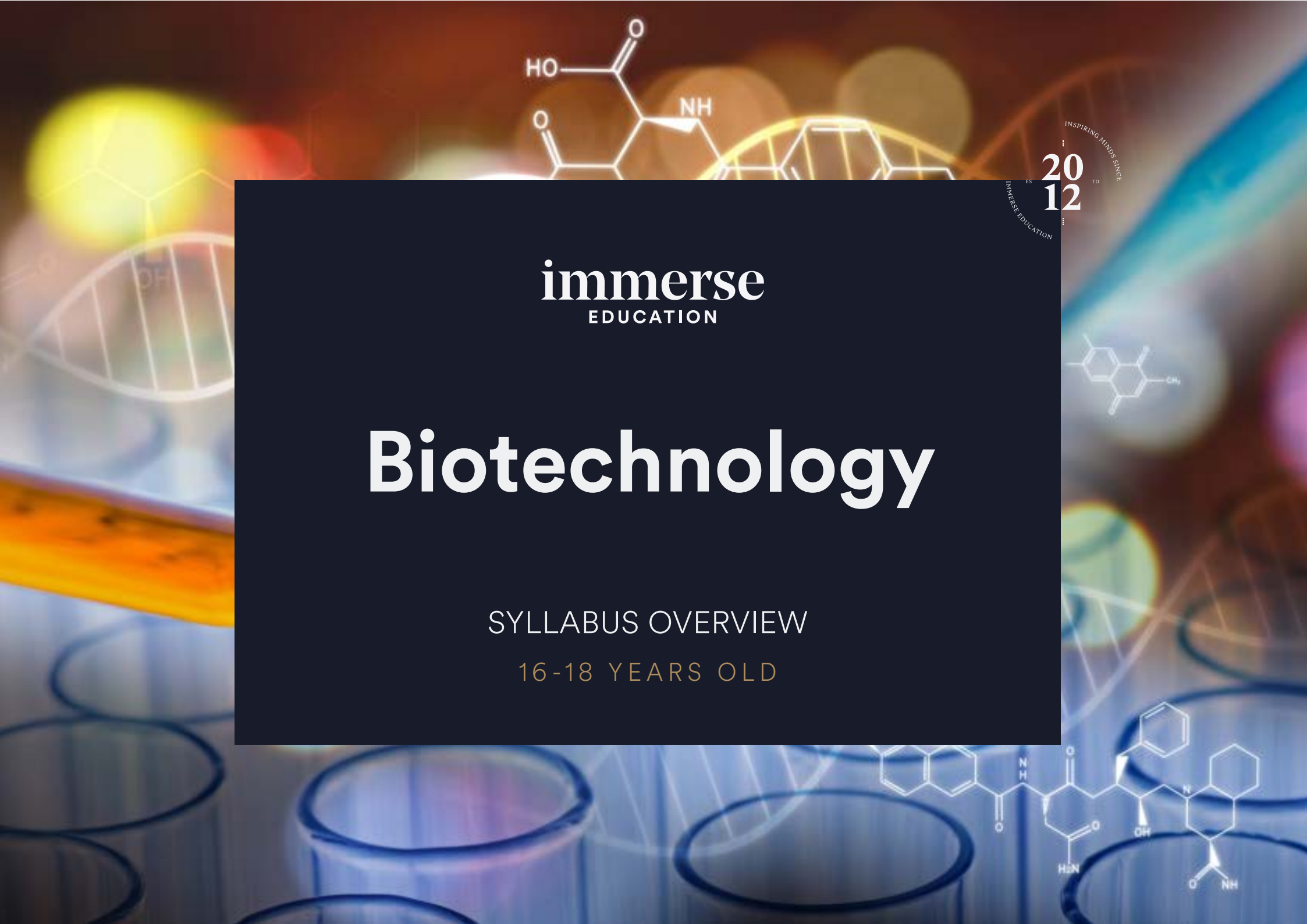


immerse
EDUCATION

Biotechnology

SYLLABUS OVERVIEW

16-18 YEARS OLD

About the Programme

The aim of these introductory programmes is to provide participants with academically challenging content in a classroom environment based on the university style of learning. Through academic sessions, the programmes also offer young students unique and valuable insights into what it would be like to study their chosen subject at an advanced level.

