



Programme Specification

ENG-AE-2017: Engineering (Aerospace Engineering)

LU Bachelor of Engineering with Honours awarded by Lancaster University (FHEQ Level 6)

Programme Status: Approved | Version: 1

Introduction

This programme specification provides a summary of the main features of the Engineering (Aerospace Engineering) programme and the learning outcomes that you as a student might reasonably be expected to achieve and demonstrate on successful completion of the programme.

Further detailed information related to this programme and the College can be found in the following resources:

- Programme Handbook
- B&FC Student Handbook
- B&FC Admissions Policy
- Work based and placement learning handbook (for foundation degrees)
- Student guide to assessment and feedback

Key Programme Information

Programme Code	ENG-AE-2017
Programme Title	Engineering (Aerospace Engineering)
Teaching Institution	Blackpool and The Fylde College
Professional, Statutory and Regulatory Body (PSRB) Accreditation	None
UCAS Code	
Language of Study	English
Version	1
Approval Status	Approved
Approval Date	30 August 2018
JACS Code	
Programme Leader	Margarita Georgieva

Programme Awards

Award	Award Type	Level	Awarding Body
LU Bachelor of Engineering with Honours	Honours Degree (360 credits)	Level 6	Lancaster University

Programme Overview

Aerospace Engineering is an exciting, cutting-edge field that opens up international prospects. Graduates have a range of options in the research, design and development of civil and military aircrafts, missiles, weapons systems, satellites, space vehicles. They also work in testing and maintenance of aircrafts and systems and in improving efficiency \pm speed, weight, fuel consumption. Aerospace Engineering is increasingly oriented towards sustainability in recent years and many roles in the field also address its environmental impact.

As a student in Aerospace Engineering, you will learn about aircrafts, flying and flight systems, and by the time you graduate, you will have specialist knowledge in aerodynamics, avionics, materials and structures, propulsion and systems integration. Our BEng (Hons) Aerospace Engineering programme will provide you with the core and specialist principles of engineering to furnish you with the required skills to enjoy an exciting career path within this future-oriented sector. You will have the opportunity to customise your course to follow an Aerospace pathway, after you have sampled core engineering subjects.

You will begin your studies at Level 4 with core common modules. You will master the essentials, including mathematics and computer-aided design (CAD) which will give you a great advantage on the job market. At Levels 5 and 6, you will gain more insight into subject specialisms. We have designed the programme so as to give you the opportunity to explore practical subject areas and to engage in hands-on learning. The programme will allow you to develop your own interests and projects in the field and prepare for the range of responsibilities you can undertake in the future.

The UK has a significant shortfall of suitably-skilled and qualified engineers, and a very advanced aerospace industry. At B&FC, we have well-developed working relationships with a wide range of Engineering employers, through which we help and support learners into sustainable employment. Many of our graduates are now employed by major companies (EDF Energy, Westinghouse Springfields, BAE Systems, Airbus, NIC, GCE and Ford Motor Company) as design, production, project or research and development engineers. Successful students may also wish to continue their studies by undertaking a relevant postgraduate degree at another university institution, leading to even greater career opportunities.

Admission Criteria

The entry criteria for Level 4 of the programme are:

- A minimum of 48 UCAS points for entry post 2017 (or 120 points pre-2017 UCAS system) (excluding functional skills) from one of the following:
 - 2 GCE A2 levels (or equivalent), to include mathematics and a technology, engineering or science-based subject.
 - A National Certificate, Diploma or Extended Diploma (or equivalent) in a science or technology-based subject, including passes in mathematics.

The entry criteria for direct entry onto Level 5 of the programme are:

- HNC or HND with an overall merit grade in: Mechanical, General or Aeronautical/Aerospace Engineering or an appropriate Engineering discipline.

At either entry level:

If English is not the candidate's first language, an IELTS score of at least 6.0 with a minimum of 5.5 in all skills is also required. Applicants who are able to demonstrate relevant work experience or knowledge will also be considered on an individual basis and will be invited to an interview to determine suitability.

Career Options and Progression Opportunities

Aerospace engineers have a variety of options after graduation that range from development of new aircraft components to investigating aircraft accidents. Aerospace professionals also take part in flight testing, supervising aircraft development and manufacturing, and in researching and developing innovative ideas. A continuous need for Aerospace engineers means there are excellent career opportunities for talented engineering graduates across the sector. However, with a degree in Aerospace Engineering, you might want to seriously consider an international career, working with companies in technology innovation for aerospace, or going into further university study and research.

What should you expect from your future job? You will most probably be placed either in an office, or a factory, including production hangars and laboratories that test, produce, develop and research various components. You can expect to work with sophisticated software and tools. Very important for Aerospace Engineering will be your enthusiasm and dedication, as well as stress management and attention to detail. You will most probably develop a very particular

set of soft skills that will combine fast decision-taking and extreme accuracy as human error in this field can lead to serious consequences for humans.

