BTEC Applied Science & Forensics



Physics EYFS to Post 16

Unit 1 C2 Waves

Unit 1 C3 Uses of EM

Waves in Communication

Communication

Forensic Science & Criminal Investigations (BTEC)

Mixture of exams and coursework covering the fundamentals of crime scene investigation.

Equivalent to 2 A-levels



P10 Force & Motion **Newtons Laws of Motion** Weight & terminal velocity Forces & braking Momentum Forces & elasticity



P8 Forces in Balance Vectors & scalars Resultant forces Centre of Mass The parallelogram of forces Resolution of forces



P15 Electromagnetism Magnetic Fields Magnetic fields from electric currents

The motor effect



P12 Wave Properties Types of waves

Wave properties Reflection & refraction Sound waves

Unit 1 C1 Working with Waves

Applied Science (BTEC)

Mixture of exams and coursework covering fundamentals of Waves topic within Physics. Equivalent to 1 A-level.

P2 Energy Transfer by Heating How conduction, convection & radiation transfer energy Specific heat capacity Heating & insulating buildings

Post



Exam

GCSE Paper 2 Topics

PPE Exam

16



P4 Electric Circuits

Current & charge

P9 Motion

Potential difference & resistance

V-I characteristics of components

Series & parallel circuits

Speed & distance -time graphs Velocity & acceleration

Types of waves in the electromagnetic spectrum How we use the spectrum to communicate Other uses of the waves in the spectrum

P7 Radioactivity

P13 Electromagnetic Waves

Atoms & radiation The discovery of the nucleus Changes in the nucleus What are alpha, beta and gamma radiation

Mock

Exam

YEAR

P6 Molecules & Matter

Density States of matter & changes of state Internal energy Specific latent heat Gas pressure, volume & temperature



Paper 1 topics

Electromagnets 2 Magnets and magnetic fields Electromagnets Using electromagnets



P5 Electricity in the Home AC, cables & plugs

Electrical power Energy transfer from electrical currents Appliances & efficiency

Waves 2

Sound waves, water waves and energy Radiation and energy Modelling waves

Enquiry processes 2

YEAR

Analysing and evaluating Communication Evidence and sources Critique claims and justify opinions Risks and benefits



P3 Energy Resources **Energy Supply & Demand**

How do we generate electricity from wind & water, the sun and earth **Environmental considerations** when choosing energy



Food and Fuels Energy resources Energy and power Energy adds up

Energy dissipation

Enquiry processes 1 Asking Scientific

auestions Planning

Energy & Work Gravitational, Kinetic & Elastic Potential **Energy Stores** Efficiency & Power

P1 Conservation and Dissipation Energy

Changes in Energy Stores

Conservation of Energy



Waves 1 Sound waves and speed

Loudness and amplitude Frequency and pitch The ear and hearing Light & Colour Reflection and refraction The eye and vision

Electromagnets 1 Potential difference

Resistance Series and Parallel circuits Charging up



YEAR



Introduction to forces Balanced and unbalanced forces Speed Distance- time graphs Gravity



Compare and give reasons for variations in how components function, including brightness of bulbs, loudness of buzzers and position of on/off switches



Forces 2 Friction and drag Squashing and stretching

Turning forces Pressure in gases Pressure in liquids

Explain that we see things because light travels from light sources, sometimes to objects and to our eyes.



Energy 2

Work, energy and machines Energy and temperature Energy transfer: particles Energy transfer: radiation and insulation

YEAR



and buzzers.

Use recognised symbols in simple circuit diagrams

Construct simple series circuits, Identify if a lamp will identifying and naming the parts, light in a series circuit including cells, wires, bulbs, switches and recognise a switch opens and closes a

or volume of a buzzer with number and voltage of cells in Electricity #2 the circuit.

Associate the brightness of a bulb

Earth and Space

Describe the movement of the moon relative to the Earth

Recognise that light appears to travel in straight lines

of air resistance, Describe the sun, Earth water resistance and moon as and friction, that approximately spherical

travels in a straight line. Identify the effects

act between

moving surfaces

Recognise that shadows have

the same shape as the objects

that cast them because light



Recognise that some mechanisms including

greater effect.

levers, pulleys and gears

reduce the force to have a

Light #2

Explain that objects are seen because they give out or reflect light into the eye

Find patterns in the pitch of a sound and the object creating

Patterns between the strength of vibrations and the volume of sound.

> Sound is caused by vibrations travelling through a medium.



Identify examples of contact and non-contact forces and that magnetic forces can act at a distance.

Compare and group everyday materials based on magnetism

Describe Magnets have two poles, predictions can be made as to whether a magnet will repel or attract.

Identify common appliances that run on electricity

Electricity #1

Sounds get fainter

with distance. Compare movement Notice light is over different reflected from surfaces.

Recognise some common conductors and insulators.

Light #1

change

Find patterns in

the ways shadow

circuit

Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky

KS2

Earth and other planets relative to the sun in the solar system

bodies

Describe the movement of the

KS1

Understanding the World

Forces #2

Explain that unsupported

objects fall towards the Earth

because of the force of gravity



EYFS

Forces and

light from the dangerous and how to protect the eyes from

Recognise that

surfaces

Recognise we need light to see and dark is the absence of light.

Recognise that shadows are formed when the light from is Observe and describe weather associated with the seasons and how day length varies

Seasonal Changes

the 4 seasons

Observe changes across

Understanding that there is a range of technology and a range of uses.



Magnetism #1

sun can be light damage.

blocked by an opaque object.