



**National Qualifications 2017
Internal Assessment Report
Skills for Work: Laboratory
Science**

The purpose of this report is to provide feedback to centres on verification in National Qualifications in this subject.

National Courses

Skills for Work: Laboratory Science at SCQF level 5

F86K 75	Careers Using Laboratory Science
F86L 75	Working in a Laboratory
F86M 75	Practical Skills
F86N 75	Practical Investigation

General comments

The course has been delivered by centres since session 2010–11.

All centres visited in session 2016–17 had a very good understanding of the requirements of the course/units and had made contact with other centres prior to undertaking the course for the purposes of sharing resources and good practice.

The approval visits prior to the delivery of the course have been particularly useful for both centres and verifiers. These provided opportunities to discuss any issues related to the course which required clarification, for example appropriate internal verification and course assessment procedures, as well as what to expect in an external verification visit.

As part of SQA's commitment to regularly review qualifications to ensure they are relevant and fit for purpose, a scoping exercise was undertaken in 2016 to determine whether the National 5 Laboratory Science Skills for Work Course was still fit for purpose. Various stakeholders, including presenting centres, candidates and employers were consulted to provide a comprehensive appraisal of the current provision. The structure and framework of the qualification was deemed to be appropriate, and therefore remain unchanged. However, there have been changes to the content in the *Careers Using Laboratory Science* unit and updates to the *Working in a Laboratory* unit.

Centres should be aware that the course and unit specifications have been re-coded and updated to the new templates for National Qualifications. Centres must ensure that they are using these updated versions from session 2017–18 onwards. Centres are advised that there is new for old approval; ie they do not require to be re-approved for the course if they have been prior approved.

Course arrangements, unit specifications, instruments of assessment and exemplification materials

Assessors and internal verifiers in all centres were very familiar with the course as a whole, as well as the individual unit specifications. SQA assessment materials were used by all centres with appropriate changes to enhance the candidate experience. SQA support materials for the units were also used, again with appropriate changes and additions to support learning and individual centre assessment strategies. Any materials organised by centres ensured that the materials did not deviate from the required assessment of outcomes for all units. Where centres could justify omissions from the assessments, in order to avoid repetition for candidates for example, this was deemed appropriate by external verifiers if changes were documented and agreed internally by centres.

Evidence requirements

The evidence submitted during external verification showed a clear understanding of the requirements by all centres. There were no omissions for any outcomes in all units. Assessment evidence was well presented and easily accessible for external verification of each candidate.

Administration of assessments

All centres assessed the units of the course to an appropriate standard and were able to justify all assessment decisions. Where candidates did not meet the standard required for an outcome within a unit, centres made it very clear as to why the standard had not been met and appropriate remediation was offered before candidates were re-assessed. Centres presented all assessments and assessment decisions as evidence.

Appropriate internal verification was evident in all centres. All centres also had internal verification plans and documented evidence to show discussion of internal verification issues arising during the course, and decisions regarding these issues.

Most centres were in the process of completing the *Practical Investigation* unit at point of external verification, however could show that good plans were in place to complete the teaching and assessment of this unit.

Areas of good practice

Science technicians in the centres visited played an effective part in demonstrating and checking candidate scientific techniques, and by offering an example of a career path in a science context. The technicians in almost every centre had completed or were in the process of completing the level 3 microbiology course with Scottish Schools Education Research Centre and were able to use this experience to give good advice to both assessors and candidates.

Centres opted to deliver the *Careers using Laboratory Science* unit throughout the course. This is good practice as it allows candidates time to reflect with regard to their self-evaluations on scientific and work-related skills. Many centres also managed this time in order to have individual discussions with candidates about their progress and to offer suggestions to ensure achievement in areas of difficulty.

Many centres combined outcomes in this unit to avoid repetition for candidates. Where outcomes had been overtaken by candidates during the completion of their presentation, centres clearly indicated where this had occurred. Centres ensured that the three self-evaluations required in this unit were suitably spread out throughout the course, with the first at the beginning and the last towards the end. The self-evaluations were discussed with candidates and progress in each skill area was evident.

Although not mandatory, many centres organised visits to industry to enhance the candidate experience and allow candidates to see science skills in action in the workplace and talk to working scientists about their career paths. Other centres had organised visits from science, technology, engineering and mathematics (STEM) ambassadors to the centre for the same purpose. Some centres had extensive links with local further education (FE) colleges/universities and many of the practicals/assessments were conducted at FE colleges/higher education establishments.

Many centres had employability principal teachers and careers officers with whom they liaised to enhance the overall course, setting up mock interviews and application forms for employment as well as the aforementioned STEM ambassador visits.

As the course covers work from all areas of science, some assessors referred to colleagues for advice and guidance in specific areas where they had a particular expertise.

All centres followed internal verification processes. Discussions at departmental meetings pertinent to the course were also evident, and any decisions made were well-documented.

Specific areas for improvement

Centres should ensure that internal verification takes place as soon as possible after completion of the outcomes and that internal verification is dated. This ensures that candidates are given feedback as quickly as possible and are given the best opportunity to pass an outcome on the next attempt after appropriate remediation. Where visual verification of candidate practical work has taken place, centres should make this clear for external verifiers. This can be best established by inclusion in the centre's verification policy for this course. The verification policy should be concise and agreed by assessors and internal verifiers.

The *Careers using Laboratory Science* unit should be assessed throughout the course to ensure that the first self-evaluation is undertaken by candidates close to the start of the course, the second approximately half-way through the course, and the last evaluation towards the end of the course. This will ensure that progress is made by candidates in terms of the skills involved, including practical skills which are undertaken in other units. SQA materials give exemplification of the candidate responses in the candidate reviews of these skills and progression in these skills should be evident for each candidate in their folio.

Centres should ensure that candidates present at least one piece of evidence for the completion of each calculation type in the *Working in a Laboratory* unit. Where this evidence is contained in another unit, for the purpose of external verification, it should be made clear where the evidence can be found. Centres should encourage candidates to use an appropriate number of significant figures for the final answers' calculations, and ensure the use of units in final answers where appropriate. If significant figures and units are not considered by candidates in evidence, then the evidence presented will be deemed inappropriate. It is recommended that this unit should be the final unit delivered as it allows the scientific and employability skills gained in the other units to be used in a practical scientific situation.

Centres should ensure that candidates are aware that the evidence for the titration practical in the *Practical Skills* unit requires them to show initial and final volumes with appropriate units.

Where centres produce their own class records for external verification they should ensure that these records match closely with the exemplar records produced in SQA materials.