

Science SMSC

The information below is a guide to when SMSC topics are covered by the science curriculum at BA. However, different sets are taught at different 'rates' as they are taught different courses (eg Triple Science GCSE, Science and Additional Science GCSE or Science GCSE and BTec Applied Science). Also, the teacher pairings for each set differ, and topics are divided between staff based on their areas of specialism.

The y9 content is based on the teaching carried out in 2014-15. The academic year 2015-16 is difficult to confirm as the new GCSE science specifications are not yet accredited, and the faculty is still in the process of choosing the most appropriate GCSE science courses to follow.

Year	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
9	KS3 Space: Awe and wonder at the nature of the Universe	B1.1 Impact of diet and exercise on health; spread of infectious disease / development of scientific theory of infection	C1.1 Development of the periodic table	P1.1 Use of everyday appliances and energy consumption; economic impacts of insulation	B1.2 Use of hormones to control fertility / IVF treatment	C1.2 Social, economic and environmental impact of exploitation of limestone use for building materials
10	B1.3 Ethics of drug testing; evaluating health effects of alcohol, smoking and cannabis; impacts of legal and illegal drug use B1.4 Adaptations - effect of environmental change (eg climate change) on distribution of living organisms C1.3 Social, economic and environmental impacts of extracting or recycling metals P1.2 Efficiency of energy consumption by appliances / cost effectiveness; types of energy wastage for a range of appliances	B1.5 Impact of non-sustainable removal of biomass from a habitat C1.7 Effect of human activities on atmosphere and climate; Impact of inability to accurately predict earthquakes P1.3 Implications of electricity not being available in certain locations P1.5 Evaluating the risks of mobile phone use (microwave radiation)	B1.6 Recycling of waste materials in nature – sustainable use of resources P1.4 Evaluating different methods of generating electricity – social, economic and environmental effects of choices P1.6 Limitations of the model of how the Universe began.	B1.7 Ethics and societal impacts of cloning, genetic engineering and GMO C1.4 Social, economic and environmental impacts of using crude oil as fuel; production of better fuels and use of plant materials as a more sustainable alternative C1.5 Evaluate the social, economic and environmental impacts of using crude oil products as raw materials for plastics / other chemicals	B1.8 Gradual acceptance of Darwin's theory of natural selection due to societal factors C1.6 Evaluate the use of emulsifiers in foods; impact of oils in the diet ISA – see below	ISA – see below Some sets will be completing the GCSE Science units (statements B1, C1 and P1) – others will move on to GCSE Additional Science content (see B2, C2 and P2 statements below). C2.1 Awe and wonder at atomic structure; understanding how scientific community has advanced the model of the atom P2.1 effects of consuming alcohol and drugs on stopping distances P2.2 Impacts of new technologies such as regenerative braking and vehicle safety features P2.3 Efficiency of different types of lighting
11	B2.1 Awe and wonder at complexity of organisms (cells, tissues, organs, systems) B2.2 Awareness of developments in tissue engineering technologies (time permitting)	B2.3 Evaluate manipulation of environment in which plants are grown B2.5 Evaluating use of enzymes in industry / the home	B2.7 Making informed judgements about the social and ethical issues of stem cell use and genetic testing of embryos P2.4 Recognise safe and unsafe practice in use of mains electricity	B2.8 Suggest reasons why Scientists can't be sure how life on Earth started P2.5 Hazards of nuclear power; evaluating occupation / location effects on radiation doses	Revision and exams BTec coursework	Exams

	C2.2 evaluate developments of new materials, eg nanomaterials C2.3 Issues with sustainable development for manufacturing processes – starting materials, yield, energy requirements; production of synthetic fertilisers	C2.4 Development of catalysts, and evaluating their use P2.3 Evaluating choice of lighting /efficiency of energy use				
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Please note that sets 11A3, 11B3 (BTec Applications of Science) and 11a4 (BTec Principles of Science) will be covering different SMSC aspects during the academic year.

Additionally, 11A1 will also cover the following SMSC aspects as they are studying triple science:

- B3.4 Impact of human activities on the environment eg deforestation, waste, biofuels, food production
- C3.2 Social, economic and ethical implications of water quality / adding chlorine and fluorine to drinking water
- C3.3 Social, economic and environmental implications of fuels – evaluating the use of hydrogen for cars
- C3.4 Evaluating the use of analytical chemistry for forensic / health and environmental means
- C3.5 Understanding the energy use and yield of the Haber process
- C3.6 Social, economic and environmental impacts of the use of ethanols, carboxylic acids and esters
- P3.1 Medical physics – evaluating the risks and benefits of screening technologies, eg ultrasound, CT, X-rays

Where possible during investigative work for all year groups, and ISA assessment, the following aspects will be covered:

Societal aspects of scientific evidence

A judgement or decision relating to social-scientific issues may not be based on evidence alone, as other societal factors may be relevant.

- Evidence must be scrutinised for any potential bias of the experimenter, such as funding sources or allegiances.
- Evidence can be accorded undue weight, or dismissed too lightly, simply because of its political significance. If the consequences of the evidence could provoke public or political disquiet, the evidence may be downplayed.
- The status of the experimenter may influence the weight placed on evidence; for instance, academic or professional status, experience and authority.
- Scientific knowledge gained through investigations can be the basis for technological developments.
- Developments in science and technology have ethical, social, economic or environmental consequences, which should always be taken into account when evaluating the impacts of any new developments.
- Advancements in science can have ethical implications. The effects of these must be taken into account in a balanced way to facilitate decision making.
- Decisions are made by individuals and by society on issues relating to science and technology.

Limitations of scientific evidence

Science can help us in many ways but it cannot supply all the answers.

- We are still finding out about things and developing our scientific knowledge.
- There are some questions that we cannot answer, maybe because we do not have enough repeatable, reproducible and valid evidence.

- There are some questions that science cannot answer directly. These tend to be questions where beliefs, opinions and ethics are important.