

GCE AS/A Level Subject Criteria for Science, with particular reference to Chemistry

The RSC is the largest organisation in Europe for advancing the chemical sciences. Supported by a network of over 43,000 members worldwide and an internationally acclaimed publishing business, our activities span education and training, conferences and science policy, and the promotion of the chemical sciences to the public. The RSC has participated in various discussions with the regulatory authorities, awarding bodies, higher education, industrialists, and teachers concerning the revision of A-level.

There seems little dispute about the majority of the list of content in Appendix 2 as a bridge between GCSE and studies in Higher Education in the chemical sciences. However there are clear discontinuities across the suite of A-levels, particularly in relation to the criteria for biology when set against chemistry. In particular Biology section 1.6 Biological Molecules refers to the structure, role and importance of carbohydrates, proteins, lipids, water and inorganic ions as part of AS, where the first three of these would appear in A2 Chemistry. Similar comments can be made for the nature and properties, and the importance of the tertiary structure of enzymes. Whilst the specification content statement 3.4 refers to a range of contexts including contemporary examples there is no further exemplification of this in Appendix B. If this is not provided in the criteria there is no guarantee that awarding bodies will reflect 3.4 in their specifications.

The RSC wishes to make two particular points with respect to content:

1. 2.(e) could make explicit the requirement for sustainable development by requiring explicitly the calculation of atom economy (as in the additional exemplification at GCSE).
2. 2.2a refers to energy levels but not to their values. Without this requirement the ability to ask students to understand trends such as atomic radius across the Periodic Table is limited.

The Royal Society of Chemistry welcomes the move to reduce the amount of assessment and recognises that, for many subjects, 2 assessment units at AS and two assessment units at A2 provide a good model. We dispute whether this is the case for science subjects and, in particular, chemistry. The RSC recognises that a 2 unit external model may suffice for AS, in that students at this level could be gaining practical skills and experience without being assessed in them. These skills and experiences can then be applied to a wider range of contexts in the A2 year. We would thus recommend that A2 comprises 3 assessment units, two external and one, either external or internal, assessing practical skills. This proposal may need the regulatory authorities to agree a different range of % weightings as specified in Section (86d)iii) of the Draft GCE AS and A level qualification criteria.

The RSC is willing to work with the regulatory authorities and awarding bodies to ensure that these revised AS and A-level specifications for chemistry stimulate and develop students enthusiasm for the subject and encourage them into further study.