Biology Curriculum Map

GCSE BIOLOGY

Exam preparation

Year 11

Required Practicals:

Biological Sampling

Investigating Decay

B7 Ecology

Communities and biological sampling

Biodiversity

Land and water use and pollution

Effects of global warming

B6 Inheritance, variation and evolution

Mechanism of genetic inheritance

Variation and species

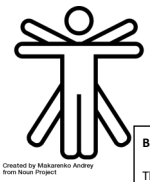
Evolution by natural selection

Year 10

Required Practicals:

Investigating reaction times

Investigating plant tropisms



B5 Homeostasis

The nervous system

Control of internal conditions

The endocrine system

Hormonal control of fertility

Required Practicals:

Investigating limiting factors in photosynthesis

B4 Bioenergetics

Photosynthesis and limiting factors

Aerobic and anaerobic respiration

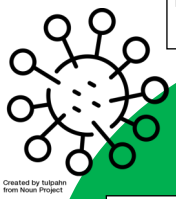
Metabolism

B3 Infection and response

Pathogens

Prevention and response to communicable disease

Drug discovery and development



Year 9

Required Practicals:

Microscopy

Investigating osmosis

Culturing microorganisms

B1 Cell Biology

Cell structure

Specialised cells

Cell division

Cell transport

B2 Organisation

Organ Systems

Digestive system and enzymes

Circulatory system

Health and Non-communicable

Required Practicals:

Chemical tests for nutrients in food

Investigating enzyme activity

← GCSE BIOLOGY

Unit 6 Genetics and evolution

Variation

Genetic inheritance

Evolution

Carrying out scientific research

Evaluating evidence

Year 8

Unit 5 Photosynthesis

Photosynthesis

Plant organisation

Plant reproduction

Studying biological tissues

Collecting, presenting and analysing data

Unit 4 Organisation

Respiration and the respiratory system

Digestive system

Muscular-skeletal system

Studying biological tissues

Biochemical testing

Year 7

Unit 2 Reproduction

Male and female reproductive systems

The menstrual cycle and puberty

Pregnancy and childbirth

Biological sampling

Collecting, presenting and analysing data

Unit 3 Ecology and classification

Biodiversity

Classification of species

Food chains and webs

Biological sampling

Microscopy

Culturing microorganisms

Unit 1 Cell biology

Characteristics and organisation of living things.

Cell structure

Microorganisms

← KS3 BIOLOGY

Substantive Knowledge

Disciplinary Knowledge

Chemistry Curriculum Map

GCSE CHEMISTRY

Exam preparation

Year 11

C10 Using Resources

Finite and renewable resources

Water treatment

Life cycle assessments and recycling

Material chemistry

C9 Chemistry of the Atmosphere

The changing atmosphere

The greenhouse effect

Atmospheric pollutants

Required Practicals:

Chromatography

Identifying ions

C8 Chemical analysis

Pure substances and formulations

Testing for gases

Identifying ions

Required Practicals:

Water purification

C7 Organic Chemistry

Crude oil refinement

Properties and uses of hydrocarbons

Functional groups

Year 10

C4 Chemical changes

Reactions of metals

The reactivity series

Salt formation

Electrolysis

Neutralisation reactions

Required Practicals:

Making soluble salts

Electrolysis

Titrations

C4 Energy Changes

Endo and exothermic reactions

Energy changes in reactions

Batteries and fuel calls

C5 Rates of reaction

Factors affecting the rate of a reaction

Collision theory and activation energy

Reversible reactions and dynamic equilibrium

Required Practicals:

Investigating temperature change in reactions

Required Practicals:

Investigating the factors that affect the rate of a reaction

Year 9

C3 Quantitative Chemistry

Conservation of mass

Relative formula mass

Chemical calculations using the mole

Volumes of gases

C1 Atoms and the Periodic table

Atoms, elements and compounds

Separating mixtures

Development of the atomic model

Development and structure of the Periodic table

Key groups on the Periodic table

C2 Bonding, structure and the properties of matter

Chemical bonding

Properties of ionic, covalent and metallic substances

Allotropes of carbon

Polymers

Nanoparticles

← GCSE CHEMISTRY

Unit 5 Chemical reactions Part 2

The pH scale

Reactions of acids and alkalis

Year 8

Unit 4 Earth and atmosphere

Structure of the Earth

The rock cycle

The changing atmosphere

Earth's resources

Handling chemicals safely

Investigating practical chemistry

Writing chemical equations

Carrying out chemical reactions safely

Chemical analysis

Unit 3 Chemical reactions

Physical and chemical changes

Conservation of mass in reactions

Changing scientific ideas over time

Analysing scientific data

Investigating weathering

Year 7

Unit 2 Atoms and the Periodic table

Atoms, compounds and mixtures

Structure of the periodic table

Groups on the periodic table

Changing scientific ideas over time

Making observations of chemical reactions

Unit 1 Particles

The particle model of matter

Changing states

Diffusion

← KS3 CHEMISTRY

Laboratory techniques

Making precise measure-ments

Substantive Knowledge

Disciplinary Knowledge

Physics Curriculum Map

GCSE PHYSICS

Exam preparation

Year 11

P8—Space Physics

Formation of the solar system

Life cycle of stars

Orbital motion

The big bang theory

P7—Magnetism and electromagnetism

Magnetic force and fields

Electromagnetism

The motor and generator effects

P6—Waves

Transvers and longitudinal waves

Properties and uses of electromagnetic waves

Visible light and lenses

Infrared and black body radiation

Sound waves

Required Practicals:

Measuring waves

Investigating infrared radiation

Investigating reflection and refraction

Year 10

P4—Atomic structure

Development of the model of the atom

Radioactive isotopes

Uses and dangers of radiation

Half –lives

Nuclear fission and fusion

P5—Forces

Contact and non-contact forces

Resolving forces

Forces and motion

Newton's laws of motion

Hooke's law

Moments, levers and gears

Required Practicals:

Determining the density of regular and irregular objects

Required Practicals:

Investigating Newton's 2nd law

Investigating Hooke's law

Year 9

P3 - Particle model of matter

Density

Changes of state and internal energy

Kinetic theory

Particle motion and pressure in gases

P1—Electricity

Series and parallel circuits

Current, potential difference and resistance

Energy transfer in appliances

Mains electricity and the National grid

P1—Energy

Energy stores and transfers

Calculating energy transfers

Energy transfer as heat

Power and efficiency

Energy resources

Required Practicals:

Specific heat capacity

Investigating insulation

Required Practicals:

Investigating resistance

I-V Characteristics of circuit components

← GCSE PHYSICS

Year 8

Unit 4 Forces Part 2

Particle model

Pressure

Density

Unit 3 Static electricity and magnetism

Electrostatic force

Magnetism and magnetic fields

Electromagnetism

The motor effect

Designing investigations—focus on presenting data

Applications of scientific ideas to real-life concepts

Researching scientific ideas

Investigating the properties of electromagnetic waves

Using Formulae to solve problems

Designing investigations into upthrust

Unit 3 Light and space

Energy transfer by waves

Properties of electromagnetic waves

Formation of the Solar system

Exploring Space

Year 7

Unit 2 Forces Part 1

Resultant force

Speed and motion

Moments and levers

Unit 1 Energy

Energy stores and transfers

Energy use in the home

Energy resources

Using formulae to solve problems

Designing investigations—focus on writing a clear method

Laboratory techniques

Using formulae to solve problems

← KS3 Physics

Substantive Knowledge

Disciplinary Knowledge