Aerospace engineers have upper-range starting salaries. At senior level, you can expect salaries in the £45,000 - £65,000 range. If you are aiming for high starting salaries, you may consider further study at a Masters or a research level. The time you spend with us will prepare you sufficiently for applying for further study with any institution. Engaging in advanced research in this field may be challenging but is definitely worth it and offers a wealth of personal and professional development opportunities.

Programme Aims

- To develop strong specialist knowledge in aerospace systems and technologies, their design, development and manufacture.
- To train proficient aeronautical engineers with a robust foundation and framework in their specialism who are flexible life-long learners.
- To enable students to gain skills, knowledge and confidence in applying proven principles, technological techniques, applications and methods in Aerospace Engineering.
- To explore and utilise new developments in the field, including research and advanced technologies, acquire knowledge, analyse and evaluate new developments in the sector as they emerge and to apply these appropriately.
- To provide students with the opportunity to gain transferable knowledge and skills to enable them to engage fully into design, research, development, manufacture, testing and maintenance of aerospace systems.
- To provide students with the opportunity to gain a critical and informed awareness of contemporary issues, legislation, problems and opportunities afforded by a focus upon engineering in recognition of the impact of the demands of industry.
- To graduate professional aeronautical engineers who produce or propose sustainable solutions with lasting, impactful outcomes for the success of the industry, attentive to their ecological imprint.
- To educate aeronautical engineers about responsibility, professional development and lifelong learning.
- To provide academic, technical and personal development through a variety of learning experiences, in particular, the development of communication skills and capability of critical analysis, problem solving, the presentation and justification of rational argument and alternative courses of action.
- To facilitate the opportunity to pursue the level of study which will enable students to critically review, consolidate and extend a systematic and coherent body of knowledge, by utilising specialised skills across an area of study.
- To enable students to critically evaluate concepts and evidence from a range of sources, to transfer and apply diagnostic and creative skills and exercise significant judgement in a range of situations, accepting responsibility and accountability for determining and achieving personal and/or group outcomes.

Programme Learning Outcomes

Level 6

Upon successful completion of this level, students will be able to:

1. Work in teams, managing tasks and resources to meet changing technical and managerial needs which support continuous quality improvement
2. Use interpersonal skills to communicate technical and non-technical information to a variety of audiences
3. Apply ethical principles to sustainable professional practices in an engineering context which recognise obligations to society, the profession and the environment

4. Critically analyse and evaluate complex systems and their interdependencies through the application of systems thinking via analysis of the wider engineering context
5. Independently plan, manage and execute a technically and theoretically informed project, which extensively analyses all aspects of a problem and proposes adequate solutions, broadly deepens knowledge and skills base and critically evaluates expected outcomes
6. Independently analyse essential facts, concepts, and fundamentals of aerospace engineering, underpinned by scientific and mathematical principles
7. Problem solve, communicate and work collaboratively with others and independently to develop innovative ideas and new ways of thinking to support the development of aeronautical engineering practices and knowledge
8. Use aerospace-specific IT facilities and information retrieval skills to develop planning and teamwork which support lifelong learning and continuing professional development
9. Use advanced IT facilities for aeronautical engineering needs
10. Creatively apply, utilise and adapt aerospace engineering principles and knowledge to extend technological capability and knowledge base through new applications and techniques
11. Use and apply quantitative science and engineering tools to the analysis of aerospace problems
12. Apply aeronautical principles, knowledge and skills in an engineering context in view of creating adaptive, sustainable and efficient solutions that correspond to given specifications
13. Interrogate and resolve problems using a sound evidence base to contribute to improved effectiveness of aeronautical and aerospace products, systems and services, supporting sustainability
14. Evaluate engineering decisions for a more socially inclusive, ethical, economically stable, environmentally sustainable and commercially viable world
15. Critically analyse, test and evaluate aerospace systems and processes to identify possible problems, inefficiencies or other issues that may impact users or service providers
16. Formulate innovative designs, products and services
17. Apply health, safety and sustainability principles to engineering solutions with an awareness of ethical considerations
18. Use and apply industry-standard engineering skills through laboratory and workshop activities for designing, analysing, implementing, testing and controlling
19. Design, develop and implement procedures to undertake engineering tasks, identify problems and develop solutions through critical evaluation

