



Job Description & Person Specification

Section 1 Role Overview

Job title:	Teaching and Research Fellow in Aircraft Structural Design
Vacancy reference:	5412
Faculty/ Professional Service Unit:	Faculty of Engineering and Applied Sciences
Theme:	Aerospace and Aviation
Job type:	Full time Permanent
Hours of work:	37 hours per week, normally worked Monday to Friday. Flexible working will be considered.
Salary details:	Salary level 5 – range £38,655 to £46,492 per annum with potential progression to £53,108 per annum
Line Manager:	Dr Jafar Jamshidi, Senior Lecturer in Integrated Product Development
Start date:	As soon as possible

Section 2

About Cranfield University

Cranfield's world-class expertise, large-scale facilities and unrivalled industry partnerships is creating leaders in technology and management globally. Find out more about our unique impact, and our vision, mission and values [here](#).

We aim to create and maintain a culture in which everyone can work and study together and realise their full potential. We are a Disability Confident Employer and proud members of the Stonewall Diversity Champions Programme. We are committed to actively exploring flexible working options for each role and have been ranked in the Top 30 family friendly employers in the UK by the charity [Working Families](#). Find out more about our key commitments to Equality, Diversity and Inclusion and Flexible Working [here](#).

Section 3

About the Faculty of Engineering and Applied Sciences

Cranfield's research and educational excellence is recognised internationally and is brought together in the Faculty of Engineering and Applied Sciences. The faculty hosts the associated core research and education 'Themes' which in turn host a number of world-class centres and institutes. The themes define their own research challenges and educational missions, with the Directors of Theme working closely with the [Deputy Vice-Chancellor \(FEAS\)](#).

About the Aerospace & Aviation Theme

Our Aerospace & Aviation theme is one of the industry-facing themes that make up Cranfield University's Faculty of Engineering and Applied Sciences. We are the only university in Europe with our own airport and runway. Through the strong links with industry we have built over the past 70 years, we focus on defining and delivering the aircraft, airport and airspace management of the future.

[Learn more about Aerospace](#)

Aerospace and Aviation cover six centres: Aeronautics, Propulsion & Power; Air Transport Management; the National Flying Laboratory Centre; and Safety & Accident Investigation, as well as two major cross-university research facilities - the Aerospace Integration Research Centre (AIRC) and the Digital Aviation Research and Technology Centre (DARTeC). The Theme operates a number of unique facilities including a SAAB 340B+ Flying Classroom and Laboratory, Boeing 737 Ground Demonstrator, Wind and Icing Tunnels, Engine test cells and Accident Investigation Laboratory.

About the Centre for Aeronautics, Propulsion & Power

The Centre is one of the world's largest centres for postgraduate education and research in aircraft design, aerodynamics, advanced modelling and simulation tools and methods along with a strong track record in power plant modelling and performance simulation research.

