

Year 10 - Double Science (21st Century OCR - Core Science GCSE) Curriculum Plan (page 1)

Topics covered	Assessments
<p>In the Double Science GCSE two GCSEs are awarded; Core Science GCSE and Additional Science GCSE. In Year 10 the Core Science GCSE is studied.</p> <p>Three topics are covered in Biology, Chemistry and Physics.</p> <p>Biology B1 You and Your Genes (What is DNA, genetic variation and testing, idea of how some organisms reproduce through cloning) B2 Keeping Healthy (Consider the process homeostasis, the factors that can lead to heart disease, how vaccinations work and types of drug trials) B3 Life on Earth (Look at biodiversity, Darwin's theory of evolution, food chains, competition and adaptation of organisms)</p> <p>Chemistry C1 Air Quality (Air pollutants, Combustion of fuels, analysis of data – mean, ranges, outliers, the effect of poor air quality on health) C2 Material Choices (Material properties, types of plastics and how they are produced, Nanotechnology) C3 Chemicals in the Environment (Rock types, chemicals from salt and those containing chlorine, alkalis, risks associated with chemicals)</p> <p>Physics P1 The Earth in the Universe (Plate tectonics, use of waves to detect earthquakes, structure of the solar system, the application of mathematics to describe scale – light years, distances between planets and galaxies) P2 Radiation and Life (Ionising radiation, electromagnetic radiation and how it is used, benefits and risks with use of radiation in everyday applications) P3 Sustainable Energy (How electricity is generated, selecting energy sources, the demand for energy, the environmental impact)</p>	<p>This is a modular course with 3 exams making up 75% of the final grade. Two control assessment make up 25% of the final grade</p> <p>Modular Examinations: B1C1P1 worth 25% B2C2P2 worth 25% B3C3P3 worth 25%</p> <p>Examinations will be in January and June.</p> <p>Controlled Assessment: Case Study worth 12.5%</p> <p>Controlled Assessment: Data Analysis worth 12.5%</p> <p>In Year 11 students will take the Additional Science GCSE. This again consists of modular examinations and a controlled assessment activity.</p>

Year 10 - Double Science (21st Century OCR - Core Science GCSE) Curriculum Plan (page 2)

Home enrichment opportunities

Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens

Science Week (Activities in Cambridge during March)

Media programs such as Horizon, Dispatches, Natural World, How things are made

Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website

21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html

Year 10 - Biology GCSE – 21st Century OCR Curriculum Plan

Topics covered	Assessments
<p>In Year 10 the following topics will be covered:</p> <p>B1 You and Your Genes (What is DNA, genetic variation and testing, idea of how some organisms reproduce through cloning)</p> <p>B2 Keeping Healthy (Consider the process homeostasis, the factors that can lead to heart disease, how vaccinations work and types of drug trials)</p> <p>B3 Life on Earth (Look at biodiversity, Darwin's theory of evolution, food chains, competition and adaptation of organisms)</p> <p>B4 The process of life (DNA, Respiration, movement of molecules, chloroplast)</p>	<p>This is a modular course with a total of 3 exams making up 75% of the final grade. A controlled assessment makes up 25% of the final grade</p> <p>Modular examinations: B1B2B3 worth 25% is sat in year 10 B4B5B6 worth 25% is sat in year 11 B7 worth 25% is sat in year 11</p> <p>Controlled Assessment: Investigation worth 25%</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	

Year 10 - Chemistry GCSE – 21st Century OCR Curriculum Plan

Topics covered	Assessments
<p>In Year 10 the following topics will be covered:</p> <p>C1 Air Quality (Air pollutants, Combustion of fuels, analysis of data – mean, ranges, outliers, the effect of poor air quality on health)</p> <p>C2 Material Choices (Material properties, types of plastics and how they are produced, Nanotechnology)</p> <p>C3 Chemicals in the Environment (Rock types, chemicals from salt and those containing chlorine, alkalis, risks associated with chemicals)</p> <p>C4 Chemical Patterns (Ionic bonding, reactivity of halogens and alkali metals)</p>	<p>This is a modular course with a total of 3 exams making up 75% of the final grade. A controlled assessment makes up 25% of the final grade</p> <p>Modular examinations: C1C2C3 worth 25% is sat in year 10 C4C5C6 worth 25% is sat in year 11 C7 worth 25% is sat in year 11</p> <p>Controlled Assessment: Investigation worth 25%</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	

