



SUBJECT Science -KS3

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Area of Study: Enquiry process Matter Organisms	Area of Study: Matter forces	Area of Study: Ecosystem Reactions	Area of Study: Energy	Area of Study: Genes Earth	Area of Study Waves
	Content: Working Scientifically Particle model Cells Movement	Content: Separating mixtures Forces Gravity	Content: Interdependence Plant reproduction Acids and alkalis Metals and non- metals	Content: Energy cost Energy transfer	Content: Human reproduction Variation Earth Universe	Content: Sound Light

**Support at home**

For all areas	Seneca website	Revision guide	<u>Flash cards</u>
	Seneca	<a href="https://www.cgpbooks.co.uk/secondary-books/ks3/science/shs34-ks3-science-complete-revision-practice">https://www.cgpbooks.co.uk/secondary-books/ks3/science/shs34-ks3-science-complete-revision-practice</a>	<a href="https://www.cgpbooks.co.uk/secondary-books/ks3/science/shf31-ks3-science-revision-question-cards">books/ks3/science/shf31-ks3-science-revision-question-cards</a>

<b>Assessments:</b> AP1: Written test- on Autumn 1 content AP2: Written test on Autumn 1, 2 and spring 1 content AP3: Written test on all content	<b>Careers in the Curriculum:</b> 'Guess the job'- at the start of every topic. Shows jobs related to the topic being studied  Career video- shows the 'day in the life' of a job related to the topic.
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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
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Year 8	Area of Study: Organisms Matter	Area of Study: Electromagnets Ecosystems	Area of Study: Reactions Forces	Area of Study: Genes	Area of Study: Energy Waves Earth	Area of Study: Enquiry processes
	Content Digestion Breathing Elements Periodic table	Content Current Potential difference and resistance Magnets and electromagnets Respiration Photosynthesis	Content Types of reaction Chemical energy Contact forces Pressure	Content Inheritance Evolution	Content Work, energy and machines Heating and cooling Wave properties and wave effects Climate Earth resources	Content How science works

## Support at home

For all areas	Seneca website	Revision guide	Flash cards
	Seneca	<a href="https://www.cgpbbooks.co.uk/secondary-books/ks3/science/shs34-ks3-science-complete-revision-practice">https://www.cgpbbooks.co.uk/secondary-books/ks3/science/shs34-ks3-science-complete-revision-practice</a>	<a href="https://www.cgpbbooks.co.uk/secondary-books/ks3/science/shf31-ks3-science-revision-question-cards">https://www.cgpbbooks.co.uk/secondary-books/ks3/science/shf31-ks3-science-revision-question-cards</a>

## Assessments

<p>Assessments:</p> <p>AP1: Written test- on Autumn 1 content</p> <p>AP2: Written test on Autumn 1, 2 and spring 1 content</p> <p>AP3: Written test on all content</p>	<p>Careers in the Curriculum:</p> <p>'Guess the job'- at the start of every topic. Shows jobs related to the topic being studied</p> <p>Career video- shows the 'day in the life' of a job related to the topic.</p>
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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 9	Area of Study: Cells Atoms and periodic table	Area of Study: Energy Infection and disease	Area of Study: Energy Infection and disease	Area of Study: Bonding Electricity	Area of Study: Molecules and matter Calculations	Area of Study: Organisation 2
	Content Cell structure and transport Cell division Atomic structure Periodic table	Content Conservation and dissipation of energy Energy transfer Energy resources Communicable and non-communicable diseases Preventing and treating diseases	Content Conservation and dissipation of energy Energy transfer Energy resources Communicable and non-communicable diseases Preventing and treating diseases	Content Structure and bonding Electrical circuits Electricity in the home	Content Molecules and matter Chemical calculations	Content Organising animals and plants

### Support at home

For all areas	Seneca website Seneca	Flash cards <a href="#">GCSE Revision Guide- Amazon Link</a>
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### **Assessments**

<b>Assessments:</b> AP1: Written test- on Autumn 1 content AP2: Written test on Autumn 1, 2 and spring 1 content AP3: Written test on all content	<b>Careers in the Curriculum:</b> 'Guess the job'- at the start of every topic. Shows jobs related to the topic being studied
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SUBJECT Science -KS4



