

The UK government sees STEM skills as crucial for the country's productivity. It has spent almost £1billion over the last ten years on initiatives to encourage the uptake of STEM subjects.<sup>1</sup>

Despite this, shortages of technical-level skills in sectors that depend on STEM subjects have been identified.<sup>2</sup> These skills shortages have been described by the government as 'one of our key economic problems' and with the exit from the European Union on the horizon, there are worries that these problems could be exacerbated.<sup>3</sup>

There's a definite need for STEM skills and graduates and this course will give you the skills and knowledge to progress into a range of different scientific disciplines.

**Applied Science** is the use of scientific processes and knowledge to achieve a particular practical or useful result. There are a wide range of **applied science** related fields, including Biomedical, Environmental and Forensic Science.<sup>4</sup>

**Biomedical Science** is a broad area of science that can be found in much of modern medical science. Biomedical science incorporates areas such as the determination of the blood requirements of critically ill patients to identifying outbreaks of infectious diseases to monitoring biomarkers in cancer.<sup>5</sup>

**Forensic Science** is traditionally involved in the production of scientific evidence for use in courts of law to support the prosecution or defense in criminal and civil investigations.<sup>6</sup>

**Environmental Science** is another broad area of study that incorporates Biology, Chemistry and Physics and works on the negative impact of these areas to our Environment as well as looking for solutions to Environmental issues.

In order to be competent at any of these fields of expertise, you must be able to demonstrate the following:

## Forensic Scientist

- undertake fine, analytical, painstaking work with exceptional attention to detail
- Have a logical, unbiased and methodical approach to problem solving
- Develop a persistent approach and enquiring mind
- Demonstrate your ability to work well in a team, as well as independently
- Have strong written and oral communication skills and the ability to communicate scientific information to non-experts
- Be able to work to deadlines
- Have good colour vision.
- Be committed to continued professional development.<sup>7</sup>

## Biomedical Scientist

- Must have clear and effective written and verbal communication skills
- A strong analytical approach
- A keen eye for detail
- Excellent research skills
- Excellent problem-solving skills
- Take on responsibility associated with the role.
- The ability to work independently AND as part of a team.<sup>8</sup>

## Environmental Scientist

- Strong written and oral communication skills
- Excellent research skills
- Excellent problem-solving skills
- An investigative and inquisitive mind
- A hands-on approach to problem solving
- The ability to work both independently and as part of a team

All Applied Scientists are responsible for the quality and accuracy of the work they undertake within the limits of their personal authority.

**Biomedical Scientists** will be responsible for carrying out a range of laboratory and scientific tests on tissue samples and fluids to help clinicians diagnose and treat diseases. You may also be asked to evaluate the effectiveness of treatments. Once qualified, you may specialise in the following areas: infection sciences, blood sciences, cell sciences or genetics and molecular pathology.<sup>8</sup>

**Forensic Scientists** will be responsible for processing and categorising evidence that may be used in criminal investigations. This might include the processing disturbing evidence samples from the scene such as biological evidence to support a criminal investigation.<sup>7</sup>

Environmental Scientists will be responsible for carrying out a range of tests and experiments into samples such as air, soil, and water pollution alongside providing guidance and advice on how to minimize these effects. Environmental Scientists also work in the field to observe changes and provide risk assessments on the impact that a company or act is having on the environment and surrounding communications, in both rural and urban settings

For **all three** fields of science, you will need to demonstrate a core set of behaviours in order to be competent in your job role and complement wider business strategy and development. This will enable you to support their long-term career development.

In 2020 – 2027, there is a 5.9% expected growth in specialist scientist roles creating **6,300** biomedical jobs. In the same period, 40.3% of the workforce is projected to retire, creating **42,600** new job openings. In the same time

frame, 37% in the CSI/Policing roles will be required in addition to 40% of the current workforce expected to retire equating to an approximation of 42,000 and 65,000 new roles within the field of Biomedical and Forensic Science. Environmental professionals expect to see a 5.1% growth and 39.9% of the workforce is expected to retire from 2020-2027 creating more than 16,800 jobs <sup>9 10</sup>

The field of **forensic science** is becoming increasingly diverse and many industries use these skill sets such as:

- Analytical chemist
- Biomedical scientist
- Detective
- Forensic computer analyst
- Forensic scientist
- Forensic Anthropologist
- Forensic Archaeologist
- Scientific laboratory technician
- Teaching laboratory technician
- Toxicologist
- Crime Scene Investigator

The field of **biomedical science** and industry use skills sets such as:

- Analytical chemist
- Biomedical scientist
- Biotechnologist
- Clinical scientist, biochemistry
- Clinical scientist, genomics
- Clinical scientist, haematology
- Clinical scientist, immunology
- Forensic scientist
- Medicinal chemist
- Microbiologist
- Physician associate
- Research scientist (medical)
- Toxicologist

The field of **Environmental Science** uses skills sets such as:

- Amenity horticulturist
- Commercial horticulturist
- Environmental consultant
- Environmental education officer
- Environmental engineer
- Environmental manager
- Horticultural consultant
- Horticultural therapist
- Marine biologist
- Nature conservation officer
- Recycling officer
- Sustainability consultant
- Waste management officer
- Water quality scientist

By completing this course, you will gain a formal Science qualification that will support progression to further education at Level 3/pre-tertiary level if taken as part of a programme of study. You will learn how to work effectively and practice advanced scientific skills. In addition to the practical skills you will develop, you will also improve your cognitive and problem-solving skills, use critical thinking to non-routine problems, improve your interpersonal skills such as communication, self-management and development, all critical transferable skills.

## Course Content

Foundation knowledge of Biology, Chemistry and Physics	Science in Medicine
Understanding of our environment	Biotechnology procedures and Applications
Practical Scientific Skills	Investigating a Crime Scene
Life Sciences	Understanding Human Behaviour
The living body (Biomed pathway)	Foundation Knowledge of Analytical Chemistry (Forensic Pathway)

**Duration and Attendance** – 1 Years, starting September

**Entry Requirements** - Grade 3 or 4 (C) in English (4 preferable), Grade 3 or 4 (C) Mathematics (4 preferable), and Science.

**Further Study** - Subject to successful interview and completion of this course, you may progress to further levels of study within Science in the college, apprenticeship, university or employment.

**Career Opportunities** - Completion of this course of study and further courses can provide a steppingstone and lead to modern apprenticeships or employment as a trainee in a wide range of science sectors.

**Typical job titles** – Forensic Scientist, Crime Scene Investigator, Forensic Anthropologist, Forensic Archaeologist, Toxicologist, Teacher/Lecturer, Scientific Lab Technician, Teaching Lab Technician, Analytical chemist, Biomedical scientist, Biotechnologist, Medicinal chemist, Microbiologist, Sustainability consultant, Water quality scientist and Environmental manager

**Application Process** - You will be invited to discuss your application with us. Your application, current qualifications and interview will form part of the selection process.

### References

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