This Syllabus Overview provides a summary of the topics and subject areas that participants can encounter during their studies with Immerse. It has been carefully created by our expert tutors who are members of faculty at world-leading universities, and who have experience in teaching undergraduate students.

Academic Sessions

The academic sessions at Immerse are arranged into modules to enable participants to explore a broad range of topics over the course of their programme. The modules included in this syllabus overview are indicative but not prescriptive.

Tutors are encouraged to include their own specialisms and also focus on any particular areas of interest expressed by participants within the class. They may choose to provide further detail on a specific topic, or they may include new material and information that builds on the knowledge already developed during the programme.

Personal Project

Each programme includes an element of individual work, generally termed the ‘Personal Project’. This can take many forms but is commonly an essay or presentation delivered on the final day of the programme. Participants will receive feedback on this work which may also be mentioned in the participant evaluation which is provided in writing by the tutor once the programmes have ended.

Preparatory work

Some tutors may ask participants to complete some preparatory work, such as reading or a series of exercises in advance of the programme. Participants are strongly encouraged to complete this work since it will be included in the opening sessions of the programme. Any preparatory tasks will be provided in advance of the programme directly to the participant.

Academic Difficulty

As all of our programmes are designed to provide a unique introduction to advanced material, the syllabus will be academically challenging at times.

This is something to be excited about and all of our tutors will encourage and support participants throughout the programme. Immerse Education aims to develop every participant regardless of ability, and our tutors will adapt their teaching to individual needs.

Session Aim

The Immerse Education Biotechnology Programme aims to develop a comprehensive understanding of science and technology in students. Through a series of university-style lectures, students will explore the multifaceted aspects of biotechnology, encompassing areas such as medical imaging, pharmacology, microbiology and plant biotechnology.

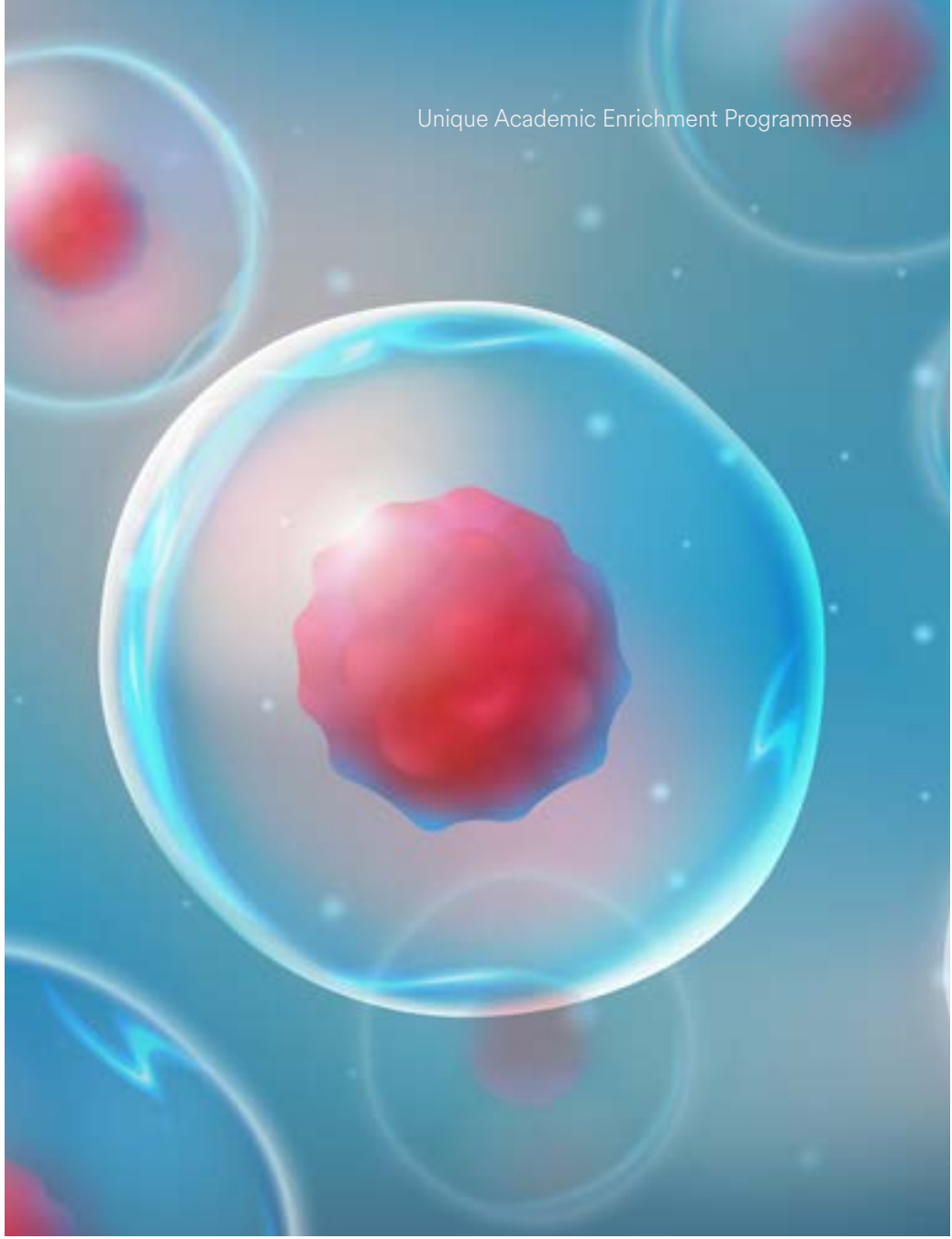
The course integrates case studies, hands-on practical work and theoretical learning to foster the development of essential skills for a career in biotechnology. By the end of the programme, students can expect to have grasped a good understanding of biotechnology and also have experienced studying at an undergraduate level.