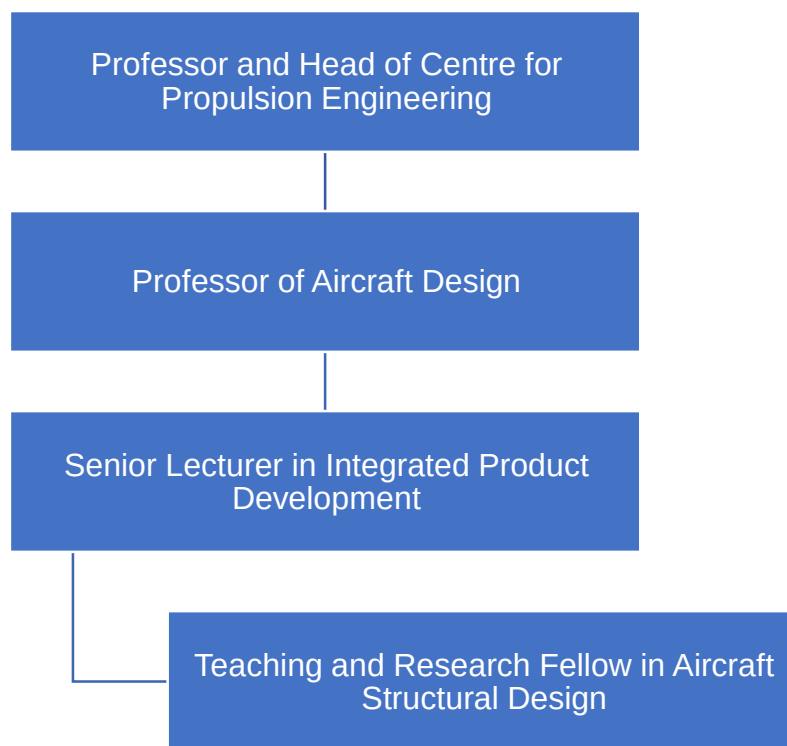
Two of the University's flagship courses are delivered from the Centre: our master's programmes in Aerospace Vehicle Design and Aerospace Dynamics. These courses have run successfully since the establishment of the original Cranfield College of Aeronautics in 1946.

Our courses supply highly qualified aerospace engineers to major players in the industry, both in the UK and internationally. Instruction on the course is delivered in a problem-based environment by lecturers with extensive industrial experience. The group design projects emulate realistic industrial scenarios and associated processes.

Our leading research is application oriented and performed in close cooperation with industry, enabling us to introduce relevant findings quickly into our CPD and master's programmes. We engage with business through building strategic long-term relationships and can provide expertise in applied aeronautics and aircraft design.

Cranfield University sits at the boundary between academia and industry. As a specialist postgraduate university, we work closely with the aerospace sector, and we are always working to bridge the gap between the two, bringing industrial insight into the classroom, and academic rigour back into industry. The Aerospace Vehicle Design Group, which sits within the Centre for Aeronautics, Propulsion & Power, is one of the largest and most industrially recognised university aircraft design groups in the world.

Organisational Chart



Section 4

Job Details

Job Purpose

This is an exciting opportunity ideally suited, but not limited to, experienced airframe design and analysis engineers from industry, who wish to move into an academic career. It would ideally suit an established academic looking for a role with a stronger focus on postgraduate teaching. Whichever route you take, you will join a friendly and supportive team that values practical engineering experience and will help you make the most of it.

Your main responsibility will be to deliver and develop high-quality postgraduate teaching across aircraft structural analysis and design. Working with senior colleagues, you will teach on our Aerospace Vehicle Design MSc, supervise student research and design projects, and contribute to the management of the course. Experience of high-impact, cross-disciplinary and industrially relevant projects would be a real advantage.

The work will stretch your skills and capabilities. Our students and staff tackle the structural challenges of emerging concepts and configurations such as blended wing bodies, strut-braced ultra-high-aspect-ratio wings, variable camber wings and active gust load alleviation. Many of these studies are run with industry and research partners, including Airbus, GKN Aerospace, Safran and NASA. They are carried out to current EASA Certification Specifications using industry-standard tools such as NASTRAN/PATRAN, ABAQUS and 3DEXPERIENCE, so your industrial experience will be directly relevant from day one. These are high-profile projects that create genuine opportunities to connect with manufacturers, suppliers and operators.

Alongside teaching, you will contribute to research and consultancy in aircraft structural design and analysis, as part of a team whose research portfolio includes many of the biggest names in aerospace. This will include supporting bids for research funding, helping to deliver funded research and industrial projects, and publishing in high-quality journals. You will be supported to establish your own research and publication record, and to broaden your teaching contribution across the Aerospace Vehicle Design MSc as your academic career develops.

Above all, this is a role for someone who enjoys helping others learn, and who wants to shape the next generation of aircraft structures engineers while contributing to the industry's progress towards more sustainable, zero-emission aviation.

