Pearson
BTEC

Delivering BTEC
during Coronavirus (COVID-19)

September 2020 to August 2021

Engineering

Guidance for BTEC Nationals, Firsts, Tech Awards and QCF Level 1

Teaching and learning guidance

Last updated 22 January 2021

Introduction

It is expected that COVID-19 will continue to impact upon teaching, learning and assessment through the academic year, impacting those learners who are part-way through their qualifications and those who are commencing this academic year. We are committed to ensuring that learners continue to benefit from the breadth of content of BTEC qualifications through adaptations in teaching and learning.

This document is intended to provide you with guidance for how you **might adapt delivery** for the sector's BTEC qualifications in the academic year of 2020-2021.

We continue to work with our regulators and relevant sector bodies on any possible adaptations or accommodations in line with the OFQUAL and DfE consultations.

Key aspects such as social distancing, safety, lost teaching time, subject content and practical activities have been considered from a sector perspective for your reference. However, it should be noted that all of the guidance provided here must only be followed within the context of the guidance issued by your own centre, relevant governing and industry bodies, local and national government.

For further advice and guidance, please refer to the Teaching, Learning and Assessment pages on Pearson's website or contact us via the Customer Support portal.

We look forward to continuing to support you and your learners throughout this challenging time and wish you well for the coming year.

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Overview: Engineering

Adaptations to Assessments in 2021

Please refer to the assessment section on the **2020/2021 Teaching and Assessment page,** for adaptations to assessments and qualifications for the 2021 Academic Year. Here you will find:

- External Assessment Adaptations
- Tech Award Assessment Evidence Adaptations
- Work Experience and Employer Engagement
- Exam timetables
- FAQs

Please note that not all qualifications will be adapted, and it is important that you refer to the relevant adaptation guidance for 2021.

Some qualifications will not be adapted for one of the following reasons:

- An adaptation would impact the reliability and validity of the qualification
- The qualification is a licence to practice or primary purpose is progression to the workplace

Please note all adaptations apply to assessments completed by 31 July 2021.

Social distance and safety

Teaching and learning for these engineering programmes does not normally require group work or a close proximity between learners, although they may sometimes work in pairs in the workshop/laboratory. A very small number of units do require teamwork (e.g. peer review in the Tech Award Component 1: Exploring Engineering Sectors and Design Applications and teamwork in RQF Level 3 Unit 2: Delivery of Engineering Processes Safely as a Team). Centres will need to have measures in place to enable these to be carried out safely.

The necessary health and safety precautions must be taken into account for all practical work. This means that many practical activities, such as making a product, are not possible from home; however, some practical work may be possible if learners have access to appropriate computer hardware and software, for example for CAD and circuit simulation/testing.

Most workshop and laboratory work will probably require fewer learners in the centre, which may make the situation safer; however, lone/unsupervised working should not be allowed, and centres will also need to ensure that there are a sufficient quantity of tools and equipment to ensure social distancing can be maintained. In addition, tools and equipment will need to be cleaned after use. Theoretical content can be delivered by distance learning methods.

Lost teaching time

Most learners will have missed some teaching time during early to mid-2020, which means that staff will probably need to in-fill as they deliver the programmes during 2020-21. This will require careful planning, particularly the missed teaching and learning that is needed for the synoptic assessment (in particular, Tech Award Component 3 and RQF Level 3 Unit 3) later in the programme or for programmes where the learners were in other settings during 2019-20 and are likely to have had varied experiences (e.g. those learners that will start BTEC Level 3 in FE or sixth form colleges in September 2020).

Flexibility of delivery and assessment

The focus on technical and specialist skills must be retained, especially for Level 3 learners that are looking to progress into industry or higher education; however, in some cases it may mean that learners cannot access industry standard equipment during this academic year;

for example, as web-based software may have some limited functionality.

The learners' time in centre should focus on the use of specialist equipment in workshops and laboratories, which will allow for skills building in these areas. The theoretical content is more suited to remote teaching and learning for which tasks and research can be set and written submissions are often appropriate. Centres should also make use of diverse evidence types including written reports, presentations, posters, simulations, and audio-visual recordings during teaching and learning.

Centres should also evaluate the range of optional units being delivered during this academic year, as in some cases it may be advantageous to deliver more units with a theoretical/analytical content/bias.

What is important to retain the validity of the sector's qualifications?

Practical work is fundamental to the BTECs in Engineering and is essential for developing the skills needed by the sector. It is also valuable for demonstrating and illustrating theoretical concepts and making comparisons between theoretical and practical approaches.

In some educational settings (where in loco parentis does not apply) the contact time between staff and learners is likely to be less than in previous years. In this situation practical work should be prioritised when learners are in the centre, as theoretical activities can be more easily delivered remotely.

Are there other delivery methodologies that can be used to support the purpose of the qualification?

