

# Combined Science – Biology – Year 10

## Organisation

- Principles of organisation
- Digestive tissues and organs
- Enzymes
- Digestive enzymes
- RP4: Effect of pH on enzymes
- RP3: Food tests
- Circulatory system: Blood vessels
- Components of blood
- Heart structure
- Heart dissection
- Coronary heart disease
- Treating CHD

### Unit length:

12 – 13 weeks

## Bioenergetics

- Plant tissues/organs: Leaf structure Stem and roots
- Photosynthesis & uses of glucose
- Limiting factors of photosynthesis
- RP5: Rate of photosynthesis
- Transpiration
- Aerobic respiration
- Anaerobic respiration

### Unit length:

9 – 10 weeks

## Disease

- Non-communicable disease
- Cancer
- Communicable diseases: Pathogens
- White blood cells
- Vaccines
- Antibiotic resistance
- Development of drugs

### Unit length:

7 - 8 weeks

## Homeostasis

- Human nervous system: Receptors Reflexes and Synapses
- RP6: Reaction Time
- Hormones and Glands
- Blood glucose and Diabetes
- Menstrual hormones and cycle
- Fertility and Contraception

### Unit length:

7 – 8 weeks

## Genetics

- DNA, genes, gametes
- Meiosis Monohybrid inheritance
- Inherited diseases

### Unit length:

4 -5 weeks

# Combined Science – Chemistry – Year 10

## Bonding and Materials

- Review atomic structure
- Ionic bonding
- Properties of ionic compounds
- Covalent bonding
- Properties of covalent compounds
- Metallic bonding
- Metals and alloys
- Diamond and graphite
- Graphene and fullerenes
- Polymers

**Unit length:**  
10 – 11 weeks

## Quantitative Chemistry

- Balancing equations
- Relative formula mass calculations
- Chemical measurements and uncertainty
- Moles (HT)
- Reacting masses calculations (HT)
- Concentrations of solutions

**Unit length:**  
6 – 7 weeks

## Electrolysis

- Reactivity series
- Redox reactions & metal extraction
- Electrolysis of ionic compounds
- Electrolysis of aqueous compounds
- RP8: Electrolysis
- Half equations (HT)

**Unit length:**  
6 - 7 weeks

## Acid Base Chemistry

- Acids and metals
- pH scale and neutralisation reactions
- Salts
- RP9: Making pure salts
- Exothermic and endothermic reactions
- RP10: Temperature changes
- Reaction profiles
- Energy changes (HT)

**Unit length:**  
8 – 9 weeks

## Reaction Rates

- Reaction rates: Collision Theory
- Factors affecting reaction rates
- Reaction rate calculations
- RP11: Rates of reaction
- Catalysis Reversible reactions
- Equilibrium
- Factors affecting equilibrium (HT)

**Unit length:**  
8 - 9 weeks

# Combined Science – Physics – Year 10

## Circuit and Household Electricity

- Review energy
- Review energy
- Electrical circuit components
- Batteries and lamps
- Current and Charge
- Potential Difference
- Resistance
- Ohm's Law calculations
- Series circuits
- Parallel circuits
- RP2: Resistance along a wire
- RP3: Electrical components 1
- RP3: Electrical components 2
- Alternating current
- Cables and plugs National Grid
- Electrical power calculations

### Unit length:

12 – 13 weeks

## Particles

- RP1: Specific heat capacity
- RP1: Specific heat capacity Density
- RP4: Density of shapes
- Changes of state
- Specific latent heat
- Gas pressure

### Unit length:

7 – 8 weeks

## Radiation

- Atomic structure & radiation particles
- Development of the atomic model
- Radiation particles: properties & uses
- Radiation equations
- Half-life

### Unit length:

5 - 6 weeks

## Forces and Motion

- Vectors and Scalars
- Balanced & unbalanced forces
- Force, Mass, Acceleration Parallelogram & resolution of forces
- Speed, Distance, Time
- Distance-time graphs
- Velocity-time graphs
- Acceleration
- Effect of forces on acceleration

### Unit length:

9 – 10 weeks