

Report on consultation on Draft Themes and Topics for the Diploma in Science

ANNEX

(Final Publication Date)

Version Number	Date amended	Date sent for review	Next review date	Version Name
Annex v.1	21.10.08	23.10.08		First draft appendix to accompany QD6a

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The following tables are presented in order to provide the Qualification Development Group with the full range of suggestions for change, additions or alterations made by online survey respondents in relation to proposed topic titles, content and Additional and Specialist Learning at the three levels of the Diploma in Science.

Survey question 10

Given that the diagram is illustrative only, are there any specialisms missing that you believe should be considered?

Number of respondents: 80

Table 1: Specialisms suggested to be missing from Figure 2 in consultation document

Specialism	Number of respondents
Psychology/behavioural science (e.g. environmental psychology, consumer psychology, territory in animals, health psychology, social psychology, sports psychology, neuropsychology – affects of drugs on behaviour, memory and cognitive processes)	23
Mathematics and statistics (examples given: experimental data, errors and their propagation, regression analysis, basic statistics testing, calculus, mechanics, analytic geometry, complex numbers, linear algebra, mathematical physics, biomathematics, biostatistics, mathematical medicine)	23
Neuroscience/neurobiology	4
Ethics/philosophy of science	3
Meteorology/climate science	3
Sustainable development/sustainability	2
Polymer science/processing	2
Construction and the Built Environment	1
Automotive technology	1
Oceanography	1
Relativity	1

Pharmacology	1
Research techniques	1
Palaentology	1
ICT	1
Biochemistry	1
Atomic physics	1
Fluid flow (e.g. oceans and atmospheres, molten polymers, sailing, acoustics)	1

Survey question 17:

Are there any changes you would like to see made to the proposed topics?

Number of respondents: 45

Please note that these responses are not based on respondents' review of the detail as set out in the Appendix, but on the brief detail set out in the consultation document, within each of the level-specific Venn diagrams. Topic numbers have been added for ease of reference.

Table 2: Suggested changes to proposed topics across ALL levels

Suggested change	Number of respondents
Essential mathematical content is currently missing (9 respondents)	9
Psychology is currently missing (8 respondents)	8
The topics contain too much content	
Suggest including: conducting and light emitting polymers, medical materials, robots, artificial Intelligence	1
Could include more links to supply chains and industry	1
Could include more quantitative chemistry and physics	1
Reference public health concerns (e.g. vaccines, health effects of mobile phones)	1

Table 3: Suggested changes to proposed topics at FOUNDATION level

Topic number	Suggested change
F1	Could include scientific method, precision and accuracy
F7	Could include climate change
F4	Too abstract for Foundation level

Table 4: Suggested changes to proposed topics at HIGHER level

Topic number	Suggested change
H2	Could include artificial skin and tissue culture

Table 5: Suggested changes to proposed topics at ADVANCED level

Topic number	Suggested change
A5	Currently no mention of viruses or zoonotic disease
A3 & A6	Current duplication between these two topics
N/A	<p>Could include cybernetics, food processing (in centre of diagram)</p> <p>Include animal and human nutrition (e.g. role of diet in aetiology of human disease)</p>

Survey question 18:

Some further level of detail has been provided in [Appendix 1](#). If you wish to review this detail and as a result believe some topics are inappropriate, please could you give your reasons why

Number of respondents: 26

Table 6: Suggested changes to proposed topic content (Appendix) across ALL levels

Suggested change	Number of respondents
Need to increase mathematical content	6
Psychology content currently missing	4
Further inclusion of basic scientific principles (e.g. periodic table, properties and families of elements, Blooms taxonomy)	2
Need clear indication of level of depth to be covered on each topic	2
Only limited physics content – no physical chemistry, virtually no inorganic chemistry	1
F7 & A6 include environmental protection and sustainability, but H5 is limited to monitoring the environment	1
Could include ‘feminine’ health science e.g. pregnancy, parturition, post-natal care	1

Table 7: Suggested changes to proposed topic content (Appendix) at FOUNDATION level

Topic number	Suggested change
F1	Areas missing: scientific method, precision, accuracy
F5	Could include benefits and issues
F7	Could include climate change
F4 & F6	Too complex for Foundation level

Table 8: Suggested changes to proposed topic content (Appendix) at HIGHER level

Topic number	Suggested change
H1d	'Transfer' should be 'transforms'
H2	Could include artificial skin and tissue culture; too wide in scope
H3	Could link to sustainability and include cycling of elements such as carbon in the environment
H4	Could include welfare issues and benefits of different systems, and role of assurance schemes
H6	Could include weak intermolecular forces as well as strong bonding - needs to deal with microstructures as well as crystal structure at molecular level
H7	Could be integrated across the topics – not developed as a separate one Could include evidence for climate change