Year 10 - Physics GCSE – 21st Century OCR Curriculum Plan

Topics covered	Assessments
<p>In Year 10 the following topics will be covered:</p> <p>P1 The Earth in the Universe (Plate tectonics, use of waves to detect earthquakes, structure of the solar system, the application of mathematics to describe scale – light years, distances between planets and galaxies)</p> <p>P2 Radiation and Life (Ionising radiation, electromagnetic radiation and how it is used, benefits and risks with use of radiation in everyday applications)</p> <p>P3 Sustainable Energy (How electricity is generated, selecting energy sources, the demand for energy, the environmental impact)</p> <p>P4 Explaining motion (Forces, momentum, speed and velocity, everyday examples of motion)</p>	<p>This is a modular course with a total of 3 exams making up 75% of the final grade. A controlled assessment makes up 25% of the final grade</p> <p>Modular examinations: P1P2P3 worth 25% is sat in year 10 P4P5P6 worth 25% is sat in year 11 P7 worth 25% is sat in year 11</p> <p>Controlled Assessment: Investigation worth 25%</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	

Year 10 – BTEC Applied Science Edexcel– Curriculum Plan

Topics covered	Assessments
<p>In Year 10 the following topics will be covered:</p> <p>Chemistry and Our Earth. Areas covered include understanding of the periodic table and the differences between elements, compounds and molecules. Understand factors that affect the rate of chemical reactions.</p> <p>Energy and Our Universe Students consider how electricity is produced and the different types of energy sources available. Students identify how the electromagnetic spectrum is used in industry and evaluate the properties of electromagnetic waves. Students also explain the structure of our Solar System.</p>	<p>Students provide evidence of their understanding through the production of coursework. This can come in a number of forms including power point presentations, practical work and write up of results. Activities are placed into a context in order that students can see links between the scientific ideas and skills and apply them to the work place. There are no examinations.</p> <p>Each assignment will enable a student to achieve a pass or merit level, and some assignments will also provide opportunities to achieve a merit level.</p> <p>The assignments for the Chemistry and Our Earth topic are: Elements, mixtures and compounds: Atomic Structure: Rates of Reaction: Man's Effect on Earth</p> <p>The assignments for the Energy and Our Universe topic are: Energy Transformations: The Electromagnetic Spectrum: Electricity: The Solar System</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	

Year 11 - Double Science (21st Century OCR – Additional Science GCSE) Curriculum Plan

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Topics covered	Assessments
<p>In the Double Science GCSE two GCSEs are awarded; Core Science GCSE and Additional Science GCSE. In Year 10 the Core Science GCSE topics are studied. In Year 11 the Additional Science GCSE</p> <p>Three topics are covered in Biology, Chemistry and Physics.</p> <p>Biology B4 Homeostasis (How body water levels and temperature are managed) B5 Growth and development (DNA, division of cells) B6 Brain and mind (how organisms respond to stimuli, development of the brain, how messages are passed around the body)</p> <p>Chemistry C4 Chemical Patterns (Ionic bonding, reactivity of halogens and alkali metals) C5 Chemicals of the natural environment (Covalent bonding, extraction of metals from rocks) C6 Chemical synthesis (Acids, Titrations, preparation of a salt, rates of reactions)</p> <p>Physics P4 Explaining motion (Forces, momentum, speed and velocity, everyday examples of motion) P5 Electric circuits (the idea of electric charge, use of models to explain and predict circuit behaviour, energy transfer in circuits) P6 The wave model of radiation (electromagnetic spectrum, the reflection and refraction of waves, speed and frequency of waves)</p>	<p>This is a modular course with 4 exams making up two thirds of the final grade.</p> <p>Modular Examinations:</p> <p>B4C4P4 worth 16.7% January 2012 B5C5P5 worth 16.7% January 2012 B6C6P6 worth 16.7% June 2012 Ideas In Context worth 16.7% June 2012</p> <p>Coursework: Practical investigation worth 33%</p> <p>If appropriate opportunities are available to retake modules from the Core Science GCSE during January or June.</p>

Year 11 - Double Science (21st Century OCR – Additional Science GCSE) Curriculum Plan (page 2)

Home enrichment opportunities

Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens

Science Week (Activities in Cambridge during March)

