

Heathcote School and Science College

Sixth Form



Department Transition Guide

DT; Professional Construction Practice

(WJEC Level 3)

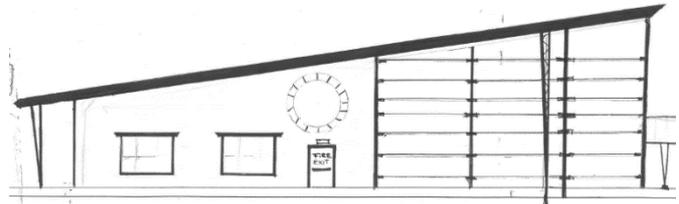
Including;

- Course Overview and Specification Summary
- Department Vision for A-level and links to career pathways
- Pre-reading
- Task/project for summer

Applied Diploma: Professional Construction Practice

Course Overview

The construction sector is vital to any country for maintenance, improvement and growth of its infrastructure, buildings and engineering stock. A comprehension of institutional standards, procedures and business processes of the specialised disciplines that drive and administer the industry is relevant to all those who work or desire to be part of this established sector.



The WJEC Level 3 qualification in Professional Construction Practice is designed to provide learners with a comprehensive framework of knowledge, understanding and promotion of applied skills that this multi-disciplined sector relies upon.



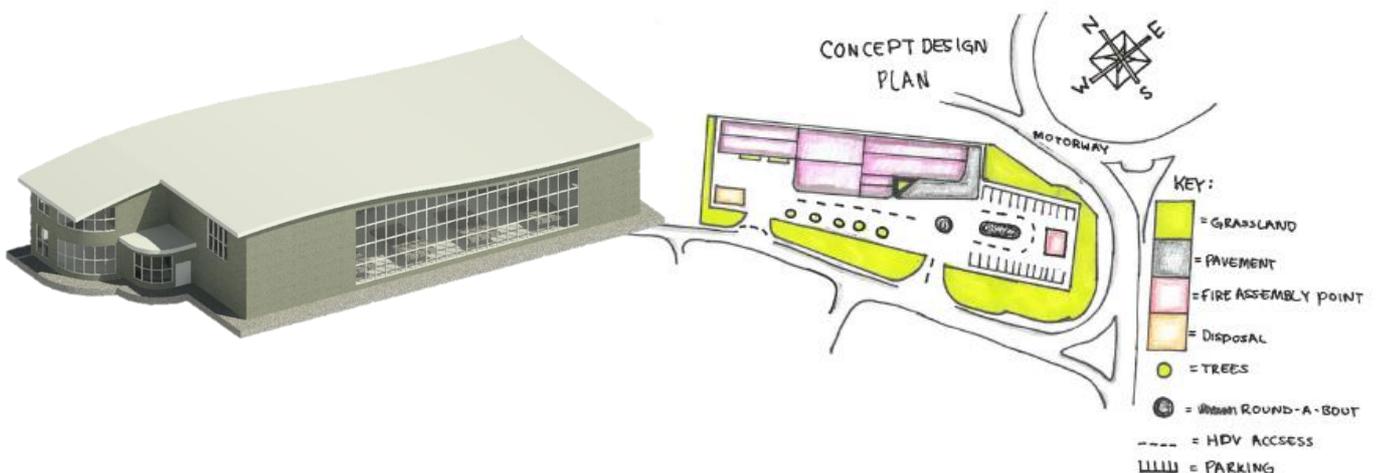
Studying this qualification will encourage research, prompt investigation and analysis of the aspects and impacts of the construction disciplines and their interrelationships through collaboration. This will give rise to an understanding of the diverse roles within the construction industry and yield transferable skills. The

qualification will support learners progression from level 1/2 particularly in subjects such as Design Technology, Construction, Engineering and Business Studies.

The overarching aim is to enable learners to broaden their understanding of technical and professional procedures so they are better equipped decision makers in a technological age. Those seeking careers in a digital built environment will have an appropriate grounding in collaboration and BIM techniques to enable them to make rational decisions about their progression routes into employment in this sector.