Year 10	Autumn 1			Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
	Area of Study			Area of Study		Area of study		Area of study		Area of study		Area of study	
	Topic C1: Chemical changes  AQA Spec link 4.4.1.1 – 4.4.3.5	Topic P1: The Atom and Radiation  AQA spec link 4.4.1-4.4.4.2	Topic B1: Bioenergetics  AQA spec link: 4.41.1 -	Topic C1: Energy changes  AQA Spec link 1.1.1-1.1.6	Topic B2: Homeostasis  AQA spec link: 4.5.1 – 4.5.4.2	Topic B2: Inheritance and Reproduction  AQA spec link: 4.6.1.1 – 4.6.1.8	Topic C2: Chemical analysis  AQA spec link: 4.8.1.1 – 4.8.3.7	Topic P2: Forces in Balance and pressure  AQA spec link: 4.5.1.1 – 4.5.5.2	Topic C2: Rates of reaction  AQA spec link: 4.6.1.1 - 4.6.7.2	Topic P2: Forces in motion AQA spec link: 4.5.6.1 – 4.5.7.3	Topic P2: Waves  AQA spec link: 4.6.1 – 4.6.3.2	Mock preparation and feedback	Topic B2 Ecology  AQA spec link: 4.7.1 - 4.7.5.4
- reactivity series - displacement reactions - extracting metals - salts from metals and insoluble bases - making salts - neutralisation and pH - electrolysis	-Atoms and isotopes - Development of the model of the atom - nuclear radiation and decay - nuclear equations - radioactive contamination - half lives - nuclear fission and fusion	- Photosynthetic reaction and rates - Uses of glucose - Respiration - Response to exercise and metabolism	-Atoms -Chemical equations -Separating mixtures -Fractional distillation and paper chromatography -History of the atom -Structure of the atom -Ions atoms and isotopes -Electronic structure	- Homeostasis - The nervous system, brain and eye - controlling body temperature - endocrine system - glucose control - water and nitrogen balance - hormones in human reproduction, contraception, infertility - plant hormones and coordination.	- Sexual and asexual reproduction - Meiosis - DNA and the genome - DNA structure - Genetic inheritance - Inherited disorders - Sex determination	-Purity, formulations and chromatography - Tests for gases - Flame tests - Tests for carbonates, halides and sulphates - instrumental methods	- Scalar and vector quantities - Contact and noncontact forces - gravity - resultant forces - work done and energy transfers - moments, levers and gears - pressure in gases and fluids - tmospheric pressure	Calculating rates of reaction - Factors - Collision theory, activation energy and catalysts - reversible reactions and dynamic equilibrium	- speed, distance and time - acceleration - terminal velocity - momentum and conservation of momentum - forces and elasticity	- Transverse and longitudinal waves - properties of waves - reflection and refraction - sound waves and uses - electromagnetic waves, uses and applications - lenses - infrared radiation		- Adaptations, interdependence and competition - abiotic and biotic factors - levels of organisation - cycles and decomposition - biodiversity - waste management - deforestation and global warming - trophic levels and food production	

### Assessments End of Topic Tests

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Energy Changes The Atom and Radiation Bioenergetics	Forces in Balance Homeostasis	Inheritance and Reproduction Chemical Analysis	Forces in motion Forces in Pressure Rates of Reaction	Organic Chemistry Waves	Ecology

### Assessment Point (AP)

AP1: Energy Changes The Atom and Radiation Bioenergetics Plus retrieval from Year 9	AP2 Forces in Balance Homeostasis Inheritance and Reproduction Chemical Analysis Plus Retrieval from previous topics	End of Year 10 Exams Biology, Chemistry and Physics separate exams. To cover all topics in Year 9 and 10.
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### Support at home

Websites: <ul style="list-style-type: none"> <li>• BBC bitesize</li> <li>• Free Science Lessons</li> <li>• Fuseschool.org</li> <li>• Physics and Maths Tutor</li> </ul>	Physical resources: <ul style="list-style-type: none"> <li>• CGP revision guide</li> <li>• Oxford revise guides</li> </ul>
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Year 11	Autumn 1			Autumn 2			Spring 1			Spring 2			Summer 1
	Area of Study			Area of Study			Area of Study			Area of study			Area of study
	Topic B2: Ecology  AQA Spec link	Topic C2: Organic Chemistry  AQA Spec link: 4.7.1.1 – 4.7.3.4	Retrieval Sessions	Topic P2: Space  AQA Spec link: 4.8.1.1 – 4.8.2	Topic C2: Chemistry of the atmosphere  AQA Spec link 4.9.1 – 4.9.3	Retrieval Sessions	Topic P2: Magnetism and Electromagnetism  AQA Spec link 1.1.1-1.1.6	Topic C2: The Earth's resources  AQA Spec link 4.10.1.1 -	Retrieval Sessions	Topic B2: Variation and Evolution  AQA Spec link 4.6.2.1 – 4.6.4	Topic Revise B2, C2 and P2	Retrieval Sessions	Exam technique and preparation
	- Adaptations, interdependence and competition - abiotic and biotic factors - levels of organisation - cycles and decomposition - biodiversity - waste management - deforestation and global warming - trophic levels and food production	-Crude oil, hydrocarbons and alkanes - Fractional distillation - cracking and alkenes - alcohols, carboxylic acids, polymers, amino acids and DNA	Chemistry: Atoms, Periodic table and Bonding.  Biology: Cells, Enzymes, Digestive system	- The solar system - The life cycle of a star - Orbital motion - Red shift	-Composition and history of the atmosphere  -Greenhouse gases Global warming  -Atmospheric pollutants	Biology: Circulatory and respiratory systems, Plant Transport  Physics: Energy and electricity	- Magnets and magnetic fields - The motor effect, electromagnetism and motors  - induced potential and generator effect and transformers	-Using the Earth's resources, -Potable water and treating water -extracting metals - LCAs and recycling - preventing corrosion -alloys, ceramics, polymers and composites - The Haber process and fertilisers	Chemistry: Quantitative chemistry, Chemical Reactions,  Biology: Immune System	- Variation and evolution - Selective breeding, genetic engineering and cloning - Theory and evidence for evolution - Speciation - Understanding genetics - Fossils and extinction - Resistant bacteria - Classification	Biology: Bioenergetics  Physics: Matter and Radiation		

