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Director of Education
Head of Centre
SQA Co-ordinator
Principal Teacher of Physics
Teacher with responsibility for Physics
 Physics Lecturers

**For the attention of all staff responsible for the delivery of
National Qualifications in Physics**

Contact Name: Andrew Shield at Glasgow
Direct Line: 0141 242 2151
e-mail: Andrew.Shield@sqa.org.uk

Dear Colleague,

National Qualifications Update – Physics

This letter is intended to provide centres with information on developments in National Qualifications in Physics. 

I would like to take this opportunity to introduce myself and make contact with you as Qualifications Manager for Physics. As you will be aware Hugh McGill retired from the post last October and I took over the reins in January. I would also like to take this opportunity to thank Mary Weir, Qualifications Officer, for so ably looking after all matters relating to Physics in the intervening months.

Communication between the SQA and practitioners is a high priority and in addition to these twice yearly update letters I can be contacted in a number of ways, through e-mail using the address above, via the direct phone number above and also via the e-mail link on the Physics pages of the SQA website, <http://www.sqa.org.uk>.

Moderation Issues

A number of issues have been identified as a result of the recent central moderation procedure.

At Standard Grade there was a welcome reduction in the number of centres being given a not accepted result, especially on arithmetic errors. There are still a very small number of centres not submitting a complete record of the candidates' attempts at the practical techniques.

Centres are reminded that they are required to give candidates the opportunity to attempt all eight techniques. Some centres have started making useful comments on the flyleaves in the cases where candidates have been unable to attempt a particular technique due to absenteeism, etc. We still continue to see some trivial topics used for Standard Grade

Investigations, e.g. deformation of a balloon when masses are added. Centres are encouraged to read the Senior Moderator's reports from previous years available on the SQA website. For NQ moderation there were still a significant number of centres receiving a not accepted result, the Outcome 3 reports were a particular concern at both Higher and Advanced Higher, with centres attributing a pass to reports which were clearly not at an appropriate standard to the level. Again centres are encouraged to read the Senior Moderator's reports on the SQA website which give feedback on these issues.

Retrospective moderation of AH Physics Investigation will take place in the autumn. Centres should note that if they have candidates who have passed the unit assessment for the investigation but have not submitted an investigation report for the external assessment, then the centre is likely to be selected for retrospective moderation.

Understanding The Standards – AH Physics

A document entitled "Guidelines for Understanding Standards in Physics at Advanced Higher Level" has been placed on the secure website (see your SQA coordinator). This exemplifies sections of the AH Investigation report along with a commentary to indicate the marks awarded and the reasons for awarding the marks. Centres are encouraged to access this document and use it in addition to the Guidance to Candidates and Guidance to Teachers/Lecturers documents available on the SQA website.

Please note that the uplift date for the Investigation Reports in 2005 will be the 28th April.

Professional Development Workshops

The SQA will be running two professional development workshops in Higher Physics in the autumn. These are aimed at helping practitioners understand the procedures and standards applied in Higher Physics. The workshops will be lead by the Principal Assessor for Higher Physics and members of the examining team and aim to inform delegates of issues affecting the performance of candidates in the 2004 examination, consider points for action which may help delegates improve the performance of candidates and provide an opportunity for delegates to focus on points of action, identify best practice and clarify issues.

The workshops will be held in Edinburgh on 28th August and Stirling on 2nd October.

Application forms should be in your centre, or can be submitted electronically via the SQA website.

Similar workshops held in 2003 for English and Mathematics were very well received by delegates.

Physics Data Booklet

All centres will be issued with sufficient copies of the Physics Data Booklet to allow two copies per candidate. One copy should be retained by the centre for use in examinations, the other copy is for use during coursework.

The Physics Data Booklet contains the formulae used at all levels of Physics from Standard Grade to Advanced Higher. It also contains some additional relationships that are appropriate to different levels of Physics and a Periodic table of Elements.