Subordinate aims include:

- Developing the knowledge and skills needed for employment
- Gaining practical experience needed to underpin lifelong learning
- Increasing the knowledge needed to transfer skills and understanding between contexts
- Reinforcement of learning in the core subjects of English, mathematics and science
- Developing practical skills in creativity and problem solving in technological contexts
- Developing an understanding of their place in the community and society
- Developing safe, secure and responsible attitudes to working with other people
- Developing the skills for working collaboratively with IT
- Developing knowledge in the field of critical evaluation and feedback



Specification Summary

The Applied Diploma in Professional Construction Practice is made up of 4 mandatory units.

Unit No.	Unit	Assessment	GLH	%
1	Design the Built Environment	Internally Assessed Controlled Assignment	72 GLH	20%
2	Create the Built Environment	External Examination	72 GLH	20%
3	Value and Use the Built Environment	External Examination	72 GLH	20%
4	BIM and Construction Projects	Internally Assessed Controlled Assignment	144 GLH	40%

Unit 1 – Designing the Built Environment [72 GLH]

The aim of this unit is for learners to understand and appreciate; the various stages of the design and planning processes, the impact of health and safety on design and the provision of primary service utilities.

The built environment is made up of historic and contemporary buildings, the spaces between them, including parks, streets and other open areas and the infrastructure that links these components together. The design of each building within this environment is a complex process that involves many people working through many stages. Good design will provide a built environment that promotes health, safety and well-being.

To provide and protect the quality of the built environment it is vital to ensure that the right development happens in the right place at the right time, to the benefit of communities and the economy. A complex system for the control of development has been created involving strategic planning at national and local levels and many other social, political and economic factors. This system must agree, on behalf of the community, to a development proposal before it can take place.

The design of the buildings that shape our environments must be influenced by many factors to promote the safety, health, comfort and productivity of occupants. These designs must be developed to minimise the risk of harm to those who have to build, use and maintain the building and ensure that the possibilities for reducing environmental impact and running costs of the building over its lifetime are maximised.

At the end of this unit you will have produced a concept design for a development proposal and gained knowledge and practical experience of the stages and key factors that influence the design of the built environment.

Unit 2 – Create the Built Environment [72 GLH]

The aim of this unit is for learners to understand and appreciate; the existing and developing processes required to construct a range of buildings including the use of project management and quality assurance. Consideration is also given to job roles within the industry, their interrelationship and career progression.

There is a diverse range of construction professional roles that have a shared common strand of design, operational and commercial acumen. The common objective to sustainably resource, construct and maintain the built environment relies on the specialised primary occupations of Architect, Engineer, Builder and Surveyor.

The advent of continually improving the institutional standards that govern the built environment and these same diverse roles place their own unique influences on the industry which is often in a state of cyclical change mirroring the economic peaks and troughs of prosperity followed by decline.

As such, construction professionals utilise dynamic and pre-emptive skills and strategies to ensure cost effective and timely delivery of buildings and infrastructure whilst evolving new techniques to help define their future in this competitive market to ensure positive qualitative outcomes.

The product of this approach is to safely deliver sustainable building and infrastructure stock that promotes modern structural and fabric solutions of the future whilst understanding the traditional processes that help them to reflect on lessons learnt from the past.

Unit 3 – Value and Use the Built Environment [72 GLH]

The aim of this unit is for learners to understand and appreciate; the engagement of stakeholders and communities in the development and use of the built environment. The protection of the environment and the physical structure in the use of the built environment will also be considered.

Stakeholder and community engagement is the participating audience that the modern construction professional is expected to educate, consult and maintain a constant dialog with to ensure the positive outcomes of all projects.

The high expectations of stakeholders is not just confined to clear channels of communications but also to the provision of ‘greener’ and more sustainable forms of energy to help reduce the carbon footprint that many individuals or organisations have publically agreed to reduce as part of their own personal or corporate ethos, vision and values.

This tapestry of expectation, communication, compliance and understanding of often highly complex and often innovative technologies must be conveyed by the design and delivery team to the clients/stakeholders in a timely and ordered manner. Ensuring both the immediate successful handover and future maintenance is achieved.

