Advanced Higher Engineering Science

Subject-specific guidance on gathering key evidence in session 2020–21

Please read this guidance alongside National Courses: guidance on gathering evidence and producing estimates and the SQA Academy resource, Quality assurance of estimates for National Courses.

Gathering key evidence for Advanced Higher Engineering Science

This document and National Courses: guidance on gathering evidence and producing estimates will give you additional support and guidance to support your decision making for session 2020–21. Evidence should be gathered later in the course, as a realistic reflection of a candidate’s attainment. It is important to note that it is not the quantity of evidence, but the quality of evidence, in relation to its predictive value, that will support you during this process.

The following types of key evidence are likely to provide a good predictive value and may be helpful to you, although there may be other types of key evidence you would like to use.

Types of key evidence

While evidence to support a provisional result can come from a variety of sources (including naturally-occurring evidence during learning and teaching), there are certain types of evidence that provide a clearer indication of candidate ability. Typically, these closely represent the normal components of course assessment:

♦ question paper (50% of the marks of a candidate’s grade)
♦ project (50% of the marks of a candidate’s grade)

The modifications made to the Advanced Higher Engineering Science course assessment still stand and for session 2020–21, we have removed the project. While you must deliver all course content, we would not expect you to gather project evidence to help determine a candidate’s ability and to decide on a provisional result.

You can use the following types of evidence. We have listed the evidence in order of what might be the most useful in the current situation. However, you are not obliged to use them or to use them exactly as they are.
1 Internally assessed question paper
Performance in an internally assessed question paper (closely matching the live question paper) is an excellent indication of candidate attainment.

Ideally, a question paper of the same duration, mark allocation, demand, and content sampling as the live question paper. You can find full details of the question paper in the Advanced Higher Engineering Science course specification available on SQA’s website.

If you are creating an internally assessed question paper from past papers, you must ensure that there is an appropriate mix of questions from different sources (and, ideally, adaptations or alterations) to make it comparable to an unseen assessment.

2 Class tests
Class tests are good indicators of candidate attainment. These tend to focus on specific content areas and may have a shorter duration than an internally assessed question paper, but are still of value when determining candidate attainment.

You must consider the demand of the class test when determining its value (for example, if it only contains grade C questions or the opportunity to demonstrate grade C skills, it cannot be an indication of grade A performance). Likewise, a single class test cannot demonstrate integration or retention of knowledge or skills over time.

This would not be indicative of the overall attainment of a candidate, but a series of class tests could consolidate evidence such as an internally assessed question paper to support a provisional result.

3 Project
The application of practical skills and practical problem solving is important in Advanced Higher Engineering Science, however, because of the current situation, assessing in this way is impracticable for many centres. That is why we removed the project for session 2020–21 as part of our assessment modifications, and why we would not expect to see project evidence from centres.

Smaller scale project work (that demonstrates the application of practical skills and practical problem solving) is a good indicator of candidate attainment. This would be much shorter and less demanding than the project component of course assessment but could certainly consolidate other evidence (such as an internally assessed question paper) to support a provisional result.

Delivery and assessment
All course content must still be delivered. However, there is no requirement to have evidence of every skill and every area of content. You should holistically review each candidate’s performance when determining their provisional result.

Demand
The demand of evidence must also be considered. Demand is typically defined in two ways — by the content being assessed and by the nature of the assessment.
The following illustrates demand in a question paper and a project:

**Question paper**

**Content** — some content is more straightforward than others. Grade C content is knowledge relating to simple engineering principles, project management, or similar. Grade A content is a more detailed knowledge of complex engineering principles, or similar.

**Nature of assessment** — there are different ways that we can assess using a question paper. Grade C assessment is typically questions asking candidates to ‘describe’, where candidates perform simple calculations, or similar. Grade A assessment is typically asking candidates to ‘explain’ or ‘discuss’, where candidates perform complex calculations (which could include multiple stages or calculus), or similar.

**Project**

**Nature of assessment** — there are different ways that we can assess using a project. Grade C assessment is typically when candidates demonstrate simple engineering skills, processes, or similar. Grade A assessment is when they demonstrate complex engineering skills, processes, modelling, or similar. Another differentiation is by the depth and detail of response.

**Using additional assessment resources for session 2020–21: key information**

It is important that you use valid and reliable assessment when gathering evidence in session 2020–21.

In Advanced Higher Engineering Science, SQA will provide a question paper for session 2020–21. Please note that the marking instructions have not been standardised based on candidate responses. You may therefore need to agree within your centre how to consistently mark an item if a candidate response is not covered by the marking instructions.

The Advanced Higher Engineering Science question paper will only be available on SQA’s secure website — you must treat this confidentially, in the same way as other live assessment materials.

You have the option to use the question paper as an internal assessment for gathering candidate evidence. Question papers can be split to support assessments you carry out during class time.

If you use a question paper in part or in its entirety, you should remind candidates that they must not discuss the content of the paper with anyone, including friends, family or on social media.
Understanding the national standard

Examples of how to apply the marking instructions for the question paper are available for Advanced Higher Engineering Science on SQA's Understanding Standards website.

Here you can also find the annual course reports for Engineering Science for 2018 and 2019. These provide a summary of the areas candidates performed well in and the areas candidates found demanding. They also contain advice on preparing candidates for future assessment, and statistical data relating to grade boundaries.