

Your guide to the changes for 2021

Following [Ofqual's consultation](#) on arrangements for the assessment of VTQs in 2020/21, we've reviewed units in our Cambridge Nationals and Cambridge Technicals being taken this academic year to provide specific guidance at qualification and unit level on changes to requirements or alternative approaches to support public health guidance.

Our changes are designed to make units to be taken in 2020/21 possible to complete, given the constraints you are all working with, and to make sure that the learning outcomes and assessment criteria can still be met.

We understand that the current disruption continues to change and also varies across regions, so our guidance gives acceptable alternatives you can consider when delivering units in your school /college while following the public health guidance.

Please use the [specification and assignments](#) available on our website, alongside this document, to plan and carry out assessment in 2020-21.

Overview of changes for R110

Unit number	Unit title	Mandatory (M)/ Optional (O)
R110	Preparing and planning for manufacture	M

Which element(s) of the unit are affected?

LO2 requires candidates to manufacture a pre-production product using tools and equipment, but access to workshops/tools may be limited.

What adaptations are possible for this unit?

Adaptations are possible. They should focus on making the manufacturing process as accessible and deliverable as possible in the centre, while still meeting the LO and marking criteria.

Centres can achieve this by:

- Using a simplified product, which would reduce the amount of time that candidates spend in the workshop. Some processes could be carried out outside the workshop, for example in a classroom. Centres will need to consider an alternative engineering drawing used in LO1 that shows the pre-production product.
- Reducing the number of tools and equipment needed.
- Demonstrating a minimum of two different processes.
- Carrying out the quality control check in a classroom rather than a workshop.

What has changed?

What has changed	Detail
<p>Tasks</p>	<p>As described in the guidance for the current set assignments, candidates should choose a common product across units R110, R111 and R112 where possible. This will reduce overall workshop time.</p> <p>The choice of product is key. For example, centres could choose to manufacture a product such as a badge or drill gauge which could reduce the programming and manufacturing period. This would mean less time in the workshop.</p> <p>Learning Outcome 2: Be able to use tools and equipment safely to make a pre-production product</p> <p>For LO2, candidates must manufacture a product from a production plan and engineering drawings, using appropriate tools and equipment. The product should be a non-CNC manufactured pre-production product. After completing the product, the candidate should carry out quality control checks.</p> <p>Possible adaptations:</p> <ul style="list-style-type: none"> • The choice of product will be key. For example, centres could choose to manufacture a product such as a bottle opener or drill gauge. This could be made using less time in a workshop and using relatively few tools, pieces of equipment and processes. • Centres could amend the set assignment product of the mounting pillar by carrying out any two of the following manually controlled processes: drilling, turning, milling or tapping. • Centres could use a minimum of two different processes to reduce the amount of time needed in a workshop. • The quality control part of the task could take place in a classroom rather than in a workshop. <p>Where centres/candidates have limited access to workshops and tools, the following may help:</p> <ul style="list-style-type: none"> • If candidates would normally practice manufacturing a product as part of teaching and learning before completing their assignment, centres could use: <ul style="list-style-type: none"> • Teacher demonstrations of manufacturing a product • Video or photographic storyboard/booklet demonstrations of a product being manufactured • Demonstrations could include a commentary describing each aspect of the manufacturing process. This should include potential safety issues and appropriate tools. • Candidates could carry out a range of activities in the workshop to show their skills. They could also have a professional discussion to explain how they would use different skills to make the final product. <p>If centres and candidates have no access to workshops or tools for assessment, they will not be able to complete the task. Although adaptations can be made in terms of choosing a different product, reducing the amount of time in the workshop, and carrying out some activities in a classroom, manufacturing a product will require access to a workshop.</p>

What has changed	Detail
Centre guidance/assessment guidance	N/A
Other documentation, e.g. witness statements	No changes required.
Considerations for moderation	Moderation needs to consider that: <ul style="list-style-type: none"> • candidates may have limited access to tools and resources • some tasks may not have been carried out in a workshop. Explanations and descriptions may be limited in technical terminology.

Overview of changes for R111

Unit number	Unit title	Mandatory (M)/ Optional (O)
R111	Computer aided manufacturing	M (for Certificate)

Which element(s) of the unit are affected?

For LO2 and LO3, candidates have to program, set up and operate CNC machinery, which cannot be remotely assessed. Access to CAD and CNC software, and the use of the workshop areas, may be limited.

What adaptations are possible for this unit?

Adaptations are possible for each of these LOs. They should focus on making the process as accessible and deliverable in the centres as possible, while still meeting the LOs and marking criteria.

Centres can achieve this by:

- Simplifying the product to be manufactured by making the programming operations simpler. This could reduce the amount of time spent in the workshop.
- Producing one product rather than a batch.
- Demonstrating a minimum of two different processes.

What has changed?

