

Pearson BTEC Nationals in Civil Engineering

Delivery Guide

Pearson BTEC Level 3 National Diploma in Civil Engineering

Pearson BTEC Level 3 National Extended Diploma in Civil Engineering

Pearson BTEC Level 3 National Extended Certificate in Construction and the Built Environment (360 GLH)

Pearson BTEC Level 3 National Foundation Diploma in Construction and the Built Environment (540 GLH)

First teaching September 2017

Edexcel, BTEC and LCCI qualifications

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Welcome to your BTEC National delivery guide

This delivery guide is a companion to your BTEC Level 3 National specifications, Authorised Assignment Briefs (AABs) and Sample Assessment Materials (SAMs). It contains ideas for teaching and learning, including practical activities, realistic scenarios, ways of involving employers in delivery, ways of managing independent learning and how to approach assessments. The aim of this guide is to show how the specification content might work in practice and to inspire you to start thinking about different ways to deliver your course.

The guidance has been put together by tutors who have been close to the development of the qualifications and so understand the challenges of finding new and engaging ways to deliver a BTEC programme in the context of the new qualifications from 2017.

Guidance around what you will need to consider as you plan the delivery of the qualification(s) has been provided. You will find information around the structure of your course, how you may wish to build the course for your learners, suggestions for how you could make contact with employers and information around the other support and resources available to you.

Unit-by-unit guidance has been provided, which includes suggestions on how to approach the learning aims and unit content, as well as ideas for interesting and varied activities. You will also find coverage of assessments, including useful advice about external assessment, as well as tips and ideas around how to plan for and deliver your assignments.

You will also find a list of carefully selected resources for each unit. The lists include suggestions for books, websites and videos that you can either direct your learners to use or that you can use as a way to complement your delivery.

We hope you will find this guidance relevant and useful.

Enjoy your course!

What's new

The BTEC Level 3 Nationals 2017 are the result of more than three years' consultation with employers, higher education institutions, and many thousands of tutors and managers in colleges and schools. Our aim has been to ensure that the BTEC Level 3 Nationals continue to allow a recognised and well-respected route into employment or higher education by meeting the needs of these key stakeholders and that learners continue to enjoy a stimulating course of study and develop the skills and attributes that will enable them to progress.

As a result of this consultation and on the advice of employers, higher education institutions and most importantly of those of you who teach BTEC, some key changes have been made to the BTEC Level 3 Nationals. These are described throughout this delivery guide and include the following.

- **Updated content and a larger proportion of mandatory content** – both employers and universities said they wanted a greater consistency in coverage of the subject for BTEC learners. Employers wanted to see systematic coverage of core knowledge and skills for their sector, and for the Nationals to reflect up-to-date industry practice.
- **The reintroduction of external assessment** – employers were keen to see an element of rigour and consistency across the country in terms of assessment, while higher education institutions wanted learners to be better prepared for meeting deadlines and preparing for formal exams, where appropriate. Both were keen to see learners applying their knowledge and skills to new contexts through synoptic projects and assessments.



- **A focus on employability skills** – the BTEC approach to learning, through projects, practical assignments, group work and through simulating the world of work, has always supported the development of employability skills, e.g. self-management. In the new Nationals, the balance of cognitive and skills work has been carefully calibrated to ensure that learners get a range of different opportunities across their course.
- **Broader assessment in internal units** – the assessment criteria for each unit are carefully structured to set a clear level of demand. Distinction criteria encourage and require depth of study, including demonstration of the application of knowledge and understanding as well as a synoptic element for the learning aim or unit.
- **Alignment with DfE criteria for performance measures for 16–19 year olds in England** – all new BTECs are designed as either Applied General qualifications or Tech Levels to fulfil criteria for inclusion in 2018 performance tables and funding for 16–19 year olds and 19+ learners.

To support transition to the BTEC Level 3 Nationals 2017, we are providing a support programme with exemplar and practice materials, and training is available. Please see the *Support and resources* section for details of the support and the link to sign up to training, which will be available from 2017 and throughout the lifetime of the qualification.

Notes:

The specification tells you what **must** be taught and what **must** be assessed. This delivery guide provides suggestions and ideas on how you could do this.

The suggestions given in this delivery guide link with the Authorised Assignment Briefs provided by Pearson, but they are not compulsory. They are designed to get you started and to spark your imagination.



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OVERVIEW

Delivery Guides as support

In the specification, the 'Unit content' tells you what must be taught and the 'Assessment criteria' what must be assessed. The 'Essential information for assessment decisions' explains what the assessment criteria mean.

This delivery guide provides suggestions and ideas on how to plan and deliver the qualification, and includes a summary of recent changes.