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Table 9: Suggested changes to proposed topic content (Appendix) at ADVANCED level

Topic number	Suggested change
N/A	A topic equivalent to F1 required at Advanced level to deal with aspects of 'how science works' incl. methods of systematic investigation, statistical concepts
A1	Stereochemistry and principles of green chemistry both missing
A2	Need explicit mention of principles of valid analytical measurement
A3	Could introduce procedures such as life-cycle assessment – topic title does not conjure notion of sustainability Needs to be underpinned by concept of welfare as well as sustainability Could include opportunity to explore ethics and genetic engineering
A5	Currently no mention of viruses or zoonotic disease Use of 'prokaryotic' outdated
A6	Could include impact of UK/European law on environmental technologies Could include role of science in development of wildlife rehabilitation techniques
A6, A7 & A8	These thought to revisit Key Stage 4 Programme of Study
A1d & A3c	Currently available at GCSE level – some A3 items also thought to be at Key Stage 3
A9	Possibility of de-motivating learners – an option at GCE Physics and very unpopular

Survey question 19

What areas would you like to see covered in the Additional and Specialist Learning component at each of the three levels?

Number of respondents (Foundation): 48

Number of respondents (Higher): 46

Number of respondents (Advanced): 61

Table 10: Suggestions for Additional and Specialist Learning at FOUNDATION level

Suggestion for content	Number of respondents
Mathematics (e.g. geometry, algebra, sets and functions)	17
Psychology	10
ICT (e.g. use of statistical software)	4
Using scientific methods safely (incl. ethics)	2
Geography	2
Economics	2
Geology	2
Extended study of a workplace environment	1
Modern Foreign Language	1
English	1
Technology	1
GCSE Additional Science	1
GCSE Additional Applied Science	1

Environmental and Land-based Science	1
Sexual health	1
Development of medicine	1
Science in industry contexts (e.g. business, hairdressing/cosmetics, communications, health and safety, catering)	1
Transportation	1
Sustainability	1
Social sciences	1
Critical evaluation of science stories in the media	1
Sports science	1
Forensic science	1
Food preservation and preparation	1
Marine Science Metocean	1
Animal care	1
Newton's Laws of Motion	1

Table 11: Suggestions for Additional and Specialist Learning at HIGHER level

Suggestion for content	Number of respondents
Mathematics (e.g. differential, integral calculus)	14
Psychology (e.g. links to psychology, use of psychology in multidisciplinary topics, neuropsychology, biopsychology, criminal psychology, social psychology)	11
ICT (e.g. use of statistical software)	3
Languages	2
Economics	2
Medicine and disease	2
Transportation	2
Humanities	1
English	1
Technology	1
Geography	1
Geology	1
Environmental and Land-Based Science	1
Electronics systems	1
Molarity	1
Science in industry (e.g. satellite industry, food and drinks industry, medicine, town planning, environmental management, entertainment industry)	1

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Design of structures	1
Sustainability	1
Ethics	1
Properties of materials	1
Newton's Laws of Motion	1
Health and Safety	1
Science in the home (e.g. construction, kitchen science)	1
Marine Science Metocean	1
Animal care	1

Table 12: Suggestions for Additional and Specialist Learning at ADVANCED level

Suggestion for content	Number of respondents
Mathematics/equivalent of Maths/Further Maths A level (e.g. calculus, statistics, mechanics, biometrics, interpretation of data, vectors, linear algebra, complex numbers, Mathematics for Engineering, geometry)	29
Psychology (e.g. statistical and empirical psychology)	10
Top up Biology, Chemistry and Physics to enable progression to HE (e.g. equiv. of A2 units)	5
ICT (e.g. use of statistical software)	3
Electronics (e.g. multimedia entertainment, optical communications)	3
Nanotechnology	1

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GM crops and foods (benefits and concerns)	1
Advances in food processing	1
Toxicology	1
Modern languages	1
Technology	1
Geography	1
Economics	1
Geology	1
History and philosophy of science	1
Epidemiology	1
Design of structures	1
Sustainability	1
Properties of materials	1
Nuclear Science	1
Genetic engineering	1
Ethics	1
Earth sciences	1
Fisheries oceanography	1
Climate change	1
Forensic analysis	1

