Science - Biology

Year 11 Curriculum Map

Year 11 – Autumn Term
Biology
B5 – Homeostasis and Response, and
B6 – Inheritance, Variation and Evolution

Prior Learning	**B5 – Homeostasis and Response** At key stage 3, pupils should have learnt about the structure and function of the human reproductive systems, the Menstrual cycle and how enzymes help digest food molecules. **B6 – Inheritance, Variation and Evolution** At key stage 3, pupils should have learnt that cells divide, the structure of plant and animal cells and the differences between environmental and inherited (genetic) variation. Pupils also know how gametes fuse to produce a gamete and how the nuclei of eukaryotic cells contain chromosomes, which contain DNA.
What will I learn?	**B5 - Homeostasis and Response** In this unit, pupils will learn about endocrine glands and how hormones are transported to target organs. They will be able to explain the hormones thyroxine and adrenaline affect the body. Pupils will also ne able to describe how the menstrual cycle is controlled by hormones and how hormones are used in contraception. Pupils will also learn about diabetes and how blood sugar concentration is controlled. **B6 – Inheritance, Variation and Evolution** In this unit, pupils will learn about meiosis and its importance in sexual reproduction. They will be able to explain how cells become specialised, and the importance of stem cells. Pupils will be able to explain the difference between sexual and asexual reproduction and the need for meiosis. Pupils will be able to explain the structure of DNA, about mutations and the causes of genetic variation. They will be able to explain how the inheritance of some characteristics occurs in families.
How will I be assessed?	Formative – Recall 5, Cold calling, skills such as graphs in books, retrieval homework task, mid topic assessment. Summative – End of topic assessment.
Next Steps	**B5 - Homeostasis and Response** This subject content is not revisited in other units. It will be covered in targeted revision sessions but should from part of a detailed revision plan at home using the provided revision guides. **B6 – Inheritance, Variation and Evolution** This subject content is not revisited in other units. It will be covered in targeted revision sessions but should from part of a detailed revision plan at home using the provided revision guides.
Opportunities for Independent Learning	BBC Bitesize: Focus eLearning by Focus Educational Software ltd. https://www.bbc.co.uk/bitesize/topics/zppffcw https://www.bbc.co.uk/bitesize/topics/zyybb82 Seneca Learning: https://app.senecalearning.com/classroom/course/891f0540-1d79-11e8-a6da-15f18bba751c B5: CGP GCSE Biology text books page 207-243 B6: CGP GCSE Biology text books page 244-279
Personal Development and CEIAG	**B5 - Homeostasis and Response** In this topic, pupils will learn how their body maintains its internal conditions and how medical professionals can control and treat different endocrine conditions e.g. diabetes and infertility.

	Possible careers linked to this topic are clinician, diabetic nurse, charity work (diabetic society) fertility specialist. **B6 – Inheritance, Variation and Evolution** In this topic, pupils will develop an understanding of how different organisms grow and divide and the potential scientific benefits of studying cell growth. Pupils also understand how technology enables scientific advancements to take place e.g. microscopy. Possible careers linked to this topic are Genetic Counsellor, Genetic Engineering, health, diabetes, clinician,
Enrichment Opportunities (Cultural Capital)	**B5 - Homeostasis and Response** Understand the issues faced by some couples in terms of fertility. Develop an understanding of how to assist somebody who is suffering from low blood sugar. Research the difficulties faced by diabetics and infertile couples due to funding by NHS. **B6 – Inheritance, Variation and Evolution** Research opportunities into genetic disorders, building DNA models, considering inheritance probabilities. https://www.youtube.com/watch?v=c3kZQCi8Ng0 https://www.yourgenome.org/activities/origami-dna https://www.yourgenome.org/activities/extracting-dna-from-fruit https://www.yourgenome.org/activities/sequence-bracelets

	Year 11 – Spring Term **Biology** **B7 - Ecology**
Prior Learning	**B7 - Ecology** At key stage 3, pupils should have learnt about how almost all life on Earth depends on photosynthesis in plants and algae, and about the interdependence of organisms, including food webs and insect pollination. Pupils should be able to explain how organisms affect and are affected by their environment, including the accumulation of toxic materials
What will I learn?	**B7 - Ecology** In this unit, pupils will learn about how ecosystems are organised, and how communities are affected by abiotic and biotic factors. They will be able to explain how the abundance and distribution of organisms are measured and how energy is transferred through trophic levels. They should be able to explain parasitic and mutualistic relationships. Pupils will examine how humans affect ecosystems and the benefits of maintaining biodiversity, along with the importance of the carbon cycle, water cycle and nitrogen cycle. Pupils will learn about how indicator species can be used to assess pollution levels and why the rate of decomposition of food and compost can vary.
How will I be assessed?	**B7 - Ecology** Formative – Recall 5, Cold calling, skills such as graphs in books, retrieval homework task, mid topic assessment. Summative – End of topic assessment.
Next Steps	This subject content is not revisited in other units. It will be covered in targeted revision sessions but should from part of a detailed revision plan at home using the provided revision guides.
Opportunities for	**B7 - Ecology** Focus eLearning by Focus Educational Software ltd.

Independent Learning	https://www.bbc.co.uk/bitesize/topics/zxxhh39 https://app.senecalearning.com/classroom/course/891f0540-1d79-11e8-a6da-15f18bba751c Focus eLearning by Focus Educational Software ltd.
Personal Development and CEIAG	**B7 - Ecology** In this unit, pupils will learn about the importance of careers in conservation such as environmental scientist, zoologist and wildlife biologist. Through the study of the world around them and environmental issues, pupils will develop an understanding of how to be responsible, respectful and active citizens who are able to play their part and become actively involved in public life as adults. Possible careers linked to this topic are environmental scientist and ecologist.
Enrichment Opportunities (Cultural Capital)	**B7 - Ecology** BBC Life series National Geographic WWF website The Carbon Cycle game Visit Blackpool Zoo Research non-indigenous or endangered species