There are numerous opportunities for online delivery of theoretical activities and tutor-led demonstrations. Learners can communicate with groups they are working with remotely via centre managed platforms; the said platforms can also be monitored by tutors to allow them to assess the progress of learners. However, centres will also need to take extra care that any assessment work completed by learners remotely is authentic and has not been plagiarised.

Assessment tasks for practical outcomes should be prioritised during centre-based time and learners can also submit their work remotely via Google or other VLE-type platforms.

Teaching and learning guidance: Engineering

Unit examples	Remote delivery possible (✔ / X)	Socially distanced possible (✔ / X)	Comments	Main Type of Evidence
BTEC Level 1/Level 2 Tech Award in Engineering (2017)				
C1	Partially	✔	The teaching and learning for this Component could primarily be delivered remotely. It depends on the IT infrastructure (hardware/software) that the centre has. CAD can be delivered remotely, including the skills needed to produce a virtual model. Physical modelling doesn't need workshop access, so could be completed in a standard classroom with appropriate equipment. Peer review could take place virtually.	LA A: Written LA B: Written & designs, inc CAD/Physical & virtual model/Peer review
C2	Partially	✔	Aspects of teaching and learning for this Component could be delivered remotely or in a standard classroom. Nevertheless, the disassembly/making/inspecting aspects of this Component need to take place in a workshop and therefore each centre will need to timetable this in an appropriate manner, given that the capacity of the workshop/s will be reduced to ensure social distancing/extra cleaning can take place.	LA A: Written LA B: Disassembly activity/written LA C: Planning (written)/Making/Inspecting

C3 (Externally assessed)	Partially	✔	Learners will need to undertake practice activities to prepare for Part 1 (testing); however, if the correct equipment is available it doesn't necessarily need to be delivered in a workshop and could take place in a standard classroom. Preparation for Part 2 could be primarily remote or delivered in a classroom. This Component is synoptic and therefore if C1 and C2 are taught in a suitable manner centres could focus on learner preparation for assessment via the use of tasks from previous series.	Testing/Designs/Written

General comments:

This is a pre-16 qualification and each centre is therefore in loco parentis meaning that remote/blended learning will be minimised wherever possible. Learners will also be completing other qualifications at the same time.

The main focus needs to be on C2 LA B and LA C and how centres timetable learner access to workshops given social distancing/extra cleaning requirements. Any difficulties with this will be exacerbated by cohort size.

Access to the correct hardware/software for CAD (C1) should be less problematic.

The general guidance here should be that centres should deliver/assess C1 in the first instance as well as the more practical aspects of C2, so that there is enough time for all learners to complete the learning related to disassembly/making/inspecting. Disassembly/making/inspecting may well need to be delivered using sub-groups due to reduced workshop capacity (for social distancing/extra cleaning), and therefore starting the delivery early will ensure all learners have equal opportunities.

Note that if the products selected for C2 LA B and LA C are too complicated it could be difficult to ensure all learners have an equal opportunity to access the workshop/s.

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Unit examples	Remote delivery possible (✔ / X)	Socially distanced possible (✔ / X)	Comments	Main Type of Evidence
BTEC Level 3 Nationals in Engineering RQF (2016)				
U1 (Externally assessed)	✔	✔	Could be delivered remotely. There are some Distance Learning centres that already do this.	Calculations
U2	Partially	✔	LA B could be delivered remotely if the IT infrastructure (hardware and software) supports it. LA C will need to be delivered in a workshop and note that the assessment takes place in groups of 3 or 4 learners. Reduced workshop capacity for social distancing/extra cleaning may mean that the delivery of this Learning aim will be based on sub-groups and staggered. There is no definitive requirement to deliver the Learning aims sequentially, so Learning aim C could be delivered to a sub-group of learners (face to face) with Learning aims A and B being taught concurrently to the whole group (remotely).	Written/CAD drawings for LA A and B LA C: Can include records of team meetings (minutes), activity logs, a risk assessment, set-up planning notes, quality control charts/annotated drawings, modified production plans, annotated photographs of the processes, observation records
U3 (Externally assessed)	✔	✔	This is a synoptic unit so the advice here would be to deliver it during the second half of the programme if possible. Could be delivered remotely with suitable formative feedback prior to the external assessment.	Written Designs

