

# A Taste of Science Summer School

# Contents

The course	page 3
Psychology	page 3
Human physiology	page 4
Forensic science	page 4
Biomedical science	page 5
Biological and environmental sciences	page 5

# The course

Our Taste of Science Summer School is an exciting 2-week programme that includes academic English classes and science workshops, enabling you to enhance your academic skills, whilst giving you a flavour of what it's like to study science at UWE Bristol.

This course is ideal for those students who may be thinking of studying science at university, or already studying science at Foundation level.

As well as attending classes on English language and culture, taught by experienced specialist language tutors, you will also have the opportunity to attend 5 workshops, each one focussing on a different area of science. The workshops will be led by staff from the Faculty of Health and Applied Sciences, in state-of-the art facilities using the latest technology. The topics for the workshops will be:

## **1. Psychology: introduction to the brain and its functions**

Psychology is the study of the human mind and behaviour. Recent advances in technology have allowed us to study the brain using non-invasive techniques. This has led to unlocking a wealth of information and scientific study to understand which brain areas are engaged in cognitive processes. We will consider what insight this gives when trying to understand brain function and cognitive processes. We will also look at brain injury and how this can broaden our understanding of cognitive function.

### **Learning objectives**

- To introduce the different techniques used to image the brain
- To recognise the different lobes in the brain and their functions
- To appreciate how different brain injuries and conditions can help us to understand how the brain functions

## **2. Human physiology: nerve and muscle function**

Human physiology is the science of the mechanical, physical, and biochemical function of humans, and serves as the foundation of modern medicine. As a discipline, it connects science, medicine, and health, and creates a framework for understanding how the human body adapts to stresses, physical activity, and disease.

### **Learning objectives**

- To measure nerve conduction velocity. You will measure the speed that electrochemical impulses travel along nerves in your arms, and learn how this is affected by factors such as age, sex, and various medical conditions.
- To measure the stretch reflex of the gastrocnemius (calf) muscle. This muscle is primarily involved in running, jumping and other 'fast' movements of the leg, and to a lesser degree in walking and standing. The stretch reflex is related to the condition and health of the muscle.

## **3. Forensic science: crime scene marks and impressions**

Forensic scientists collect, preserve, and analyse scientific evidence in order to investigate a crime scene. This evidence can be used in both criminal and civil law cases, and can work for either the prosecution or the defence. One of the most commonly encountered evidence types at a crime scene are marks and impressions.

### **Learning objectives**

- To understand the difference between finger/hand/footprints and marks, and how they can be used as forensic evidence
- To gain practical experience of the techniques that crime scene examiners and laboratory scientists use to detect and develop finger marks, footwear marks and various impressions using both physical and chemical processes

#### **4. Biomedical science: urine diagnosis workshop**

Analysis of urine is used to detect and manage a wide range of disorders, such as urinary tract infections, kidney disease and diabetes. This workshop will give participants an opportunity to be biomedical scientists and analyse various synthetic urine samples, to provide information to medical practitioners and inform diagnosis and treatment.

##### **Learning objectives**

- To understand the role of biomedical scientists in the clinical pathway, and to aid medical practitioners in providing diagnosis and treatment options
- To understand how analysis of urine provides an insight into how well our body is functioning via a non-invasive procedure
- To gain practical experience of various laboratory methods commonly used to characterise urine
- To compare the value of qualitative and quantitative methods

#### **5. Biological and environmental sciences: bio-indicators to assess water quality**

Aquatic invertebrates can be used as bio-indicators to assess the quality of water. The UWE Bristol campus has a number of ponds of different water quality, from which we will collect samples of invertebrates and water. These will be brought back to the lab for identification and interpretation.

##### **Learning objectives**

- To introduce the concept of bio-indicators of environmental quality in relation to the assessment of water quality
- To give participants hands-on experience of sampling and identification of aquatic invertebrates in the field
- To introduce participants to some standard lab and field techniques used in the study of biology, ecology and the environmental sciences

**Find out more about applying to our [International Summer School](#) or email [globalstudents@uwe.ac.uk](mailto:globalstudents@uwe.ac.uk).**