

Curriculum Overview

Subject: Biology

Year Group: 10



Year 10 & 11 Biology is **academically ambitious**. Throughout Key Stage 4 (KS4) students will extend the **powerful knowledge** already developed in KS3. Each Lesson has a particular **LORIC** and **Career focus** reflecting the school's improvement plan.

With a focus on Key Concepts, Apparatus and Techniques across all topics students will develop the **subject disciplinary knowledge** needed to scrutinise the world around them and communicate their findings effectively. Students will follow the AQA GCSE Biology specification and are required to undertake 10 required practical activities, developing analytical and rational thought processes through planning, experimentation and reflection. Developing extended science writing through the use of long written questions (LWQ) has been identified as a particular area of development. **Interleaving questions** at the beginning of every lesson allow students to spend time recalling previous learning so that **practise** makes permanent.

TERM 1	TERM 2	TERM 3
<p>KNOWLEDGE/SKILLS</p> <p>B5- Communicable diseases (Types, transmission and defence, growing and preventing bacteria, plant diseases and defence)</p> <p>B6 -Preventing and treating disease (vaccinations, drug discovery and development, monoclonal antibodies)</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>KNOWLEDGE/SKILLS</p> <p>B9- Respiration (Aerobic/ anaerobic, metabolism and the liver).</p> <p>B10 -Human nervous system (Homeostasis, reflexes, Brain, eye)</p> <p>B11 -Hormonal co-ordination (1) (Diabetes, negative feedback)</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>KNOWLEDGE/SKILLS</p> <p>B14- Variation and evolution (Selective breeding, natural selection, genetic engineering, cloning)</p> <p>B8- Photosynthesis (process, rate, use of glucose)</p> <p>B11 -Hormonal co-ordination (2) (Menstrual cycle, controlling fertility, plant hormones)</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures.

KEY ASSESSMENTS	KEY ASSESSMENTS	KEY ASSESSMENTS
Half term 1: Growing bacteria LWQ Half term 2: Preventing and treating disease test	Half term 1: Respiration LWQ Half term 2: The human nervous system test	Half term 1: Variation and evolution test Half term 2: Hormones LWQ End of Year 10 PPE
Extended reading suggestions and external resources:		
KS4 Bitesize Science https://www.bbc.co.uk/bitesize/subjects/z9ddmp3		
Oak National Academy Lessons https://classroom.thenational.academy/subjects-by-key-stage/key-stage-4/subjects/biology		
Chase High Youtube Playlists https://www.youtube.com/channel/UCSK4ImJfi5sPH4UBp7cZtyQ		
<p>We actively encourage students to read and research about the wider Scientific world- Planet Earth and Perfect Planet both on BBC iPlayer are examples of where students can engage with Science from the safety and comfort of their own homes.</p>		

Curriculum Overview

Subject: Chemistry

Year Group: 10



Year 10 & 11 Chemistry is **academically ambitious**. Throughout Key Stage 4 (KS4) students will extend the **powerful knowledge** already developed in KS3. Each Lesson has a particular **LORIC** and **Career focus** reflecting the school's improvement plan.

With a focus on Key Concepts, Apparatus and Techniques across all topics students will develop the **subject disciplinary knowledge** needed to scrutinise the world around them and communicate their findings effectively. Students will follow the AQA GCSE Chemistry specification and are required to undertake 8 required practical activities, developing analytical and rational thought processes through planning, experimentation and reflection. Developing extended science writing through the use of long written questions (LWQ) has been identified as a particular area of development. **Interleaving questions** at the beginning of every lesson allow students to spend time recalling previous learning so that **practise**