Assessments						Support at home	
End of Topic Tests							
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Physical resources:	
Ecology Organic Chemistry	Chemistry of the atmosphere Space	Magnetism and electromagnetism Space Using resources	Variation and Evolution			<ul style="list-style-type: none"> <li>CGP revision guide</li> <li>Oxford revise guides</li> </ul>	
Assessment Point (AP)						Careers in the curriculum	
	Year 11 November mock: Paper 1 plus additional Year 10 and 11 topics		Mock paper for Paper 2: Biology, Chemistry and Physics		GCSE External exams	Career links and examples are embedded into each topic's summary sheet. Including: Biology: Medicine and nursing, nutritionist, veterinary care, agriculture Chemistry: Pharmacy, chemical engineering. Physics: Mechanical and electrical engineering	

- Websites:
- BBC bitesize
  - Free Science Lessons
  - Fuseschool.org
  - Physics and Maths Tutor



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Biology - Y12	<p>Math and Practical Skills</p> <ul style="list-style-type: none"> <li>• Apparatus and techniques</li> <li>• Uncertainty, percentages and graphs</li> </ul> <p>Cells</p> <ul style="list-style-type: none"> <li>• Prokaryotic</li> <li>• Eukaryotic</li> <li>• Methods of studying cells</li> <li>• Cell cycle and mitosis</li> <li>• Membranes and transport across</li> </ul> <p>Biological molecules</p> <p>Structure and properties of:</p> <ul style="list-style-type: none"> <li>• Water</li> <li>• Carbohydrates</li> <li>• Lipids</li> <li>• Proteins</li> <li>• Nucleic acids</li> </ul>	<p>Enzymes and Digestion</p> <ul style="list-style-type: none"> <li>• Structure and function</li> <li>• Induced fit</li> <li>• Inhibitors</li> <li>• Industrial uses</li> <li>• Structure, function and adaptations human digestion to include enzymes</li> </ul> <p>Immunity</p> <ul style="list-style-type: none"> <li>• Cell recognition</li> <li>• Immune response</li> <li>• HIV</li> <li>• Monoclonal antibodies</li> <li>• ELIZA</li> </ul>	<p>Protein Synthesis</p> <ul style="list-style-type: none"> <li>• DNA, genes and chromosomes</li> <li>• Protein synthesis</li> <li>• Mutation</li> <li>• Meiosis</li> </ul> <p><b>Genetic Diversity</b></p> <ul style="list-style-type: none"> <li>• Genetic diversity (variation)</li> <li>• Adaptation and natural selection</li> <li>• Evolution</li> </ul> <p>Gas Exchange</p> <ul style="list-style-type: none"> <li>• SA:Vol ratios</li> <li>• Gas exchange in:</li> <li>• Insects</li> <li>• Fish</li> <li>• Mammals               <ul style="list-style-type: none"> <li>◦ structure,</li> <li>◦ function</li> <li>◦ adaptations</li> </ul> </li> </ul>	<p>Mass Transport</p> <ul style="list-style-type: none"> <li>• Surface area to volume ratios</li> <li>• Mass transport in:</li> <li>• Insects</li> <li>• Fish</li> <li>• Mammals</li> <li>• This includes structure, function and adaptation of the cardiovascular system in humans</li> <li>• Mass transport in plants</li> </ul> <p>Biodiversity</p> <ul style="list-style-type: none"> <li>• Taxonomy</li> <li>• Species richness</li> <li>• Simpsons index</li> <li>• Measuring diversity</li> </ul>	<p>AS Synoptic</p> <p>Photosynthesis</p> <ul style="list-style-type: none"> <li>• Measuring photosynthesis</li> <li>• Photosynthetic pigments</li> <li>• Limiting factors</li> </ul> <p>Populations and ecosystems (ecology)</p> <ul style="list-style-type: none"> <li>• Ecosystems</li> <li>• Habitats</li> <li>• Abiotic / biotic</li> <li>• Estimating population size – ecological techniques</li> <li>• MRR</li> <li>• Statistical tests</li> </ul> <p>Conservation - Structured independent study over holidays</p>	
<b>Support at Home</b>	<ul style="list-style-type: none"> <li>• Complete text book reading and make notes prior to each topic</li> <li>• Complete text book questions and mark at the end of each topic</li> <li>• Library of support texts available in S9</li> <li>• A / A* consider subscription to review magazine (some copies available in S9)</li> <li>• Zig Zag learning grids</li> <li>• Topic workbooks with answers</li> </ul>					
<b>Assessments</b>	<ul style="list-style-type: none"> <li>- Essay style assessment for each topic</li> <li>- Topic Tests to allow students to focus on exam technique and give a progress check</li> <li>- Written assessments for each assessment point which will be synoptic and build knowledge and skills</li> <li>- CPAC assessment through lab books</li> </ul>			<p><b>Careers in the Curriculum:</b></p> <ul style="list-style-type: none"> <li>Health care / medicine</li> <li>Animal welfare</li> <li>Conservation</li> <li>Genetics</li> <li>Research and lab work</li> </ul>		



