CSSA Science Learning Journey

CHILDWALL SPORTS & SCIENCE ACADEMY
LYDIATE LEARNING TRUST

YEAR 11 Biology

Evolution
- DNA and Proteins (separates only)
- Natural selection
- Evolution
- Fossils & Extinction
- Classification
- Theory of Evolution & Speciation (separates only).

Controlling Reproduction
- Reproduction
- Hormones in Human reproduction
- The Menstrual Cycle
- Contraception
- Fertility Treatment & IVF

Feedback & Control
- Homeostasis
- Nervous System
- The Brain & The Eye (separates only)
- Hormonal Coordination
- Insulin & Diabetes
- Plant Hormones (separates only)

YEAR 11 Chemistry

Chemical Analysis
- Pure substances
- Distillation
- Chromatography
- Gas tests
- Identifying ions (separates only)

Our Atmosphere
- Changes in the Atmosphere
- Pollution
- Global Warming

Controlling Reactions
- Rates of Reaction
- Le Chatelier's Principle
- Reversible Reactions & Equilibrium
- The Haber Process & Fertilisers (separates only)

Carbon Chemistry
- Alkanes
- Fractional Distillation
- Alcohols, Carboxylic Acids & Esters (separates only)
- Polymers
- Polymerisation (separates only)

YEAR 11 Physics

Force Fields
- Permanent & Induced Magnetism, Magnetic Forces & Fields
- Electromagnets
- The Motor Effect
- Induced Potential, Transformers & the National Grid (separates only)
- The Solar System (separates only)
- Life Cycle of Stars(separates only)

Electromagnetic Radiation
- Electromagnetic Spectrum
- Reflection & Refraction (separates only)
- Lenses, Ray Diagrams and Colour (separates only)
- The Big Bang Theory (separates only)

YEAR 10 Biology

Ecology
- Ecosystems
- Biotic & Abiotic Factors
- Adaptations
- Feeding Relationships
- Investigating Species Distribution
- Pyramids of Biomass (separates only)
- Food security (separates)

Health & Disease
- Epidemiology
- Disease
- Immune Response
- Vaccination
- Antibiotics
- Culturing Microorganisms (separates only)

Plant & Material Cycling
- Transpiration
- Translocation
- Photosynthesis
- Decay
- Water & Carbon Cycles
- Investigating rate of decay (separates only)

Circulation & Respiration
- The Lungs
- The Heart
- Blood & Blood Vessels
- Aerobic Respiration
- Anaerobic Respiration

The Digestive System
- The Digestive System
- Mechanical and Chemical Digestion
- Absorption in the Small Intestine
- Food Tests
- Enzymes

YEAR 10 Chemistry

Energy Changes
- Percentage Yield & Atom Economy (separates only)
- Exothermic & Endothermic Reactions
- Bond energy
- Cells, Batteries & Fuel Cells (separates only)

Quantitative Chemistry
- The Mole
- Concentrations
- Limiting Reactants
- Acids, Alkalis & Neutralisation
- Titrations (separates only)
- Strong & Weak Acids

Extracting metals
- Extracting Less Reactive Metals
- Electrolysis
- Corrosion (separates only)
- Recycling

Structure & Bonding
- Ionic bonding
- Covalent Bonding
- Polymers
- Metallic Bonding
- Alloys
- Properties of alloys (separates only)

YEAR 10 Physics

Radioactivity
- Atomic Theory
- Radioactivity
- Half Life
- Nuclear Fission (separates only)

Electrical Circuits
- Resistance
- Electrical Power

Movement
- Velocity & Acceleration
- Newton's Second Law
- Momentum
- Change in Momentum (separates only)
- Work Done
- Hooke's Law
- Turning Effect's (separates only)

Energy Conservation
- Energy Stores
- Conservation of Energy
- Power
- Efficiency
- Renewable & Non-Renewable Resources

Matter
- Density
- Gas Pressure
- Pressure in Fluids (separates only)

- **Students will have separate teachers for Biology, Chemistry & Physics.**
- **Those studying Separate Sciences will study for three GCSE qualifications; one in Biology, one in Chemistry & one in Physics.**
- **Those studying Combined Science will study for two GCSE qualifications. The double qualification will assess Biology, Chemistry & Physics.**

YEAR 9

Home Electricity
- Mains Electricity
- Electrical Appliances
- The National Grid
- Static Electricity

Sound & Waves
- Longitudinal & Transverse Waves
- Wave Properties
- Sound Waves
- Ultrasound

Using Resources
- The Reactivity Series
- Potable Water
- Product Life Cycle

Genetics
- Sexual & Asexual Reproduction
- Genes & DNA
- Genetic Engineering
- Cloning
- Gene Theory
- Monohybrid Inheritance

Heating
- Thermal Transfer
- Specific Heat Capacity
- Pressure

Introduction to Quantitative Chemistry
- Atom Conservation
- Moles
- Amounts of Substance
- Concentration
- Acids and Salts

Human Interaction
- Biodiversity
- Global Warming
- Food Security
- Biotechnology
- Sustainable Farming
- Pyramids of Biomass

Acceleration
- Vectors
- Newton I
- Newton III
- Velocity-Time Graphs
- Acceleration

Periodic Table
- Subatomic Particles
- Isotopes
- Atomic Model
- Periodic Patterns

Growth & Differentiation
- Eukaryotic & Prokaryotic Cells
- Cell Transport
- Cell Division
- Stem Cells

Light
- Properties of Light
- Reflection
- Refraction

YEAR 8

Tissues & Organs
- Gas Exchange
- Diet & Nutrition
- Digestive System
- Skeletal & Muscular Systems

Acids & Alkalis
- The pH Scale
- Indicators
- Neutralisation

Movement & Pressure
- Speed
- Distance-Time Graphs
- Work Done
- Pressure

Respiration & Photosynthesis
- Aerobic Respiration
- Anaerobic Respiration
- Photosynthesis

Changing Substances
- Chemical & Physical Changes
- Oxidation
- Metals & Acids

Magnetism
- Magnetic Force
- Magnetic Fields
- Electro-magnetism

Life Diversity
- Variation
- Selective Breeding
- Adaptation

Earth Systems
- The Rock Cycle
- The Water Cycle
- Combustion

Resistance
- Resistance
- Ohm's Law
- Measuring Resistance

Nutrition
- Diet & Nutrition
- Digestive system
- Enzymes

Electrical circuits
- Series & Parallel Circuits
- Electric Current
- Potential Difference

YEAR 7

Energy
- Energy
- Energy Transfers
- Wasted Energy
- Heat & Temperature

Mixtures
- Pure & Impure Substances
- Melting & Boiling
- Separating Mixtures
- Solubility

Interdependence
- Ecosystems
- Feeding Relationships
- Competition
- Biotic & Abiotic Factors

Space
- Mass & Weight
- Gravity
- Solar System
- Satellites

Elements, Atoms & Compounds
- Chemical Symbols
- Elements & Compounds
- Metals & Non-Metals
- Chemical formulae

Reproduction
- Sexual & Asexual Reproduction
- Puberty
- Embryo Development
- Plant reproduction

Forces
- Balanced & Unbalanced Forces
- Free-body Diagrams
- Resultant Force
- Drag Forces

Particles
- States of Matter
- Changes of State
- Diffusion
- Gas Pressure
- Density

Cells
- Risks and hazards
- Animal cells
- Plant cells
- Microscopes
- Observing cells
- Specialised cells
- Organising cells.

'If I have seen further it is by standing on the shoulders of giants.' SIR ISAAC NEWTON