2.5 Using the language of drafting:</p>	<p>2.6 Drawing two dimensional (2D) plans:</p> <ul style="list-style-type: none"> the conventions and requirements of 2D plans of construction designs scales used in different applications <p>2.7 Creating three dimensional (3D) virtual models and plans:</p> <ul style="list-style-type: none"> applying scenes, backgrounds and surroundings to a 3D building model rendering the external finishes (colour and texture) of a 3D building model using standard conventions adding features such as images of people, vehicles and landscaping to enhance a 3D building model creating 360o views of a 3D building model, including rotation adding building components, other details and colour to a 3D building model importing fixture models from a library and scaling to fit their 3D model. <p>2.8 Evaluating design tasks:</p> <ul style="list-style-type: none"> requirements of the brief 	<p>1.1 The sector</p> <p>1.2 The built environment life cycle</p> <p>1.3 Types of building and structure</p> <p>1.4 Technologies and materials</p> <p>1.5 Building structures and forms:</p> <p>1.6 Sustainable construction methods:</p> <p>1.7 Trades, employment and careers:</p> <p>1.8 Health and safety:</p>			

		<ul style="list-style-type: none"> • BS standards (BS 1992:2007 + A2:2016 and subsequent updates, Building Information Modelling) • presentation techniques • conventions – annotations; lines; hatching; a range of symbols • consolidation and presentation. 	<ul style="list-style-type: none"> • personally-set success criteria needs of end users, including their safety. 		
	Disciplinary knowledge	<p>2.1 Identifying and Calculating Information</p> <ul style="list-style-type: none"> • Site analysis and measurements: Gathering data on dimensions, environmental factors, and existing conditions. • Technical calculations: Applying formulas for structural loads, material quantities, and cost estimation. <p>2.2 Writing and Setting Success Criteria</p> <ul style="list-style-type: none"> • Defining design objectives: Establishing measurable goals for functionality, aesthetics, and sustainability. • Performance indicators: Criteria for evaluating energy efficiency, durability, and compliance with regulations. <p>2.3 Drawing Plans</p> <ul style="list-style-type: none"> • Floor plans and layouts: Creating scaled representations of spaces and room configurations. 	<p>2.6 Drawing Two Dimensional (2D) Plans</p> <ul style="list-style-type: none"> • Scaled 2D drawings: Producing accurate floor plans, sections, and site layouts. • Orthographic projections: Using 2D views to represent different aspects of a building. <p>2.7 Creating Three Dimensional (3D) Virtual Models and Plans</p> <ul style="list-style-type: none"> • 3D modelling software: Using tools like Revit or SketchUp to create detailed virtual representations. • Rendering and visualization: Creating realistic images to convey material finishes, lighting, and spatial relationships. <p>2.8 Evaluating Design Tasks</p> <ul style="list-style-type: none"> • Design review: Assessing if the design meets functional, aesthetic, and regulatory requirements. • Iterative improvement: Making adjustments based on feedback, testing, and performance outcomes. 	<p>1.1 The sector Understanding the construction industry's roles, regulations, and stakeholders.</p> <p>1.2 The built environment life cycle Phases of design, construction, use, maintenance, and demolition.</p> <p>1.3 Types of building and structure Residential, commercial, industrial, and civic buildings with varied purposes.</p> <p>1.4 Technologies and materials Innovative tools and sustainable materials used in construction processes.</p> <p>1.5 Building structures and forms Designs and frameworks that provide functionality and aesthetic appeal.</p> <p>1.6 Sustainable construction methods</p>	

		<ul style="list-style-type: none"> • Spatial arrangement: Ensuring efficient use of space and adherence to design standards. <p>2.4 Drawing Elevations</p> <ul style="list-style-type: none"> • Exterior views: Depicting the appearance of a building from different sides (front, rear, side). • Material and feature detailing: Showing textures, colours, and architectural elements. <p>2.5 Using the Language of Drafting</p> <ul style="list-style-type: none"> • Standard drafting terminology: Understanding terms like scale, dimension, section, and symbols. • Technical symbols and notation: Mastery of industry-standard symbols for components like doors, windows, and electrical fittings. 		<p>Eco-friendly practices reducing environmental impact and resource consumption.</p> <p>1.7 Trades, employment and careers Various professions in construction, including skilled trades and management roles.</p> <p>1.8 Health and safety Protocols ensuring worker safety and minimizing hazards on-site.</p>	
Clarity around sequencing	Main links across the curriculum	<ul style="list-style-type: none"> • Identifying and calculating information • Writing and setting success criteria • Drawing plans • Drawing elevations • Using the language of drafting 	<ul style="list-style-type: none"> • Understanding 2D construction plan conventions and scales for applications. • Adding backgrounds, finishes, features, and 360° views to 3D models. • Assessing requirements, success criteria, and end-user safety needs. • Producing accurate scaled drawings, including floor plans and layouts. • Using software tools for detailed 3D virtual building representations. 	<ul style="list-style-type: none"> • Understanding industry roles and stakeholders. • Phases from design to demolition. • Different buildings serve various purposes. • Innovative tools and sustainable resources. • Designs impacting functionality and aesthetics. 	

			<ul style="list-style-type: none"> • Reviewing designs for functionality, aesthetics, and regulatory compliance. 	<ul style="list-style-type: none"> • Eco-friendly practices reducing environmental impact. • Diverse professions within the construction industry. • Protocols ensuring worker safety standards.
	Authentic cross curricular links	Art, Science, Draftsman, Engineering, Civil Engineering, Maths, Science, Geography.	Art, Science, Draftsman, Engineering, Civil Engineering, Maths, Science, Geography.	Engineering, Civil Engineering, Maths, Science, Geography.
Vocabulary	Key words	<ul style="list-style-type: none"> • Area • Volume • Angles • Client Brief • Accuracy • Block Plans • Cross-Sections • Elevations • BS Standards • Annotations 	<ul style="list-style-type: none"> • 2D Plans • Conventions • Scales • 3D Models • Rendering • Textures • 360° Views • Components • Success Criteria • End Users 	<ul style="list-style-type: none"> • Sector • Lifecycle • Building Types • Materials • Structures • Sustainability • Careers • Trades • Regulations • Safety
Assessment	Summative assessment	Unit 2 – Controlled Assessment Task (Accommodation Scheduled issued to students to complete), 60% overall mark. This unit is internally assessed, externally verified.		Unit 1 – terminal examination in June (40% of overall mark).
Links to the real world / careers / PD		Civil Engineering - Architect, Surveyor, Contract Manager, Quantity Surveyor, Site Manager, Structural Engineer, Various Construction Trades.		