Key Deliverables

	Description of Deliverables	% of time
1	Teaching: Prepare and deliver lectures and tutorials on the MSc in Aerospace Vehicle Design, and set and mark a range of assessments, helping students turn theory into the practical engineering judgement that industry expects of structures engineers. Teach topics such as: • Structural analysis of metallic and composite airframes. • Fatigue and damage tolerance.	55%

	• Airframe structural layout. • Structural suitability, aeroelasticity and structural dynamics. • Finite element analysis using ABAQUS, NASTRAN/PATRAN or similar tools. • Computer-aided design using 3DEXPERIENCE or CATIA. Design modules and assure their quality, and shape how we teach across the department, for example by introducing new methods, tools and industrial case studies. Hands-on project supervision, meeting students weekly to guide their work, supervision projects that draw on your own specialist skills. For many students, this is where their confidence as engineers is built, and your skills and experience will make a real difference.	
2	Research: Advance our work in aircraft structural design and analysis as part of a team. Develop your own area of research and expertise, drawing on your industrial and/or academic background, or contribute as a team member to one of the Group's broader research programmes. Agree a development plan with your line manager and other senior colleagues to develop your research activity in step with your teaching. Contributions to include: • Develop and submit research proposals and funding bids, both individually and as part of a team, to funders such as UK Research and Innovation, the Aerospace Technology Institute and industry partners. • Help to deliver funded research contracts and industrial consultancy. • Publish in high-quality journals and present at conferences. • Co-supervise PhD students, and link MSc projects to live research where this benefits students.	30%
4	CPD Courses: Opportunity to share your expertise with practicing professionals and to widen your industry network. Prepare and deliver sessions on these courses, either at Cranfield or onsite with clients, working as part of a teaching team or delivering a complete short course yourself. Take ownership of a CPD course, leading its design, planning and delivery.	5%
5	Group Contribution and Citizenship: As a member of a united and ambitious team, you will help the Group thrive beyond your own teaching and research, through: • Representing the Group at industry events, conferences and outreach activities, and promoting its work to potential students, partners and sponsors. • Supporting the development and delivery of the Faculty's and Theme's strategies, so you have a voice in where the Group goes next.	10%

	• Helping to monitor early-career research staff, supporting their personal development, day-to-day wellbeing and health and safety, and contributing to their performance reviews.	
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Please be advised that the percentages allocated for the key deliverables may be adapted to take into account the needs of the centre and / or University.

Planning and organising

The Aerospace Vehicle Design MSc is unlike most master's programmes. For the first six months, students work together on an extensive Group Design Project, taking an aircraft concept from early design towards detailed definition, much as a team would in industry. You will play a key part in the project's Structures Group, guiding students through the real structural design and analysis decisions that shape an airframe.

You will also bring your own expertise into the curriculum by creating new teaching material, designing coursework assignments and setting examinations. Because our students can start their individual theses at different points in the year, you will supervise research projects year-round rather than in a single seasonal block. This keeps the work varied and gives you steady contact with emerging engineering talent.

Beyond the MSc, you will contribute to the Group's research and short-course activity. This includes tailor-made courses designed for specific industrial clients, which put you in direct contact with the engineers and organisations shaping the future of aviation.

No two years look quite the same. Research and consultancy work ranges from single-day advisory roles to large projects running over months or years, and new opportunities can arrive at short notice. You will need to plan your time carefully and balance these alongside your teaching and other commitments. In return, you will enjoy a role with real variety, and the chance to move between the lecture theatre, the design office and the industrial project.

Communicating and influencing

This is a highly connected role. You will work closely with colleagues across the University and build relationships with senior figures in the aerospace industry.

Within Cranfield, you will be in frequent, day-to-day contact with the Course Director, Head of Group, Head of Centre, Centre administrators and academic colleagues to keep the MSc running smoothly. You will also work with visiting speakers from industry and with external examiners, who help us maintain the programme's high academic standards.

