

SCIENCES

BIOLOGY

Faculty Contact: Mr I Davies, PT Science



Levels Available

National 3, 4 and 5, Higher and Advanced Higher

Purpose, Aims and Benefits of the Course

Biology affects everyone and aims to find solutions to many of the world's problems. It explores the use of genetic modification to produce new plants and drugs, devising fertility treatments, curing genetic diseases, and exploring new sources of food.

National 3, 4 and 5

Unit 1: LIFE ON EARTH - How living things fit into the natural world and how they depend on each other.

Unit 2: CELL BIOLOGY - All living things are made of cells, and an understanding of how they work and the processes that occur in them is fundamental.

Unit 3: MULTICELLULAR ORGANISMS - Some of the processes that occur within the bodies of animals and plants.

Higher

Unit 1: DNA AND THE GENOME- A study of DNA structure, production of proteins, the applications of DNA technology and therapeutic use of stems cells.

Unit 2: METABOLISM AND SURVIVAL - the process of respiration and how it is essential in metabolism.

Unit 3: SUSTAINABILITY AND INTERDEPENDENCE - sustainability of food production.

Higher Human

Unit 1: HUMAN CELLS – DNA structure, gene expression, mutation and genetic disease. Cellular respiration and energy systems.

Unit 2: PHYSIOLOGY AND HEALTH – Anatomy and physiology of reproduction. Cardiovascular physiology and pathology of cardiovascular disease.

Unit 3: NEUROBIOLOGY AND IMMUNOLOGY: Physiology of nervous system, memory, body defences and immunization.

Advanced Higher

Unit 1: CELLS AND PROTEINS – a study of the structure and roles of proteins in cell processes.

Unit 2: ORGANISMS AND EVOLUTION – a study of the co-evolution of parasites and their hosts.

Unit 3: INVESTIGATIVE BIOLOGY - practical skills will be developed to a high level and a Practical Investigation will be completed.

Progression Routes

BGE → National 3 → National 4 → National 5 → Employment, training, further education

BGE → National 4 → National 5 → Higher → Employment, training, further education

BGE → National 5 → F.A → Employment, training, further education

BGE → National 5 → Higher → Advanced Higher → Employment, training, further education

SCIENCES

CHEMISTRY

Faculty Contact: Mr I Davies, PT Science



Levels Available

National 3, 4 and 5, Higher and Advanced Higher

Purpose, Aims and Benefits of the Course

The purpose of the course is to develop learners' curiosity, interest and enthusiasm for Chemistry in a range of contexts. The key skills of scientific inquiry and investigation are integrated and developed throughout the course. The relevance of Chemistry is highlighted by the study of the applications of Chemistry in everyday contexts. This will enable learners to become scientifically literate citizens, able to review the science-based claims they will meet. The courses give the opportunities for learners to develop the ability to think analytically, creatively and independently, and to make reasoned evaluations.

National 3, 4 and 5

Unit 1: CHEMICAL CHANGES & STRUCTURE You will build on detailed chemical concepts and use these in analytical applications. You will develop skills and awareness of ethical and environmental issues in a local and international context.

Unit 2: NATURE'S CHEMISTRY You will build on the understanding of natural resources and associated products to gain knowledge and develop skills. You will apply these skills when considering ethical and environmental implications of the application of chemical knowledge to fuelling and feeding a modern society.

Unit 3: CHEMISTRY & SOCIETY You will be introduced to important chemical concepts and apply skills in areas such as the development and use of novel and new materials, including forms of energy generation.

