



# **Advanced Higher Physics: Understanding the next steps for session 2016–17**

Early in 2016, each subject area was reviewed and the results published in individual [Subject Review Reports](#) in May. Some actions applied immediately for candidates in session 2016–17, other actions were for later years.

This Guidance note explains the impact on assessment for candidates being presented in session 2016–17 and must be read in conjunction with the Subject Review Report as the principal guide to arrangements for this year.

(Previously published subject documents affected by the subject changes will be amended in due course. There may be a period of misalignment.)

# Session 2016–17

## Unit assessment

### Advanced Higher

- ◆ During this session develop two Unit tests for each Unit in the Course, covering Assessment Standards (AS) 2.1 and 2.2, and which better reflect the skills and knowledge requirements of physics. Allocate marks to the questions and introduce a cut-off score of 50% for the achievement of Outcome 2.
- ◆ Guidance will be produced to provide advice on how to adapt current Unit assessment support packs — Assessment Standards 2.1 (KU) and 2.2 (PS) — into one test, with marks and a cut-off score. This will act as an interim measure until the single tests are available.
- ◆ For Outcome 1, introduce a criterion for a pass of five out of six Assessment Standards, excluding the *Investigating Physics* Unit.

It should be noted that there will still be the requirement for candidates to be given the opportunity to meet all Assessment Standards. The above threshold has been put in place to reduce the volume of re-assessment, where that is required.

- ◆ **Outcome 1**  
(H7XD 77 *Physics: Rotational Motion and Astrophysics*,  
H7XE 77 *Physics: Quanta and Waves* and H7XF 77 *Physics: Electromagnetism* Units)

Centres are reminded that the transfer of evidence arrangements, that are already in effect for Advanced Higher, mean that most candidates will not be assessed on Outcome 1 in the two Units listed, as where the candidate's evidence meets the standards for the Outcomes and Assessment Standards of the *Investigating Physics* Unit (H7XG 77), this can be used as evidence for Outcome 1 of the other Units, without the need to match the evidence against the Assessment Standards. (The converse does not apply).

Candidates would only need to be assessed for this Outcome if they were completing standalone Units or had not achieved the *Investigating Physics* Unit and they wished to attain the other three Units.

Where candidates need to be assessed on this Outcome, they are no longer required to show full mastery of the Assessment Standards to achieve Outcome 1. Instead, five out of the six Assessment Standards for Outcome 1 must be met to achieve a pass.

| Assessment Standard | Achieved (✓ or x) |      |      |      |      |      |
|---------------------|-------------------|------|------|------|------|------|
|                     | 1.1               | x    | ✓    | ✓    | ✓    | ✓    |
| 1.2                 | ✓                 | x    | ✓    | ✓    | ✓    | ✓    |
| 1.3                 | ✓                 | ✓    | x    | ✓    | ✓    | ✓    |
| 1.4                 | ✓                 | ✓    | ✓    | x    | ✓    | ✓    |
| 1.5                 | ✓                 | ✓    | ✓    | ✓    | x    | ✓    |
| 1.6                 | ✓                 | ✓    | ✓    | ✓    | ✓    | x    |
| <b>Pass/Fail</b>    | Pass              | Pass | Pass | Pass | Pass | Pass |

**Important note:** If assessing Outcome 1, there is still the requirement for candidates to be given the opportunity to meet all Assessment Standards. The above threshold has been put in place to reduce the volume of re-assessment, where that is required.

#### **Re-assessment**

Candidates may be given the opportunity to re-draft their original Outcome 1 report or to carry out a new experiment/practical investigation.

- ◆ **Outcome 2**  
(H7XD 77 *Physics: Rotational Motion and Astrophysics*,  
H7XE 77 *Physics: Quanta and Waves* and H7XF 77 *Physics:*  
*Electromagnetism Units*)

**Assessment Standards 2.1 and 2.2**

Assessment Standards 2.1 (making accurate statements) and 2.2 (solving problems) are no longer required to be passed independently. Assessment Standards 2.1 and 2.2 can now be assessed by means of a single assessment for each Unit.

During session 2016–17, centres have two possible options when assessing Outcome 2 (AS 2.1 and 2.2). Option 1 is detailed on pages 4–7 and Option 2 is on page 8.

## Option 1: Assessment

Candidates can be assessed by means of a single test that contains marks and a cut-off score. A suitable Unit assessment will cover all of the key areas (AS 2.1) **and** assess each of the problem solving skills (AS 2.2).

Where a candidate achieves 50% or more of the total marks available in a single Unit assessment they will pass Outcome 2 for that Unit. Existing Unit assessment support packs can be used during session 2016–17. Guidance on the use of each pack is noted below.

### (a) Unit assessment support pack 1 and 2 (Unit-by-Unit approach)

As these packages contain questions on all of the key areas (AS 2.1) and questions covering each of the problem solving skills (AS 2.2), Unit assessment support pack 1 **and 2 may be adapted** for use as a single assessment for their associated Units.

The number of marks available for each question should be combined to give the total number of marks available. A cut-off score of 50% should be applied to each of these Unit assessments.

The balance of knowledge and skills in the current Unit assessment support packs does not always reflect the relative importance of these within physics, since they do not all adequately assess physics based calculations.