TERM 1	TERM 2	TERM 3
<p>KNOWLEDGE/SKILLS</p> <p>C3- Structure and bonding (Ions, covalent/ionic/metallic bonding, giant structures).</p> <p>C6 - Electrolysis</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>KNOWLEDGE/SKILLS</p> <p>C4- Chemical calculations (moles, yield, concentrations, titrations)</p> <p>C7 - Energy changes (Endo/Exothermic reaction, bond energy, batteries, fuel cells)</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>KNOWLEDGE/SKILLS</p> <p>C5- Chemical changes (acids and alkali, the reactivity series, extracting metals)</p> <p>C8 - Rates and equilibrium (Rates of reactions and how they can be manipulated)</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures.
<p>KEY ASSESSMENTS</p> <p>Half term 1: Covalent bonding LWQ</p>	<p>KEY ASSESSMENTS</p> <p>Half term 1: Chemical calculations LWQ</p>	<p>KEY ASSESSMENTS</p> <p>Half term 1: Chemical changes test</p>

Half term 2: Electrolysis test

Half term 2: Energy changes test

Half term 2: Effect of concentration and pressure
LWQ
End of Yr 10 PPE

Extended reading suggestions and external resources:

KS4 Bitesize Science <https://www.bbc.co.uk/bitesize/subjects/zs6hvcw>

Oak National Academy Lessons <https://classroom.thenational.academy/subjects-by-key-stage/key-stage-4/subjects/chemistry>

Chase High Youtube Playlists <https://www.youtube.com/channel/UCSK4ImJfi5sPH4UBp7cZtyQ>

We actively encourage students to read and research about the wider Scientific world- Planet Earth and Perfect Planet both on BBC iPlayer are examples of where students can engage with Science from the safety and comfort of their own homes.

Curriculum Overview

Subject: Physics

Year Group: 10



Year 10 & 11 Physics is **academically ambitious**. Throughout Key Stage 4 (KS4) students will extend the **powerful knowledge** already developed in KS3. Each Lesson has a particular **LORIC** and **Career focus** reflecting the school's improvement plan.

With a focus on Key Concepts, Apparatus and Techniques across all topics students will develop the **subject disciplinary knowledge** needed to scrutinise the world around them and communicate their findings effectively. Students will follow the AQA GCSE Physics specification and are required to undertake 10 required practical activities, developing analytical and rational thought processes through planning, experimentation and reflection. Developing extended science writing through the use of long written questions (LWQ) has been identified as a particular area of development. **Interleaving questions** at the beginning of every lesson allow students to spend time recalling previous learning so that **practise** makes permanent.

TERM 1	TERM 2	TERM 3
<p>KNOWLEDGE/SKILLS</p> <p>P2- Energy transfer by heating (Conduction, insulation, specific heat capacity)</p> <p>P9- Motion (Speed, distance, velocity, graph skills)</p> <p>P6 -Molecules and matter (Density, Change of states, Specific latent heat).</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>KNOWLEDGE/SKILLS</p> <p>P7 – Radioactivity (Density of material, nuclear decay and half-life, Fission and fusion dangers and uses of radiation)</p> <p>P4- Electric circuits (Components, series/parallel, Current/charge/potential difference)</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>KNOWLEDGE/SKILLS</p> <p>P8- Force in balance (Vectors and scalars, levers, centre of mass,)</p> <p>P5- Electricity in the home (Plugs, power, appliances and efficiency)</p> <p>P10- Forces and motion (Acceleration, terminal velocity, momentum, extension, impact and safety)</p> <p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures.

<p>KEY ASSESSMENTS</p> <p>Half term 1: Specific heat capacity LWQ</p> <p>Half term 2: Molecules and matter test</p>	<p>KEY ASSESSMENTS</p> <p>Half term 1: Radioactivity LWQ</p> <p>Half term 2: Electrical circuits test</p>	<p>KEY ASSESSMENTS</p> <p>Half term 1: Forces test</p> <p>Half term 2: Cables and plugs LWQ</p> <p>End of Yr 10 PPE</p>
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Extended reading suggestions and external resources:

KS4 Bitesize Science <https://www.bbc.co.uk/bitesize/subjects/zpm6fg8>

Oak National Academy Lessons <https://classroom.thenational.academy/subjects-by-key-stage/key-stage-4/subjects/physics>

Chase High Youtube Playlists <https://www.youtube.com/channel/UCSK4ImJfi5sPH4UBp7cZtyQ>

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Curriculum Overview

Subject: Combined Science

Year Group: 10



In Year 10 & 11 students complete a carousel of learning across topics in Biology, Chemistry and Physics. Throughout Key Stage 4 (KS4) students will extend the **powerful knowledge** already developed in KS3. Each Lesson has a particular **LORIC** and **Career focus** reflecting the school's improvement plan. The more cognitively challenging topics are scheduled later in the course to allow time for the development of the skills and knowledge to deliver them effectively. Topics are rotated out of sync with Single sciences so that resources are available to all students.

