

KS4 Long Term Curriculum Plan

Year	Curriculum Title	HT1 topics	HT2 topics	HT3 topics	HT4 topics	HT5 topics	HT6 topics
10	Edexcel Combined Science/Separate Sciences	<p>Biology</p> <p>B2 Cells and Control</p> <p>Mitosis, Growth in animals and plants, Stem cells, Neurotransmitters</p> <p><i>Retrieval: Specialised cells Genetics</i></p> <p>Separate Sciences only: Development of Darwin's Theory, Tissue Culture, GM and Agriculture, Fertilisers and Biological Control</p>	<p>Biology</p> <p>B3: Genetics</p> <p>Meiosis, DNA, Inheritance, Gene Mutation</p> <p><i>Retrieval: Cell reproduction Farming</i></p>	<p>Biology</p> <p>B4 Natural Selection And Genetic Modification</p> <p>Evidence for Natural Selection, Darwin's Theory, Classification</p> <p><i>Retrieval: Genetics Cell control/Enzymes</i></p> <p>Separate Sciences only: Virus Life cycle, Plant Defences, Plant Diseases, <i>Core Practical: Antibiotics</i>, Monoclonal Antibodies.</p>	<p>Biology</p> <p>B5 Health, disease, and medicine</p> <p>Non Communicable Disease, Cardiovascular Disease, Pathogens, Spreading pathogens, Physical and chemical barriers, The immune system.</p> <p><i>Retrieval: Genetics Natural Selection</i></p>	<p>Biology</p> <p>B5 Health, disease and medicine Continued</p> <p>B6 Plant Structures and their function</p> <p>Photosynthesis, Factors affecting photosynthesis, <i>Core practical – light intensity and the rate of photosynthesis</i>, Absorbing water and minerals, Transpiration and translocation.</p> <p><i>Retrieval: Diseases Meiosis</i></p>	<p>Biology</p> <p>B6 Plant Structures and their function Continued</p> <p><i>Retrieval: Plants Medicine</i></p> <p>Separate Sciences only: Plant Adaptations, Plant Hormones, Uses of Plant Hormones.</p>

