



NQ Verification 2013–14 Key Messages Round 3

01

Section 1: Verification group information

Verification group name:	Engineering Science
Verification event/visiting information	Event
Date published:	June 2014

National Courses/Units verified:

National 5 Course Assignment (IACCA)

02

Section 2: Comments on assessment

Assessment approaches

All centres used the SQA-provided Course Assignments, therefore ensuring that all assessment instruments were valid.

Assessment judgements

The majority of centres verified were Accepted or Accepted*. Accepted* indicates that there are some recommended actions, but that there was overall agreement with the approach to assessment and the reliability of the assessment judgements. Additional guidance is given below on the sections of the assessment task.

Section 1

Specifications were completed particularly well across the sample; however, a number of issues were present in the systems/sub-systems diagrams. For example, a number of centres had consistent errors in presenting the diagrams in a standard format, ie incorrect system boundaries, boxes around inputs and outputs, incorrect feedback loops, lack of drivers, components in the wrong place, etc.

Section 2

It is worth noting that flowcharts may have errors in them at this point — it is early in the design process. However, they should be fixed after testing (Section 3b). Sketches for structures/mechanisms are required and these, in general, were found to be of a good standard. While it is worth remembering that we are not assessing the quality of the graphic work, it is helpful to ensure that sketches are appropriately annotated.

Section 3a

Evidence must be provided for a constructed model of the structure and/or mechanism (alternatively, evidence of a simulation would suffice).

Please note that any model must be the candidate's own work. Use of a pre-built model without evidence of simulation will mean that the candidate will be awarded zero marks.

The materials and components used for the sub-system must be stated and fully justified. A large variance was found in the samples with respect to the quality of the evidence provided for this section.

Section 3b

Evidence must be provided for a constructed microcontroller/electronic sub-system, along with attached inputs and outputs (alternatively, evidence of a simulation would suffice).

Please note that any model must be the candidate's own work. Use of a pre-built model without evidence of simulation will result in the candidate being awarded zero marks.

In addition, a correct microcontroller code (to match the flowchart from Section 2) must be included. If the code is further developed at this point to improve the system, further versions of the code must be supplied.

Although the band descriptors call for integration with the mechanical sub-system, this was not insisted on due to practical difficulties.

Examples of good practice found included the inclusion of pin-out diagrams to clearly define what input or output each pin was connected to, and the inclusion of comments within the programme code.

Section 4

Evidence for this section must include detail of the tests planned and what outcomes were expected (future tense), details of the actual test results (past tense) and details of any adjustments made as a result of the tests.

This was found to be a real challenge to a significant number of centres. It is not good enough to say that a system worked. Comments must compare each sub-system with the original specification and note any adjustments made, giving justifications for the adjustments to the system.

Section 5

Evaluations should refer to the outcomes from Section 4, comparing them with the original specification from Section 1 and suggesting possible improvements to the system.

A full record of progress should include lesson-by-lesson details of what was done, teacher assistance required and what was learned.

Please note that full descriptive responses are required to meet the level of challenge of the National 5 Course.

03

Section 3: General comments

Internal verification

It was found that some centres had robust policies in place and had evidence of following them. However, policy statements on their own, without evidence of implementation, are not enough to ensure good quality assurance practices.