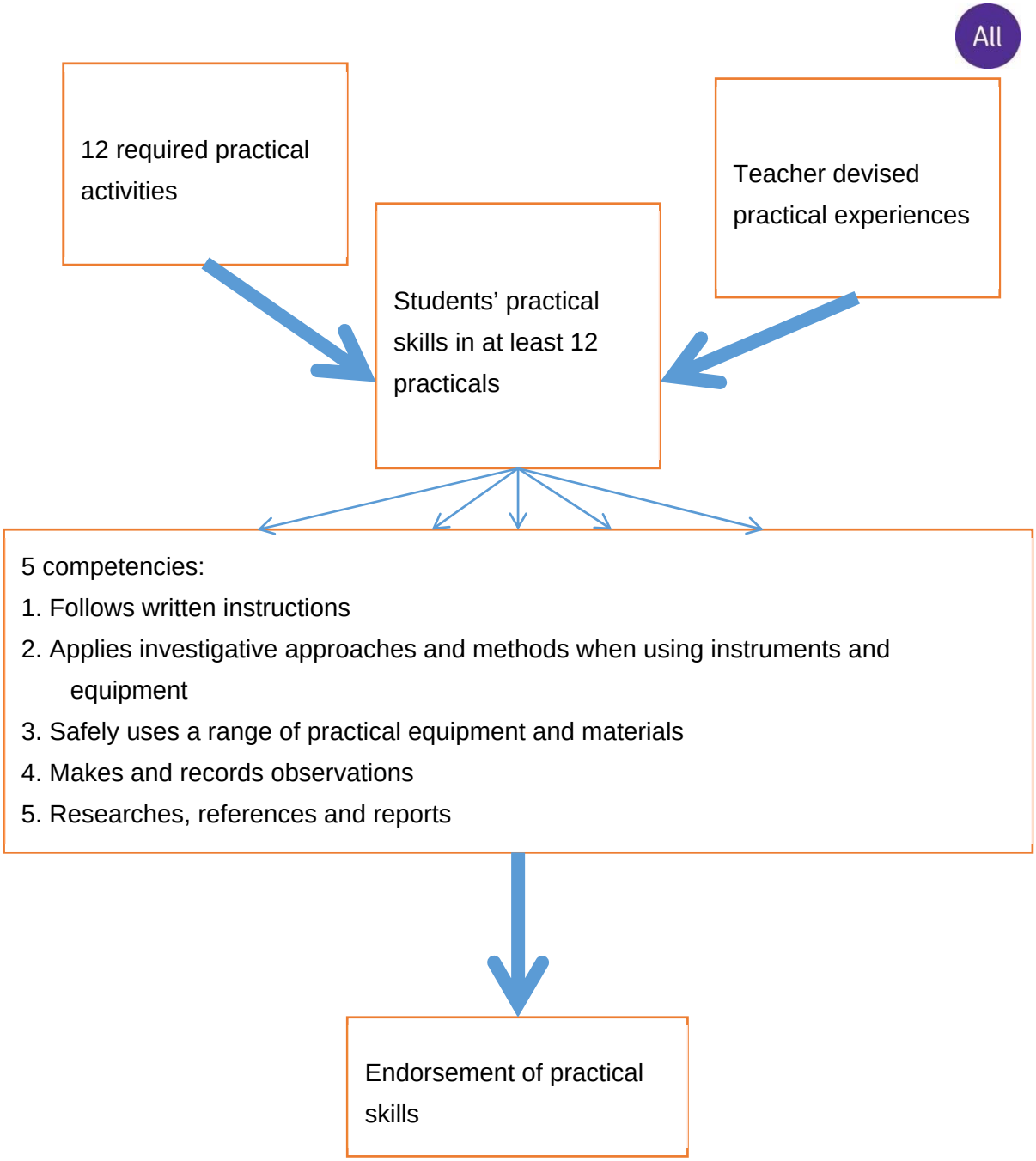
Requirements for CPAC (practical) endorsement in A-level biology, chemistry and physics
May 2018

1. The practical endorsement, directly assessed by teachers (see section F)

Teachers will assess their students' competence at carrying out practical work. They will assess each student on at least 12 different occasions. These could be the 12 required practicals, or could be during other practical work.

At the end of the course, teachers will decide whether or not to award a pass in the endorsement of practical skills. The teacher must be confident that the student has shown a level of mastery of practical work good enough for the student to go on to study science subjects at university.



