UNIVERSITY OF BIRMINGHAM | HUMAN RESOURCES

Job Description

Position Name	Associate Professor in Geotechnical Engineering
College/Budget Centre	EPS/Engineering/Civil Engineering
Position Number (if Known)	106579
Proposed Grade	Grade 9

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 Civil Engineering, Mechanical Engineering, and Electronic, Electrical and Systems Engineering, we are now entering the next phase of our development.

The School has invested significantly in both people and infrastructure, including our new £65m signature engineering building, the world-leading £26m National Buried Infrastructure Facility, and the £28m UK Rail Research and Innovation Network (UKRRIN). These facilities have strengthened our research capabilities and reinforced Birmingham's position as a leading institution for engineering research and education.

Our strong culture of collaboration with industry ensures that pioneering research is translated rapidly into practice. This strength was recognised in the 2021 Research Excellence Framework (REF), where Engineering at Birmingham was ranked among the top ten institutions in the UK.

In line with these developments, we seek to appoint a highly research-active academic to join the Department of Civil Engineering. The Department of Civil Engineering undertakes research across geotechnical engineering; structures and fluids; resilient systems and climate action; and railway engineering, while working closely with other research groups across the School and the wider University.

For this recruitment we are particularly interested in candidates who demonstrate ambition, innovation and leadership, and who undertake research and teaching in geotechnical engineering with an emphasis on digital technologies, computational modelling, smart systems and artificial intelligence. This could cover but is not limited to, research ranging in:

- Computational geotechnics, including AI-supported modelling, data-driven soil–structure interaction, and the integration of field and laboratory data for geo-infrastructure design.
- Digital twins, automation and robotics in ground engineering, including AI-driven asset management, predictive maintenance, autonomous inspection, computer vision and sensing technologies.

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, the successful candidate will contribute to the Department and School through leadership, management and enterprise activities, as appropriate.

The successful candidate will hold a PhD (or equivalent qualification) in civil engineering, geotechnical engineering or a closely related discipline. 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.

Summary of Role

Associate Professor

Contribute at a senior level, on a sustained basis, to research, teaching leadership and administration across the Department and School.

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

Teaching responsibilities will include:
(a) the development and leadership of major teaching programmes; and
(b) enhancing the student experience and student employability in ways that benefit the College and the University.

Management and administrative responsibilities will include leadership and management activity at Department and School level, with involvement across the University. This may include sustained contributions to knowledge transfer, enterprise, business engagement, public engagement and related activities that deliver clear benefit to the College and the 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 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, open days, recruitment activities and Departmental/School committees);
- demonstrating support for colleagues, such as sharing resources, providing advice;
- willingness to volunteer for one-off duties (such as supporting School 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 Civil Engineering, or a closely allied subject.
- 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: geotechnical engineering, and/or Data Science and AI in geotechnical 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: building information modelling (BIM) in ground engineering, computational geotechnics, intelligent infrastructure systems, civil engineering design including their context in terms of sustainability, and resilience; 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.