The institutional standards governing ‘exemplar’ government initiatives are considered to be the minimum standards by which building stock is now received by all sectors of the industry and set’s the precedent for how they are maintained into the future.

Unit 4 – BIM and Construction Projects [144 GLH]

The aim of this unit is for learners to understand and appreciate; the application of Building Information Modelling in managing the design, creation and maintenance of built assets.

The design, construction and management of the built environment involves many people, possibly with differing and conflicting short term interests. The BIM approach seeks to remove conflicting interests on the basis that the longer term interests of all stakeholders are best served by close collaboration towards a common goal, achieved via a process that appreciates the contributions of all specialists and manages building information throughout the building life cycle.

BIM (Building Information Modelling) is the process of designing, constructing or operating a building using electronic objected orientated information. It is technology based and relies on protocols for the storage and exchange of data. The ability of organisations in the construction supply chain to operate and exchange information on a building project, referred to as BIM maturity level, is critical and needs to be equal across the project team.

A BIM project is comprehensive. It starts with the specification of maturity level and definition of the Employers Information Requirements (EIR) progresses through the identification and appointment of a design and construction team, with suitable project and BIM experience and the production, exchange and refinement of BIM information throughout technical design, implementation, handover and management of the building in use.

The importance of the common data environment (CDE), used as a data repository throughout a BIM project and of the management of the contents of the CDE, as refined and clarified within a series of standards developed by industry and government to aid in the adoption of BIM.

At the end of this unit you will have produced BIM information for a development proposal and gained knowledge and practical experience of the principles and aims of BIM, of the collaborative processes involved and their potential for improvement of all aspects the built environment.

Department Vision

Our Level 3 programme seeks to provide you with the ability to transform by learning about yourself as a problem-solver, the people's lives who you will be enhancing through your building design development and the materials you will identify for procurement as part of building design solution. You will actively contribute to key aspects of your learning including creativity, culture, wealth and well-being. You will become a more discerning consumer enabling you to be fully prepared for a changing world and enable yourself to live a more fulfilling and sustainable lifestyle.

Career Pathways

The main purpose of the Level 3 Diploma in Professional Construction Practice is to support access routes to Degree courses, Higher National Vocational Qualifications, Modern Apprenticeships including 'Traineeships' and employment associated with; Architecture, Structural and Temporary Works Engineering, Architectural Technologist, Construction Management, Project Management, Design Management, Estate Management, Quantity Surveying, Building Surveying, Mechanical & Electrical Management, Engineering Services, Construction related SME Services, Supply Chain Management, Document Control, Client Representation and Contract Administration.

Pre-reading

WJEC Vocational Award Constructing the Built Environment Level 1/2 – a useful resource that offers accessible and practical examples of common practices within the construction industry.

100 Contemporary Houses - a book that rounds up 100 of the world's most interesting and pioneering homes from the past decade, to discuss architecture at its most elementary and intimate.

Summer Task

Research a need within your local community and consider ways in which you may be able to meet this need through a built solution. Begin by considering the members of your community; what are the social issues of that particular community? How do they affect the community? Where are the possible areas in which a building may be constructed to provide a suitable solution? Who would pay for the building? Who might manage it?

Once you have established a need and a suitable location start to generate some initial sketches of the area. The sketches could be a combination of bubble diagrams, façade and aerial sketches that form part of a block diagram and conceptual design presentations.

Gain feedback on your designs, ideally from your target user group and record their feedback, drawing conclusions about ways to develop the design further to meet the identified needs. Produce rough models of your early designs using any scrap materials you can find and take a photo of them for analysis purposes.

Using these modelling and review experiences develop your design ideas further by refining your design using floor plan details and cross-sectional views to show what is happening inside your building. Aim to move towards a single design solution, where possible, considering key points such as building orientation, services, weather-proofing and access.



