

Year 11 Curriculum Area – Separate Science

<p>What concepts will we be covering this half term?</p>	<p>Curriculum mapping for students Key concepts: Biology: Topic B18 – Biodiversity and Ecosystems Human population explosion Land and water pollution Air pollution Deforestation and peat destruction Global Warming The Impact of Change Maintaining Biodiversity Trophic Levels and Biomass Factors affecting food Security Making Food Production Efficient Sustainable Food Production</p> <p>Chemistry: Topic C15 – Using Our Resources Rusting Useful Alloys Properties of Polymers Glass, Ceramics and Composites Making Ammonia – The Haber Process Making Fertilisers in the Lab Making Fertilisers in Industries</p> <p>Physics: Topic P15 - Electromagnetism Magnetic fields Magnetic fields of electric currents Electromagnets in Devices The motor effect The Generator Effect The Alternating-Current Generator Transformers Transformers on Action</p> <p>Key Questions to consider: Biology - What is sustainability and why is it important? Chemistry – How are the Earth's resources used in chemical reactions to make useful products? Physics - How do power stations generate alternating currents for our home? How do motors work?</p>
<p>What resources can you use to support your learning?</p>	<p>BBC website: Biology: https://www.bbc.co.uk/bitesize/examspecs/zpgcbk7 Chemistry: https://www.bbc.co.uk/bitesize/examspecs/z8xtmnb Physics: https://www.bbc.co.uk/bitesize/examspecs/zsc9rdm</p>

Oak National Academy:

Biology

Global Warming

<https://classroom.thenational.academy/lessons/global-warming-6ww64c>

This lesson looks at the effect that humans have on ecosystems with a focus on global warming.

Maintaining Biodiversity

<https://classroom.thenational.academy/lessons/biodiversity-cmrk8r>

This lesson introduces biodiversity and the effect that humans can have on it.

Trophic Levels and Biomass

<https://classroom.thenational.academy/lessons/biomass-64rpcc>

This lesson introduces the concept of biomass and looks at how energy is transferred between organisms in a food chain.

Factors affecting food Security

<https://classroom.thenational.academy/lessons/food-security-and-farming-6mw3gr>

This lesson introduces food security and describes how farming techniques and biotechnology can be used to increase food security.

Review

<https://classroom.thenational.academy/lessons/review-part-2-75k36d>

This lesson revises cycles, global warming and biodiversity and applies your knowledge to exam questions.

Chemistry:

Rusting

<https://classroom.thenational.academy/lessons/rusting-6nhk6c>

This lesson will look at corrosion and rusting. We will look at experiments to see what is needed for rusting to occur as well as what we can do to prevent rusting. We will look at the sacrificial protection of iron using zinc.

Useful Alloys

<https://classroom.thenational.academy/lessons/alloys-64v34e>

This lesson will look at metals and why they are often alloyed. We will look at common examples of alloys and what they are used for.

Properties of Polymers

<https://classroom.thenational.academy/lessons/polymers-6hgker>

This lesson will look at the different properties of polymers and their uses. We will look at the differences between high and low density poly(ethene) as well as the differences between thermosetting and thermosoftening polymers.

Glass, Ceramics and Composites

<https://classroom.thenational.academy/lessons/glass-ceramics-and-composites-c4w3ae>

This lesson will look at how glass is made as well as the uses of composites and ceramics. We will compare the physical properties of glass, ceramics and composites, and explain how their properties are related to their uses.

Making Ammonia – The Haber Process

<https://classroom.thenational.academy/lessons/making-ammonia-and-the-haber-process-70rkat>

This lesson will look at why ammonia is such an important compound. We will look at the Haber Process and the different conditions that are used.

Making Fertilisers in the Lab

<https://classroom.thenational.academy/lessons/the-economics-of-the-haber-process-74r32d>

This lesson will look at the Haber Process and the need for compromised conditions in the manufacturing process. We will look at the effect of temperature and pressure on the yield of ammonia as well as the importance of a catalyst.

Making Fertilisers in Industries

<https://classroom.thenational.academy/lessons/making-fertilisers-in-the-lab-and-in-industry-6wrk6e>

This lesson will look at the NPK fertilisers and what they are made of. We will compare the process of making fertiliser in the lab compared to making it in industry.

Physics:

Magnetic fields

<https://classroom.thenational.academy/lessons/magnetic-fields-61jkcc>

This lesson shows how to plot the shape of a magnetic field, what the shape of the magnetic field between magnets looks like and explores the Earth's magnetic field.

Magnetic fields of electric currents

<https://classroom.thenational.academy/lessons/electromagnetism-cqv64r>

The lesson explores electromagnetism and how electrical currents can produce magnetic fields, how those fields can be made stronger and how they can be put to good use.

Electromagnets in Devices

<https://classroom.thenational.academy/lessons/electromagnetic-devices-ctjk2d>

In this lesson will explore how direct current (DC) is produced by dynamos, comparing the construction of a dynamo to that of a generator and also compare the construction and operation of a loudspeaker and microphone.

The motor effect

<https://classroom.thenational.academy/lessons/the-motor-effect-and-left-hand-rule-cctp8c>

This lesson explores the interaction between electrical currents and magnetic fields, predicting the direction of the force produced and understanding the factors that affect the size of the force.

Transformers

<https://classroom.thenational.academy/lessons/transformers-cgvp8c>

In this lesson we describe the structure of a transformer, and explain how an alternating current in one coil induces a current in another.

Transformers on Action

<https://classroom.thenational.academy/lessons/transformer-equations-75jkae>

In this lesson we explain how the ratio of potential differences across the two coils depends on the ratio of turns and carry out calculations linking both transformer

	<p>equations and relate to advantages of power transmission at high potential differences.</p>
<p>Tasks to complete so we can assess your understanding/ Key Performance Indicator tasks</p>	<ul style="list-style-type: none"> • Complete any of the revision tasks, watch the videos and do the tests on the BBC bitesize page. • Complete the lessons on the oak national academy website – follow the lesson to watch the video and complete the activities and the quiz.
<p>What can you do if you need help/ support?</p>	<p>If you need help please email your teacher –</p> <p>sfox2@netherthorpe.derbyshire.sch.uk</p> <p>gwatkins@netherthorpe.derbyshire.sch.uk</p> <p>mraybold@netherthorpe.derbyshire.sch.uk</p> <p>sparry@netherthorpe.derbyshire.sch.uk</p> <p>jmccammon@netherthorpe.derbyshire.sch.uk</p> <p>shutton@netherthorpe.derbyshire.sch.uk</p> <p>jcarr@netherthorpe.derbyshire.sch.uk</p> <p>pgreenwood@netherthorpe.derbyshire.sch.uk</p> <p>bchristmas@netherthorpe.derbyshire.sch.uk</p> <p>nconnolly@netherthorpe.derbyshire.sch.uk</p> <p>jroberts@netherthorpe.derbyshire.sch.uk</p>