QUEEN'S UNIVERSITY BELFAST

# AEROSPACE ENGINEERING

**EXCELLENT INTEGRATION OF THEORETICAL AND PRACTICAL MODULES**
Allowing our students to achieve 2nd and 3rd place in the National Design Build and Fly competition in 2019

**INDUSTRY PLACEMENT OPTION**
With unique support from our dedicated placement officer

**ACCREDITED PROGRAMME**
Accredited by the Royal Aeronautical Society

**SHAPING A BETTER WORLD**
SINCE 1845

# AEROSPACE ENGINEERING

## Why study Aerospace Engineering?

Combining Physics and Maths, Aerospace Engineering is the ideal degree for problem-solvers who are fascinated by aircraft, spacecraft, rockets, satellites and Formula 1. Aerospace Engineering is at the cutting edge of technology, understanding and applying scientific principles to the design, development and service of some of the most technologically advanced engineering products in the world.

With aerospace companies including Bombardier and Base on our doorstep, Northern Ireland is a great place to study Aerospace Engineering. Continued growth in air travel coupled with the advent of commercial space travel mean that the Aerospace Engineering industry is booming and our graduates are highly sought-after. As an Aerospace Engineering student at Queen's, you'll have frequent opportunities to visit Aerospace companies across Northern Ireland.

Our graduate aerospace engineers have gone on to enjoy success across a diverse range of fields, from commercial aircraft and helicopter development to spacecraft systems and unmanned aerial vehicles; they are leading missions to Mars and the Moon, designing the drones of the future and shaping the future of mobility.

With the ability to succeed in varied and challenging situations, aerospace engineers are naturally versatile, which also opens up a wide range of career opportunities outside the wider aerospace industry. Past graduates have successfully transferred the team-working, communication and project management skills learned on the programme to roles in leading private and public sector companies worldwide.

**Course Director**
Dr Marco Geron

## Who will be teaching you?

Queen's School of Mechanical and Aerospace Engineering has a reputation for exceptional research and teaching that spans over 100 years. Through our research-led teaching you will be working with academics currently ranked 8th in the UK for research intensity (REF 2014), and you'll have the opportunity to engage with industry experts.

## Your study options

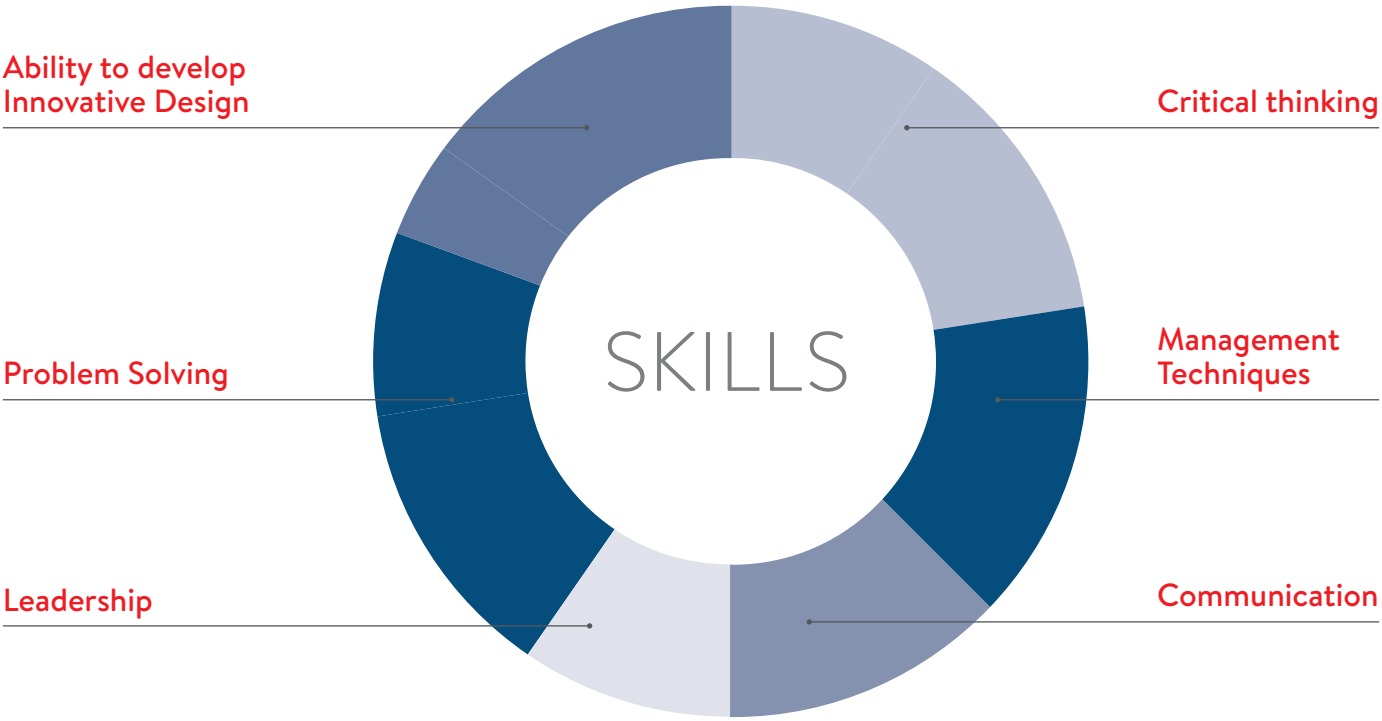
There are two course structures available: BEng Honours, and MEng Honours. The BEng degree is a three-year programme of study, while the four-year MEng programme extends study to in-depth specialist topics, with the aim of producing future engineering leaders.

