

**THE UNIVERSITY OF MANCHESTER****PARTICULARS OF APPOINTMENT****FACULTY OF SCIENCE & ENGINEERING****SCHOOL OF MECHANICAL, AEROSPACE & CIVIL ENGINEERING****CIVIL ENGINEERING****RESEARCH ASSOCIATE IN ENGINEERING****VACANCY REF: S&E-14468**

Salary:	£35,845 per annum
Hours:	Full Time
Duration:	1 December 2019 until 31 July 2020
Location:	Sackville Street, Manchester

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**Enquiries about the vacancy, shortlisting and interviews:**

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**The University of Manchester**

The University of Manchester is the largest campus university in the United Kingdom being situated within an easy walking distance of the cosmopolitan city centre and a short train journey from the spectacular Peak District National Park. It formally came into existence in October 2004 from the union of the Victoria University of Manchester and the University of Manchester Institute of Science and Technology (UMIST). The constituent Universities have a distinguished record of scientific achievement. Highlights include the splitting of the atom by Rutherford, the operation of the world's first stored-program computer in 1948, and the building of the world's largest steerable radio-telescope (Jodrell Bank). World-class teaching and research are undertaken at the University of Manchester with the aim of being one of the top 25 Universities in the world by 2020. Currently, Manchester ranks in the top 50 Universities in all global league tables. The University has 25 Nobel Prize recipients amongst its current and former staff and students. At the University of Manchester, we are at the forefront of pioneering discoveries, interdisciplinary collaboration and cross-sector partnerships that are tackling the biggest questions facing the planet.

**Faculty of Science and Engineering**

The Faculty of Science and Engineering is large and comprehensive with nine Schools: Chemical Engineering & Analytical Sciences; Chemistry; Computer Science; Earth, Atmospheric & Environment Sciences; Electrical & Electronic Engineering; Materials; Mathematics; Mechanical, Aerospace & Civil Engineering; and Physics & Astronomy. Together with research institutes including: Manchester Institute for Biotechnology, Dalton Nuclear Institute and Photon

Science Institute, Thomas Ashton Institute and the University of Manchester Aerospace Research Institute (UMARI), the Faculty represents a diverse portfolio of research and teaching of the highest quality and the Faculty now generates more than a third of the total research income for the University.

### **The School of MACE**

The School of MACE is the largest School within the Faculty of Science and Engineering at the University of Manchester. Manchester was the birthplace of the engineering discipline, and MACE has historical routes in the Institute of Mechanics in founded in 1824. Today the School hosts 1300 undergraduate and 450 postgraduate students, delivers undergraduate programmes across Mechanical, Aerospace and Civil Engineering, and MSc programmes in both technical engineering subjects and management. With 130 academic staff, 100 technical and support staff, and 300 postgraduate researchers, the School is at the forefront of engineering education in the UK.

The School hosts world-leading academic researchers in areas including structures in extreme environments, innovative manufacturing, engineering resilient systems, modelling and simulation, aerospace engineering and nuclear engineering. Research activities are connected into a range of research institutes and centres including the Dalton Institute, the Modelling & Simulation Centre and MACE has a leading node of the interdisciplinary Tyndall Centre for Climate Change Research. Research active academics are strongly encouraged to engage in multi-disciplinary research through collaborating with colleagues across Manchester's Schools, Faculties and Institutes, and coordinate activities supporting the University's specialist beacon areas, for example Addressing Global Inequalities, Advanced Materials and Energy.

The School's vision is to create societal change by leading innovation in the engineering discipline, and through research inspired teaching, develop pioneering engineers of the future and we firmly believe that our staff hold the key to succeeding this.

### **Overall Purpose of the Job:**

This combined teaching and research role provides an exciting opportunity for an outstanding candidate to combine excellent teaching in structural design with an exciting research project. For the teaching aspects of this role, the post holder will contribute towards the planning and delivery of key civil engineering courses in steel and concrete structures as well as design. In addition to this, the post holder will contribute to the wider teaching curriculum within the School, deliver other duties such as the setting, marking, and assessment of coursework and examinations, supervising student projects and providing excellent student support.