Programme Structure

Pathway	Module	Level	Credits	Coursework	Practical	Written Exam
Stage 1						
All	B4SCENG-AE: Introduction to Academic Study (Mandatory)	4	20	60%	40%	
	ENG402: Engineering Science (Mandatory)	4	20	100%		
	ENG403: Managing a Professional Engineering Project (Mandatory)	4	20	100%		
	ENG404: Engineering Mathematics (Mandatory)	4	20	60%		40%
	ENG405: Computer Aided Design (Mandatory)	4	20	100%		
	ENG406: Engineering Design (Mandatory)	4	20	80%	20%	
Stage 2						
All	ENG501: Further Engineering Mathematics (Mandatory)	5	20	50%		50%
	ENG502: Professional Engineering Management (Mandatory)	5	20	100%		
	ENG503: Research Project (Mandatory)	5	20	100%		
	ENG561: Aircraft Aerodynamics (Mandatory)	5	20	50%	50%	
	ENG562: Aircraft Propulsion (Mandatory)	5	20	70%		30%
	ENG563: Aircraft Flight Control Systems (Mandatory)	5	20	100%		
Stage 3						
Stage award: LU Bachelor of Engineering with Honours (Awarded by Lancaster University)						
All	AER601: Avionics (Mandatory)	6	20	70%	30%	
	ENG601: Dissertation (Mandatory)	6	40	85%	15%	
	ENG602: Professional Engineer (Mandatory)	6	20	100%		
	ENG603: Control and Simulation (Mandatory)	6	20	40%		60%
	ENG652: Advanced Engineering Techniques and Materials (Mandatory)	6	20	40%		60%

Course Options

You will start your studies with common core courses taken by all BEng students. The programme is offered on a full-time basis, however there is also opportunity for employees to enter the programme at Level 5 with a suitable entry qualification and study on a part time basis to align with employment needs:

- Full time - typically 2-3 days per week over 3 years
- Part time - typically 1 day per week over 3 years (with direct entry to Level 5 via a suitable HNC/D).

Please note: Level 4 is delivered on a full-time basis only. We offer an alternative part-time HNC route onto the degree programme also if required.

Study Workload

This programme requires commitment to attend lectures and workshops at Bispham Campus in line with your study timetable. It is a requirement of the programme that you also undertake appropriate independent study and further reading and assessment.

The programme is offered on a full time basis which will typically require attendance on campus for two full days per week over three years.

A part time pathway can be followed from Level 5 onwards, which would typically require attendance on campus one full (long) day per week over 3 years.

As well as attendance to lectures, you are expected to undertake sufficient self-directed study. For each hour of class contact, you can typically expect to undertake an additional 2-3 hours of work, however this is dependent upon individual progress. Each module may require different independent study hours.

Programme Delivery: Learning and Teaching

The course will be delivered using a range of methods, which may include informal lectures, tutor-led whole group discussions, student presentations, technical workshops, computer laboratory activities, group work, group and individual research and seminars.

Modules are designed to integrate practical and theoretical application, so software and laboratory equipment will be regularly introduced by tutors and applied at relevant points within your studies.

You will significantly benefit from relatively small class sizes and a warm and friendly learning environment which encourages effective group interaction. Tutors are very accessible and supportive which will enhance your learning experience by one-on-one support when needed.

You will be shown various knowledge-based items, tools and techniques and will be able to practice with them where appropriate to reinforce the taught portion of some sessions. Independent research will allow development of additional tools and techniques as appropriate to your chosen specialism. This becomes more important as you progress through the programme.

You will have access to outstanding specialist facilities and equipment including our Advanced Technology Centre (new in 2015). This will allow you to work with industry-standard equipment and software relevant to your future engineering career. You will practice with th

Programme Delivery: Assessment

Various modes of assessment will be used in different modules to ensure all aspects of learning are assessed and that you are competent in different forms of demonstrating your knowledge. These will range from real world case studies, live presentations and briefing sessions, written assessments, computer aided design projects and written examinations. You will be supported in the preparation for assessments via readily available tutorial sessions and tutor support.

Programme Delivery: Work Based and Placement Learning

The programme has been designed to carefully align with industrial need. You are strongly encouraged to gain work experience, via summer internships, short courses in industry, and industrial visits. Although work placement is not an integral part of the programme, we regularly invite guest speakers, employers and previous students at relevant points throughout your studies to integrate the academic and work based experience.

Case studies of workplaces and employment will be embedded within specific modules and will feature throughout the programme, as will the development of aligning attitudes and behaviours expected of a Professional Engineer.

Programme Delivery: Graduate Skill Development

The BEng Aerospace programme offers you the opportunity to experience and develop a range of skills related to the discipline. These include accessing and evaluating information from a range of technical sources and communicating findings in a range of ways suitable to engineering. Modules are designed to develop your existing skills to enable you to become independent engineers and will provide the basis for a successful career in engineering, developed through industry and academic research and enquiry. Further skills in technical information analysis and application will be developed during the delivery of the programme content through lectures, guest speakers and research into engineering systems, sub-systems and approaches.