Unit-by-unit guidance has been provided that includes suggestions on how to approach the learning aims and unit content. Teaching, learning and formative assessment activities are also suggested. You will also find delivery plans to help you timetable your course and ensure your learners are well prepared for internal and external assessments.

Links to carefully selected resources are provided for each unit. The lists include suggestions for books, websites and videos that will help you plan and deliver your course. Alternatively, you may wish to direct your learners to these resources.

Use the delivery guides as model templates or an interpretation on which you can base your own plan. Every delivery guide presents each unit as an exemplar, highlighting Civil Engineering links to motivate tutors and learners.



Significant changes for those teaching to the new 2017 specification

The BTEC Level 3 Nationals 2017 contain significant changes to the previous 2010 version. These changes reflect the views and demands of civil engineering teaching practitioners, those working in the construction sector and government bodies with oversight of the qualifications.

For those familiar with the older 2010 specification, these changes are summarised in the table below:

Change	New 2017		Old 2010	
Programme Name	Civil Engineering		Construction and the Built Environment (Civil Engineering)	
Qualification Names/GLH	No equivalent		Certificate	180 GLH
	Extended Certificate (Construction & the Built Environment only)	360 GLH	Subsidiary Diploma	360 GLH
	Foundation Diploma (Construction & the Built Environment only)	540 GLH	90 – credit Diploma	540 GLH
	National Diploma in Civil engineering	720 GLH	Diploma	720 GLH
	Extended Diploma in Civil Engineering	1080 GLH	Extended Diploma	1080 GLH
Mandatory Units	Between 4 and 9. All qualifications		1	
Optional Units	Choose from up to 33 dependent on qualification		Choose from up to 30 dependent on qualification	
Assessment	Internal through assignment and up to 3 External depending on qualification		Internal only through assignments	



Structure

The table below shows the structure of the qualifications in the Civil Engineering suite of qualifications.

By a clear understanding of the units and careful selection, centres can tailor the qualification to suit the needs of their learners and the resources of the centre.

Unit (number and title)	Unit size (GLH)	Extended Certificate (360 GLH)	Foundation Diploma (540 GLH)	Diploma (720 GLH)			Extended Diploma (1080 GLH)		
				CBE	C	BS	CBE	C	BS
1 Construction Principles	120	M	M	M	M	M	M	M	M
2 Construction Design	120	M	M	M	M	M	M	M	M
3 Tendering and Estimating	120						M	M	M
4 Construction Technology	60	M	M	M	M	M	M	M	M
5 Health and Safety in Construction	60	M	M	M	M	M	M	M	M
6 Surveying in Construction	60		O	M	O		M	O	
7 Graphical Detailing in Construction	60		O	M	O	O	M	O	O
8 Building Regulations and Control in Construction	60		O	M			M	O	
9 Management of a Construction Project	60			O	O	O	M	O	O
10 Building Surveying in Construction	60		O	O			O	O	
11 Site Engineering for Construction	60		O	O	M		O	M	
12 Low Temperature Hot Water Systems in Building Services	60			O		O	O		O
13 Measurement Techniques in Construction	60		O	O	O		O	O	
14 Provision of Primary Services in Buildings	60		O	O		M	O		M
15 Further Mathematics for Construction	60				M	O	O	M	O
16 Work Experience in the Construction Sector	60						O	O	O
17 Projects in Construction	60			O	O	O	O	O	O
18 Building Information Modelling	60			O	O	O	O	O	O
19 Quantity Surveying	60		O	O		O	O		O
20 Quality Control Management in Construction	60			O			O	O	O
21 Building Services Science	60					M	O		M
22 Economics and Finance in Construction	60						O		
23 Construction in Civil Engineering	60				M		O	M	
24 Planning Application Procedures in Construction	60						O		
25 Property Law	60						O		
26 Conversion, Adaptation and Maintenance of Buildings	60						O		
27 Building Services Control Systems	60					O			O
28 Ventilation and Air Conditioning Design	60					O			O
29 Use of Static and Dynamic Fluids in Building Services	60					O			O
30 Plumbing Technology in Building Services	60					O			O
31 Electrical Principles in Building Services	60					O			O
32 Electrical Installation Standards, Components and Design	60					O			O
33 Measurement Techniques in Building Services	60					O			O
34 Building Regulations and Control in Building Services	60					O			O
35 Principles and Applications of Structural Mechanics	60				O			O	
36 Public Health Engineering	60				O			O	
37 Specialist Civil Engineering Techniques	60				O			O	
38 Highway Construction and Maintenance in Civil Engineering	60				O			O	



Overview of the Civil Engineering qualification suite

The level 3 Nationals in Civil Engineering are a suite of qualifications that focus on different progression routes, allowing learners to choose the one best suited to their aspirations. Pearson has developed the content of the new BTEC Nationals in collaboration with employers and representatives from higher education and relevant professional bodies. This ensures that the content is up-to-date and includes the knowledge, understanding, skills and attributes required in the sector.

