Higher Chemistry

Course Rationale

Chemistry, the study of matter and its interactions, contributes essential knowledge and understanding across all aspects of our lives. It explains the links between the nature of matter as particles and the known properties of substances. Chemistry research and development is essential for the introduction of new products; the chemical industry is a major contributor to the economy of the country. In this course you will learn the impact chemistry makes on developing sustainability, and its effects on our lives, the environment, and on society.

Course Content

Through application of knowledge and understanding of chemical concepts, in practical situations, you will develop an appreciation of the impact of chemistry on everyday life.

The main areas of study are:

Chemical Changes and Structure - Here you will apply your understanding of atomic theory to investigate trends in the periodic table, recognising underlying patterns and principles. You will deepen your understanding of the connection between bonding and a material's physical and chemical properties.

Nature's Chemistry - In this area you will learn about organic chemistry within the context of the chemistry of food and the chemistry of everyday consumer products, soaps, detergents, fragrances and skincare. You will explore the relationship between the structure of organic compounds, their physical and chemical properties and their uses, and cover key functional groups and types of organic reaction.

Chemistry in Society - Here you will learn about the principles of physical chemistry which allow a chemical process to be taken from the researcher's bench through to industrial production. This includes collision theory, controlling reaction rates, catalysts, chemical calculations, dynamic equilibria, enthalpy changes and oxidising and reducing agents. Analytical chemistry will be used e.g. to determine the purity of reagents and products.

Researching Chemistry - Throughout the course you will gain experience in practical and investigative techniques, developing skills in scientific communication, analysis and evaluating the effectiveness of procedures**.** As part of your course assessment you will then research, plan and undertake a practical investigation, and communicate your results and conclusions using your scientific literacy skills.

Skills

Working with others, you will enhance your practical and research skills. You will be challenged to apply your understanding of chemical concepts in new and unfamiliar contexts, and to think critically and creatively to solve scientific problems. You will develop and apply your numeracy and scientific literacy skills. You will develop the ability to think analytically, creatively and independently, and to make reasoned evaluations.

Course Assessment

To support your learning, your work will be assessed on an ongoing basis throughout the course. The formal course assessment has two components: a question paper (80%) and an assignment (20%). The assignment is the report on the practical investigation described above. These are set and marked by the SQA and graded A-D.

Progression

If you complete the course successfully, it may lead to Advanced Higher Chemistry or further study (HNC, HND, degree), training or employment in areas such as environmental science, health & medicine, manufacturing industries, biochemistry, food science, forensic science, chemical engineering and sport & leisure industries.

Career Pathways

Biochemist Chemical engineer Dentist Dietician Doctor Environmental Consultant Food scientist Forensic pathologist Geoscientist Lab technician Materials engineer Neuroscientist Nurse Occupational therapist Orthoptist Pharmacist Vet nurse Pharmacologist Physiotherapist Radiographer Textile technologist Teacher Vet