U4	✔	✔	This unit requires no use of physical equipment or tools/workshops or laboratories so is probably suitable remote learning.	Written
U5	Partially	✔	The project draws together learning from across the programme so the advice here would be to deliver it later in the programme if possible. The Project Supervisor will have a major role here in advising what the learner can or cannot do for Learning aim C in particular, where the learner has to generate/test a solution; clearly, access to physical equipment or tools/workshops or laboratories may be limited. Learning aims A and B could be delivered remotely.	Written Designs Solution Testing
U6 (Externally assessed)	Partially	✔	Most/some of the content in this unit could be delivered remotely depending on the IT infrastructure (hardware and software) available; however, learners will probably still need some face to face delivery when assembling/operating/testing microcontroller systems. Delivery of this aspect of the unit may be based on sub-groups and staggered for social distancing/extra cleaning.	Written Flow charts Code Practical outcome
U7	✔	✔	Could be delivered remotely. There are some Distance Learning centres that already do this.	Calculations
U10	✔	✔	The whole unit could be delivered remotely if the IT infrastructure (hardware and software) supports it.	CAD drawings Screenshots
U19	Partially	✔	Another unit where the 'build (make) and test' content would probably need some face to face delivery depending on the IT infrastructure (hardware	Circuit diagrams, photographs, tables of results, sketches, screenshots, calculations,

			and software) available; however, other content could be delivered and assessed remotely, suggesting a blended approach would be suitable.	evaluation of the physical and simulated circuits, observation records

General comments:

Given that this is a suite of post-16 qualifications the general guidance here should be that centres can make use of remote learning wherever possible/practicable for those units/Learning aims that do not require access to physical equipment or tools/workshops or laboratories.

The majority of units in this suite of qualifications have at least one Learning aim that is psychomotor in nature. A blended learning approach would suggest that centres could timetable learners for face to face delivery where there is a specific need for it. Practical Learning aims may well need to be delivered using sub-groups due to reduced workshop/laboratory/IT suite capacity (for social distancing/extra cleaning) and therefore starting the early delivery of these practical Learning aims will ensure all learners have equal opportunities.

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Unit examples	Remote delivery possible (✔ / X)	Socially distanced possible (✔ / X)	Comments	Main Type of Evidence
BTEC Level 3 Nationals in Engineering QCF (2010)				
U1	✔	✔	The content allows for remote learning delivery.	Written
U2	✔	✔	The content allows for remote learning delivery. Note that the skills for producing and delivering a presentation could be done over a suitable online platform.	Written Graphical information
U3	Partially	✔	The project draws together learning from across the programme so the advice here would be to deliver it later in the programme if possible. The Project Supervisor will have a major role here in advising what the learner can or cannot choose to focus on; clearly, access to physical equipment or tools/workshops or laboratories may be limited. The presentation skills could be developed using a suitable online platform.	Written Designs Solution Testing
U4	✔	✔	Could be delivered remotely. There are some Distance Learning centres that already do this.	Calculations
U5	✔	✔	Could be delivered remotely. There are some Distance Learning centres that already do this.	Calculations Written (limited)
U6	Partially	✔	Could be delivered remotely with some face to face delivery for the experiments and testing activities that	Calculations Written

			need to be completed. The practical activities are not the major focus of the unit and teacher demonstrations could be completed online.	Annotated photographs Tables of results Observation record
U10	Partially	✔	Could be delivered remotely with some face to face delivery for the testing activities that need to be completed. The practical activities are a minor aspect of the unit and teacher demonstrations could be completed online.	Written Annotated photographs Tables of results Observation record
U17	✔	✔	The whole unit could be delivered remotely if the IT infrastructure (hardware and software) supports it.	Written CAD drawings Screenshots Observation record
U35	Partially	✔	The 'build (make) and test' content would need face to face delivery but the other content could be delivered remotely; this suggests a blended approach would be suitable.	Written Annotated photographs Screenshots Observation records etc
General comments: Given that this is a suite of post-16 qualifications the general guidance here should be that centres can make use of remote learning wherever possible/practicable for those units/Learning outcomes that do not require access to physical equipment or tools/workshops or laboratories. A blended learning approach would suggest that centres could timetable learners for face to face delivery where there is a specific need for it. Practical Learning outcomes may well need to be delivered using sub-groups due to reduced workshop/laboratory/IT suite capacity (for social distancing) and therefore starting the early delivery of these practical Learning outcomes will ensure all learners have equal opportunities.				

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Unit examples	Remote delivery possible (✔ / X)	Socially distanced possible (✔ / X)	Comments	Main Type of Evidence
BTEC Level 1/Level 2 Firsts in Engineering (2012)				
U1 (Externally assessed)	✔	✔	The content allows for remote learning delivery.	Written (online)
U2	✔	✔	The content allows for remote learning delivery.	Written Diagrams
U3	Partially	✔	The vast majority of the content allows for remote learning delivery. The skills required for Learning Aim B are not onerous and therefore it should be possible to provide learners with suitable access to the workshop/equipment required, notwithstanding social distancing/cleaning requirements.	Written Annotated photographs Observation record
U5	Partially	✔	The vast majority of the content allows for remote learning delivery. The skills required for Learning aim A are not onerous and therefore it should be possible to provide learners with suitable access to the workshop/equipment required, notwithstanding social distancing/cleaning requirements.	Written Annotated photographs Observation record