Whereas the previous Nationals were internally assessed only, this new suite of qualifications has three different types of assessment: internal, external and synoptic. There is also more of an emphasis on developing and utilising links with employers. This may require a review of how the units are delivered and assessed, providing a unique opportunity to create project-based assessments that map across more than one unit, and to embrace employer engagement when developing realistic briefs and case studies.

These qualifications are aimed at supporting post-16 learners to help them choose specialist pathways within civil engineering-related industries, by giving them the technical skills and knowledge required. This will enable learners to pursue their desired career goals either through employment or suitable higher education courses. As previously outlined, employers must have significant involvement in these programmes.

In the Civil Engineering sector, these are:

- Pearson BTEC Level 3 National Extended Certificate in Construction and the Built Environment (360 GLH)
- Pearson BTEC Level 3 National Foundation Diploma in Construction and the Built Environment (540 GLH)
- Pearson BTEC Level 3 National Diploma in Civil Engineering (720 GLH)
- Pearson BTEC Level 3 National Extended Diploma in Civil Engineering (1080 GLH)

All qualifications in the suite share some common units and assessments, allowing learners some flexibility in moving between qualifications where they wish to select a more specific progression route. The published programme specification provides an overview of various qualification sizes clearly highlighting both mandatory (M) and optional (O) units. Some units are mandatory across all qualification sizes, while some units are mandatory only for larger size of the qualification. While choosing the optional units, consideration must be given to possible coordinated delivery across units, as well as to the efficient use of resources.



Making the right choice for your learners

You should support learners to help them make the right choice that aligns well with their future career aspirations, such as starting a degree or a specific job role in the industry.

For example, the **Extended Diploma** is largest size of qualification within the suite:

- It is equivalent in size to 3 A levels and allows learners to develop a substantial common core of knowledge.
- Learners have the choice to study topics in depth across a full range of optional units.
- Learners will develop the broader skills highly valued by higher education institutions, such as critical thinking.
- It covers a wide range of written and verbal communication skills that are required in the construction sector.

This qualification would suit learners if they are studying full time over a period of two years and wish to pursue a career in civil engineering. It may be the case that they wish to proceed directly into employment as, for example, a technician (as this qualification is intended to meet the requirements of registering as a technician). Alternatively, this qualification will also allow learners to progress into higher education.

For each qualification, no prior study of the sector is needed, but learners should normally have a range of achievement at level 2 in GCSEs or equivalent qualifications, including English, Mathematics and Science.

The smaller size qualifications, such as the **Foundation Diploma**, cater for learners who wish to learn about construction alongside other areas of study (such as an A level), and as a support in their progression to higher education.



Making contact with employers

The employers in the construction industry range from small design consultancies to large national and international construction companies. Depending on the size of the qualification, business models of varying sizes will benefit learners, as well as the optional units that you have chosen.

If the centre has well established construction programmes, you could start by contacting employers who are already on the customer database. If this is not possible, developing a list of local companies using internet-based searches is a good start. You could also develop a list of relevant staff within, for example, the local council, Highway Agency and Environment Agency. You should also look to build links with professional bodies such as the Chartered Institute of Building (CIOB), Chartered Institute of Building Services Engineers (CIBSE) and Institution of Civil Engineers (ICE).

Making contact with employers via email or phone is a good start, but ensure that you are clear regarding the unit content in advance. You should also be flexible with the timing of any site visits or guest speakers. While talking to employers, it is always worthwhile to articulate the mutual benefits of developing a positive relationship between the centre and the employers. For example, one of the benefits that they are likely to receive from this relationship could be by offering work placements, which will give them opportunities for low-risk employee recruitment, while also contributing towards the local and national skills agenda.



