

PRINCIPLES IN ENGINEERING AND ENGINEERING BUSINESS J830, J840

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 R104

Unit number	Unit title	Mandatory (M)/ Optional (O)
R104	Optimising performance in engineering systems and products	M

Which element(s) of the unit are affected?

LO4 requires the use of tools and equipment to perform maintenance tasks on a product, but access to workshops/tools may be limited.

What adaptations are possible for this unit?

Adaptations are possible. They should focus on making the optimisation process for LO4 as accessible and deliverable as possible in the centre while still meeting the LO and marking criteria.

Centres can achieve this through suitable choices of product, and by reducing the number of maintenance tasks so that:

- The range and types of equipment needed is minimised and simplified.
- Different candidates can potentially use different tools/equipment if more than one product is used across the teaching group.
- Workshop access is not necessarily needed and there is as much flexibility as possible about where the task can take place.

What has changed?

What has changed	Detail
Tasks	<p>Learning Outcome 4: Be able to perform simple procedures to optimise product/system performance</p> <p>For LO4, candidates must carry out simple maintenance tasks on a product.</p> <p>Possible adaptations:</p> <p>The choice of product is key. For example, set assignment B uses a workshop compressor, which may not be possible if workshop access is restricted. Teachers can choose alternative products that may be suitable in a classroom with a small range of appropriate tools. The following are examples:</p> <ul style="list-style-type: none"> • electric drill/power tools – replacing the motor brushes • electric kettle – replacing the heating element • hydraulic bottle jack – changing the oil or replacing hydraulic fluid • vacuum cleaner – replacing the belt. <p>To make best use of assessment time and resources, candidates could carry out fewer maintenance tasks. In order for candidates to be able to meet the marking criteria and access the full range of mark bands, at least one task should be carried out across each of the criteria. For example:</p> <ul style="list-style-type: none"> • use manufacturer's/system information for system check • use tools and equipment safely • check armature wear within tolerance • replace motor brushes. <p>Centres could also consider candidates carrying out maintenance tasks in small groups if possible. If sharing tools and equipment makes this more difficult, one candidate could perform the maintenance tasks while others look at the manufacturer's instructions and identify potential hazards. This could be swapped over on different products so that everyone gets an opportunity to do the maintenance tasks.</p> <p>The aim must be for the candidate to perform the maintenance tasks. It's hard to replicate the task without this.</p>
Centre guidance/assessment guidance	N/A
Other documentation, e.g. witness statements	<p>No changes required.</p> <p>If evidence is recorded in a group activity, the witness statement should record the contribution of an individual candidate, as distinct from that of the group as a whole.</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>

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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