



**Bournemouth  
University**

# Forensic Science BSc (Hons)

## School of Applied Sciences

Forensic Science is the application of all areas of science to assist law enforcement agencies to detect criminal activity and to support the legal system to make just decisions where scientific evidence is presented in a court of law. You will be introduced to a wide range of scientific disciplines that are involved in the detection of criminal activity.

---

**Start Date:**

September

---

**Duration:**

3 years full-time with an optional short placement (or 4 years with a 40 week placement); 6 years part-time

---

**UCAS:**

F413

---

**Entry Requirements:**

**For 2012 entry:** 300 tariff points, typically from 3 A-levels or equivalent

**For 2013 entry:** 300 tariff points, including 100 from one required subject (e.g. B at A-level). BTEC Extended Diploma: DDM

---

**Required subjects:**

At least one of the following subjects: Chemistry, Biology, Human Biology, Maths

---

**Recommended GCSEs:**

A minimum of 5 GCSEs grades A\* - C including a Science, Maths and English or equivalent qualifications.

---

**If English is not your first language:**

IELTS (Academic) 6.5 with minimum 5.5 in each component or equivalent

---

**Contact askBU enquiries service:**

**Tel:** 08456 501501 (UK callers only)

+44 (0)1202 961916

Email: [askBUenquiries@bournemouth.ac.uk](mailto:askBUenquiries@bournemouth.ac.uk)

Web: [www.bournemouth.ac.uk/askBU](http://www.bournemouth.ac.uk/askBU)

---

**Open Days:**

To register for an open day log on to:  
[www.bournemouth.ac.uk/opendays](http://www.bournemouth.ac.uk/opendays)

---

**For more course information:**

[www.bournemouth.ac.uk/courses/bsfsc](http://www.bournemouth.ac.uk/courses/bsfsc)

**Why choose this course?**

- International reputation for both traditional and forensic archaeology and anthropology
- Invaluable lab and fieldwork experience, including mock crime scenes and disasters, utilising our field station and streetwise facilities
- Opportunity to study a wide range of specialisms including DNA analysis, toxicology, bone and skeletal analysis.

**Course Overview**

The course aims to provide you with sound scientific knowledge, the ability to think and solve complex scientific problems and to develop effective communication skills. You will be provided with theoretical and practical training covering crime scene science, toxicology, chemistry and molecular biology. The course draws on the School's international reputation for forensic archaeology, anthropology, genocide investigation and toxicology.

If you have a scientific background and a desire to establish a career in forensic science or a wider range of science careers then this course is ideal. After gaining an understanding and knowledge of key concepts, professional skills and forensic sciences, you will be able to pursue this specialist area of expertise in the civil and criminal arenas or go on to further study in a more specialised field.

As well as studying high level sciences, you will undertake indoor and outdoor practical exercises in purpose-designed facilities under the tuition of experienced staff. For example the School's 'crime house' facility, with an attached purpose designed lab and CCTV monitoring where you can carry out full-scale simulated crime scene investigations.

This course was conceived as the most relevant and modern course, specifically for forensic investigators. Many European countries believe forensic archaeology is a crucial component in many crime scenes where bodies are buried. A recent theme at international conferences has been mass disasters and this shows the foresight in course design realising that many forensic investigators work on tsunami, earthquake, genocide or mass transport cases rather than typical crime scenes.

## **Course Content & Unit Overviews**

### **Year 1**

#### **Introduction to Forensic Investigation**

This unit will provide you with a deeper appreciation of the legal aspects, command structure and operational procedures of UK forensic investigations and provide a deeper insight into a range of forensic sciences available. It will provide you with the theoretical understanding to enhance practical experience in the recovery of physical evidence.

#### **Investigative & Reporting Skills**

Providing you with the core skill set necessary for undergraduate study in a science subject, this unit will particularly develop independent learning. By the end of the unit you will have completed a simulated science-based investigation exercise, demonstrating the application of a range of core skills as an investigative scientist.