For the research aspect of this role, a framework is required that carefully mitigates flood hazards and provides resilience and action on short-term environmental shocks and long-term environmental change in Thailand. To achieve the objectives of this research, a comparative stakeholder engagement study shall be conducted. Guided by the region-specific understanding of our Thai research collaborators, a number of interviews and focus group discussions will be held with three categories of stakeholder: individuals, businesses and asset owners. For each of these categories, comparative studies will be conducted to determine which of the infrastructures that the identified stakeholders are responsible for are resilient and why. The study will consider stakeholders subjected to hydrometeorological hazards of similar magnitude, examining differences in the trajectories of post disaster recovery. The factors that underpin the

recovery trajectories will be grouped into 'resource sets', notionally defined as: (a) human resources; (b) social and political resources; (c) financial resources; (d) natural and provided protective resources; (e) physical resources and redundancy.

The teaching aspect of this role is to provide maternity leave cover for the following two taught units in the Second Year of the Undergraduate Civil Engineering Curriculum:

To coordinate the undergraduate unit Design 2 (Civil) MACE20012, which aims to develop knowledge, skills and understanding relevant to civil engineering design in groups, including construction details, CAD drawing revision, and the collection and analysis of data as required for the planning and execution of a civil engineering design project.

To deliver lectures and tutorials, assess and feedback the 'concrete' subject within the undergraduate unit Steel and concrete Structures MACE20322 which includes the following: Loadings/ Actions on Structures: Limit States Design, Imposed load, Dead load, Design envelope, Reinforced concrete design: Eurocode 2, Reinforced Concrete Beams, Reinforced Concrete Columns and Pad foundations.

### **Key Responsibilities, Accountabilities or Duties:**

#### **Research:**

- Develop research objectives and proposals for own or joint research, with the assistance of a mentor if required.
- Write up research work for publication.
- Communicate complex information, orally, in writing and electronically.
- Liaise with colleagues and students.
- Join external networks to share information and identify potential sources of funds.
- Manage own research and administrative activities, with guidance if required.
- Work with colleagues on joint projects, as required
- Collaborate with academic colleagues on areas of shared research interest.
- Attend and contribute to relevant meetings.
- Use creativity to analyse and interpret research data and draw conclusions on the outcomes.
- Plan and manage own research activity in collaboration with others.
- Be aware of the risks in the work environment and their potential impact on their own work and that of others.

#### **Teaching:**

- Plan, design, develop and deliver teaching for the units Design 2 and the 'concrete' component of the unit Steel and Concrete structures, where possible incorporating social responsibility in to the curriculum.
- Set, mark and assess coursework and examinations, providing timely and effective feedback to students.
- Attend relevant examination boards, unit review meetings and prepare a resit examination paper in both units named above.

- Provide a range of student support mechanisms to enhance the student experience.
- Contribute to the wider activities of the School, Faculty and University through input to project teams, working groups and committees.
- Make an active contribution towards the University's social responsibility goals through outreach, public engagement, equality diversity and inclusion, environmental sustainability and impactful research.

### **PERSON SPECIFICATION**

- A PhD in structural engineering (or equivalent).
- Demonstrable teaching experience in structural engineering and structural design.
- The ability to be able to contribute to a wider range of administrative tasks within the School e.g. course development, assessment exercises, examinations, recruitment and management of resources.
- Specialist knowledge or willingness to rapidly acquire the required specialist knowledge in the discipline, in particular stakeholder engagement analysis and other social-science orientated research method.
- Experience in research methods and techniques to work within established research programmes, in particular those with an international dimension.
- Excellent communication and interpersonal skills
- Excellent time management and organisational skills
- Ability to work independently and as part of a team
- Ability to liaise confidently and effectively with a range of individuals
- Flexible approach to dealing with research problems as they arise
- Willingness to learn and develop
- Ability to present in both written and oral publications
- Ability to meet deadlines
- Ability to assess and organise resources
- Understand equal opportunity issues as they may impact on areas of research content.