It should be noted that the range of data contained in the booklet has been limited to that syllabus content which may be assessed through written examination papers. This range should be supplemented by other resource material as necessary during the course, e.g. by using data sheets. Should any additional information (or data not included in the booklet) be required in an examination, such information will be included in the examination paper.

Please note that the booklets are intended for use in Physics courses leading to the 2006 examination and beyond. They must NOT be used by candidates undertaking courses for examination in 2005.

Candidates starting courses in Standard Grade in 2004 and candidates starting courses at Access 3, Intermediate 1 and Intermediate 2 levels in 2004 **for examination in 2006** should become familiar with the contents of the booklet through use during coursework.

Use of the booklets for internal assessment purposes is permitted.

The booklet will also be available to download from the SQA website, <http://www.sqa.org.uk>. Additional copies of the booklet can be obtained from the Customer Contact Centre either by e-mail at customer@sqa.org.uk, or by phoning 0141 242 2214.

Revision of Arrangements Documents

Revised versions of the arrangements documents for Standard Grade, Access 3, Intermediate 1 and Intermediate 2 Physics courses **leading to examinations in 2006 and beyond** will be available on the SQA website.

Candidates undertaking examinations in Physics in 2005 should continue to be taught using the current arrangements documents.

One change has been made to the Intermediate 1 and Access 3 arrangements in the Movement unit to focus on the benefits of streamlining.

For the other levels minor changes have been made to Content Statements to improve the consistency of style across Physics courses at all levels. The requirement to state some of the mathematical relationships has been removed with emphasis moved to carrying out calculations involving the relationships between quantities.

Terminology relating to the Radioactivity unit at Intermediate 2 has been updated to reflect current practice. In particular the term “Quality Factor, Q ” has been replaced with the term “radiation weighting factor, w_R ”.

Revised arrangements for Higher and Advanced Higher Physics courses will be issued next year for courses leading to examinations in 2006.

More details on the changes can be found in the appendices to this update letter.

Physical Quantities, Symbols and Units

The Appendices from the Physics General Marking Instructions have been updated to include the relevant changes in arrangements for courses leading to examination in 2006 and beyond. These appendices will be available to download as a separate file from the SQA website as a pdf file.

NABs

NABs for Intermediate 2 Physics have been revised to take account of the updated terminology in the Radioactivity unit.

Revised NABs for use with Intermediate 2 Physics **leading to examinations in 2006 and beyond** will be available on the secure website (see your SQA coordinator).

Candidates undertaking examinations in 2005 should continue to use the present version of the NABs.

The following changes to questions have been made:
 quality factor, Q has been changed to radiation weighting factor, w_R ,
 dose equivalent has been changed to equivalent dose, and
 $H = DQ$ has been changed to $H = Dw_R$, in the marking instructions.

These changes are summarised below:

NAB	Question Paper	Marking Instructions
D382 11/001	p14, q1	p19
D382 11/002	p8, q2	p12
D382 11/003	p8, q3	p12
D382 11/004	p9, q4	p12
D382 11/005	p9, q4	p13

Revisions to NABs for Higher Physics will be issued next year to accompany the revisions to arrangements documents.

NAB Threshold of Attainment

I have received a number of enquiries lately relating to the cut off scores or threshold of attainment (TOA) to be applied to NABs at various levels. It is appreciated that it is some time since guidance was issued on this matter and this information may no longer be readily available in centres.

A reminder of the TOAs to be used for each level and the requirements for Outcome 3 reports (Outcome 2 at Access 3) is included in the appendices.

Centres are reminded that a $\frac{1}{2}$ mark in the total for a candidate's NAB score should be rounded up, e.g. $17\frac{1}{2}$ should be rounded to 18.

Specimen Question Paper

The corresponding changes are being made to the specimen question paper for Intermediate 2 and will be available on the SQA website.

These changes are summarised below:

Question	Amendments	Marking Instructions
33	p20 (text and table amended)	p7

Revisions to the Specimen paper for Higher Physics will be issued next year to accompany the revisions to arrangements documents.

