

## Engineering and Physical Sciences Pathway

The College of Engineering and Physical Sciences has a long and proud tradition of educating students from across the globe. We welcome scholars from over 200 countries who contribute to the strong international atmosphere that is a major feature of the college.

You will study at the leading edge of modern science and engineering. The College covers a broad range of world-leading research, from developing microengines to our particle physics research at CERN. STEM (Science, Technology, Engineering and Mathematics) subjects are critically important in the development of our future fuels, materials and machines, and the College plays a significant role in training the next generation of world-class engineers and scientists to solve our future challenges. We have strong links with major UK employers such as Rolls-Royce and Airbus, and our staff and students are at the forefront of research into a wide variety of areas, from working with particle physicists at the Large Hadron Collider in Switzerland to using nanotechnology to develop microengines.

The Engineering and Physical Sciences Pathway will lead you towards an undergraduate degree in one of the following:

- **Chemical Engineering** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=chemical+engineering>)
- **Chemistry** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=chemistry>)
- **Civil Engineering** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=Civil+engineering>)
- **Computer Science** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=Computer+science>)
- **Electronic, Electrical and Systems Engineering** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=Electronic%2c+Electrical+and+Systems+engineering>)
- **Mathematics** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=Mathematics>)
- **Mechanical Engineering** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=Mechanical+engineering>)
- **Metallurgy and Materials** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=Metallurgy+and+Materials>)
- **Physics and Astronomy** (<http://www.birmingham.ac.uk/undergraduate/courses/search.aspx?CourseListTextQuery=Physics+and+Astronomy>)

See the **Engineering and Physical Sciences Pathway progression table 2015** (</Documents/students/foundation-academy/eps-progression-2015.pdf>) for more information about the undergraduate degrees available for a Foundation Academy student choosing this pathway and the compulsory and optional modules you should undertake.

### Course fact file

**Duration:** 1 year / 4 years

**Typical Offer:** 0 (**[More detailed entry requirements and the international qualifications accepted can be found in the course details \(?OpenSection=EntryRequirements\)](#)**)

**Start date:** September 2015

### Contact

If you have any questions, please contact us at:

Email: [foundation@contacts.bham.ac.uk](mailto:foundation@contacts.bham.ac.uk) (<mailto:foundation@contacts.bham.ac.uk>)

Tel: +44 (0)121 414 9292

## Details

### Engineering and Physical Sciences pathway modules

You will take subject-specific modules from the table below plus one of the Academic English and Study Skills modules (or the Advanced Academic skills) amounting to a total of 120 credits.

When you receive and accept your offer, you will be advised about your module choices. Some undergraduate degrees will have compulsory modules that you should take in your BFA programme.

Modules	Credits
Introductory Mathematics	10
Properties of Matter	10
Mechanics and Waves	20
Further Mathematics	20
Foundation Electronic and Electrical Engineering	20
Computer Science	20

Introductory Chemistry	10
The Periodic Table	10
Introductory Organic Chemistry	10
Organic Spectroscopy	10
Physical Chemistry	20 and 10
Practical Chemistry (Laboratory)	10

### Module descriptions

There are a range of **Academic English and Study Skills** (<http://www.birmingham.ac.uk/International/foundation-academy/academic-english-and-skills/index.aspx>) modules, including advance options.

### Introductory Mathematics

This module develops your confidence and knowledge in basic mathematical techniques and skills.

### Properties of Matter

In this module you will be introduced to some of the basic structures of matter and how these structures affect material properties and their behaviour and uses in science and engineering.

### Mechanics and Waves

The aim of this module is to develop a basic understanding of the principles of mechanics and the fundamental concepts of wave motion.

### Further Mathematics

This module builds on the knowledge and skills developed in the Introductory Mathematics module (Term 1). It will cover topics associated with functions, further calculus and numerical methods.

### Foundation Electronic and Electrical Engineering

This module aims to develop basic knowledge and skills relevant to electricity and magnetism.