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Biology - Y13	<p><b>Math &amp; Practical Skills (2)</b></p> <ul style="list-style-type: none"> <li>• Statistics</li> <li>• Key formulae</li> <li>• More graphs</li> <li>• Uncertainty</li> </ul> <p><b>Evolution</b></p> <ul style="list-style-type: none"> <li>• Speciation</li> <li>• Hardy Weinberg</li> </ul> <p><b>Photosynthesis</b></p> <ul style="list-style-type: none"> <li>• ATP revision</li> <li>• Practical and ROR</li> </ul> <p>Respiration</p> <ul style="list-style-type: none"> <li>• Chemiosmosis</li> <li>• Glycolysis and Krebb's</li> <li>• Aerobic vs anaerobic</li> <li>• Measuring respiration</li> </ul>	<p><b>Respond to the environment</b></p> <ul style="list-style-type: none"> <li>• Survival and response</li> <li>• Behavior</li> <li>• Reflexes</li> </ul> <p>Growth substances in plants</p> <p><b>Photosynthesis</b></p> <ul style="list-style-type: none"> <li>• Biochemistry</li> </ul> <p><b>Energy in the environment</b></p> <ul style="list-style-type: none"> <li>• Biomass</li> <li>• NPP and GPP</li> <li>• Nutrient cycles</li> </ul> <p><b>Essay skills</b></p>	<p>Nerves and muscles</p> <ul style="list-style-type: none"> <li>• Receptors</li> <li>• Transmission of impulses</li> <li>• Synapses</li> <li>• Control of heart beat</li> <li>• Contraction of skeletal muscles</li> </ul> <p>Control Gene Expression</p> <ul style="list-style-type: none"> <li>• Mutations alter proteins</li> <li>• Totipotency</li> <li>• Pluripotency</li> <li>• Genetic redundancy</li> <li>• Control of protein synthesis</li> <li>• Epigenetics</li> <li>• apoptosis</li> <li>• Genomes</li> </ul>	<p>Homeostasis</p> <ul style="list-style-type: none"> <li>• Homeostasis and feedback</li> <li>• Control of:               <ul style="list-style-type: none"> <li>◦ Temperature</li> <li>◦ Blood sugar</li> <li>◦ Water and ions</li> </ul> </li> <li>• Disorders and their treatment</li> <li>• Endocrine system</li> <li>• Action of hormones</li> </ul> <p><b>Gene technology</b></p> <ul style="list-style-type: none"> <li>• Recombinant</li> <li>• DNA hybridization and labelling</li> <li>• DNA to identify traits and diseases</li> <li>• Genetic fingerprinting</li> </ul>	<p>A Synoptic</p> <p>Revision and exams</p>	
	<b>Support at Home</b>	<ul style="list-style-type: none"> <li>• Complete text book reading and make notes prior to each topic</li> <li>• Complete text book questions and mark at the end of each topic</li> <li>• Library of support texts available in S9</li> <li>• A / A* consider subscription to review magazine (some copies available in S9)</li> <li>• Zig Zag learning grids</li> <li>• Topic workbooks with answers</li> </ul>				



<b>Assessments</b>	<ul style="list-style-type: none"><li>- Essay style assessment for each topic</li><li>- Topic Tests to allow students to focus on exam technique and give a progress check</li><li>- Written assessments for each assessment point which will be synoptic and build knowledge and skills</li><li>- CPAC assessment through lab books</li></ul>	<b>Careers in the Curriculum:</b> <ul style="list-style-type: none"><li>Health care / medicine</li><li>Animal welfare</li><li>Conservation</li><li>Genetics</li><li>Research and lab work</li></ul>
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