The first two years of the MEng are shared with the BEng, during which you will be introduced to aerospace engineering with a balance of mathematical, scientific and applied problem-solving. At the end of the second year, BEng students have the opportunity to transfer to the MEng.

All of our Aerospace Engineering degrees come with the option of a sandwich year in industry. You can spend up to 12 months getting hands-on experience in a real engineering environment within a relevant aerospace company. Past students have been placed with global giants including Airbus, Red Bull technology and Rolls Royce.

Additionally, there are opportunities to work or study abroad through the International Association for the Exchange of Students for Technical Experience (IAESTE), Erasmus and Study USA exchange programmes.

# WHAT YOU'LL LEARN




## Our subject areas

Aircraft Design: Core to our degrees is the understanding of the aircraft development process, and students are guided through the development of the skills necessary to transform customer requirements into state-of-the-art aerospace technology.

Aerodynamics, Fluid Mechanics and Propulsion: The study of air flow around and through objects is key to understanding how forces such as lift, drag and thrust are generated. Modules in aerodynamics, fluid mechanics and propulsion explore these concepts in detail, developing both fundamental understanding and expertise in state-of-the-art computational simulation.

Flight Mechanics and Avionics: The motion of aircraft in 3D space is highly complex, and students are introduced to how aircraft handling and performance are linked to the many systems within an aircraft. Avionics demonstrates how instrumentation can be used for navigation and for understanding concepts such as GPS and communications systems.

Structural Design, Manufacturing and Materials: Structural strength and rigidity are vitally important for safe flight. Students combine an understanding of material properties and manufacturability with the use of sophisticated computational analysis and design methods to develop high-performance aerospace structures.

Professional Studies: In order to understand the role of the engineer in society, technical modules are accompanied by professional studies such as accounting, economics, law and management. You'll also have the opportunity to take part in the Engineering Leadership Programme and a range of Employability Development workshops.

Practical skills: You'll have the opportunity to understand what the role of a practicing Aerospace Engineer is in industry and to relate module content to a real-life work environment through regular field trips to aerospace companies. Additionally, a recent £17million investment in our state-of-the-art laboratory and teaching facilities means you'll benefit from a wide-range of experimental facilities including a design studio, a flight simulator and an annual flight laboratory course.

## Individual research projects

One of the most fascinating parts of your degree is the opportunity to undertake an individual research project in the final year. This gives you a chance to engage with the aerospace engineering design and development process, and bring your knowledge to life, while embedding core skills in project management, reporting and presentation skills.

"My placement year was a priceless experience. I was able to put my existing skills and knowledge into practice, as well as developing my innovative thinking and expressing my personality. I learnt a lot about Rolls-Royce, engineering and myself, as it not only made me a more professional engineer, it also made me a more employable person. I think it's a journey that most undergraduates will let pass them by, but I am glad that I took the opportunity when I did."

**Emma Boyd**
MEng Aerospace Engineering

## Your career prospects

You'll graduate with the design and development skills and knowledge to succeed in the aerospace industry, as well as the versatility to transfer your skills to the wider graduate sector. The degree is developed in conjunction with our Industrial Advisory Forum and our graduates rise to the top of their fields and include notable figures such as Michael McKay (Flight Operations Director for ESA Mars and Lunar Missions, European Space Agency), Michael Ryan (Vice- President and General Manager, Bombardier Aerospace, Belfast) and Air Commodore David Case (Royal Air Force).

A degree in Aerospace Engineering from Queen's will also equip you with core skills and employment-related experience valued by employers from a range of industries. Many of our graduates go on to excel in other fields, such as engineering, IT, business and finance and the public sector.

Further study is also an option – graduates can choose from a wide range of Master's programmes as well as a comprehensive list of research topics; see the School website for further information.

# AEROSPACE AT QUEEN'S

**Our BEng/MEng degree programmes are accredited by the Royal Aeronautical Society (RAeS) providing you with a solid foundation for your career. A MEng degree in aerospace, from Queens, satisfies all of the academic requirements for registration as a Chartered Engineer (CEng). We have excellent links with the professional engineering institutions and benefit from their support.**

**To discuss your options in more detail or if you have any questions contact:**

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FIND OUT MORE ABOUT OUR AEROSPACE COURSES:

**http://go.qub.ac.uk/aerospace**

**CONTACT US**

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FACULTY OF ENGINEERING AND PHYSICAL SCIENCES