Level 4

- Collaborative work and leadership skills: delivered within the literacy, project and specialist modules. You will work in groups or pairs and will be expected to develop teamwork and leadership skills by successfully managing your time, resources and deliverables.
- Communication, information and digital literacies: delivered across most modules at this level with special attention paid to them in the Academic and Digital Literacy module. You will learn to find, process and analyse information, as well as communicate it effectively.
- Ethical, social and professional understanding: ethical and social topics will be discussed in engineering-specific modules where we will use examples that affect you local community and well as society at large. Analytical methods for engineers will help you take a different look at ethical and social issues and propose Engineering solutions.

We will provide a foundation for you professional understanding throughout Level 4 study. You will experience a wide-range of general engineering curriculum modules with 6 core modules, including managing professional engineering projects, applied mathematics, engineering design and computer aided design. These modules are supported by group projects and laboratory work, and the development of literacy skills. This broader approach, allows you to sample engineering disciplines so you can switch to an alternative engineering discipline if you choose to do so at the end of this stage. It also ensures that you have a solid grounding in digital literacy, ethical considerations and develop an appetite for lifelong learning which you will carry through into subsequent years and hopefully further study.

Level 5

- Collaborative work and leadership skills: You will build on the skills acquired with Professional Engineering Management and Research Project modules which will enable you to improve the skills you developed at Level 4.
- Communication, information and digital literacies: You will put to practice what you learned at Level 4 in order to research, gather information and use it for your engineering projects.
- Ethical, social and professional understanding: You will develop these skills further with professional modules such as Aircraft Flight Control Systems and Aircraft Aerodynamics, as well as Aircraft Propulsion.
- Global citizenship: You will explore topics of importance for global development, sustainability within your future profession and other topics that you will need a global awareness for. These topics are integrated within each of the modules at Level 5.
- Enterprise and entrepreneurial awareness and capabilities: You may also be asked to consider how your future profession fits within an entrepreneurial mindset and how you can function as an independent professional. To develop these skills, modules such as Professional Engineering Management and the specific Aerospace Engineering modules will be useful to you.

At Level 5, subject specialist modules will be introduced. Collaborative work will be an inherent part of the programme within your engineering project, allowing peer and selfassessment approaches to be introduced, developing essential communication, ethical awareness and management characteristics. You will continue to apply the principles studied at Level 4 and develop your knowledge and skills in more specialized areas such as aircraft aerodynamics, aircraft propulsion and aircraft flight control systems.

Level 6

- Research, scholarship and enquiry skills: You will develop those skills with the Dissertation module which will play a significant part in making you an independent, selfsufficient engineer. Skills gained in communication and digital literacy will be extremely useful to you at this stage.
- Personal and intellectual autonomy: You will be expected to display a great deal of independent thinking and autonomy at Level 6, especially within modules such as Professional Engineering and the 3 specialist modules at this level which include Control and Simulation, Avionics and Advanced Engineering Techniques and Materials.
- A commitment to lifelong learning and career development: It is expected that you identify at this stage further development opportunities and have a vision for your professional career in Aerospace Engineering. You will be given support and ideas by our staff.

During Level 6 of the programme, you will experience several modules in highly focused areas such as avionics, advanced engineering techniques and materials, systems integration and systems thinking. You will explore and critically analyse the engineering environment within the 'Professional Engineer' module. You will also undertake a dissertation project based on a significant specific engineering project aligned to your interests that will shape and further define your specialized route into your chosen career.

There is a strong emphasis on employability and enhancement of graduate skills in all years of the programme. From Level 4 study onwards, personal development plans (PDP's) will be driven through a tutorial system and will focus on identifying the skills and attributes of graduate engineers as employees, with the formulation and setting of action plans to achieve them. Teaching, learning and assessment methods allow development of key transferable skills such as problem solving, ethics and globalization through communication and digital literacy. The production of assessment work in varied formats such as engineering reports, essays, oral presentations and discussions will contextualize the communication and cognitive requirements of modern employable engineers.

Study Costs: Equipment Requirements

You will need your own scientific calculator; we recommend the Casio FX-991ES (costs start from around £15) and basic geometry drawing kit (protractor ruler and set squares), and equipment for note-taking.

Books, Journals and electronic resources can be accessed via the College Learning Resources facility.

Read our [tuition fees guide](#).

Study Costs: Additional Costs

There may be additional costs to consider such as optional educational visits and photocopying/printing.

It is highly recommended (but not mandated) that at the start of your programme, you apply for student membership through a professional organisation such as IMechE or IET. Some organisations provide discounted student membership whilst for others there is no charge.

- IMechE - Affiliate Member*: No charge for an apprentice or studying engineering at college or an undergraduate student studying a STEM degree.
- IET* - Students and apprentices (one year) £20.00. Students and apprentices (for duration of course, up to five years) £50.00

Related Courses

Related course within this discipline:

BEng Mechanical
BEng Mechatronics