

Forensic Learning Points in Science at Kineton High School

Key Stage 4

	Key Stage 4	
Time	Year 10	Year 11
Autumn	<p>BIOLOGY: Topics: Preventing Disease / Photosynthesis</p> <p>Curriculum End Points:</p> <ol style="list-style-type: none"> 1. Explaining how diseases can be prevented and treated. 2. Describing the process of photosynthesis, factors affecting its rate, and the uses of the glucose made. <p>Vocab: Vaccination, antibiotics, antibodies, antigens, photosynthesis, endothermic, limiting factors.</p> <p>Main Assessments:</p> <ul style="list-style-type: none"> • Infection and Response End of Unit Test. <p>CHEMISTRY: Topics: Chemical changes (Electrolysis) and Energy Changes</p> <p>Curriculum End Points:</p> <ol style="list-style-type: none"> 1. Stating what is deposited at the electrodes in electrolysis for a range of different ionic compounds. 2. Describing different reactions as Exothermic and Endothermic and calculating the energy changes of these reactions. 3. Triple only – Understand and evaluate chemical cells and fuel cells. <p>Vocab: Electrons, Anode, Cathode, Ions, Oxidation, Reduction, Cation, Anion, Exothermic, Endothermic, Reaction Profile, Activation energy, Fuel cells.</p> <p>Main Assessments:</p> <ol style="list-style-type: none"> 1. Chemical changes (Acids, Metals and Electrolysis) Unit Test <p>PHYSICS: Topics: P4 & P4T Atomic structure</p> <p>Curriculum End Points: Explaining differences & similarities between the different ionising materials. Developing understanding of the history of scientific development. P4T TRIPLE ONLY – Understanding uses & dangers of radioactive materials.</p> <p>Vocab: Alpha, beta, gamma, ionising, penetrating, decay, half-life</p> <p>Main Assessments:</p> <ul style="list-style-type: none"> • Atomic structure end of unit test 	<p>BIOLOGY: Topics: Variation and Evolution</p> <p>Curriculum End Points:</p> <ol style="list-style-type: none"> 1. The causes of variation between individuals. 2. Describing the evidence for evolution, explaining how organisms become extinct, and how living things are classified. <p>Vocab: Natural selection, selective breeding, genetic engineering, fossils, extinction, classification, domains, kingdoms.</p> <p>Main Assessments:</p> <ul style="list-style-type: none"> • Inheritance, Variation, and Evolution End of Unit Test. • Year 11 Mock Exams – Biology Paper 1. <p>CHEMISTRY: Topics: Chemistry of the Atmosphere and Using resources</p> <p>Curriculum End Points:</p> <ol style="list-style-type: none"> 1. Describing the structure of the Earth's atmosphere. 2. Investigating the environmental problems our actions cause on the Earth. 3. Describing how we use the Earth's resources. 4. Explaining how water is made safe to drink. 5. Evaluating our use of the Earth's resources <p>Vocab: Carbon dioxide, Global warming, Acid Rain, Global dimming, Sulfur dioxide, Nitrogen oxides, Particulates, Life cycle assessment, phytomining, bioleaching.</p> <p>Main Assessment:</p> <ol style="list-style-type: none"> 1. Chemistry of the Atmosphere and Using Resources Test <p>PHYSICS: Topics: P7 & P7T Motion & Newton's Laws</p> <p>Curriculum End Points: Using graphs and formulae to describe motion along a line. Understanding and using Newton's 3 laws of motion P7T TRIPLE ONLY – Using ideas about momentum to solve problems around collisions and explosions.</p> <p>Vocab: stationary, velocity, acceleration, interact</p> <p>Main Assessments:</p> <ul style="list-style-type: none"> • Forces end of unit test part 2 • Year 11 mock exams Physics paper 1 (COVERING TOPICS 9P1, 9P2, 9P3, P4, P5)

PHYSICS TRIPLE ONLY:

Topics: P12T LIGHT

Curriculum End Points:

Describing the process of reflection & refraction of light and how humans see colours.

Explaining lenses using diagrams.

Vocab: convex, concave, focus

Main Assessments:

- Light teacher-marked exam questions

Spring

BIOLOGY:

Topics: Respiration and Nervous System

Curriculum End Points:

1. Describing the process of respiration, both aerobic and anaerobic, and explaining the effects of exercise.
2. Describing the structure and function of the human nervous system, including the eye and brain for triple students only.

Vocab: Aerobic, anaerobic, glycogen, exothermic, neurone, synapse, reflex.

Main Assessments:

- Bioenergetics End of Unit Test.

CHEMISTRY:

Topics: The Rate and Extent of Chemical Change

Curriculum End Points:

1. Calculate rates of Reaction.
2. Explain how certain factors affect rate of reaction.
3. Explain how reversible reactions can be at equilibrium and how stresses to the system can affect equilibrium.

Vocab: Collision theory, Activation energy, Concentration, Surface Area, Temperature, Pressure, Catalyst, Dynamic Equilibrium, Closed system, Rate.

Main Assessments:

- The rate and Extent of Chemical Change Unit Test

PHYSICS:

Topics: P5 & P5T Particle model

Curriculum End Points:

Developing understanding of changes of state, using particle model and internal energy.
Describing the effect of changing temperature on gas pressure
P5T TRIPLE ONLY – gas pressure and volume.

