

What are the aims and intentions of this curriculum?

AQA Combined Science Trilogy is taught at the Parkside Studio College as one of the core subjects at KS4. It equips students with skills and knowledge transferable to both educational and career settings and provides a worthwhile course for students of various ages and from diverse backgrounds in terms of general education and lifelong learning. The units covered in this scheme of work are unit two: chemistry, biology and physics. The knowledge and skills ascertained throughout the study of the course will prepare students for careers in STEM.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Autumn 1	The nervous system, hormonal coordination, homeostasis, Reproduction, Genetics,	<ul style="list-style-type: none"> • Structure and function of the nervous system • Response to stimuli • Reflex action • Synapse • Homeostasis • Structure and function of the human endocrine system • Hormones • Control of blood glucose concentration • Hormones in human reproduction • Contraception • Hormones to treat infertility • Negative feedback mechanism • Sexual and asexual reproduction • Meiosis and sexual reproduction • Gametes and fertilization • Sex determination • DNA, chromosome, gene and genome • Genetic inheritance and inherited genetic disorder • Gamete, genotype, phenotype, homozygous, heterozygous, allele, dominant allele, recessive allele • Genetic engineering • Ethics and concerns about genetic engineering 	<p>Practical and enquiry skills: Plan, analyses and present results from experiment relating to the nervous system</p> <p>Communication: Role play the reflex arc</p> <p>Practical and enquiry skills: Plan an experiment to test for diabetes and evaluate the old approach of doctors tasting urine to determine if patient has diabetes</p> <p>Communication: Debate the ethics of contraception</p> <p>Scientific Communication: Use models to explain the process of meiosis</p> <p>Scientific Communication: Complete Punnett squares and genetic crosses. Interpret the results and describe the offspring.</p> <p>Communication: Debate the ethics of genetic engineering</p> <p>Practical and enquiry skills: Extract DNA from fruit</p> <p>Scientific Communication: Use Punnett's squares to interpret results on progeny</p>	<p>Teacher: End of Unit test, kerboodle test and quiz</p> <p>Self: Past paper question, worksheet, project</p> <p>Peer: Class worksheet, portfolio, assignment, presentations, models</p>
Autumn 2	variation, evolution,	<ul style="list-style-type: none"> • Variation 	<p>Practical and enquiry skills: Class survey and report</p>	<p>Teacher: End of Unit</p>

organizing an ecosystem, biodiversity and ecosystem, forces in balance, motion, forces and motion

- Selective breeding
- Evolution of species by natural selection
- Mutations
- Evidence for evolution – fossils and resistant bacteria
- Extinction
- Classification
- Carl Linnaeus binomial system of naming organism
- Carl Woese three domain system of classification
- Ecosystem, community, interdependence, biotic factors, abiotic factors, competition, stable community, habitat
- Distribution of species
- Adaptations of organisms for survival
- Extremophiles
- Levels of organization in an ecosystem
- Feeding relationship
- Material cycles
- Biodiversity
- Waste management
- Land use and deforestation
- Global warming
- Maintaining biodiversity
- Scalar and vector quantity
- Contact and non-contact forces
- Weight and gravitational field
- Calculating the weight of an object
- Resultant force
- Calculating resultant force for components acting at right angle
- Elastic and inelastic deformation
- Hooke's Law
- Distance and displacement
- Speed and velocity
- Calculating speed using formula
- Rearrange speed formula to find time or distance travelled
- Distance-Time graphs
- Acceleration
- Calculating acceleration using formula

Measure variation in plant a species

Scientific Communication: Produce a model to represent selective breeding

Communication: Write essay on the pros and cons of selective breeding

Practical and enquiry skills: Field investigation

Scientific Communication: Use models to describe material cycling

Scientific Communication: Use models and graphs to describe vector and scalar

Practical and enquiry skills: investigate contact and non-contact forces

Practical and enquiry skills: measure the weight and mass of an object and convert from mass to weight and weight to mass.

Practical and enquiry skills: Plan experiment to calculate speed of an object

Practical and enquiry skills: required practicals on acceleration

Communication: represent forces using diagrams

Practical and enquiry skills: required practical on Hooke's law

Communication: represent the motion of objects on graphs

test, kerboodle test and quiz, end of term examination

Self: Past paper question, worksheet, project

Peer: Class worksheet , portfolio, assignment, presentations, models

		<ul style="list-style-type: none"> • Velocity-Time graphs • Equations of motion for uniform acceleration • Falling under gravity • Newton first law of motion • Newton second law of motion • Equation for newton second law of motion • Inertial Mass • Newton's third law of motion • Thinking distance, braking distance, stopping distance • Momentum • Conservation of momentum 	<p>Practical and enquiry skills: Design a parachute for free falling object</p>	
<p>Spring 1</p>	<p>Wave properties Electromagnetic waves Magnetism Electromagnetism Crude oil and fossil fuel Chemical analysis</p>	<ul style="list-style-type: none"> • Features of transverse and longitudinal waves • Properties of waves • Amplitude, frequency, period, peak, trough, wavelength • Wave equation • Electromagnetic spectrum • Radio waves, gamma waves, X-ray, microwaves and ultraviolet waves • Uses of Electromagnetic waves • Magnetic force • Magnetic material • Magnetic field • Magnetic field around a current carrying wire • Magnetic field around a solenoid • The motor effect • Flemming's left hand rule • Crude oil • Hydrocarbon • Fractional distillation • Flammability, boiling point, viscosity and volatility of hydrocarbons • Alkanes • Cracking • Alkene 	<p>Scientific Communication: Draw diagram of waves</p> <p>Practical and enquiry skills: investigate waves in a ripple tank</p> <p>Practical and enquiry skills: find the speed of sound using echo</p> <p>Practical and enquiry skills: investigate infrared radiation</p> <p>Communication: draw ray diagrams</p> <p>Scientific Communication: Research electromagnetic waves</p> <p>Practical and enquiry skills: investigate the magnetism</p> <p>Practical and enquiry skills: Use molymods to make models of hydrocarbons</p> <p>Practical and enquiry skills: Investigate cracking of hydrocarbon</p> <p>Practical and enquiry skills: investigate the products of combustion</p>	<p>Teacher: End of Unit test, kerboodle test and quiz</p> <p>Self: Past paper question, worksheet, project</p> <p>Peer: Class worksheet portfolio, assignment, presentations, models</p>

Spring 2

The Earth's atmosphere, The Earth's resources, using our resource

- Proportion of gas in the atmosphere
- Theory on the early Earth's atmosphere
- Greenhouse effect
- Greenhouse gases
- Carbon footprint
- Atmospheric pollutants
- Use of Earth's resources
- Finite and infinite resources
- Pure water and potable water
- Sewage treatment
- Metal ores
- Life cycle assessment

Scientific Communication: Make models to show the proportion of gases in the atmosphere

Scientific Communication: Use posters to represent theories of early Earth

Communication: write an essay putting forward arguments for and against global climate change

Practical and enquiry skills: Analysis and purification of water sample

Communication: research water purification

Communication: research metal ores and the extraction of metal from low grade ore

Teacher: End of Unit test, kerboodle test and quiz, end of term examination

Self: Past paper question, worksheet, project

Peer: Class worksheet, portfolio, assignment, presentations, models