#### **Topics in Contemporary Science**

You will be exposed to a range of contemporary themes in science, either driven by research taking place within the School or by topical science agenda. The unit is delivered by a seminar series covering all aspects of the science relevant to the School of Applied Sciences. Topical or popular issues are examined and the science that underlies them explored.

#### **Practical Skills**

The practical and field skills necessary for undergraduate study in a science subject specifically within the fields of archaeology, environment & biological-forensic science will be covered. You will be taught through a series of short courses and self directed learning exercises designed to develop your independent learning skills.

#### **Biology**

The fundamental concepts of biology, including cell biology, molecular biology, anatomy and physiology will be studied in this unit. It will explore the molecular basis of life, physiological processes and the function, structure and regulation of the most important organ systems in animals. You will also develop core bioscience skills, such as practical ability, data handling, time management and team work through laboratory classes.

#### **Chemistry**

You will be provided with an understanding of some aspects and processes within fundamental chemistry and analytical chemistry and develop your laboratory skills.

The unit will predominately be delivered through lectures and practical laboratory sessions. The laboratory sessions will enable reinforcement of the theoretical concepts by dealing with experimentally generated data and will allow for one-to-one and small group discussions.

---

### **Year 2**

#### **Biochemistry**

This science-based unit is designed to enable you to be conversant with biochemical aspects of modern biological sciences whilst serving to provide a foundation for final level study such as Biomolecules and Toxicology in the third year. Supported by some of the laboratory practical sessions, the unit will deliver the contents of four core parts of modern biochemistry, namely structure of macromolecules, transmission of genetic information, function of proteins, and metabolic pathways.

#### **Crime Scene**

This unit aims to provide details on the legal aspects, command structure and operational procedures of UK scene of crime investigations and provide an introduction to a range of forensic sciences. It will also provide practical experience in the recovery of evidence from potential scenes of crime.

#### **Forensic Science**

The basic scientific and analytical principals underlying the practice of forensic science will be explored in this unit. You will be introduced to a range of basic case types and to the analytical techniques commonly employed in forensic casework.

#### **Human Osteology**

The basic principles of analysis and interpretation involved in the study of skeletal remains of modern humans will be covered in this unit. It introduces the concepts and uses of biological data in examination and analysis of human skeletal remains from archaeological and forensic contexts and involves the determination of basic bioprofiling characteristics including sex, age at death, ancestry and stature. Attention is also given to considering skeletal data at the level of populations as opposed to that of individuals.

#### **Introduction to Toxicology**

The basic principals of toxicology will be explored in this unit, designed to offer foundation knowledge for those intending to study toxicology at higher levels or for those intending to study subjects peripheral to toxicology or

where a basic understanding of toxicology will be relevant.

*Option units: choose one of the following:*

### **Human Origins & Evolution**

Past and current theories surrounding human origins and evolution will be explored. This unit will consider various lines of evidence including modern human biology, fossil anatomy, genetic studies, primatological evidence and archaeological material. You will be introduced to concepts of evolutionary theory, approaches to understanding specific adaptations and to differing hypotheses regarding human ancestry and how these may be approached critically.

### **Applications of Archaeological Science**

This unit will develop your understanding of how thematic archaeological research questions may be addressed through the use of archaeological scientific techniques and approaches. Knowledge of case studies will be developed to promote understanding of the potential applications of archaeological science to investigate the behaviour of past human societies.

---

## **Year 3**

### **Advanced Forensic Science**

You will enhance your knowledge and critical thinking skills associated with the scientific and analytical principals underlying the practice of forensic science in this unit. You will gain in depth knowledge of key areas of forensic science.

### **Forensic Toxicology**

This course aims to provide you with a knowledge and understanding of the complex issues involved with the analysis of common drugs and poisons in human tissues and the ways in which they exert their effects on the body and influence behaviour.

### **Biomolecules**

By the end of this unit you will be conversant with the concepts and approaches of holism compared with reductionism in modern biological sciences. It will review the principles of biology and modern biotechnologies from molecular levels to systems biology, such as DNA analysis, DNA profiling, functional genomics, gene expression and cDNA microarray, proteomics and protein interactions, epigenetics, bioinformatics, recombinant DNA, and biotechnology.