With a focus on Key Concepts, Apparatus and Techniques across all topics students will develop the **subject disciplinary knowledge** needed to scrutinise the world around them and communicate their findings effectively. Students will follow the AQA Combined Science specification and are required to undertake 21 required practical activities developing analytical and rational thought processes through planning, experimentation and reflection. Developing extended science writing through the use of long written questions (LWQ) has been identified as a particular area of development. **Interleaving** questions at the beginning of every lesson allow students to spend time recalling previous learning so that **practise** makes

TERM 1	TERM 2	TERM 3
<p>KNOWLEDGE/SKILLS:</p> <p>Biology: B9- Respiration (Aerobic/ anaerobic, metabolism and the liver).</p> <p>Chemistry: C5 - Chemical Changes (acids and alkali, the reactivity series, extracting metals) C7 - Energy Changes (endothermic and exothermic reactions, bond energies)</p> <p>Physics: P7 – Radioactivity (Density of material, nuclear decay and half-life, dangers and uses of radiation) P8- Force in balance (Vectors and scalars, Centre of mass,) P9- Motion (Speed, distance, velocity, graph skills)</p>	<p>KNOWLEDGE/SKILLS</p> <p>Biology: B5- Communicable diseases (Types, transmission and defence) B6 -Preventing and treating disease (vaccinations, drug discovery and development) B10 -Human nervous system.</p> <p>Chemistry: C8- Rates and equilibrium (Rates of reactions and how they can be manipulated) C9- Crude oil and fuels (Hydrocarbons, fractional distillation) C10- Chemical analysis (Chromatography, gas tests).</p> <p>Physics: P6- Molecules and matter (Density, Change of states, Specific latent heat).</p>	<p>KNOWLEDGE/SKILLS</p> <p>Biology: B8- Photosynthesis (process, rate, use of glucose)</p> <p>Chemistry: C3- Structure and bonding (Ions, covalent/ionic/metallic bonding, giant structures). C4 -Chemical calculations (masses, moles and concentrations).</p> <p>Physics: P2 -Energy transfer by heating (Conduction, insulation, specific heat capacity) P4- Electric circuits (Components, series/parallel, Current/charge/potential difference) P5 -Electricity in the home (Plugs, power, appliances and efficiency)</p>

<p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures. 	<p>Skills:</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. • AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. • AO3: Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures.
<p>KEY ASSESSMENTS</p> <p>Half term 1: The effect of exercise on the body LWQ Chemical changes test</p> <p>Half term 2: Velocity time graphs LWQ Radioactivity test</p>	<p>KEY ASSESSMENTS</p> <p>Half term 1: Rates and equilibrium test Density LWQ</p> <p>Half term 2: Vaccination LWQ Crude oil and fuels test</p>	<p>KEY ASSESSMENTS</p> <p>Half term 1: Structure and bonding test Photosynthesis LWQ</p> <p>Half term 2: Electric circuits test Specific heat capacity LWQ</p> <p>End of year 10 PPE</p>
<p>Extended reading suggestions and external resources:</p> <p>KS4 Bitesize Science https://www.bbc.co.uk/bitesize/subjects/zp266yc Oak National Academy Lessons https://classroom.thenational.academy/subjects-by-key-stage/key-stage-4/subjects/combined-science Chase High Youtube Playlists https://www.youtube.com/channel/UCSK4ImJfi5sPH4UBp7cZtyQ</p> <p>We actively encourage students to read and research about the wider Scientific world- Planet Earth and Perfect Planet both on BBC iPlayer are examples of where students can engage with Science from the safety and comfort of their own homes.</p>		