Knowledge Organiser

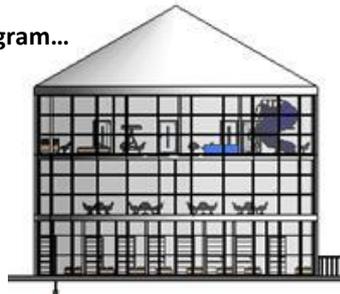
Level 3 Applied Diploma: Professional Construction Practice

Common key topics...

- Services: gas, electricity and water (can also include HVAC)
- Sub-structure: foundations / Superstructure: building frame
- Orientation: the position of the building in relation to the sun
- Infrastructure: systems that support the function of the building

Key roles within an organogram...

- Project Manager
- Architect
- Quantity Surveyor
- Structural Engineer
- Facilities Manager
- Site Foreman
- Interior/Exterior Designer



Building Information Modelling...

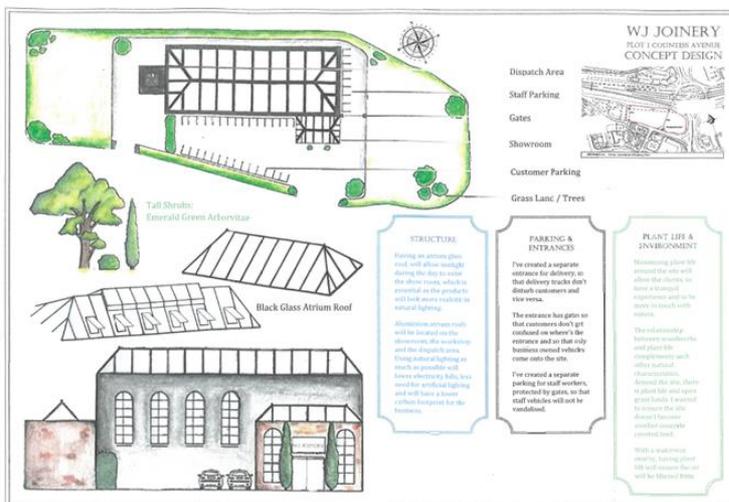
Understanding what is meant by BIM is an essential part of this qualification. When creating accurate digital models it is important to ensure that BIM software is used to provide accurate and detailed information about all aspects of the building design.

Providing your target client with a visual representation of the design is important but it is vital that all members of the project team are able to draw specific data from the BIM model in order for them to be able to support the construction of the new building.

Technical Drawings...

You will be required to produce design plans by hand using drafting techniques to accurately communicate your design intentions. The drawings will include a block plan (aerial view of the space and surrounding land/buildings), a floor plan, building elevations drawing (a drawing of each side of your building), a cross-sectional view (a 'cut-through' of your building) and a services plan. You may also choose to generate a series of initial concept sketches and plan using a bubble diagram.

Below is an example of the kind of high quality layout you should aim for when presenting your work. The use of fine line and tonal/textural rendering has enabled the pupil to present their ideas professionally with a design that is well-communicated and appealing.



Feasibility Study...

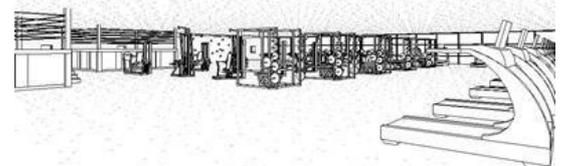
You will be asked to complete a feasibility study to discuss the various building options for your project. You will discuss issues relating to access, orientation, travel, location and support this with an executive summary.

Procurement Plan...

Sourcing the materials and services required to complete the project is a key task you will complete as part of the procurement section. You will be required to consider issues such as sustainable materials, locating suitable merchants and researching methods of construction that manage waste of all types.

Revit Software...

This is a key piece of software that we use for this course. It would be advisable to download a free trial / version of the software. We have workbooks that we can provide you with to practice using the tools to create building designs of your own. This is an industry standard piece of software and would be useful to learn.



For Revit practice booklets email: adolan@heathcote.waltham.sch.uk



High Quality Layout...

- Well-proportioned drawing
- Annotation used to explain idea
- Rendering identifies different areas
- Details used to communicate points