Media programs such as Horizon, Dispatches, Natural World, How things are made

Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website

21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html

Year 11 - Biology GCSE – 21st Century OCR Curriculum Plan

Topics covered	Assessments
<p>In Year 11 the following topics will be covered:</p> <p>B4 Homeostasis (How body water levels and temperature are managed)</p> <p>B5 Growth and development (DNA, division of cells)</p> <p>B6 Brain and mind (how organisms respond to stimuli, development of the brain, how messages are passed around the body)</p> <p>B7 Biology across the ecosystem (Food chains and interdependence, use of new technologies e.g. genetic modification, blood and circulation)</p> <p>Idea in Context paper – Pre-release material (variable in content)</p>	<p>Modular examinations: B4B5B6 worth 16.7% B7 and Ideas in Context paper worth 33%</p> <p>Coursework: Data Analysis: 13% Case Study: 20%</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	

Year 11 - Chemistry GCSE – 21st Century OCR Curriculum Plan

Topics covered	Assessments
<p>In Year 11 the following topics will be covered:</p> <p>C5 Chemicals of the natural environment (Covalent bonding, extraction of metals from rocks)</p> <p>C6 Chemical synthesis (Acids, Titrations, preparation of a salt, rates of reactions)</p> <p>C7 Chemistry for a sustainable world (Organic acids, esters, alcohols, chemical analysis, chemical equilibrium, green chemistry)</p> <p>Ideas in Context paper – Pre-release material (content variable)</p>	<p>Modular examinations: C4C5C6 worth 16.7% C7 and Ideas in Context paper worth 33%</p> <p>Coursework: Practical Investigation worth 33%</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	

Year 11 - Physics GCSE – 21st Century OCR Curriculum Plan

Topics covered	Assessments
<p>In Year 11 the following topics will be covered:</p> <p>P5 Electric circuits (the idea of electric charge, use of models to explain and predict circuit behaviour, energy transfer in circuits)</p> <p>P6 The wave model of radiation (electromagnetic spectrum, the reflection and refraction of waves, speed and frequency of waves)</p> <p>P7 Observing the Universe (Observatories and telescopes, Mapping the sky, understanding of the sun, the lives of stars)</p> <p>Idea in Context paper – Pre-release material</p>	<p>Modular examinations: P4P5P6 worth 16.7% P7 and Ideas in Context paper worth 33%</p> <p>Coursework: Data Analysis: 13% Case Study: 20%</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	

Year 11 – BTEC Applied Science Edexcel– Curriculum Plan

Topics covered	Assessments
<p>In Year 11 the following topics will be covered:</p> <p>Energy and Our Universe Students consider how electricity is produced and the different types of energy sources available. Students identify how the electromagnetic spectrum is used in industry and evaluate the properties of electromagnetic waves. Students also explain the structure of our Solar System.</p> <p>Biology and our Environment Students consider what a gene is and how these influence our characteristics. In the context of a zoo, students look at food chains and the dependence of one species on another (interdependence). Students consider how humans have an effect on the environment. Students explain the difference between bacteria, viruses and fungi and methods used to fight diseases such as vaccinations.</p>	<p>Students provide evidence of their understanding through the production of coursework. This can come in a number of forms including power point presentations, practical work and write up of results. Activities are placed into a context in order that students can see links between the scientific ideas and skills and apply them to the work place. There are no examinations.</p> <p>Each assignment will enable a student to achieve a pass or merit level, and some assignments will also provide opportunities to achieve a merit level.</p> <p>Students will review and reflect on the assignments for the Energy and Our Universe topic: Energy Transformations: The Electromagnetic Spectrum: Electricity: The Solar System</p> <p>Biology and our Environment Genes and Genetics: Linton Zoo: Human Impact on the Environment: Health and Disease</p> <p>Students will submit their final folders for internal and external moderation.</p>
<p>Home enrichment opportunities</p> <p>Cambridge University museums – Museum of Zoology, Whipple Museum of the History of Science, The Sedgwick museum of Earth Sciences, The Polar museum, Botanic Gardens</p> <p>Science Week (Activities in Cambridge during March)</p> <p>Media programs such as Horizon, Dispatches, Natural World, How things are made</p> <p>Websites - PhET website good for review of physics, GCSE Bite Size KS4, You Tube for a variety of topics e.g. nanotechnology (narrated by Stephen Fry), BBC News Science and Environment website</p> <p>21st Century Suite Science OCR website - http://www.ocr.org.uk/qualifications/type/gcse_2011/index.html</p>	