

Job Description: Assistant Professor (Research and Education)

Post title and post number	Assistant Professor in Mechanical Engineering
Grade	8
Information for applicants	
<p>This is an exciting time to be an academic in engineering at the University of Birmingham. Following the creation of the School of Engineering in 2016, which brought together the disciplines of Civil Engineering, Mechanical Engineering, and Electronic, Electrical and Systems Engineering, we are now entering the next phase of our development. We are investing significantly in both people and infrastructure: our new £65m landmark building and our £28m UK Rail Research and Innovation Network (UKRRIN) Centre of Excellence for Digital Systems have recently opened, while our world-leading £26m National Buried Infrastructure Facility opened in 2020.</p> <p>The School of Engineering has a long-standing tradition of world-class research and strong industrial partnerships, ensuring that our innovations deliver rapid real-world impact. We are now seeking a highly motivated, research-active academic to join the Department of Mechanical Engineering.</p> <p>This post is open to candidates with expertise in advanced propulsion and vehicle systems, particularly in areas with strong potential for research funding, including:</p> <ol style="list-style-type: none"> 1. Sustainable and low-carbon fuels, such as hydrogen carrier fuels (hydrogen, ammonia and etc), and fuel-flexible systems (spray, combustion, emissions, and efficiency) 2. Integrated electrified and hybrid powertrains, including system design, intelligent control, energy management, and thermal (HVAC) systems, with consideration of efficiency, degradation, and lifecycle performance 3. Powertrain decarbonisation strategies, involving electrification, hydrogen integration, net-zero vehicle systems, and intelligent, connected and automated vehicle systems empowered by AI technologies 4. Integrated mobility systems, including smart fleet management, vehicle–infrastructure interaction, and whole-system efficiency optimisation <p>This role offers a unique opportunity to contribute to the UK’s net-zero transport ambitions, supported by leading industry collaborations and strong funding opportunities.</p> <p>The successful candidate will have a PhD, or equivalent qualification, in one of the areas above. They will be expected to secure support from government, industry, and international organisations to conduct high-quality research, generate high-quality publications in internationally recognised journals, and contribute to the development and delivery of undergraduate, postgraduate, and CPD programmes as appropriate to the disciplinary area. Industrial experience, whether through direct employment or through collaboration, is highly desirable, as is the ability to engage effectively with academic, government, and industrial partners in the UK and internationally.</p> <p>For informal enquiries, please contact Dr Carl Anthony, Head of the Department of Mechanical Engineering, at c.j.anthony@bham.ac.uk.</p>	
Summary of Role	

Contribute to the whole range of research, teaching, and administration.

Research will involve initiating, conducting and disseminating original research. The research has measurable outcomes and is reflected in a growing national reputation and often an incipient international reputation.

Teaching will include a substantial contribution to: (a) the management, development (including programme/module review) and delivery of teaching and assessment; and (b) enhancement of the student experience or employability. The role will typically also involve developing and advising others, including: (a) providing expert advice to staff and students, (b) supervising and examining PhD students, and (c) developing and advising others on learning and teaching tasks and methods.

Management and administration will involve contributions at Departmental and School level, and/or making an important contribution to some managerial/leadership activities (e.g., working groups) within the University. This may include developing and making substantial contributions to knowledge transfer, enterprise, business engagement, public engagement, widening participation, schools' outreach, or similar activities at Department/School level or further within the University.

Main Duties / Responsibilities

Education

Using a variety of methods in teaching and advising individuals and groups of undergraduates, postgraduates, or CPD students, including (as appropriate):

- teaching and examining courses at a range of levels;
- planning and reviewing your own teaching approaches and encouraging others to do the same;
- designing contemporary, inclusive, engaging and academically challenging curriculum content;
- working collaboratively with colleagues to design and deliver teaching, learning and assessment;
- using digital resources/environments effectively to support learning and assessment;
- developing programme proposals and making substantial contributions to the design of teaching programmes more widely;
- where appropriate, undertaking and developing the full range of responsibilities in relation to supervision, marking and examining;
- developing and advising others on learning and teaching tasks and methods;
- developing and making substantial contributions to knowledge transfer, enterprise, business engagement, public engagement activities or similar on own specialism that enhances the student experience or employability and which benefits the College and University;
- devising and supervising projects, student dissertations and practical work.