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		<p><u>Chemistry</u></p> <p>C5/6/7 Ionic/Covalent bonding Ionic bonds. Ionic lattices. Properties of ionic compounds.</p> <p><i>Retrieval:</i> States Separation</p>	<p><u>Chemistry</u></p> <p>C5/6/7 Ionic/Covalent bonding</p> <p>Continued</p> <p><i>Retrieval:</i> Ionic Properties of Ionic</p> <p><u>Separate Sciences only:</u> Transition metals Corrosion Electroplating Alloying Uses of metals and their alloys</p>	<p><u>Chemistry</u></p> <p>C8 Acids and Alkali</p> <p>Acids, Alkali and indicators. Looking at acids. Bases and Salts. Core practical – preparing copper sulfate. Alkalis and balancing equations. Core practical – investigating neutralisation. Reactions of acids with metals and carbonates. Solubility.</p> <p><i>Retrieval:</i> Ionic Covalent</p>	<p><u>Chemistry</u></p> <p>C13 Groups in the Periodic Table Group 1 Group 7 Halogen Reactivity Group 0</p> <p><i>Retrieval:</i> Acids Covalent</p> <p><u>Chemistry Separate Sciences only:</u> C14/15/16: Quantitative Analysis, Dynamic Equilibrium and Chemical Cells Yields Atom Economy Concentrations. Titrations and Calculations. Molar Volume of Gases. Factors affecting Equilibrium.</p>	<p><u>Chemistry</u></p> <p>C16 Fuels</p> <p>Hydrocarbons in crude oil and natural gas. Fractional distillation of crude oil. The alkane homologous series. Complete and incomplete combustion. Combustible fuels and pollution. Breaking down hydrocarbons.</p> <p><i>Retrieval:</i> Groups Acids</p>	<p><u>Chemistry</u></p> <p>C16 Fuels</p> <p>Continued</p> <p><i>Retrieval:</i> Fuels Groups</p>
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		<p>Physics</p> <p>P4 Waves</p> <p>Describing waves Wave speeds Refraction</p> <p><i>Retrieval: Energy Types and Stores Forces</i></p>	<p>Physics</p> <p>P5 EM Spectrum</p> <p>Electromagnetic waves Using EM waves EM dangers</p> <p><i>Retrieval: Waves, Energy Stores</i></p>	<p>Physics</p> <p>P6 Radioactivity</p> <p>Atomic models Half lives Background radiation Types of Radiation Dangers</p> <p><i>Retrieval: Waves The EM spec</i></p>	<p>Physics</p> <p>P1 Motion Vectors and scalars Distance time graphs Acceleration Velocity time graphs</p> <p>P2 Forces and Motion (part 1) Resultant forces Newton's 1st law Weight and Mass Newton's 2nd law <i>Core practical-investigating acceleration.</i></p> <p><i>Retrieval: Radioactivity EM spec</i></p> <p>Separate Sciences only: Braking Distance and Energy.</p>	<p>Physics</p> <p>P7/8 Energy and Forces</p> <p>Work and power. Objects affecting each other. Vector diagrams.</p> <p><i>Retrieval: Motion Forces</i></p> <p>Separate Sciences only: Rotational Forces</p>	<p>Physics</p> <p>P12 Particle model Particles and Density. <i>Core Practical – Investigating Density.</i> Energy and changes of state. Energy calculations. Gas temperature and pressure.</p> <p><i>Retrieval: Energy and Forces Resultant forces</i></p>
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11	Edexcel Combined Science/Sep arate Sciences	<p><u>Biology</u> <u>8 then 7 9</u></p> <p>B7 Animal co-ordination, control and homeostasis (part 1) Hormones. Hormonal control of the metabolic rate. The menstrual cycle. Hormones and the menstrual cycle. Control of blood glucose. Type 2 diabetes.</p> <p>B6 Plant Structures and their function Photosynthesis. Factors affecting photosynthesis. <i>Core practical – light intensity and the rate of photosynthesis.</i> Absorbing water and minerals. Transpiration and translocation.</p>	<p><u>Biology</u></p> <p>B8 Exchange and Transport in Animals Efficient transport and Exchange. The circulatory system. The heart. Cellular respiration. <i>Core Practical – Respiration rates.</i></p> <p>B9 Ecosystems and Material Cycles Ecosystems. Abiotic factors and communities. <i>Core practical – Quadrats and Transects.</i> Biotic factors and communities. Parasitism and mutualism. Biodiversity and humans. Preserving biodiversity. The water cycle. The carbon cycle. The nitrogen cycle.</p> <p><i>Retrieval:</i> Plants Animal Co-ordination</p> <p><u>Separate Sciences only:</u></p>				
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	<p><i>Retrieval:</i> <i>Disease and Medicine</i></p> <p><u>Chemistry</u></p> <p>C13 Groups in the Periodic Table Group 1 Group 7 Halogen Reactivity Group 0</p> <p>C12 – Recap of Reversible Reactions (covered in lockdown)</p> <p>C14/15 Rates of Reaction. Rates of Reaction. Factors affecting rates of reaction. <i>Core practical – investigating reaction rates.</i> Catalysts and activation energy. Exothermic and Endothermic</p> <p><i>Retrieval:</i> <i>Acids and Alkalis</i></p>	<p>Energy Transfer. Food Security. Rates of Decomposition.</p> <p><u>Chemistry</u></p> <p>C14/14 Continued</p> <p>C16 Fuels Hydrocarbons in crude oil and natural gas. Fractional distillation of crude oil. The alkane homologous series. Complete and incomplete combustion. Combustible fuels and pollution. Breaking down hydrocarbons.</p> <p>C17 Earth and the Atmosphere The early atmosphere. The changing atmosphere. The atmosphere today. Climate change.</p> <p><i>Retrieval:</i> <i>Groups Rates</i></p>				
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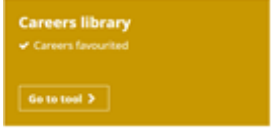
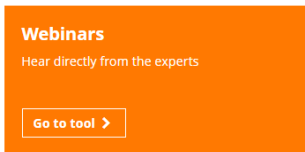

