



CWS SIXTH FORM COURSE BOOKLET INFORMATION

SUBJECT: A Level Biology

EXAM BOARD: AQA

COURSE OUTLINE

A Level Biology explores the science of life. It builds on the ideas learned at GCSE and continues to explore cells, genetics and interdependence in greater detail. The course builds pupils' knowledge, practical skills, mathematical skills and essay writing skills, allowing you to develop in many different ways simultaneously.

EXAMINATION CRITERIA

Core content:

1. Biological molecules.
2. Cells.
3. Organisms exchange substances with their environment.
4. Genetic information, variation and relationships between organisms.
5. Energy transfers in and between organisms.
6. Organisms respond to changes in their internal and external environments.
7. Genetics, populations, evolution and ecosystems.
8. The control of gene expression.

A Level

Paper 1:

- Any content from topics 1–4, including relevant practical skills.
- Written exam: 2 hours, 91 marks, 35% of A Level.
- 76 marks: a mixture of short and long answer questions, 15 marks: extended response questions.

Paper 2:

- Any content from topics 5–8, including relevant practical skills.
- Written exam: 2 hours, 91 marks, 35% of A Level.
- 76 marks: a mixture of short and long answer questions, 15 marks: comprehension question.

Paper 3:

- Any content from topics 1–8, including relevant practical skills.
- Written exam: 2 hours, 78 marks, 30% of A Level.
- 38 marks: structured questions, including practical techniques, 15 marks: critical analysis of given experimental data. 25 marks: one essay from a choice of two titles.

POTENTIAL CAREER PATHS IN THIS FIELD

Research scientist

Pharmacologist

Biologist

Ecologist

Nature conservation officer

Biotechnologist

Forensic scientist

Government agency roles

Science writer

Science Teacher

Anatomical pathology technologist

Animal physiotherapist

Clinical scientist, cardiac sciences

Dental hygienist

Dental technician

Dental therapist

Dentist

General practice doctor

Genetic counsellor

Health improvement practitioner

Medical science liaison

Neuroscientist

Physician associate

Prosthetist/orthotist

Science writer

Sustainability consultant

Veterinary nurse

Zoologist

SUBJECT: A Level Chemistry

EXAM BOARD: AQA

COURSE OUTLINE:

A Level Chemistry explores the science of matter, its properties and reactions. It builds on the ideas learned at GCSE and continues to explore physical chemistry, inorganic and organic chemistry in greater detail. The course builds pupils' knowledge, practical skills, mathematical skills and problem solving skills, allowing you to develop in many different ways simultaneously.

EXAMINATION CRITERIA:

3.1 Physical chemistry

3.1.1 Atomic structure

3.1.2 Amount of substance

3.1.3 Bonding

3.1.4 Energetics

3.1.5 Kinetics

3.1.6 Chemical equilibria, Le Chatelier's principle and K_c

3.1.7 Oxidation, reduction and redox equations

3.1.8 Thermodynamics

3.1.9 Rate equations

3.1.10 Equilibrium constant K_p for homogeneous systems

3.1.11 Electrode potentials and electrochemical cells

3.1.12 Acids and bases

3.2 Inorganic chemistry

3.2.1 Periodicity

3.2.2 Group 2, the alkaline earth metals

3.2.3 Group 7(17), the halogens

3.2.4 Properties of Period 3 elements and their oxides

3.2.5 Transition metals

3.2.6 Reactions of ions in aqueous solution

3.3 Organic chemistry

3.3.1 Introduction to organic chemistry

3.3.2 Alkanes

3.3.3 Halogenoalkanes

3.3.4 Alkenes

3.3.5 Alcohols

3.3.6 Organic analysis

3.3.7 Optical isomerism

3.3.8 Aldehydes and ketones

3.3.9 Carboxylic acids and derivatives

3.3.10 Aromatic chemistry

3.3.11 Amines

3.3.12 Polymers

3.3.13 Amino acids, proteins and DNA

3.3.14 Organic synthesis

3.3.15 Nuclear magnetic resonance spectroscopy

3.3.16 Chromatography

A Level

Paper 1:

- Relevant physical chemistry topics (sections 3.1.1 to 3.1.4, 3.1.6 to 3.1.8 and 3.1.10 to 3.1.12), Inorganic chemistry (section 3.2), Relevant practical skills.
- Written exam: 2 hours, 105 marks, 35% of A Level.
- 105 marks: a mixture of short and long answer questions.

Paper 2:

- Any content from topics 5–8, including relevant practical skills.
- Written exam: 2 hours, 105 marks, 35% of A Level.
- 105 marks: a mixture of short and long answer questions.

Paper 3:

- Any content, any practical skills.
- Written exam: 2 hours, 90 marks, 30% of A Level.
- 40 marks: questions on practical techniques and data analysis, 20 marks: questions testing across the specification, 30 marks: multiple choice questions.

POTENTIAL CAREER PATHS IN THIS FIELD

Academic researcher

Analytical chemist

Biotechnologist

Chemical engineer

Clinical scientist

Forensic scientist

Nanotechnologist

Pharmacologist

Research scientist

Scientific laboratory technician

Toxicologist

Science Teacher

Forensic Scientist

Geochemist

Hazardous Waste Chemist

Materials Scientist

Pharmacologist

Water Chemist

Civil service fast streamer

Environmental consultant

Higher education lecturer

Management consultant

Nuclear engineer

Patent attorney

Radiation protection practitioner

Science writer

SUBJECT: A Level Physics

EXAM BOARD: AQA

COURSE OUTLINE

A Level Physics explores the big ideas that govern the way that the universe exists and behaves. It builds on the ideas learned at GCSE and continues to explore particles, forces and waves in greater detail. The course builds pupils' knowledge, practical skills, mathematical skills and problem solving skills, allowing you to develop in many different ways simultaneously.

EXAMINATION CRITERIA

Core content:

1. Measurements and their errors
2. Particles and radiation
3. Waves
4. Mechanics and materials
5. Electricity
6. Further mechanics and thermal physics
7. Fields and their consequences
8. Nuclear physics

Options:

1. Astrophysics
2. Medical physics
3. Engineering physics
4. Turning points in physics
5. Electronics

A Level

Paper 1:

- Sections 1 to 5 and 6.1, including relevant practical skills.
- Written exam: 2 hours, 85 marks, 34% of A Level.
- 60 marks: a mixture of short and long answer questions, 25 marks: multiple choice questions.

Paper 2:

- Sections 6.2, 7 and 8, including relevant practical skills.
- Written exam: 2 hours, 85 marks, 34% of A Level.

- 60 marks: a mixture of short and long answer questions, 25 marks: multiple choice questions.

Paper 3:

- Section A Compulsory section: Practical skills and data analysis. Section B: Students enter for one of sections 9, 10, 11, 12 or 13.
- Written exam: 2 hours, 80 marks, 32% of A Level.
- 45 marks: short and long answer questions on practical experiments and data analysis. 35 marks: short and long answer questions on optional topics.

POTENTIAL CAREER PATHS IN THIS FIELD

Academic researcher

Technical author

Actuary

Applications developer

Clinical technologist

Data analyst

Nuclear engineer

Operational researcher

Patent attorney

Prosthetist/orthotist

Software engineer

Telecommunications researcher

Sound engineer

Acoustic consultant

Astronomer

Clinical scientist, medical physics

Geophysicist

Higher education lecturer

Metallurgist

Meteorologist

Nanotechnologist

Radiation protection practitioner

Research scientist

Science teacher