



**Higher National Qualifications**

**Qualification Verification Summary Report 2017**

**Mathematics and Statistics**

## Introduction

Eleven external verification visits were carried out by the team this session. In almost all the centres visited practice was found to be of a very high standard. However, there were a few cases where assessments and/or marking approaches did not meet the national standard.

The following units were externally verified:

H7K0 33	Engineering Mathematics 1
H7K1 34	Engineering Mathematics 2
H7K2 34	Engineering Mathematics 3
H7K3 35	Engineering Mathematics 4
H72M 34	Mathematics for Civil Engineering
DG4P 35	Mathematics for Engineering 3
DN8D 33	Mathematics for Science 1
F84K 35	Statistics for Business

## Category 2: Resources

**Criterion 2.4: There must be evidence of initial and ongoing reviews of assessment environments; equipment; and reference, learning and assessment materials.**

All the centres visited had established internal quality control procedures, and there was documented evidence of effective ongoing reviews.

Unit specifications and assessment support packs are amended occasionally, and centres must ensure that they are using the most up-to-date unit specification and assessment support pack.

## Category 3: Candidate support

**Criterion 3.2: Candidates' development needs and prior achievements (where appropriate) must be matched against the requirements of the award.**

All centres visited have processes in place to ensure that candidates' development needs are being attended to and that any prior achievements were taken into consideration. All centres regularly review their teaching materials to ensure that they are appropriate to the needs of candidates.

**Criterion 3.3: Candidates must have scheduled contact with their assessor to review their progress and to revise their assessment plans accordingly.**

Candidates have scheduled contact with assessors to review their progress and, where appropriate, to revise assessment plans at all centres visited.

## **Category 4: Internal assessment and verification**

### **Criterion 4.2: Internal assessment and verification procedures must be implemented to ensure standardisation of assessment.**

All centres visited have developed robust, effective and routinely applied internal quality control procedures.

When discrepancies in marking scheme interpretation are identified through internal verification, centres must ensure that the marking scheme is clarified so that all assessors apply consistent marking decisions.

### **Criterion 4.3: Assessment instruments and methods and their selection and use must be valid, reliable, practicable, equitable and fair.**

Internal verification of assessment instruments is universally applied by most centres verified. Most centres have developed their own contextualised assessments to suit the course of study and to meet candidates' needs. This approach gives candidates a greater sense of ownership of the subject, as it is possible for them to see how mathematics relates to their own chosen field in a readily accessible way.

Centres should ensure that they are using an assessment instrument that is consistent in content and level with the unit specification. More advanced material should be dealt with separately, as it is not appropriate to assess this material in the context of the unit specification.

Assessment instruments should not be the same except for the numbers, and, where sampling is appropriate to the unit specification, those items which are not sampled must be covered in the alternative (re-sit) assessment. Care should also be taken to avoid unnecessarily complicated language or contexts as this can constitute a barrier to achievement, particularly in cases where candidates do not have English as a first language.

Centres are advised to submit any centre-devised assessment instruments to SQA for prior verification.

### **Criterion 4.4: Assessment evidence must be the candidate's own work, generated under SQA's required conditions.**

All the centres verified have adopted a variety of procedures to ensure the authenticity of candidate submissions. Almost all centres verified conduct assessments in line with the requirements of the unit specification.

Where a candidate does not meet the required threshold in an assessment instrument, the candidate should be given an alternative assessment instrument. In mathematics and statistics units it is not appropriate for assessors to allow candidates to change assessment responses after an assessment opportunity.

**Criterion 4.6: Evidence of candidates' work must be accurately and consistently judged by assessors against SQA's requirements.**

Most centres visited had clear, effective and routinely applied policies that ensured candidates' work was accurately and consistently judged by assessors. Centres must ensure full alignment and consistency across all assessors.

Centre-devised marking schemes should take into account the SCQF level of the unit specification being assessed. In the case of SCQF level 6 units, the Higher Mathematics marking approaches form a sound basis for allocating marks in HN units. Similarly at SCQF level 7, the Advanced Higher Mathematics marking approaches form a sound basis.

Centres should ensure that follow through marks are awarded where appropriate, as long as working is not eased. In addition, centres should not award a disproportionately large number of marks for trivial processes and arithmetic.

**Criterion 4.7: Candidate evidence must be retained in line with SQA requirements.**

All centres visited complied with SQA policies and procedures regarding the retention of candidate evidence.

**Criterion 4.9: Feedback from qualification verifiers must be disseminated to staff and used to inform assessment practice.**

All centres visited had policies and procedures to ensure that feedback from qualification verifiers is disseminated to staff and used to inform assessment practice.

**Areas of good practice reported by qualification verifiers**

The following good practice was reported during session 2016–17:

**Cross marking**

Some centres routinely cross-mark candidate evidence when their mark came near the threshold for achievement.

To support new assessors, and to gain consensus on assessment decisions, group internal verification was carried out at a standardisation event.

**Specific areas for development**

The following areas for development were reported during session 2016–17.

**Marking clarity**

Care should be taken when marking to show where marks are awarded, and the totals should also be shown clearly. SQA recommends the use of our general marking symbols, which can be obtained from the website. Marking allocation should be clear, whether a mark is awarded or not.

Note that half marks should not be used.

### **Marks for arithmetic**

Marks should be awarded for the particular knowledge and/or skills being tested. Marks can be awarded for arithmetic accuracy in an answer, but these should be kept to a modest level. Errors in arithmetic should be penalised where they occur.

### **Working shown and implicit marks**

Marks should normally be awarded only where working is shown. In algebraic 'short' steps, marks can be awarded implicitly, but it should be made clear on the marking scheme when this is possible. Extended pieces of work must show working.

### **Clarity of wording**

The wording of some centre-devised questions were found to be ambiguous or unnecessarily complicated. Care should be taken to minimise uncertainty when preparing assessment instruments; and it should be clear to the candidate exactly what is required to obtain the available marks. Marks should not be awarded for processes not asked in the question (unless the context makes this obvious). Assessment writers should remember that some candidates may not have English as a first language, and unnecessarily complicated wording should be avoided.

### **Use of formulae and instruction sheets**

Centres may provide formulae sheets where appropriate. Many assessment support packs contain formula sheets. The formulae sheets should collate required formulae, but they should not be presented in a way which explains how to apply them, or leads candidates through the problems. Only formulae at the correct SCQF level should be included. Calculator instruction sheets should not be used for closed-book assessments.

### **Similarity of alternative assessment instruments**

Alternative assessment instruments should be of a similar standard, but should be sufficiently different from each other that candidates will not be able to predict the content of the assessment. Question order could be changed from one assessment instrument to the next. In cases where performance criteria are sampled, different samples should be selected in different assessment instruments.

### **Assessment material availability**

In cases where a candidate has attempted an assessment and made a re-sit attempt, all pieces of assessment evidence should be made available for verification.