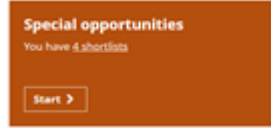
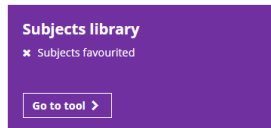
	<p><i>Types of Substances</i></p> <p><u>Physics</u></p> <p>P7/8 Energy and Forces RECAP Work and power. Objects affecting each other. Vector diagrams.</p> <p>P12 Particle model Particles and Density. <i>Core Practical – Investigating Density.</i> Energy and changes of state. Energy calculations. Gas temperature and pressure.</p> <p>P13 Forces and Matter Bending and stretching. <i>Core practical – investigating springs.</i> Extension and energy transfers.</p> <p><i>Retrieval:</i></p>	<p><u>Physics</u></p> <p>P9 Electricity and Circuits Electric Circuits. Current and potential differences. Current, charge and Energy. Resistance. Resistance of components. <i>Core practical – Investigating Resistance.</i> Transferring Energy. Power. Transferring Energy by Electricity. Electrical Safety.</p> <p>P10 Magnets and Magnetic fields Magnets and Fields. Electromagnetism. Magnetic forces.</p> <p>P11: Electromagnetic Induction Transformers. Transformers and Energy.</p> <p><i>Retrieval:</i> <i>Particle Model</i></p>				
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		<p><i>Motion and Forces</i></p> <p><u>Separate Sciences only:</u> Charges and Static Electricity. Dangers and Uses of Static Electricity. Electric Fields.</p>	<p><u>Separate Sciences only:</u> Electromagnetic Induction. National Grid.</p>				
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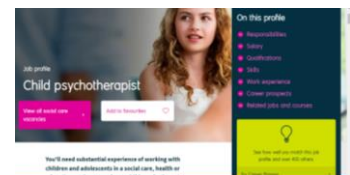
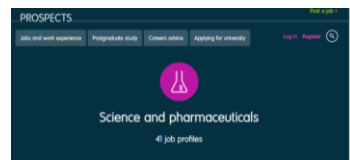
Science: Key Stage 4 & 5: Linking Curriculum Learning to Careers – GB4

You will find a dedicated section in the Resources Library - GB4 Linking Curriculum Learning to Careers. Here there are dozens of resources which can be found pertinent to most subjects.

Careers/Gatsby benchmark links				
Links to careers/jobs	Career Talks (Possible contacts)	Career and labour market information	Work place visits	Encounters with higher/further education
<p>Unifrog – student side</p>  <p>https://www.unifrog.org/student/careers</p> <p>Student side → careers library SEARCH→ Biology, Chemistry, Physics</p> <p>https://www.prospects.ac.uk/job-profiles/browse-sector Use this website to browse jobs in science sectors- to</p>	<p>Unifrog – student side -</p>  <p>https://www.unifrog.org/student/webinars</p> <p>Range of webinars on Unifrog linked to Science including:</p> <p>→Subject discovery: Medicine If you are fascinated by how the human body works and have a genuine concern</p>	<p>LMI for all widget to compare jobs – pay and growth in those sectors – bottom of page on this link https://www.altrinchamcollege.com/careers/websites</p> <p>Unifrog – Student side</p>  <p>Research over 1000 career profiles by subject area which includes a full range of up-to-date national and regional LMI.</p>	<p>Unifrog – student side</p>  <p>Search over 2000 Virtual WEX opportunities as well as numerous residential and summer schools. Students can search Virtual WEX opportunities by subject area.</p>	<p>Unifrog - student side</p>  <p>search your subject area to find University course videos/info https://www.unifrog.org/student/subjects/school-subjects</p> <p>https://www.unifrog.org/student/subjects/area-sciences</p> <p>Student side → subject's library SEARCH→ Sciences / Biology, Chemistry, Physics</p>

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find salaries, skills, qualifications, responsibilities



<https://www.prospects.ac.uk/job-profiles/browse-sector/energy-and-utilities>

<https://www.prospects.ac.uk/job-profiles/browse-sector/engineering-and-manufacturing>

<https://www.prospects.ac.uk/job-profiles/browse-sector/environment-and-agriculture>

<https://www.prospects.ac.uk/job-profiles/browse-sector/healthcare>
<https://www.prospects.ac.uk/job-profiles/browse-sector/science-and-pharmaceuticals>

for the welfare of others, Medicine could be the perfect course for you.

→ **Subject discovery: Liberal Arts and Sciences** Ever wondered what it would be like to study one of the oldest subjects in the world? Liberal Arts is one such subject – it goes back to the Ancient Greeks, who considered a liberal arts education to be the ultimate mark of an educated person.

→ **Subject discovery: Engineering** If you're seeking a future that revolves around innovation and assisting mankind in reaching new heights (literally, in the case of Aeronautical Engineering!), a degree in Engineering is the one for you.

→ **Subject discovery: Psychology** How do children acquire language? Why do we forget things? What makes a good leader? If these sorts of questions interest you, tune in to learn more about Psychology.

National careers week talks
2021 - career clips
T:\Careers & Enterprise\National Careers Week Talks 2021\Recordings

<https://icould.com/explore/categories/subject/science/>
Over 170 science job profiles – including lots of videos

Apprenticeships

You have 13 shortlists

Start >

<https://www.unifrog.org/student/apprenticeships/standards>

Research all live apprenticeship and traineeship opportunities including a range of LMI covering jobs available, average salary and employment rate.