Higher

Unit 1: CHEMICAL CHANGES & STRUCTURE

Unit 2: RESEARCHING CHEMISTRY

Unit 3: NATURE'S CHEMISTRY

Unit 4: CHEMISTRY & SOCIETY

Advanced Higher

Unit 1: INORGANIC AND PHYSICAL CHEMISTRY, Unit 2: ORGANIC CHEMISTRY AND INSTRUMENTAL ANALYSIS and Unit 3: RESEARCHING CHEMISTRY

Progression Routes

BGE → National 3 → National 4 → National 5 → Employment, training, further education

BGE → National 4 → National 5 → Higher → Employment, training, further education

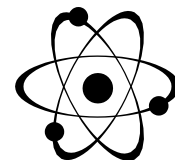
BGE → National 5 → F. A. → Employment, training, further education

BGE → National 5 → Higher → Advanced Higher → Employment, training, further education

SCIENCES

PHYSICS

Faculty Contact: Mr I Davies, PT Science



Levels Available

National 3, 4 and 5, Higher and Advanced Higher

Purpose, Aims and Benefits of the Course

The courses give students an insight into the underlying nature of our world and its place in the universe. From the study of the electrical and heat energy that we use in our society, to the exploration of space, they cover a range of applications of the relationships that have been discovered through experiment and calculation, including those used in modern technology.

Advances in Physics mean that our view of what is possible is continually being updated. These courses allow students to understand the processes behind scientific advances and to appreciate and contribute to topical scientific debate.

National 3, 4 and 5

Unit 1: DYNAMICS AND SPACE - This unit explores concepts relevant to study of the universe and its exploration.

Unit 2: ELECTRICITY AND ENERGY - This unit explores relationships in heat energy and in electrical energy

Unit 3: WAVES AND RADIATION - This unit explores issues surrounding electromagnetic and nuclear radiation.

Higher

Unit 1: OUR DYNAMIC UNIVERSE

Unit 3: ELECTRICITY

Unit 2: PARTICLES AND WAVES

Unit 4: RESEARCHING PHYSICS

Advanced Higher

Unit 1: ROTATIONAL MOTION AND ASTROPHYSICS

Unit 2: QUANTA AND WAVES

Unit 3: ELECTROMAGNETISM

Progression Routes

BGE → National 3 → National 4 → National 5 → Employment, training, further education

BGE → National 4 → National 5 → Higher → Employment, training, further education

BGE → National 5 → F. A. → Employment, training, further education

BGE → National 5 → Higher → Advanced Higher → Employment, training, further education

SCIENCES

Foundation Apprenticeship in Scientific Technologies

Faculty Contact: Mr I Davies, PT Science



About the course

This course provides an excellent opportunity for students to achieve a **Higher** level qualification that combines school-based learning with a substantial element of work experience in a research facility.

Course Overview:

This course will help you discover what a career in the science industry would be like, and if it's right for you, while you're still at school. It is a unique opportunity to work towards a qualification widely recognised by Universities, Colleges, and the Science industry. It is equivalent to a **Higher** qualification. The course is being offered to S4 and S5 students across all six East Lothian secondary schools. It is delivered on a Tuesday and a Thursday afternoon (1.30pm-4/5pm). Transport to and from the learning location, and research facilities, will be provided..

Year One:

Students will study fundamental chemistry concepts whilst gaining confidence in a wide range of chemical and biological experimental techniques. There are several research facilities offering their labs and research scientists; Charles River Laboratories, The Scottish Rural College, Edinburgh University, Royal Dick Vet School, Scottish Centre for Regenerative Medicine, Pure Malt, and the Roslin Institute.

Year Two:

Students will spend most of their Tuesday and Thursday afternoons at their allocated research facility. During this time they will record and gather evidence of their lab work in order to pass three skills-based SVQ units.

Students are expected to be on placement during certain school holidays which will be confirmed in due course.

Assessment:

Throughout the two year course students are expected to pass a range of internal assessments relevant to the course subject; there are no external exams.

As the course follows a two year programme, **there is no partial award or credit at the end of year 1**. For this reason, students must be committed to completing the course in its entirety. The exception to this is the Direct Entry course for S6 students, which can be completed in one year.

Progression:

On completion of this course students will be in a position to:

- Greatly improve their chances of gaining entry to a variety of undergraduate science courses (students are encouraged to check entry requirements with individual Universities and Colleges).

Apply for entry level positions in the Science industry via Modern/Graduate Apprenticeship programmes.