Research

Planning and carrying out research, including (as appropriate):

- planning and publishing high quality research, including winning financial support;
- project managing research activities, and/or supervising other research staff;
- presenting findings in publications and conference proceedings;
- effectively supervising and mentoring PhD students or early Career Researchers;
- providing expert advice to staff and students within the discipline;

- participating in research-related enabling activities such as adding value to a cross disciplinary network;
- applying knowledge in a way which develops new intellectual understanding; developing and making substantial contributions to knowledge transfer, and enterprise (including business engagement, public engagement) and similar activity that is of benefit to the College and the University, including ensuring that the impact of your activities is realised fully and the impact is documented.

Management/Administration

Contributing to Departmental/School administration, including:

- contributing to the administration/management of research and/or teaching across the Department/School;
- leading and managing a team to devise and implement a new and/or revised process (e.g. new programme or a recruitment drive);
- advising on personal development of colleagues and students;
- making a major contribution to some administrative activities within the University (e.g. appeals panels, working groups);
- managing enterprise, business development, and public engagement activities;
- developing and making substantial contributions to knowledge transfer, enterprise, business engagement, public engagement, widening participation, schools outreach.
- actively manages equality, diversity and inclusion through monitoring and evaluation and actively challenging unacceptable behaviour.

Citizenship

Contributing to an inclusive working environment:

- demonstrating a willingness to be involved in a variety of activities supporting University life (e.g., participation in graduation, Departmental/School committees);
- demonstrating support for colleagues, such as sharing resources, providing advice;
- willingness to volunteer for one-off duties (such as supporting School, Institute, and Departmental projects);
- positively engaging in School strategic initiatives;
- proactive support and involvement in activities specifically contributing to a positive and inclusive community spirit across the School/College/University.

Person Specification

- A first degree in engineering, physics or a subject allied to the field of advanced propulsion and vehicle systems
- A doctoral qualification with direct relevance to advanced propulsion and vehicle systems
- Industrial experience, either through working in or with industry would be desirable
- Extensive research/teaching experience and scholarship within subject specialism
- Proven ability to devise, advise on and manage learning/research
- Skills in managing, motivating and mentoring others successfully at all levels

Teaching

- Ability to design, deliver, assess, and revise teaching programmes, with emphasis in powertrain and vehicle technologies, including their context in terms of sustainability and net-zero.

- Extensive experience and demonstrated success in developing appropriate approaches to learning and teaching, and advising colleagues
- Experience and success in knowledge transfer, enterprise and similar activity that enhances the student experience or employability

Research

- Experience and achievement reflected in a growing reputation in the field of advanced propulsion and vehicle systems
- Extensive experience and demonstrated success in planning, undertaking and project managing research to deliver high quality results
- Extensive experience of applying and/or developing and devising successful models, techniques, and methods
- Experience of the development and application of AI to your research would be desirable
- Experience and achievement in knowledge transfer, enterprise, and similar activity would be desirable
- Prior research experience and a growing body of peer reviewed journal publications in one or more of the following: Sustainable and low-carbon fuels; Integrated electrified and hybrid powertrains; Powertrain decarbonisation strategies; or Integrated mobility systems.

Management Administration

- Ability to contribute to School/Departmental management processes
- Ability to assess and organise resources effectively
- Understanding of and ability to contribute to broader management/administration processes
- Experience of championing Equality, Diversity and Inclusion in own work area
- Ability to monitor and evaluate the extent to which equality and diversity legislation, policies, procedures are applied
- Ability to identify issues with the potential to impact on protected groups and take appropriate action