

Biology

AS / A2 - Exam WJEC

Entry Requirements

Although the entry requirements for AS courses at Cathays High is A* to C grades in at least four subjects, both local and national figures indicate that to achieve success in AS Biology, Chemistry or Physics you must gain at least a B in Core and Additional Science. In addition to this, a C grade in GCSE Mathematics is also recommended.

What will I study?

In AS you will study a variety of topics including:

BASIC BIOCHEMISTRY AND CELL ORGANISATION

1. Chemical elements are joined together to form biological compounds
2. Cell structure and organisation
3. Cell membranes and transport
4. Biological reactions are regulated by enzymes
5. Nucleic acids and their function
6. Genetic information is passed on to daughter cells

BIODIVERSITY AND PHYSIOLOGY OF BODY SYSTEMS

1. All organisms are linked through their evolutionary history
2. Adaptations for gas exchange
3. Adaptations for transport
4. Adaptations for nutrition

In A2 you will study a variety of topics including:

ENERGY, HOMEOSTASIS AND THE ENVIRONMENT

1. Importance of ATP
2. Photosynthesis uses light energy to synthesise organic molecules
3. Respiration releases chemical energy in biological processes
4. Microbiology
5. Population size and ecosystems
6. Human impact on the environment
7. Homeostasis and the kidney
8. The nervous system

VARIATION, INHERITANCE AND OPTIONS

1. Sexual reproduction in humans
2. Sexual reproduction in plants
3. Inheritance
4. Variation and evolution
5. Application of reproduction and genetics

Throughout both AS and A2 you will be developing practical and investigative skills within the context of the course.

How is the course assessed?

In AS the Two units are externally assessed in the form of written examinations. In A2 the Two units are again externally assessed in the form of written examinations, there will also be a practical examination that is externally assessed. In addition you will be expected to keep a laboratory logbook of the experiments that you have carried out throughout the course.

Chemistry

AS/A Level - Exam board WJEC

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What will I study?

In AS you will study a variety of topics including:

THE LANGUAGE OF CHEMISTRY, STRUCTURE OF MATTER AND SIMPLE REACTIONS

- 1 Formulae and equations
- 2 Basic ideas about atoms
- 3 Chemical calculations
- 4 Bonding
- 5 Solid structures
- 6 The Periodic Table
- 7 Simple equilibria and acid-base reactions

ENERGY, RATE AND CHEMISTRY OF CARBON COMPOUNDS

- 1 Thermochemistry
- 2 Rates of reaction
- 3 The wider impact of chemistry
- 4 Organic compounds
- 5 Hydrocarbons
- 6 Halogenoalkanes
- 7 Alcohols and carboxylic acids
- 8 Instrumental analysis

In A2 you will study a variety of topics including:

PHYSICAL AND INORGANIC CHEMISTRY

- 1 Redox and standard electrode potential
- 2 Redox reactions
- 3 Chemistry of the p-block
- 4 Chemistry of the d-block transition metals
- 5 Chemical kinetics
- 6 Enthalpy changes for solids and solutions
- 7 Entropy and feasibility of reactions
- 8 Equilibrium constants
- 9 Acid-base equilibria

ORGANIC CHEMISTRY AND ANALYSIS

- 1 Stereoisomerism
- 2 Aromaticity
- 3 Alcohols and phenols
- 4 Aldehydes and ketones
- 5 Carboxylic acids and their derivatives
- 6 Amines
- 7 Amino acids, peptides and proteins
- 8 Organic synthesis and analysis

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Physics

AS/A2 - Exam board WJEC

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What will I study?

In AS you will study a variety of topics including:

MOTION, ENERGY and MATTER

1. Basic physics
2. Kinematics
3. Dynamics
4. Energy concepts
5. Solids under stress
6. Using radiation to investigate stars
7. Particles and nuclear structure

ELECTRICITY and LIGHT

1. Conduction of electricity
2. Resistance
3. D.C. circuits
4. The nature of waves
5. Wave properties
6. Refraction of light
7. Photons
8. Lasers

In A2 you will study a variety of topics including:

OSCILLATIONS and NUCLEI

1. Circular motion
2. Vibrations
3. Kinetic theory
4. Thermal physics
5. Nuclear decay
6. Nuclear energy

FIELDS and OPTIONS

1. Capacitance
2. Electrostatic and gravitational fields of force
3. Orbits and the wider universe
4. Magnetic fields
5. Electromagnetic induction

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