Intermediate (ISC)	Advanced (AFS)	Higher (Degree)
<ul style="list-style-type: none"> Accounting Business Administration Business Development Business Management Business Studies Construction Customer Services Engineering Finance Healthcare Information Technology Marketing Manufacturing Media Music Physical Education Science Social Media Sport Teaching Transport Visual Arts 	<ul style="list-style-type: none"> Accounting Business Administration Business Development Business Management Business Studies Construction Customer Services Engineering Finance Healthcare Information Technology Marketing Manufacturing Media Music Physical Education Science Social Media Sport Teaching Transport Visual Arts 	<ul style="list-style-type: none"> Accounting Business Administration Business Development Business Management Business Studies Construction Customer Services Engineering Finance Healthcare Information Technology Marketing Manufacturing Media Music Physical Education Science Social Media Sport Teaching Transport Visual Arts

<https://www.prospects.ac.uk/employer-profiles>

Job profiles include recent LMI
<https://www.prospects.ac.uk/job-profiles/browse-sector>

Greater Manchester LMI – August 2020

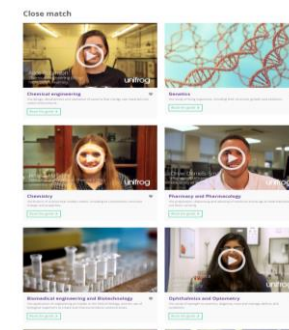


See AC careers bulletin – you could select any suitable virtual work experiences

<https://www.prospects.ac.uk/jobs-and-work-experience/work-experience-and-internships>

Create an account to see live virtual work experience opportunities
<https://www.springpod.co.uk/virtual-work-experience-programmes>

Medicine virtual work experience opportunities
→ <https://medicmentor.co.uk/university-hospitals-birmingham-trust-virtual-work-experience/>
→ <https://bsmsoutreach.thinkific.com/courses/VWE>
→ https://join.springpod.co.uk/medicine-virtual-work-experience/?gclid=EAIaIQobChM1ztDlvYKh8AIVjtd3Ch3DNQ6dEAAYASAAEgJOZfD_BwE



Unifrog – student side



Search Universities -
Undergraduate courses in the UK as well as every FE course including **sixth forms/college**.



KS4/5 - Find a suitable **MOOC** linked to your Science get a taste for what it's like to study a module at university.

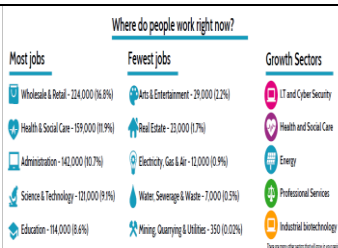
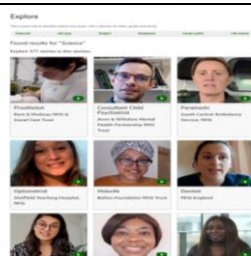
Starting soon (30)	On demand (54)	Already started (91)
<ul style="list-style-type: none"> Accounting Business Administration Business Development Business Management Business Studies Construction Customer Services Engineering Finance Healthcare Information Technology Marketing Manufacturing Media Music Physical Education Science Social Media Sport Teaching Transport Visual Arts 	<ul style="list-style-type: none"> Accounting Business Administration Business Development Business Management Business Studies Construction Customer Services Engineering Finance Healthcare Information Technology Marketing Manufacturing Media Music Physical Education Science Social Media Sport Teaching Transport Visual Arts 	<ul style="list-style-type: none"> Accounting Business Administration Business Development Business Management Business Studies Construction Customer Services Engineering Finance Healthcare Information Technology Marketing Manufacturing Media Music Physical Education Science Social Media Sport Teaching Transport Visual Arts

For example
Meiosis and mitosis- On demand so get started any time - The Open University - 8 hours to complete

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<https://www.prospects.ac.uk/job-profiles/browse-sector/transport-and-logistics>

<https://www.prospects.ac.uk/job-profiles/browse-sector/social-care>



Digital forensics

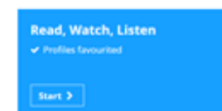
On demand so get started any time - The Open University - 7 weeks to complete - 8 hours to complete

Making Sense of Climate Science Denial - On demand so get started any time - The University of Queensland - 7 weeks to complete

Nanotechnology and Nanosensors, Part1 - On demand so get started any time - Technion - Israel Institute of Technology - 60-100 hours of videos and quizzes

Basic Analytical Chemistry

On demand so get started any time - The University of Tokyo - 6 weeks to complete



Student side - Read watch listen – SEARCH → Biology, chemistry, physics

For 1000s of wider reading materials, from journals and articles to podcasts and ted talks

GM higher – search for a 'What can I study' at University for Sciences – 5 minute video

<https://gmhigher.ac.uk/resources/what-can-i-study-part-2-sciences/>