Common Practical Assessment Criteria (CPAC)

The assessment of practical skills is a compulsory requirement of the course of study for A-level qualifications in biology, chemistry and physics. It will appear on all students' certificates as a separately reported result, alongside the overall grade for the qualification. The arrangements for the assessment of practical skills are common to all awarding organisations. These arrangements include:

- A minimum of 12 practical activities to be carried out by each student which, together, meet the requirements of Appendices 5b (Practical skills identified for direct assessment and developed through teaching and learning) and 5c (Use of apparatus and techniques) from the prescribed subject content, published by the Department for Education. The required practical activities will be defined by each awarding organisation in their specification;
- Teachers will assess students using Common Practical Assessment Criteria (CPAC) issued jointly by the awarding organisations. The CPAC are based on the requirements of Appendices 5b and 5c of the subject content requirements published by the Department for Education, and define the minimum standard required for the achievement of a pass;
- Each student will keep an appropriate record of their practical work, including their assessed practical activities;
- Students who demonstrate the required standard across all the requirements of the CPAC will receive a 'pass' grade;
- There will be no separate assessment of practical skills for AS qualifications;
- Students will answer questions in the AS and A level examination papers that assess the requirements of Appendix 5a (Practical skills identified for indirect assessment and developed through teaching and learning) from the prescribed subject content, published by the. Department for Education. These questions may draw on, or range beyond, the practical activities included in the specification.

In order to achieve a pass, students will need to:

- develop these competencies by carrying out a minimum of 12 practical activities, which allow acquisition of the techniques outlined in the requirements of the specification;
- consistently and routinely exhibit the competencies listed in the CPAC before the completion of the A-level course;
- keep an appropriate record of their practical work, including their assessed practical activities;
- be able to demonstrate and/or record independent evidence of their competency, including evidence of independent application of investigative approaches and methods to practical work.

The practical activities prescribed in the subject specification will provide opportunities for demonstrating competence in all the skills identified, together with the use of apparatus and techniques for each subject. However, students can also demonstrate these competencies in any additional practical activity undertaken throughout the course of study which covers the requirements of appendix 5c.

Students may work in groups but teachers who award a pass to their students need to be confide
individual students' competence.

All

Competency	Practical mastery

	In order to achieve a pass, students will need to have met the following expectations. Students will be expected to develop these competencies through the acquisition of the technical skills specified in Appendix 5 of the DfE subject content for each science subject Biology, Chemistry and Physics. Students can demonstrate these competencies in any practical activity undertaken throughout the course of study. The 12 practical activities prescribed in the subject specification, which cover the requirements of Appendix 5c, will provide opportunities for demonstrating competence in all the skills identified together with the use of apparatus and practical techniques for each subject. Students may work in groups but must be able to demonstrate and record independent evidence of their competency. This must include evidence of independent application of investigative approaches and methods to practical work. Teachers who award a pass to their students need to be confident that the student consistently and routinely exhibits the competencies listed below before completion of the A level course.
1. Follows written procedures	a. Correctly follows instructions to carry out experimental techniques or procedures.
2. Applies investigative approaches and methods when using instruments and equipment	a. Correctly uses appropriate instrumentation, apparatus and materials (including ICT) to carry out investigative activities, experimental techniques and procedures with minimal assistance or prompting. b. Carries out techniques or procedures methodically, in sequence and in combination, identifying practical issues and making adjustments when necessary. c. Identifies and controls significant quantitative variables where applicable, and plans approaches to take account of variables that cannot readily be controlled. d. Selects appropriate equipment and measurement strategies in order to ensure suitably accurate results.

3. Safely uses a range of practical equipment and materials	a. Identifies hazards and assesses risks associated with these hazards, making safety adjustments as necessary, when carrying out experimental techniques and procedures in the lab or field. b. Uses appropriate safety equipment and approaches to minimise risks with minimal prompting.
4. Makes and records observations	a. Makes accurate observations relevant to the experimental or investigative procedure. b. Obtains accurate, precise and sufficient data for experimental and investigative procedures and records this methodically using appropriate units and conventions.
5. Researches, references and reports	a. Uses appropriate software and/or tools to process data, carry out research and report findings. b. Cites sources of information demonstrating that research has taken place, supporting planning and conclusions.