Research and consultancy will take you outside the University. You will communicate directly with client organisations, often at senior level, and collaborate with academic colleagues and external experts on research projects. When preparing research proposals, you will work with the University's contracts office to shape bids and agreements. The Group's strong reputation means that contact with senior industry figures is a regular part of the job, giving you a real opportunity to build your professional network and influence.

Delivering short courses calls for a different set of relationships. You will coordinate with the marketing team and the University's short course administrators. Bringing these groups together, and influencing them where needed, will be key to making sure every course runs on time and to a high standard.

Problem solving

Our students are a strong part of what makes this role rewarding. Cranfield attracts a diverse, international mix of learners, from recent graduates to experienced industry professionals, and each brings different strengths, expectations and ways of learning. When you teach or lead a module, you will use your problem-solving skills to support students who progress at different speeds or hit obstacles along the way. You will also adapt your teaching materials and style so that every student is stretched and supported.

Research and consultancy bring a different kind of challenge. Industry partners' needs can change as a project develops, so you will need to respond with creativity and flexibility, and act quickly when technical or commercial issues arise. For many engineers from industry, this is familiar territory, and your experience of delivering under real-world constraints will be a real asset.

As a member of academic staff, you will take the initiative in resolving issues at every level, knowing you have the backing of experienced colleagues and the wider Group when you need it.

Decision making

Teaching and Research Fellows in the Group have genuine autonomy in how they plan and deliver their work, and many decisions are shaped together with colleagues. You will have the freedom to use your own judgement day-to-day, with experienced colleagues on hand for decisions that affect the wider programme or the Group's commitments to clients.

I) Decisions you will take without reference to others

- Planning and running MSc module activities within your area of responsibility
- Developing and delivering teaching materials within the agreed module content
- Identifying new business opportunities with industry and other partners
- Shaping your own research direction and choosing where and how to publish it
- Travelling within the UK to attend meetings and deliver courses

II) Decisions you will refer to your manager

- Changes to the content of MSc modules (agreed with the Course Director)
- Managing and delivering short courses
- Changes to your workload, teaching commitments, meetings and reviews
- Agreeing and managing deliverables on research contracts
- International travel to attend meetings and deliver courses
- Matters relating to intellectual property rights and copyright

Guiding framework

You will be supported to grow in this role from the start. Each year, you and your line manager will hold a personal development review to agree your objectives and plan how to achieve them. This is also your opportunity to talk openly about your working environment, your longer-term career goals and your route to promotion, so your development is shaped around your ambitions as well as the Group's needs.

Regularly, you will be guided by the University's published policies and procedures, which are available to all staff. You will also have the support of experienced colleagues who can help you find your feet, particularly if you are moving into academia from industry.

Impact

In this role, your work will make a visible difference to our students, the Group and the wider aerospace industry. You will take responsibility for managing modules and short courses and for teaching to a consistently high standard, directly shaping the engineers who go on to design tomorrow's aircraft.

You will also help build the Group's success. Every member of academic and research staff plays an active part in generating income, whether through research, consultancy or short courses. On joint projects, you may be asked to act as project leader, a role open to any member of academic or research staff, giving you early opportunities to lead.

Your voice will count across the University too. Cranfield has a collegiate culture in which many decisions are made in full consultation with academic staff, and we encourage and support staff who want to join bodies such as Senate, which help shape how the University is run.

Over time, we want you to become recognised in both academia and the aircraft industry as a credible and trusted expert in your field, with the Group supporting you as your reputation grows.

Facts and Figures

Cranfield University is a world leader in strategic and applied research. In the most recent Research Excellence Framework (REF 2021), 88% of our research was rated "world leading" or "internationally excellent". We are ranked 5th in the UK for Engineering – Mechanical, Aeronautical and Manufacturing in the QS World University Rankings by Subject 2026. We also have the second highest income from industry per full-time equivalent member of staff of any UK university (HESA 2019/20).