Biochemistry

This topic will give students knowledge of the basic chemical principles of biochemistry. Students will understand the basic chemical properties of molecules that make life possible and how these properties relate to specific macromolecular structures and functions. Through real-world examples, students will cover topics such as cell signalling, energy production and the biochemical basis of diseases. A range of different teaching techniques will be used in order to ensure students leave the course with a good understanding of biochemistry.

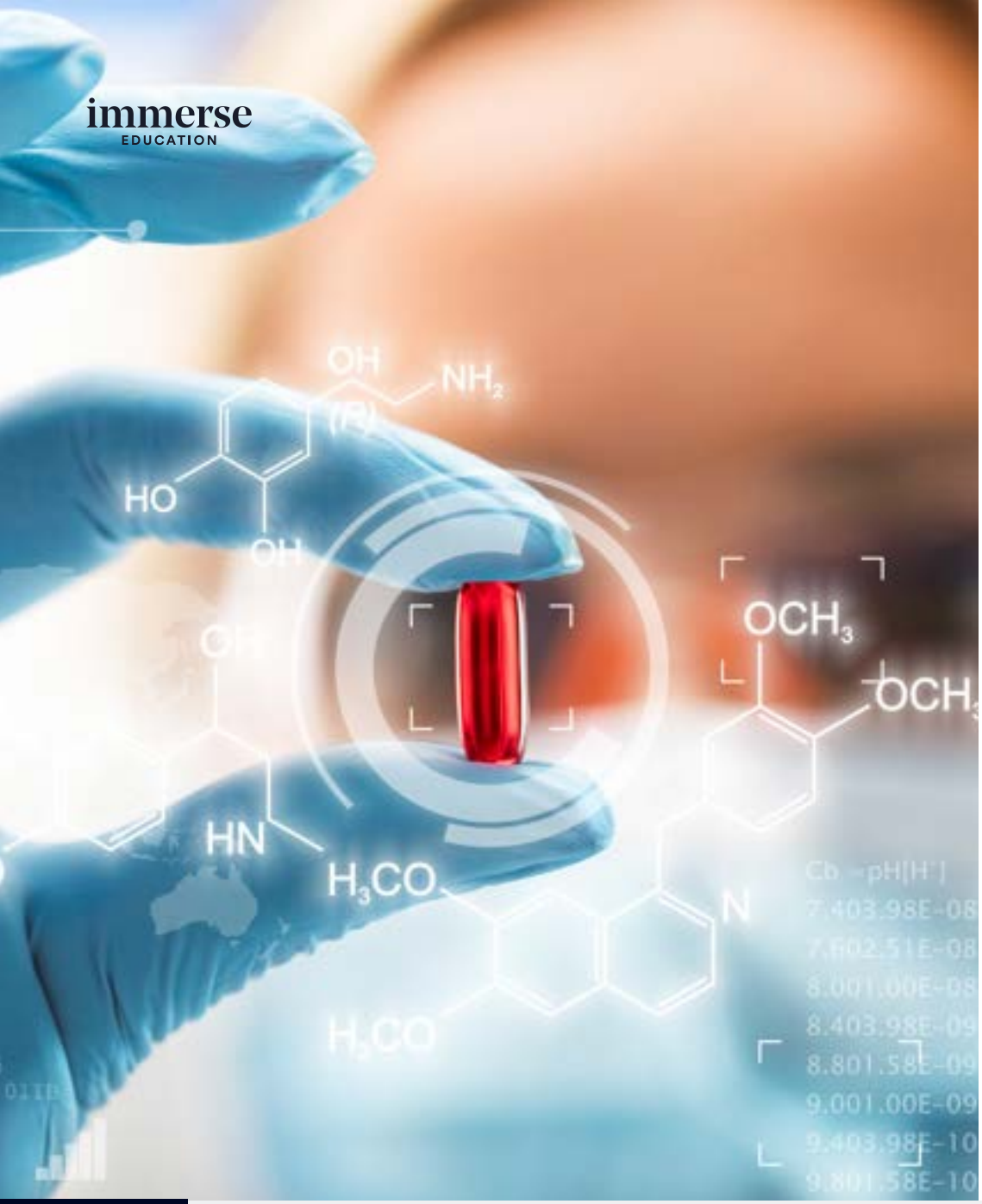
Innovations in Medical Imaging and Diagnostics