### **Independent Research Project**

The Independent Research Project provides you with an opportunity to gain experience of research in a topic of your choice relevant to your degree and to demonstrate your ability to report that research. Such experience is considered essential for those students interested in pursuing academic and/or professional research at a higher level of responsibility and achievement.

*Option units: choose one of the following:*

### **Applied Anthropology**

Introducing you to the wider applications and potential of research in Biological Anthropology, you will explore the analysis and interpretation of skeletal pathology and trauma and examine ways in which the study of disease can inform about health status in past societies. Attention is also given to considering how such pathology can provide important information that may lead to the identification of deceased individuals recovered from forensic contexts. Consideration is also given to the ways data is captured and analysed at the level of populations and of both the problems and prospects such analysis carry.

### **Environmental Forensics**

The range of issues covered by the term Environmental Forensics will be explored in this unit. These range from pollution investigations to wildlife crime at local, national and international levels. You will also address techniques and the organisations associated with the investigation of environmental crimes.

### **Forensic Practice**

This unit will consolidate much of the second and third year by virtue of examination of key players and organisations in forensic sciences and how they impact upon operations at the crime scene, the laboratory and the courts. You will become familiar with professional skills required by the forensic scientist particularly focusing on the role of the expert witness.

---

### **Student Experience**

On this course, you will find a satisfying balance of tough academic study coupled with interesting practical exercises. The emphasis is more on lab work and science but you will need to understand the crime scenes whether they be a house, burial site or suspect vehicle.

You will use our Crime Scene Training Centre which includes two bedrooms, one with an ensuite, a lounge-kitchen-diner, a bank and a drugs lab, used to carry out

full-scale simulated crime scene investigations. You can gain experience in fingerprinting, footwear impressions and blood spatter analysis for example.

We aim to make the academic work fit a context, therefore you will carry out perception tests on damaged military vehicles, go to a shooting school, carry out crime scene investigation in a mock 'village', carry out fire training, practical photography exercises and work on simulated graves or field mortuary.

Visiting specialists from organisations such as the Forensic Science Service, Police and International consultants, will back up the experienced staff who will tutor you through three enjoyable years of study.

### **Resources and Facilities**

The School has dedicated laboratories that have a comprehensive range of analytical, technical and experimental facilities, including state of the art field equipment, extensive reference collections of materials, artefacts and both human and animal skeletons to give you vital hands-on experience.

### **The Forensic Science and Biological Sciences Group**

The work of the Forensic and Biological Sciences group is concerned with the application of scientific approaches to the service of the courts and assisting police forces and other agencies in the resolution of serious crime including murder, sexual offences, drug related crime, poisoning and genocide. The teaching of science in the centre is delivered by internationally recognised staff who are actively involved in research and forensic casework in addition to visiting senior forensic practitioners.

Key ongoing projects include:

- Studies of decay processes in UK environments;
- The use of geophysical techniques in locating buried remains;
- The impact of war crimes on skeletal tissues;
- The use of archaeological and anthropological methods in the investigation of genocide and the violation of human rights;
- The distribution of drugs toxic chemicals in the body;
- Pharmacogenomics;
- The development of methods for the analysis of toxic substances in human tissues;
- The study of human skeletal remains from early 20th century conflicts;
- Use of laser scanning to record mass grave deposits.

### **Career Opportunities**

This course draws on our international reputation for forensic archaeology, anthropology, toxicology and biomolecular science investigations. It will enable you to specialise in, and pursue these areas of expertise in the civil and criminal arenas, or to go on to further study in a more specific field.

The skills that make a good forensics scientist are in demand by customs agencies and organisations concerned with health and safety, environmental health and accident investigations.

Some of our previous graduates have worked as forensic scientists with the Forensic Science Service, Police forces, humanitarian agencies and criminal tribunals, excavating mass graves in locations such as Bosnia, Kosovo, Sierra Leone and Iraq. We maintain strong links with such alumni, who continue to provide links, knowledge and support that feed back into our courses.

*The University reserves the right to introduce changes to the information given, including the addition, withdrawal, relocation or restructuring of courses.*