Our academics, many with proven research records, are in constant contact with industry through research, consultancy and product development. Cranfield works with around 1,500 organisations, from small and medium-sized companies to global multinationals such as Airbus and Boeing. Our campus includes Cranfield Airport, one of only a few university-operated airfields in the world. Around 5,000 students from more than 100 countries study with us full-time, part-time or alongside their careers.

At Cranfield, we value diversity and inclusion. We aim to create a culture in which everyone can work and study together with dignity and respect, and realise their full potential. We especially welcome applications from women, who remain under-represented in engineering. We actively consider flexible working options, including part-time, compressed or flexible hours and homeworking. To show our commitment to gender diversity in STEM, we are members of the Women's Engineering Society (WES) and Working Families, and sponsors of International Women in Engineering Day.

Section 5

Am I suited to this role?

Criteria	Essential	Desirable
Education / Qualifications	MSc or MEng degree in aeronautical engineering or a closely related discipline, with a focus on airframe structural analysis and design, together with substantial industrial experience. OR A PhD in aerospace structures.	PhD in aeronautical engineering, ideally in airframe structural analysis and design. Fellowship of Advance HE (formerly the Higher Education Academy), or willingness to work towards it. Chartered Engineer status, or membership of a relevant professional body, such as the Royal Aeronautical Society.
Experience	Substantial experience of airframe structural analysis and design, gained either through extensive industrial practice or through significant research and teaching in aeronautical engineering.	Experience of high impact, cross-disciplinary projects with industry. Experience of research projects carried out with industry, including contributing to research proposals or funding bids. Experience of teaching at postgraduate level or on professional development courses. Experience of supervising or co-supervising research students or projects. Experience of mentoring, training or developing engineers or junior colleagues.
Knowledge	In-depth knowledge of aircraft structural analysis and design, with specialist expertise in one or more of: metallic structures; composite structures; fatigue and damage tolerance; structural stability; aeroelasticity; or structural dynamics. Knowledge of airworthiness requirements and their application, such as EASA Certification Specifications.	Breadth of expertise across several of the specialist areas listed under Essential. Understanding of how the UK Higher Education Sector operates. Knowledge of novel and sustainable aircraft configurations, such as

	Working knowledge of industry-standard analysis or design tools, such as NASTRAN/PATRAN, ABAQUS, 3DEXPERIENCE or CATIA.	hydrogen-powered, supersonic or eVTOL aircraft.
Skills / Aptitudes	High-level analytical and problem-solving skills. Excellent spoken and written communication and presentation skills, including strong technical writing. Ability to explain complex technical concepts clearly to students with differing levels of experience. Strong self-motivation and the ability to work independently with minimal supervision. Good project and time management skills, including meeting milestones and delivering high-quality work on time. Ability to support, guide and motivate students at all levels. Ability to build effective working relationships with students, colleagues and industry partners.	Ability to identify future funding and business opportunities. An existing network of industrial or research contacts in aerospace.
Values	Ability to demonstrate our values: Ambition, Impact, Respect and Community.	
Other	Willingness to travel in the UK and overseas to meet partners and deliver courses.	Ability to obtain UK Security Clearance, if required for the role.

As part of Cranfield's continuing commitment to developing excellence in learning and teaching, members of staff with teaching responsibilities are expected to obtain formal recognition of their professional expertise in teaching. It is normal expectation, during probationary period, that individuals will enrol for and successfully complete module 1 (Teaching, Learning and Student Support) of the PGCert in Academic Practice, which leads to Associate Fellow of the Higher Education Academy (HEA) unless an equivalent qualification is held already.

The module focuses on student learning, teaching methods and support of students, consists of 5 one day workshops, and assessment of two written submissions of approximately 3000 and 5000 words. Additional modules may be taken to gain Fellowship of the HEA, and the PGCert in Academic Practice if appropriate to the individuals continued development.