U7	**X**	✔	This is a practical unit that requires access to tools/equipment/machinery for the delivery. Centres will need to make a careful decision here as to whether it is possible to appropriately timetable learners for delivery given the reduced capacity of workshops due to social distancing/ cleaning requirements. **For learners on the First Award (600/4788/4) and First Certificate (600/6628/3) only,** assessment adaptations are available as follows for Unit 7 Machining Techniques: • **Both Learning Aims must be assessed, but only for the 'drilling' process.** • **The 'turning or milling' process does not need to be assessed.**	Written Annotated photographs Diaries/logs Inspection records Observation record
U8	Partially	✔	**For learners on the First Award (600/4788/4) and First Certificate (600/6628/3) only,** assessment adaptations are as follows for Unit 8 Electronic Circuit Design and Construction: • **Only Learning Aims A and B must be assessed.** • **Learning Aims C and D do not need to be assessed.**	Written Annotated photographs Observation record
U9 (Externally assessed)	✔	✔	The content allows for remote learning delivery. There are practice examinations available that can be completed remotely.	Written
U12	Partially	✔	**For learners on the First Award (600/4788/4) and First Certificate (600/6628/3) only,** assessment adaptations are as follows for Unit 12 Engineering Design: • **Only Learning Aims A and B must be assessed.** • **Learning Aim C does not need to be assessed.**	Written Annotated photographs Observation record
General comments: This is now effectively a suite of Level 1/Level 2 post-16 qualifications; consequently, learners are likely to need more support. A blended learning approach may be suitable, but the way a centre approaches the delivery of the above will need to be more nuanced. If cohort sizes (and social distancing/cleaning requirements) allow it, a greater focus on face to face learning may be appropriate. The demand on practical resources/workshops etc that have less capacity due to social distancing/cleaning requirements may mean that unit choice is more restricted/different to previous years.				

Unit and Thematic Guidance	Remote delivery (✔ / X)	Socially distanced (✔ / X)	Comments
BTEC QCF L1 – Engineering			
Unit 1: Working Safely in Engineering **Unit 4: Developing Skills in Planning and Making a Machined Product** **Unit 9: Developing Skills in Routine Servicing of Mechanical Equipment** **Unit 10: Developing Skills in Routine Servicing of an Electrical/Electronic System** **Unit 20: Interpreting and Using Engineering Information** **Unit 21: Engineering Marking Out**	Partially	✔	A blended learning delivery approach is possible with these units, as they contain a mix of non-practical (theoretical in nature) and practical activities. Activities that do not require the direct use of a workshop/laboratory can be delivered remotely. For example, in Unit 4, Learning Outcome 2 learners could use engineering drawings to plan the manufacture of an engineered product. For practical activities, such as those required for Unit 1, Learning Outcome 4, learners need access to a workshop/laboratory to complete supervised engineering tasks safely and to the required standard. Reduced workshop/laboratory capacity for social distancing/extra cleaning may mean that the delivery has to be based on smaller sub-groups and delivery may need to be staggered.
Unit 2: Developing Skills in Making Engineering Components Using Hand Tools **Unit 3: Developing Skills in Using a Bench/Pedestal Drilling Machine**	**x**	✔	These units are not suitable for remote delivery as they require learners to have access to either an engineering workshop or laboratory to carry out supervised practical activities safely. For example, learners will prepare hand tools, machinery, materials, components and the work area to complete various practical activities safely and to the required standard.

Unit 5: Developing Skills in Assembling Mechanical Components **Unit 6: Developing Skills in Joining Materials Using Welding** **Unit 7: Developing Skills in Electronic Assembly** **Unit 8: Developing Skills in Wiring Electrical Circuits and Components**			Reduced workshop/laboratory capacity for social distancing/extra cleaning may mean that the delivery of these units has to be based on smaller sub-groups and delivery may need to be staggered.
Unit 11: Starting Work in Engineering **Unit 16: Positive Attitudes and Behaviours at Work** **Unit 17: Working in a Team**	Partially	✔	The majority of these units can be delivered remotely and they do not specifically require the use of workshops/laboratories. However, there are some Learning Outcomes that are practical in nature and are more suited to face to face delivery, as they involve team working and demonstrating behaviours and/or attitudes. These activities could be delivered in a classroom setting.
Unit 12: Searching for a Job **Unit 13: Applying for a Job** **Unit 14: Preparing for an Interview** **Unit 15: Interview Skills** **Unit 18: Investigating Rights and Responsibilities at Work** **Unit 19: Planning an Enterprise Activity**	✔	✔	These units are appropriate for remote delivery. For example, investigation and reporting can be completed by learners using relevant documents online and through published databases, which will allow them to complete tasks related to the topic areas. In addition, practical interviewing tasks can be completed online.