



Job Description

Position Name	Associate Professor in Mechanical Engineering	
College/Budget Centre	EPS/Engineering/Mechanical Engineering	
Position Number (if Known)	58193 & 99056	
Proposed Grade	Grade 9 (58193)	
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

Associate Professor

Contribute at a senior level on a sustained basis to the whole range of research, teaching leadership and administration.

Research will involve an established national and developing international reputation through significant original research work and a clear record of impact, and/or designing and developing significant innovative underpinning technologies.

Teaching will include: (a) development and leadership of major teaching programmes or equivalent; and (b) enhancement of the student experience or employability that is of manifest benefit to the College and University.

Management and administration will include Departmental/School leadership and management activity with University wide involvement that may include sustained high value impact knowledge transfer, enterprise, business engagement, public engagement and similar activities that are of manifest benefit to the College and University.

Main Duties / Responsibilities

Associate Professor

Research

To pursue sustained research activity through original research and scholarship, including other research-related contributions through conference papers and presentations and/or consultancy projects and advice. Where appropriate for the discipline, this may include some but not all of the responsibilities listed below:

- Make a major contribution to the management of research activities
- Lead successful funding bids which develop and sustain research support for the specialist area (in disciplines where this is possible)
- Publish leading research that results in a sustained, highly respected reputation of international quality in the subject area and/or designing and developing innovative underpinning technologies
- Provide expert advice internally and externally
- Provide leadership of research that contributes to the progression of the discipline (in disciplines where this is possible)
- Referee and peer review articles for peer reviewed academic journals and grant applications by research councils and/or other major funding bodies

- Lead sustained high value impact activity in knowledge transfer and enterprise (including business engagement, public engagement) that is of manifest benefit to the College and University, and: a) makes a significant contribution to policy development at a national and international level; and/or b) involves development of industrial links and comparable networks and initiatives.

In addition, research responsibilities will include some but not necessarily all the indicative responsibilities from grade 8 listed below:

- Supervise and examine PhD students, both within the institution and externally
- Manage research activities and/or supervise other research staff
- Develop novel methodologies and techniques appropriate to the type of research being pursued

Learning and Teaching

To contribute at a senior level on a sustained basis in learning and teaching. Where appropriate for the discipline, this may include some but not all of the responsibilities listed below:

- Lead the development of new and appropriate approaches to learning and teaching. This may be underpinned by research and evaluation of teaching methods and systems.
- Act as adviser for teaching and learning methods through excellent practice and mentoring other colleagues
- Lead the design and/or co-ordination of programmes or equivalent activities across the School or Department
- Contribute to the development of teaching and learning policy, methods and standards, more widely than the School of Engineering
- Contribute to debate nationally about policy, methods and practices through publications, conference activity and roles that advance quality in the discipline
- Lead the development and management of assessment strategies within the School/Department
- Lead substantial and sustained high value impact activity in knowledge transfer and enterprise (including business engagement, public engagement) that enhances the student experience and/or employability and is of manifest benefit to learning and teaching in the College and the University. This may include the development of industrial links and comparable networks and initiatives.

In addition, the learning and teaching responsibilities will include some but not necessarily all the indicative responsibilities from grade 8 level listed below:

- 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
- Undertake and develop the full range of responsibilities in relation to supervision, marking and examining
- 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

Management/administration

To chair and/or lead activities in the Department/ School and representation on University committees or working groups. Where appropriate to the discipline, this is likely to include some but not all of the responsibilities listed below.

- Make an important contribution to the development and running of the Department or School, for example, leading activity on teaching assessment and/or on research
- Develop and manage staff and resources in support of major research and/or teaching activities
- Make important contributions to the development of the Department/School/PAU's research strategy and/or learning and teaching strategy
- Contribute significantly to the development and delivery of knowledge transfer, enterprise, business engagement and public engagement activities with a sustained high value impact of manifest benefit to the College and the University

In addition, the management/administration responsibilities will include some but not necessarily all the indicative responsibilities from grade 8 listed below:

- contribute to the administration/management of research and/or teaching across the Department/School
- Lead/project 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 staff and students
- Make a sustained contribution to widening participation, schools' outreach and/or public understanding of the discipline
- Contribute to administrative activities within the University (e.g., appeals panels, working groups)
- Develop and manage staff and resources in support of major research and/or teaching activities

Citizenship

- identifying wellbeing issues within the School/College/University and developing appropriate solutions to address these;
- taking collective ownership of challenges faced by the School or College and working with colleagues to develop solutions;
- mentoring and coaching of colleagues, particularly those in the early stages of their career.

In addition, the citizenship responsibilities will include some but not necessarily all the indicative responsibilities from grade 8 listed below:

- 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

Associate 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.

Associate Professor

Demonstrated competence in Research; Learning and Teaching; and Management and Administration; and excellence in at least two of these areas.

Research requirements

An excellent national reputation and a developing international profile through significant original research work and a clear record of impact. Evidence of success under the following headings, as appropriate to the discipline:

- High level peer esteem as evidenced by
 - Excellent reputation in the UK and often internationally, reflected in sustained high-quality output, level of innovation, impact on subject and recognition.
 - An excellent and sustained record of peer reviewed research publications
- Successful and sustained supervision of doctoral students to completion.
- Substantial and sustained research income generation, e.g., through research grants, contracts, research consultancy or other external funding.
- Sustained high value impact knowledge transfer and enterprise that is of manifest benefit to the College and University.
- 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.

Learning and teaching requirements

An excellent teaching profile and performance in terms of both impact and quality. The teaching quality demonstrated to be informed by an appropriate level of scholarship. Evidence of success under the following headings:

- High national reputation for the development of teaching and learning excellence within the discipline with an 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.
- Successful and sustained use of a range of appropriate teaching methods, and assessment strategies that promote high quality learning, including learning that is flexible, distinctive, and current and stimulates learners' natural curiosity.
- Significant and sustained contribution to one or more of the following: strategic development of new programmes; approaches to learning; the development of learning resources.
- High quality and sustained contributions to fostering excellence in teaching activities more widely, i.e., in the Department/School or College and/or externally.
- Track record of substantial and sustained high value impact on the enhancement of the student experience, and/or employability.
- Mentoring and expert advice which develops the skills of colleagues in teaching and in fostering learning.

Management and administration-related requirements

Demonstrated significant achievement in management and administration-related activities, which may include leadership of activities/initiatives. Evidence of success under the following headings:

- Successful and sustained performance in significant administrative/managerial role (s) (e.g., exams officer).
- Significant and sustained high quality innovative contributions to the management/administration of the Department/School/College or University.

- Successful and sustained contribution to the corporate life of the School/College/University, displaying willingness to contribute actively to committees, collaborative teaching, and administrative tasks.