Centres should either replace some of the questions in the Unit assessment support packs or supplement the existing questions with additional questions. In particular, centres may wish to replace existing questions with questions testing physics calculations or add additional questions of this type, so that the tests better reflect the relative importance of calculations in physics.

Where a calculation is of the type known as a 'standard three marker', it should be allocated 3 marks and the general marking principles in the National 5 to Advanced Higher exams used.

Marks for questions testing KU would be allocated on a 1 mark for one response basis, using the marking guidance in the Unit assessment support packs.

If centres are replacing questions, it is important that each key area is still sampled.

Centres may wish to adapt the current Unit assessment support pack tests so that the sampling of each Unit is increased, the tests are out of the same total mark and that total is an even number so that the cut-off is actually 50%.

Where centres are adding additional questions, care should be taken that these questions are of an appropriate standard for Unit assessment and are not 'A grade' type questions. For example, two stage calculations involving two formulae should be split into two separate parts rather than being presented as a 5 mark calculation question.

**(b) Unit assessment support pack 3 (portfolio approach)**

It is still acceptable for centres to use this method of assessment.

Candidates should be given the opportunity to make accurate statements for all of the key areas of each Unit (AS 2.1). They must also be given opportunities throughout the Course to answer questions on each of the three problem solving skills (AS 2.2).

Evidence should be collected as candidates progress through the Course. For Assessment Standard 2.1, candidates must achieve 50% or more of the total KU marks available for **each** Unit. For Assessment Standard 2.2, candidates must achieve 50% or more of the **total** marks available for all three problem solving skills.

Examples are given below:

◆ **Example A**

This candidate has passed Outcome 2 for Units H7XD 77, H7XE 77 and H7XF 77 as they have achieved 50% or more of the total KU marks available for each Unit **and** 50% or more of the total marks available for all three problem solving skills across the three Units.

| Unit  | Assessment Standard<br>(marks achieved) |       |
|---|---|-------|
|   | 2.1                                     | 2.2   |
| H7XD 77 Physics: Rotational Motion and Astrophysics | 10/12                                   | 43/60 |
| H7XE 77 Physics: Quanta and Waves                   | 8/11                                    |       |
| H7XF 77 Physics: Electromagnetism                   | 5/8                                     |       |

◆ **Example B**

This candidate has not passed Outcome 2 for Units H7XD 77, H7XE 77 and H7XF 77 as, although they have achieved 50% or more of the total KU marks available, they have not achieved 50% or more of the total marks available for all three problem solving skills across the three Units.

| Unit  | Assessment Standard<br>(marks achieved) |       |
|---|---|-------|
|   | 2.1                                     | 2.2   |
| H7XD 77 Physics: Rotational Motion and Astrophysics | 6/12                                    | 23/60 |
| H7XE 77 Physics: Quanta and Waves                   | 8/11                                    |       |
| H7XF 77 Physics: Electromagnetism                   | 4/8                                     |       |

## **Option 1: Re-assessment**

SQA's guidance on re-assessment is that there should be one or, in exceptional circumstances, two re-assessment opportunities. Re-assessment should be carried out under the same conditions as the original assessment. It is at a centre's discretion as to how they re-assess their candidates. Candidates may be given a full re-assessment opportunity, or be re-assessed on individual key areas and/or problem solving skills. Regardless of which option is chosen, candidates must achieve 50% or more of each re-assessment opportunity.



## Option 2: Assessment

(H7XD 77 Physics: *Rotational Motion and Astrophysics*, H7XE 77 Physics: *Quanta and Waves* and H7XF 77 Physics: *Electromagnetism* Units)

Centres can continue to use the Unit assessment support packs from SQA's secure site or their own centre devised assessments **in the same way as before**.

If this option is chosen, 50% or more of the KU statements (AS 2.1) made by candidates must be correct in the Unit assessment and at least one correct response for each problem solving skill (AS 2.2) is required to pass Outcome 2. However, if a candidate is given more than one opportunity in a Unit assessment to provide a response for a problem solving skill, then they must answer 50% or more correctly.

## Option 2: Re-assessment

SQA's guidance on re-assessment is that there should be one or, in exceptional circumstances, two re-assessment opportunities. Re-assessment should be carried out under the same conditions as the original assessment. It is at a centre's discretion as to how they re-assess their candidates. Candidates may be given a full re-assessment opportunity, or be re-assessed on individual key areas and/or problem solving skills. Regardless of which KU option is chosen, candidates must achieve 50% or more of each re-assessment opportunity.

**Important note:** During session 2016–17 a single test for Assessment Standards 2.1 (KU) and 2.2 (PS), that will contain marks and a cut-off score will be introduced, as outlined in the Physics Review Report. Two tests for each Unit will be produced; one for assessment, one for re-assessment.

These will include questions testing each of the problem solving skills as well as questions sampling content from each of the key areas.

## **Course assessment**

The word count amount for the Advanced Higher Physics Project has been revised for session 2016–17. As a guide, the Project-report should be between 2,500 and 4,500 words in length excluding the title page, contents page, tables, graphs, diagrams, calculations, references, acknowledgements and any appendices. The word count should be submitted with the Project-report. If the word count exceeds the maximum by 10%, a 3 mark penalty will be applied.

## **Understanding Standards packs**

Existing Understanding Standards packs will be updated in due course.