SUPPORT AND RESOURCES

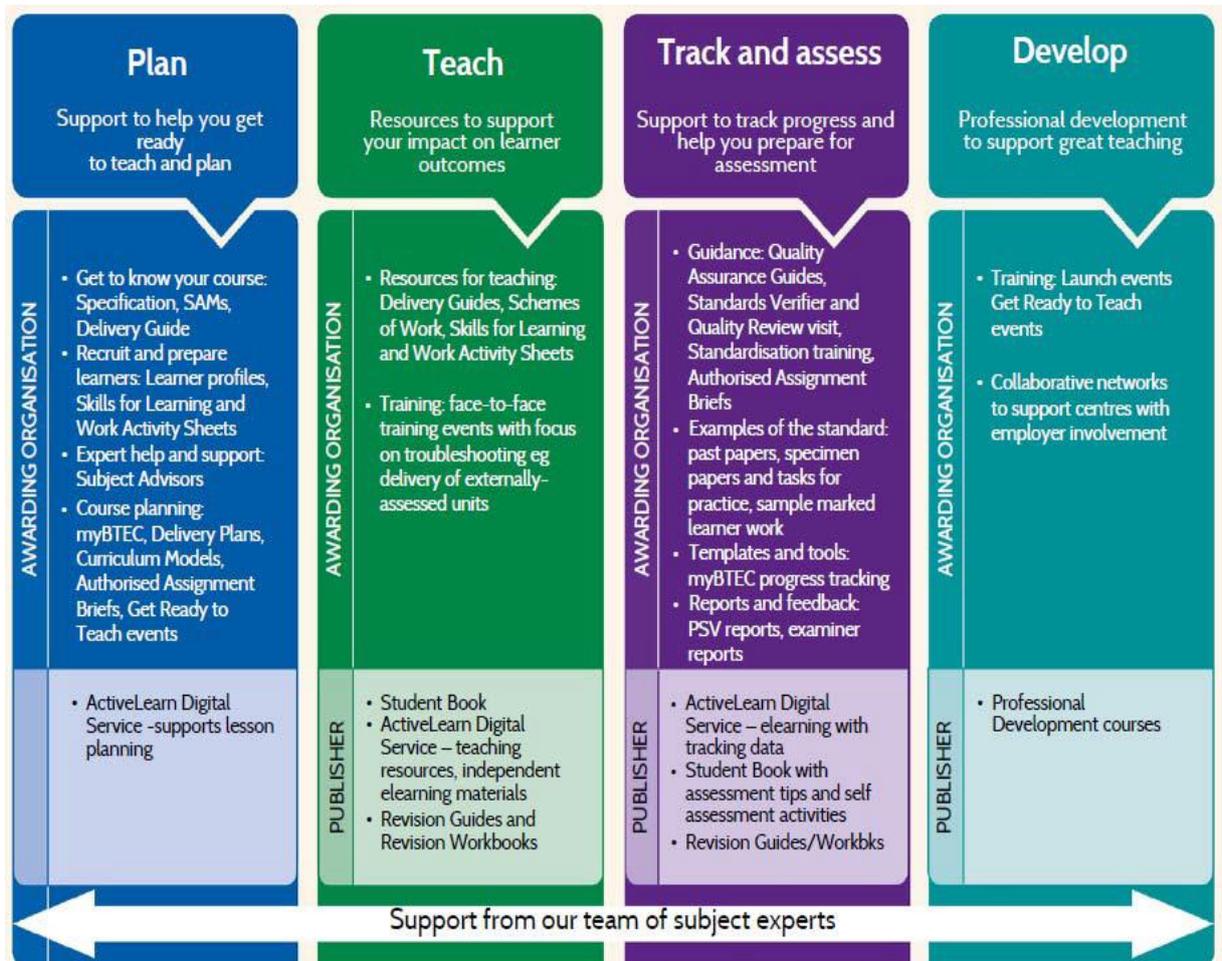
There are a wealth of resources available to ensure that you feel confident delivering your BTEC National qualification throughout your entire course.

All the 'Awarding Organisation' resources can be found on the Pearson Qualifications website here:

<http://qualifications.pearson.com/en/qualifications/btec-nationals/construction-and-the-built-environment-2017.html>

As well as the free resources supporting the qualification, provided by Pearson as an Awarding Organisation, Pearson Learning Services ('Publisher' in the tables below) provides a range of engaging resources to support BTEC Level 3 Nationals, including:

- Student books in e-book and print formats
- Revision guides and revision workbooks in e-book and print formats
- Teaching and assessment packs, including e-learning materials via the ActiveLearn Digital Service



In addition to the 'publisher' resources listed above, publishers other than Pearson may produce textbooks that are endorsed for BTEC. Check the Pearson website (<http://qualifications.pearson.com/en/support/published-resources.html>) for more information as titles achieve endorsement.



There are also a number of people who are available for you to speak to:

- **Standards Verifiers** – they are subject specialists who can support you with ensuring that your assessment plan is fit for purpose and whose role is to confirm that you are assessing your learners to national standards as outlined in the specification by providing quality assurance through sampling.
- **Curriculum Development Managers (CDMs)** – they are regionally based and have a full overview of the BTEC qualifications and of the support and resources that Pearson provides. CDMs often run network events.
- **Customer Services** – the 'Support for You' section of our website gives the different ways in which you can contact us for general queries. For specific queries, our service operators can direct you to the relevant person or department.

Subject Advice

TeachingConstruction@pearson.com

Training for the new BTEC Level 3 Nationals can be found on the Pearson website here: <http://qualifications.pearson.com/en/support/training-from-pearson-uk.html>