I hope you find the information in this letter helpful. If you require any clarification please do not hesitate to contact me.

Yours faithfully



Andy Shield
Qualifications Manager
Maths, Science & Languages Unit
Qualifications Directorate

Appendices

Appendix A

Changes to arrangements documents

Level	Minor Amendments	Statements Deleted(old)	New Statements Added
Standard Grade	1.2.1, 2.4.10, 3.5.12, 3.5.18, 4.3.3, 4.5.6, 4.5.8, 5.1.5, 5.2.15, 6.3.5, 6.4.10, 6.4.11, 7.2.9, 7.2.18	4.5.7	
Access 3		5.1.7	5.1.7
Intermediate 1		5.1.7	5.1.7
Intermediate 2	2.1.3, 2.1.14, 2.1.15, 2.2.4 (old), 2.4.10, 4.2.2 (old)	1.3.9, 1.3.10, 2.2.3, 4.2.1, 4.2.5, 4.2.6, 4.2.7	1.3.9, 4.2.1, 4.2.2, 4.2.5, 4.2.6, 4.2.7

Appendix B

NAB Threshold of Attainment

Level	Unit	Code	NAB Versions	Threshold of Attainment	Notes
Access 3	Telecommunications	D373 09	NAB001, NAB002, NAB003	9 out of 15 (8 ½)	
	Practical Electricity	D373 09	NAB001, NAB002, NAB003	9 out of 15 (8 ½)	
	Radiations	D375 09	NAB001, NAB002	9 out of 15 (8 ½)	
	Sound and Music	D376 09	NAB001, NAB002, NAB003	9 out of 15 (8 ½)	
	Movement	D377 09	NAB001, NAB002, NAB003	9 out of 15 (8 ½)	
	Electronics	D378 09	NAB001, NAB002, NAB003	9 out of 15 (8 ½)	
Intermediate 1	Telecommunications	D373 10	NAB001, NAB002, NAB003, NAB004, NAB005	12 out of 20 (11 ½)	9 out of 20 (8 ½) TOA for Access 3
	Practical Electricity	D373 10	NAB001, NAB002, NAB003, NAB004, NAB005	12 out of 20 (11 ½)	9 out of 20 (8 ½) TOA for Access 3
	Radiations	D375 10	NAB001, NAB002, NAB003, NAB004, NAB005	12 out of 20 (11 ½)	9 out of 20 (8 ½) TOA for Access 3
	Sound and Music	D376 10	NAB001, NAB002, NAB003, NAB004, NAB005	12 out of 20 (11 ½)	9 out of 20 (8 ½) TOA for Access 3
	Movement	D377 10	NAB001, NAB002, NAB003	12 out of 20 (11 ½)	9 out of 20 (8 ½) TOA for Access 3

	Electronics	D378 10	NAB001, NAB002, NAB003	12 out of 20 (11 ½)	9 out of 20 (8 ½) TOA for Access 3
Intermediate 2	Mechanics and Heat	D379 11	NAB001, NAB002, NAB003, NAB004, NAB005	24 out of 40 (23 ½)	
	Electricity and Electronics	D380 11	NAB001, NAB002, NAB003	24 out of 40 (23 ½)	
	Waves and Optics	D381 11	NAB001, NAB002, NAB003, NAB004, NAB005	12 out of 20 (11 ½)	
	Radioactivity	D382 11	NAB001, NAB002, NAB003, NAB004, NAB005	12 out of 20 (11 ½)	
Higher	Mechanics and Properties of Matter	D383 12	NAB001, NAB002, NAB003, NAB004, NAB005	18 out of 30 (17 ½)	
	Electricity and Electronics	D380 12	NAB001, NAB002, NAB003, NAB004, NAB005	18 out of 30 (17 ½)	
	Radiation and Matter	D384 12	NAB001, NAB002, NAB003, NAB004, NAB005	18 out of 30 (17 ½)	
Advanced Higher	Mechanics	D385 13	NAB001, NAB002, NAB003	18 out of 30 (17 ½)	
	Electrical Phenomena	D386 13	NAB001, NAB002, NAB003	18 out of 30 (17 ½)	
	Wave Phenomena	D387 13	NAB001, NAB002, NAB003	12 out of 20 (11 ½)	

