



Job Description

Position Name	Assistant Professor in Mechanical Engineering	
College/Budget Centre	EPS/Engineering/Mechanical Engineering	
Position Number (if Known)	58193 & 9905	
Proposed Grade	Grade 8 (G8 106515) and Grade 8 for (105563)	
Reason for grading request	X	New role : - If comparator role exists please give post title / number:
		Re-grade for existing post-holder
Background		
This is an exciting time to join the University of Birmingham and advance your academic career. Following the creation of the School of Engineering in 2016, which brought together the disciplines of Civil Engineering, Mechanical Engineering, and Electronic, Electrical & Systems Engineering, we are now entering Phase 2 of our renaissance. We are investing significantly in people and infrastructure, including our new £65m signature building, the world-leading £26M National Buried Infrastructure Facility, and the £28m UK Rail Research and Innovation Network (UKRRIN), all of which have opened in the past few years. These state-of-the-art facilities have not only enhanced our research capabilities but have also solidified our position as a leading research and education institution, enabling groundbreaking discoveries and providing an exceptional learning environment for our students. The school boasts a rich history of world-class research and takes pride in its robust and wide-reaching connections with industry. These partnerships ensure the rapid application of our pioneering research in practical settings. This fact is underscored by the 2021 Research Excellence Framework (REF), which ranked Engineering among the top 10 institutions in the UK. In line with our ongoing investments, we are seeking to appoint a driven and highly research active Mechanical Engineer to join our Department of Mechanical Engineering and help us create the future. The Department of Mechanical Engineering encompasses research in Advanced Manufacturing; Automation, Robotics and Control; Automotive Engineering; Biomedical Engineering; Clean Energy Engineering; and Sustainable Manufacturing. For this current recruitment we are particularly interested in applications from candidates who can demonstrate ambition, innovation, and leadership, and that are undertaking research and teaching in any of the areas of (Sustainable) Transportation Systems or Data Science and Artificial Intelligence. This could cover but is not limited to, research ranging in: • Advanced propulsion technologies such as hydrogen, ammonia, electrification and hybrid systems, addressing the drive to net-zero. • Application of data science and AI to engineering challenges, such as robotic manufacturing, transportation, medical engineering, future mobility, and infrastructure. The successful candidate will be expected to create and disseminate knowledge through initiating and conducting original research, through publication and through developing and delivering undergraduate, postgraduate and CPD programmes, as appropriate to the disciplinary area. In		

addition, to contribute to the department/school through management/leadership, and enterprise activities, as appropriate.

The successful candidate will have a PhD (or equivalent qualification) in one of the above areas. Industrial experience, either through working in or with industry would also be desirable. They will be expected to engage actively with external partners in academia, government and industry in the UK and internationally.

The School of Engineering is dedicated to upholding the principles of Equality, Diversity, and Inclusion (EDI) in all its endeavours, and we strongly encourage applications from individuals belonging to underrepresented groups.

For informal enquires, please contact Dr Carl Anthony (c.j.anthony@bham.ac.uk) , Head of Department of Mechanical Engineering and Professor Karl D. Dearn (k.d.dearn@bham.ac.uk), Head of School of Engineering.

Summary of Role

Assistant Professor

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

Assistant Professor

Research

To plan and carry out research, using appropriate methodology and techniques. This may include, where appropriate to the discipline:

- Pursue personal research including developing research ideas and winning support, including financial support.
- Plan, publish and/or execute high quality research
- Project manage research activities, and/or supervise other research staff
- Present findings in high quality publications and conference proceedings
- Develop novel methodologies and techniques appropriate to the type of research being pursued
- Supervise and examine PhD students, both within the institution and externally
- Provide expert advice to staff and students within the discipline

- Apply knowledge in a way which develops new intellectual understanding
- Develop and make substantial contributions to knowledge transfer, and enterprise (including business engagement, public engagement) and similar activity that is of manifest benefit to the College and the University.

Learning and Teaching

To use a variety of methods in teaching and advising individuals and groups of undergraduates, postgraduates, or CPD students. Where appropriate to the discipline this may include:

- Teach and examine courses at a range of levels
- Plan and review own teaching approaches and act as a mentor to encourage others to do the same
- Develop programme proposals and make substantial contributions to the design of teaching programmes more widely in the Department or School, as appropriate
- Where appropriate, undertake and develop the full range of responsibilities in relation to supervision, marking and examining (including summative assessment, assessed work, contributing to the final award – as a mark or as credit – such as unseen examinations, essays, dissertations, or presentations.
- Use appropriate approaches to learning and teaching in their field
- Disseminate appropriate practices through suitable media
- Develop and advise others on learning and teaching tasks and methods
- Develop and make substantial contributions to knowledge transfer, enterprise, business engagement, public engagement activities or similar on own specialism that enhances the student experience or employability and is of manifest benefit to the College and University
- Devise and supervise projects, student dissertations and practical work

Management/Administration

To contribute to Departmental/School administration or have a high level of responsibility for others. This may include:

- Contribute to the administration/management of research and/or teaching across the Department/School
- Lead and manage a team to devise and implement a new and/or revised process (e.g., new programme or a recruitment drive)
- Advise on personal development of colleagues and students
- Make a major contribution to some administrative activities within the University (e.g., appeals panels, working groups)
- Manage enterprise, business development, and public engagement activities of manifest benefit to the College and University
- Develop and make substantial contributions to knowledge transfer, enterprise, business engagement, public engagement, widening participation, schools' outreach.

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

Assistant Professor

- a first degree in Mechanical Engineering, physics or an allied subject to one of the fields of Advanced Propulsion, Intelligent Transportation, Remanufacturing, Sustainable Energy, or Data Science and AI.
- a relevant doctoral qualification
- industrial experience, either through working in or with industry would be desirable
- having CEng status or working towards/willingness to work towards CEng status.

Assistant Professor

Research

- Experience and achievement reflected in a growing reputation in your research area.
- 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 and achievement in knowledge transfer, enterprise, and similar activity.
- Prior research experience and peer reviewed journal publications in one or more of the following: (Sustainable) Transportation Systems or Data Science and Artificial Intelligence in Engineering.
- A demonstrable track record in working within multi-disciplinary research teams and contributions to team-based grant pursuit is also desirable.
- Demonstrable experience of developing/maintaining a national/international profile through platforms/methods such as social media.

Teaching

- Ability to design, deliver, assess, and revise teaching programmes at university level, to undergraduate or postgraduate cohorts, with emphasis in one or more of the following areas: Powertrain and transportation technologies, intelligent transportation, mechanical design including their context in terms of sustainability and net-zero; as well as digital engineering skills and AI methods for engineering students.
- Demonstrated success in developing appropriate approaches to learning and teaching, creating an inclusive and supportive teaching and learning environment for students of all backgrounds.
- Experience and success in knowledge transfer, enterprise and similar activity that enhances the student experience or employability.

Management Administration

- Ability and willingness 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