### Introductory Chemistry

This module aims to develop a number of fundamental concepts associated with the discipline of Chemistry. This module introduces fundamental features of atomic structure, before extending towards compounds, including concepts of bonding and oxidation states.

### The Periodic Table

This module covers important concepts such as periodicity and molecular shapes. It also expands and develops the basic bonding theories presented in the pre-requisite module (Introductory Chemistry) in more detail.

### Introductory Organic Chemistry

This module aims to develop knowledge and skills in basic organic chemistry and you will be provided with a good grounding in the Organic Spectroscopy module

### Organic Spectroscopy

This module further develops some of the concepts presented in the Introductory Organic Chemistry module, such as isomerism and arrow-pushing schemes.

### Physical Chemistry

This module aims to develop your knowledge and skills in the broad area of physical chemistry and includes practise of some mathematical techniques within a chemical context.

### Practical Chemistry (Laboratory)

This laboratory-based module is designed to provide you with experience of practical chemistry. It also provides you with training in aspects of health and safety.

### Introductory Computer Science

The module introduces issues relating to the representation, storage, exchange and manipulation of information and the theoretical and practical aspects of computing.

## Why study this course

Our Birmingham Foundation Academy (BFA) combines the highest standards of one of Britain's leading global universities with a fully integrated student experience. Designed for international students who require a preparatory year prior to UK undergraduate study, the foundation programme is equivalent in learning to year 13 of the UK education system.

Successful completion of the foundation year will also guarantee you progression onto your chosen degree. The BFA will ensure you're fully prepared for your undergraduate programme, immersing you in the university environment and giving you dedicated support in your first year in the UK.

## Fees and funding

### The Birmingham Foundation Academy Package

This includes:

- One year's tuition fees
- Books and all classroom equipment

**Please note:** Accommodation will incur additional charges to the above fee.

## Entry requirements

**Typical offer:** 0

**Birmingham Foundation Academy entry requirements** (</International/foundation-academy/entry-requirements/index.aspx>) apply.

### International students:

Depending on your chosen course of study, you may also be interested in the Birmingham Foundation Academy, a specially structured programme for international students whose qualifications are not accepted for direct entry to UK universities. Further details can be found on the **[foundation academy web pages](http://www.birmingham.ac.uk/students/foundation-academy/Pathways/index.aspx)** (<http://www.birmingham.ac.uk/students/foundation-academy/Pathways/index.aspx>).

## How to apply

Apply through the Birmingham Foundation Academy application process

### Related links

**[EPS-progression-table-2015 \(PDF - 62KB\)](/Documents/students/foundation-academy/eps-progression-2015.pdf)** (</Documents/students/foundation-academy/eps-progression-2015.pdf>)

## Learning and teaching



As a Birmingham student you are part of an academic elite and will learn from world-leading experts. From the outset you will be encouraged to become an independent and self-motivated learner, capable of formulating your own ideas and engaging critically with your subject. A key benefit of this approach is that you gain the skills that employers are looking for, such as initiative, teamworking, problem solving and time management.

To begin with you may find this way of working challenging, but rest assured that you will be guided and supported to make the transition to become an independent and self-motivated learner. You will have access to a comprehensive academic support system that will assist and encourage you, including a tutor in your college who will provide help and advice with any study-related issues, and will help you to monitor and reflect on your progress.

Our programmes in Engineering and Physical Sciences are accredited, or quality assessed, by the leading professional bodies. They are three or four years in duration, depending on whether you opt for the Bachelors or Masters qualification. Many programmes include international study opportunities, industrial experience or the option to combine your subject with a language or with business management.

For further information, please visit **[Learning at Birmingham](http://www.birmingham.ac.uk/students/foundation-academy/learning.aspx)** (<http://www.birmingham.ac.uk/students/foundation-academy/learning.aspx>)

## Employability

Graduates from these degree programmes benefit from excellent career prospects in major, globally recognised companies in industries as diverse as food, electronics, construction, pharmaceuticals and space technology; or you could continue into higher studies leading to careers in research and development