Credit transfer permitted regarding Outcome 3 evidence (Outcome 2 at Access 3)

Level	Credit permitted	Credit not permitted
<i>Advanced Higher</i>	<p>An Outcome 3 report of practical work in any of the units: D385 13 Mechanics or D386 13 Electrical Phenomena or D387 13 Wave Phenomena.</p> <p>may be used as evidence of achievement of Outcome 3 of all three of these units</p>	<p>Candidate records generated as evidence for the assessment of the unit D388 13 Physics Investigation may not be used as evidence of achievement of Outcome 3 of any Advanced Higher Physics unit.</p> <p>Outcome 3 reports of practical work in Advanced Higher Physics units may not be used as evidence of achievement of the Physics Investigation unit.</p>
<i>Higher</i>	<p>An Outcome 3 report of practical work in any of the units: D383 12 Mechanics and Properties of Matter or D380 12 Electricity and Electronics or D384 12 Radiation and Matter.</p> <p>may be used as evidence of achievement of Outcome 3 of all three of these units.</p>	
<i>Intermediate 2</i>	<p>An Outcome 3 report of practical work in any of the units: D379 11 Mechanics and Heat or D380 11 Electricity and Electronics or D381 11 Waves and Optics.</p> <p>may be used as evidence of achievement of Outcome 3 of all three of these units.</p> <p>An Outcome 3 report of practical work in any of the above three units may be used as evidence of achievement of Outcome 3 of unit D382 11 Radioactivity.</p>	<p>As simulation is permitted in the assessment of Outcome 3 of unit D382 11 Radioactivity, an Outcome 3 report for this unit may not be used as evidence of achievement of Outcome 3 of any other Intermediate 2 Physics unit.</p>

Level	Credit permitted	Credit not permitted
<i>Intermediate 1</i>	<p>An Outcome 3 report of practical work in either of the units: D373 10 Telecommunications or D375 10 Radiations may be used as evidence of achievement of Outcome 3 of the other unit.</p> <p>An Outcome 3 report of practical work in any of the units: D374 10 Practical Electricity or D376 10 Sound and Music or D377 10 Movement may be used as evidence of achievement of Outcome 3 of all three of these units.</p>	<p>An Outcome 3 report of practical work in Telecommunications or Radiations may not be used as evidence of achievement of Outcome 3 of Practical Electricity or Sound and Music or Movement or Electronics.</p> <p>An Outcome 3 report of practical work in Practical Electricity or Sound and Music or Movement may not be used as evidence of achievement of Outcome 3 of Telecommunications or Radiations or Electronics.</p> <p>An Outcome 3 report of practical work in the unit D378 10 Electronics may not be used as evidence of achievement of Outcome 3 of any other Intermediate 1 Physics unit.</p>
<i>Access 3</i>	<p>An Outcome 2 report of practical work in either of the units: D373 09 Telecommunications or D375 09 Radiations may be used as evidence of achievement of Outcome 2 of the other unit.</p> <p>An Outcome 2 report of practical work in any of the units: D374 09 Practical Electricity or D376 09 Sound and Music or D377 09 Movement may be used as evidence of achievement of Outcome 2 of all three of these units.</p>	<p>An Outcome 2 report of practical work in Telecommunications or Radiations may not be used as evidence of achievement of Outcome 2 of Practical Electricity or Sound and Music or Movement or Electronics.</p> <p>An Outcome 2 report of practical work in Practical Electricity or Sound and Music or Movement may not be used as evidence of achievement of Outcome 2 of Telecommunications or Radiations or Electronics.</p> <p>An Outcome 2 report of practical work in the unit D378 09 Electronics may not be used as evidence of achievement of Outcome 2 of any other Access 3 Physics unit.</p>