Vocab: Density, latent heat, internal energy

Main Assessments:

- Particle model end of topic test

BIOLOGY:

Topics: Adaptation and Ecosystems

Curriculum End Points:

1. Describing what living things compete for and explaining how they are adapted for survival.
2. Describing feeding relationships between organisms and explaining how water and carbon are cycled throughout nature.

Vocab: Competition, adaptation, extremophile, producer, consumer, predator, prey, combustion, decay, precipitation, evaporation, condensation.

Main Assessments:

- Year 11 Mock Exams – Biology Paper 2

CHEMISTRY:

Topics: Using resources - Triple

Curriculum End Points:

1. Evaluate how we use the Earth's resources
2. Describe how we make NPK fertilisers.

Vocab: Rusting, Corrosion, Alloys, Ceramics, Composites, NPK Fertilisers.

Main Assessments:

- Year 11 Mock exams – Chemistry Paper 2

PHYSICS:

Topics: P9 Electromagnetic waves

Curriculum End Points:

Explaining uses and dangers of the waves in the Electromagnetic Spectrum

Vocab: radio, micro, infra-red, visible, ultra-violet, X-ray, gamma

Main Assessments:

- Waves end of unit test part 2
- Year 11 mock exams Physics paper 2 (COVERING TOPICS P6, P6T, P7, P7T, P8, P8T, P9, P11T, P12T, P13T)

PHYSICS:**Topics: P6 & P6T Force interactions and elasticity****Curriculum End Points:**

Describing how forces interact with objects. Describing the forces involved in stretching or compressing an object.

P6T TRIPLE ONLY – Understanding the effects of moments and simple levers & gears.

Vocab: scalar, vector, resultant force

Main Assessments:

- Forces end of unit test part 1

PHYSICS TRIPLE ONLY:**Topics: P11T Pressure****Curriculum End Points:**

Describing the effects of changing pressure in fluids.

Vocab: atmospheric, upthrust, floatation

Main Assessments:

- Pressure teacher-marked exam questions

Topics: P13T Space**Curriculum End Points:**

Describing the structure of the universe and how scientists developed the Big Bang theory.

Vocab: red-shift, protostar, red-giant, supernova,

Main Assessments:

- Space teacher-marked exam questions

Summer

BIOLOGY:

Topics: Hormones and Reproduction (Homeostasis – Triple Only)

Curriculum End Points:

1. Describing the structure and function of the human endocrine system, and explaining plant growth responses for triple students only.
2. Describing and explaining how inherited characteristics are passed from one generation to the next.
3. (Triple Only) Explaining how the body maintains a constant internal environment in terms of water and temperature.

Vocab: Gland, pituitary, menstrual cycle, contraception, meiosis, allele, dominant, recessive.

Main Assessments:

- Homeostasis and Response End of Unit Test.
- Year 10 Mock Exams – Biology Paper 1.

CHEMISTRY:

Topics: Organic Chemistry and Chemical Analysis

Curriculum End Points:

1. Describe what crude oil is made from and how it can be separated and explain how the fractions of Crude oil can be made more useful.
2. Triple only - Describe the structure and reactions of alkenes, alcohols, carboxylic acids and esters.
3. Triple only – Describe the structure and bonding of synthetic and naturally occurring polymers.
4. Describe a range of qualitative tests used to detect specific chemicals.
5. Triple only – Describe the tests for positive and negative ions.

Vocab: Alkane, Fraction, Cracking, Alkene, Alcohol, Carboxylic Acid, Ester, Polymer, Addition, Condensation, Monomer, Functional group, homologous series, Protein, Polypeptide, Amino acids, formulation, chromatography, instrumental methods, flame emission spectroscopy.

Main Assessments:

- Organic Chemistry and Chemical analysis Unit Test
- Year 10 mock exam – Chemistry Paper 1

BIOLOGY:

Topics: Biodiversity

Curriculum End Points:

1. Explaining the effects of the human population explosion on the environment.

Vocab: Global warming, acid rain, peat bogs.

Main Assessments:

- Ecology End of Unit Test.
- Year 11 External GCSE Exams – Papers 1 and 2.

CHEMISTRY:

Topics: Revision

PHYSICS:

Topics: P10 & P10T Electromagnetism

Curriculum End Points:

Describing effects of electrical current & magnetic fields interacting, including the motor effect (HT only)

P10T TRIPLE ONLY – Describing how generators and transformers work

Vocab: field, attract, repel

Main Assessments:

- Electromagnetism end of unit test

PHYSICS:

Topics: P8 & P8T Wave properties

Curriculum End Points:

Describing basic properties of waves, including reflection and refraction.

P8T TRIPLE ONLY – Knowing the effects of sound and seismic waves

Vocab: Transverse, longitudinal, frequency, amplitude,

Main Assessments:

Waves end of topic test part 1

Year 10 mock exams Physics paper 1 (COVERING TOPICS 9P1, 9P2, 9P3, P4, P5)

PHYSICS TRIPLE ONLY:

Topics: P11T Pressure

Curriculum End Points:

Describing the effects of changing pressure in fluids.

Vocab: atmospheric, upthrust, floatation

Main Assessments:

- Pressure teacher-marked exam questions