In this topic students will step into the forefront of medical imaging and diagnostics in this captivating session, delving into cutting-edge technologies like MRI and CT scans. An in-depth exploration of AI's role in enhancing image analysis and pattern recognition will showcase its significance in improving disease detection and patient outcomes. Through real-world examples, participants will witness how innovations are shaping the future of medical diagnostics. By the end of the topic, students will appreciate the pivotal role that technological advancements play in the evolving landscape of diagnostics.



Molecular Biology

Students will acquire comprehensive knowledge about the structure and functions of vital molecules such as DNA and RNA, which facilitate the expression and preservation of genes across generations. Our exploration will encompass the phenomena of mutations, specifically focusing on chromosomal and gene mutations. Concluding this subject, we will delve into the fundamentals of genetic engineering, including aspects like gene cloning and genomics.



Pharmacology

This topic will introduce the major concepts underpinning pharmacology. Beginning with exploring the history and scope of pharmacology and how drugs are discovered, students will study the effect certain drugs have on human cardiovascular/respiratory systems, understanding how different drugs can be used to treat diseases. We will also explore the therapeutic use and potential toxicity of drugs.

Microbiology

Microbiology is the study of the biology of microscopic organisms such as viruses, bacteria, algae and fungi. Microbiology plays a crucial role in biotechnology as many of the tools, techniques and products are based on our understanding of microorganisms. Students will be looking into the production of recombinant proteins, one of the most important applications of microbiology. We will also look at key microbiologists and their discoveries. Finally, students will answer 'big-picture' questions such as 'How diverse is life on Earth?' and 'Does life exist elsewhere in the Universe?'.

Ethical Legal and Social Implication of Biotechnology

Despite biotechnology having many benefits, over the years it has provoked ethical controversy in six areas of moral concern: safety, liberty, justice, environmental nature, human nature and religious beliefs. Through case studies, students will use case studies to understand and consider many moral issues and dilemmas. Key questions will be investigated and students will be encouraged to engage in discussions. Students form a good understanding of how biotechnology can respect human dignity, promote fairness and contribute to the welfare of society.

Plant Biotechnology

In this topic, students will form a good understanding of why plant biotechnology is important and how it has impacted the environment today. Students will look at the use of tissue culture and genetic engineering techniques to produce genetically modified plants that exhibit new or improved desirable characteristics. We will discuss the benefits of plant biotechnology and the contribution of plant sciences to solving major societal and environmental challenges.

ACADEMIC PATHWAY

16-18 YEARS

ACADEMIC INSIGHTS

OUR AWARDS AND ACCREDITATIONS

British Youth Travel Awards 2018
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FINALIST

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SHORT COURSE PROVIDER (UK PROVISION)

EducationInvestor
Awards 2023

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