What has changed	Detail
Tasks	<p>As described in the guidance for the current set assignments, candidates should choose a common product across units R110, R111 and R112 where possible. This will reduce overall workshop time.</p> <ul style="list-style-type: none"> • The choice of product will be key for this. For example, centres could choose to manufacture a product such as a badge or drill gauge. This could reduce the programming and manufacturing period, resulting in less time in the workshop. <p>Learning Outcome 2: Be able to interpret information from CAD to manufacture components on CNC equipment</p> <ul style="list-style-type: none"> • For LO2, candidates have to produce and export a CAD drawing to a CNC machine, carrying out on-screen simulation, while making sure that programming operations have been carried out.

What has changed	Detail
	<p>Possible adaptations:</p> <ul style="list-style-type: none"> • Candidates could be shown screenshots of CAD and transferring to a CNC machine. Candidates can use these to explain how to export a CAD drawing to a CNC machine, explaining key commands while explaining the procedure. The use of screenshots showing the use of G codes could further be explained to include the use of datum points, co-ordinates, tool changeover and tool offsets. • Candidates could show their interpretation of a CNC program by clearly annotating the screenshots provided, or through professional discussion.
	<p>Learning Outcome 3: Be able to set up and use CNC equipment to manufacture components</p> <p>For LO3, candidates have to set up CNC equipment, use the equipment safely to manufacture a part and compare methods used to manufacture parts manually or by computer control.</p> <p>Possible adaptations:</p> <ul style="list-style-type: none"> • The choice of product is key. For example, centres could choose to manufacture a product such as a badge or drill gauge. This could reduce the programming and manufacturing period, resulting in less time in the workshop. • The candidate could produce a risk assessment for the safe use of the selected CNC machine in the classroom. This should identify hazards and personal protective equipment (PPE) to be used. • To further reduce the time in the workshop for each candidate, each CNC-produced part could be combined with those produced by other candidates. They could be treated as a batch for the purposes of comparing CNC-manufactured parts with those manufactured by hand. • When comparing manual control to CNC production, the centre could provide parts which have been pre-manufactured using each method. They could ask candidates to comment on finish, accuracy, tolerance and so on. This could be carried out in a classroom.
Centre guidance/assessment guidance	N/A
Other documentation, e.g. witness statements	<p>No changes required.</p> <p>If candidates work on assessed work away from the centre, centres must monitor progress, prevent plagiarism and make sure that the work is completed to requirements. See sections 4.3 and 4.5 of the specification. Centres must supervise practical work to make sure it meets health and safety requirements.</p>
Considerations for moderation	<p>Moderation needs to consider that:</p> <ul style="list-style-type: none"> • candidates may have limited access to tools and resources • some tasks may not have been carried out in a workshop. <p>Explanations and descriptions may be limited in technical terminology.</p>

Overview of changes for R112

Unit number	Unit title	Mandatory (M)/ Optional (O)
R112	Quality control of engineered products	M (for Certificate)

Which element(s) of the unit are affected?

For LO2, candidates need access to inspection equipment and parts to gather data for quality control checks.

Use of workshop areas may be limited.

What adaptations are possible for this unit?

Adaptations are possible. They should focus on the quality inspection of a manufactured product, and making the process as accessible and deliverable as possible in the centre while still meeting the LO and marking criteria.

This could be achieved through:

- Using products that have been manufactured from Units R110 and R111. This would reduce the amount of time that candidates spend in the workshop.
- Reducing the amount of inspection equipment needed.
- Demonstrating a minimum of two different processes.
- Carrying out the quality control check in a classroom rather than a workshop.

What has changed?

What has changed	Detail
Tasks	<p>As described in the guidance for the current set assignments, candidates should choose a common product across units R110, R111 and R112 where possible. This will reduce overall workshop time.</p> <p>The choice of product is key. For example, centres could choose to manufacture a product such as a badge or drill gauge. This could reduce the programming and manufacturing period, resulting in less time in the workshop.</p> <p>Learning Outcome 2: Be able to assess product quality from inspection and quality control techniques</p> <p>For LO2, candidates have to develop and describe quality control techniques used in stages of production, apply these during the inspection of products using selected equipment and evaluate the final product.</p> <p>Possible adaptations:</p> <p>Candidates could use their own manufactured products from Units R110 and R111, or they could be presented with pre-manufactured products which have been produced by hand and by CNC machining. They should be asked to select two different items of inspection equipment to carry out basic quality checks.</p>

What has changed	Detail
Centre guidance/assessment guidance	N/A
Other documentation, e.g. witness statements	No changes required.
Considerations for moderation	<p>Moderation needs to consider that:</p> <ul style="list-style-type: none"> • candidates may have limited access to tools and resources • some tasks may not have been carried out in a workshop. <p>Explanations and descriptions may be limited in technical terminology.</p>

Support

OCR's team of expert Subject Advisors has created videos, webinars, and other resources to guide you through these changes and help you prepare your students for their exams in summer 2021.

These resources can be found on [the qualification page on our website](#).

Contact us

If you would like to contact us, you can do so at:

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