



ONCAMPUS
Cambridge Education Group

Undergraduate Foundation Programme Engineering and Sciences

Programme details

Who is this programme designed for?

This programme is designed to prepare international students, who have completed senior secondary education, for entry to undergraduate studies at one of our partner universities. All students who successfully complete the UFP are guaranteed placement on a suitable programme of undergraduate study. The UFP is set at level 3, which is equivalent to A-level standard in the UK.

How long will I study for?

This programme lasts one academic year (nine months). The year is divided into three terms of seven to eight teaching weeks and one reading week. You will undertake up to 25 hours of classroom-based study per week.

What will I study?

This programme includes English and three academic subject modules. English will be integrated into the teaching of academic subjects, as well as being taught separately if you need additional support to develop your English language.

There are five academic pathways to choose from and you will study the pathway most suited to your chosen progression degree. Academic skills relevant to the specific subject area will be taught to fully prepare you for university study. The pathways are: Business, Economics, Finance and Management, Engineering and Sciences, Humanities and Social Sciences, Life Sciences and Art and Design.

How will I be assessed?

You will be assessed at regular intervals throughout the programme to ensure you are making the progress required to successfully complete the programme. Full assessment of the programme will take place in the final term. Assessment methodologies are aligned to those that will be experienced in the University environment, and include project work, essays, presentations and unseen examinations.



• Pure Mathematics

This module is designed to cover all the basic elements of pure mathematics. The curriculum includes topics such as: Calculus, Vectors, Matrices and Complex Numbers, Proof, Differential Equations, Mechanics and Discrete Mathematics. You will also take time to complete independent study both individually as well as group studies. By the end of the module, you will be competent in pure mathematics skills and have been equipped with an array of independent skills that you will find very useful in your future studies.

Upon successful completion of this module, you will be able to:

- Demonstrate knowledge and understanding of key elements of pure mathematics
- Demonstrating understanding of how to apply pure mathematics principles in engineering and physical sciences
- Evaluate own development in pure mathematics and make informed decisions to ensure increasing understanding of the subject
- Communicate effectively in good English including using appropriate pure mathematics vocabulary when necessary

• Physical Science

This module provides you with a good foundation of physical sciences knowledge but also the ability to develop independent learning skills which you will find useful in your university studies.

During the course, you will cover a range of topics such as: Explorations of the Earth and its place in the Universe; The Physics of Motion, Energy and Light; The Atomic Basis of Matter and The Fundamentals of Chemistry.

In terms one and two, most of the learning will be tutor-led and will take place in class. In term three, your independent learning skills will be enhanced by a range of activities such as research assignments and blended learning activities. Term three will provide you with opportunities to take more ownership of your own learning process before doing your final assessments

Upon successful completion of this module, you will be able to:

- Demonstrate knowledge and understanding of the key elements of physical chemistry and physics
- Demonstrate understanding of how the principles of chemistry and physics are applied in everyday life, including in research to enhance life standards
- Analyse familiar and unfamiliar contexts in physical chemistry and physics, and make reasoned judgements
- Access and evaluate information in physical chemistry and physics independently
- Communicate effectively in good English using specialist vocabulary as appropriate
- Demonstrate competence in applying pure maths and IT skills to support mastering physical sciences knowledge when necessary



• Skills for Science

Progress in the sciences is made through scientific experimentation and interpretation of the results. In order to complete this accurately and safely it is important to understand experimental design and methodology and how to analyse results. This module aims to prepare you for laboratory work, develop your data analysis skills and teach you how to report and critique your findings.

The module will also introduce you to regulation of scientific and medical research and medical ethics. By the end of the course you should be able to draw conclusions from data, organise facts and figures in a logical way, test hypotheses in logical ways to find answers, and see how a larger situation can be affected by smaller activities.

Upon successful completion of this module, you will be able to:

- Create and maintain a safe working environment in a science laboratory
- Demonstrate understanding of practical scientific methodology
- Analyse information and make reasoned judgements using appropriate English language
- Evaluate evidence independently and make informed conclusions
- Demonstrate good oral and written communication skills including use of information technology where necessary.

You will study:

1. SCIENTIFIC COMMUNICATION

- Understand that scientific writing should present facts and their interpretation
- Understand how writing style and language is altered for different audiences
- Understand the differences the two main types of scientific writing style: Laboratory reports and Essays
- Understand that essays must have an introduction at the beginning and a conclusion at the end
- How to communicate your findings and knowledge with non-scientists as well as other scientists

Basic mathematical skills

- Make use of appropriate units in calculations
- Use expressions in decimal and standard form
- Ratios, fractions and percentages

- Understand the terms mean, median and mode
- Understand measures of dispersion, including standard deviation

2. SCIENTIFIC METHODOLOGY

- Describe how and why appropriate control experiments should be used
- Identify the dependent and independent variables
- Identify the limitations of the material, apparatus and techniques used in chemistry and biology experiments

Handling data

- Collect and present raw data in a suitable table
- Plot two variables from experimental or other data on a suitable graph
- Construct and interpret frequency tables and diagrams, bar charts and histograms

Laboratory safety

- How to make and record observations
- How to perform an investigation in a methodical and organised way showing full regard for the safety of the investigator and others potential affected by said investigation
- How to identify which part(s) of an investigation carries potential risk to the investigation and/or the environment

Laboratory reports

- Understand that laboratory reports have the following sections: Introduction, Materials, Methods, Diagram, Results, Discussion and Conclusion

3. SELECTING AND USING A STATISTICAL TEST

- Construct an appropriate null hypothesis
- Calculate the test statistic given a standard scientific calculator and understand how to use probability for acceptance or rejection of the null hypothesis
- The chi-squared test to test the significance of the difference between observed and expected phenotypic ratios
- The Student's t-test

Introduction to medical ethics

- Outline the role of regulation in scientific and medical research
- Consequences of misrepresenting scientific and medical information
- Clinical trials; regulation, recruitment and consent
- Patient confidentiality
- Three core concepts of best interests, autonomy and rights of the patient
- The ethical criticism and defence of research on biological, animals and humans and how it is publicised

Sample timetable

	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5
Mon	EAP and English test prep	EAP and English test prep		Lunch	Subject 2	Subject 2		Personal tutorial
Tues		Subject 1	Subject 1	Lunch	EAP and English test prep	EAP and English test prep		
Wed	Skills for ...	EAP and English test prep	EAP and English test prep	Lunch	Subject 2	Subject 2		
Thur		Subject 1	Subject 1	Lunch	EAP and English test prep	EAP and English test prep		Skills for ...
Fri	Subject 2	Subject 2	Skills for ...	Lunch	Subject 1	Subject 1	EAP and English test prep	EAP and English test prep

Studied: **Undergraduate Foundation (Engineering and Sciences)**
 Progressed to: **BEng (Hons) Petroleum Engineering**

"Studying at ONCAMPUS means that we have a 'soft-landing' into university life. The centre has set up tours and talks with our respective faculty staff next year to familiarise us, which is a really important step in this journey. I feel excited about progressing to university."



**CHIDINMA
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