

JOB DESCRIPTION

Job Title	Associate Professor Urban Environment	Grade	AC4
Department	M ³ 4Impact	Date of Job Evaluation	May 2024
Role reports to	Digital Cities (DC) lead	SOC Code	2311
Direct Reports	n/a		
Indirect Reports	n/a		
Other key contacts	CMS Head FES PVC Colleagues in M ³ 4Impact, CMS and FES Colleagues in GRI Funding agencies Research Partners		
This role profile is non-contractual and provided for guidance. It will be updated and amended from time to time in accordance with the changing needs of the University and the requirements of the job.			

PURPOSE OF ROLE:

Our vision is to expand our world-leading Multi-Disciplinary and Multi-Scale Modelling expertise in both reach and ability, to tackle major societal challenges affecting the environment, quality of life, safety, security, and the economy. This will be achieved through the amalgamation and expansion of two existing award-winning teams: the Centre for Safety, Resilience and Protective Security (CSRPS) and the Computational Science and Engineering Group (CSEG), creating the Multi-scale, Multi-disciplinary Modelling for Impact (M³4Impact) platform.

Both teams excel at developing and applying mathematical models, computational simulations, and bespoke software to create digital worlds that predict physically accurate outcomes addressing a wide range of societal challenges. M³4Impact links three cross-cutting research and enterprise themes: **Safety and Security(S&S)**, covering disaster resilience, fire and evacuation dynamic coupling, urban-scale and building scale evacuation modelling, and protective security incorporating real-time interactivity through Virtual/Mixed Reality, from CSRPS; **Materials Science and Engineering (MSE)**, focusing on sustainable manufacturing with lighter, stronger materials for transport and aerospace (targeting recyclability, low waste and energy efficiency), from CSEG; and **Digital Cities (DC)**, where interdisciplinary research will develop the evidence-base to protect UK cities/populations from pollution, pathogen dispersal, natural/anthropogenic disasters and to support policy decisions, jointly from CSRPS and CSEG.

This role lies within the remit of DC's involvement within M³4Impact. It is intended to strengthen DC's capacity to conduct high quality research in the area of the urban environment, net zero and associated quality of life as affected (non-exclusively) by: atmospheric pollution, health factors associated with NOx/UHC and/or particulates concentration both indoors and at street level, pedestrian and traffic flow, urban-scale evacuation, the influence of green spaces and the effect of tall buildings on pedestrian comfort, urban island

temperature as a factor for increased mortality, etc. In its nature the role involves a highly collegiate approach and close collaboration with the other M³4Impact themes (S&S and MSE). The candidate will be expected to take a lead in promoting and supporting the further development and enhancement of our multi-scale multi-physics suite of software, and their deployment on the university HPC & GPU based system. Research topics could include:

- The long-range weather effects on the urban heat island (UHI) environment
- Multi-scale simulations linking urban canopy weather to street level conditions.
- Traffic flow and pollutant dispersion in city canyons
- The effect of green spaces and trees on air quality and particulate capture
- The effect of high-rise buildings on pedestrian comfort
- Indoor vs outdoor air quality and health effects
- Heat-related urban mortality and building quality regulation.

In conjunction with S&S:

- Air transport of toxic substances within buildings and surrounding environment
- Agent based modelling for safe disaster crowd response and evacuation.

In conjunction with MSE:

- Building fabric assessment for thermal efficiency
- Environmental acoustics and noise mitigation
- The effect of urban incinerators and other industrial pollution sources on the urban environment.

An interest in exploring how AI techniques, VR/MR and high-performance computing can be used to enhance these activities is highly desirable.

The role critically revolves in the acquisition of external funds from local authorities, national agencies (EPSRC, NERC etc.), the EU and international funding bodies to advance the DC research portfolio, enterprise and knowledge exchange activities. The candidate is expected to lead and contribute substantially to the preparation of proposals in the topics outlined above and enter discussions with potential collaborators in academia and elsewhere to promote this activity.

The ideal candidate will have a PhD in a related field and have extensive experience in conducting research in a relevant subject plus a demonstrable track of successful grant acquisition as PI or Co-Investigator. A strong track record of publication in peer reviewed, international journals will be expected.

The candidate is expected to be a leading figure in the national or international academic or professional community and someone who in time can progress to a strategic leadership position within M³4Impact, achieving a range of outcomes in academic research, enterprise activities, and knowledge exchange. The proven ability to generate significant research income is critical as an enabler, as well as the ability to add value to both DC and M³4Impact.

The focus of this position is on research and enterprise, but there would be a contribution to teaching and student supervision of up to 20%.

The post holder is expected to have, and maintain strong stakeholder

relationships at regional, national and international level, across their research disciplines and will be expected to provide strong leadership and to set standards of excellence.

KEY ACCOUNTABILITIES

Team Specific:

- Lead subject or professional research resulting in the publication and/or dissemination of original work of international excellence quality.
- Lead and win significant research/enterprise bids for funding in support of the five-year strategy for M³4Impact.
- Expand the income base derived from licensing of DC and M³4Impact range of software tools to national and international customers.
- Seek funding opportunities proactively to generate new research/enterprise and knowledge exchange income for DC and M³4Impact.
- Lead interdisciplinary research collaboration and team building, within DC, M³4Impact, the Faculty and beyond.
- Develop and lead research or innovation consortia with external partners including non-academic stakeholders.
- Develop and lead strategic alliances which build on existing collaborations and/or establish new partnerships to support new DC research/enterprise activities in the UK, Europe and internationally.
- Raising the DC/M³4Impact profile and establishing strong relationships with targeted clients and partners resulting in increased business.
- Protect and enhance M³4Impact reputation, promoting its software tools, skills, and expertise to position it as partner of choice.
- Acquire and maintain a portfolio of research and enterprise projects and/or contribute to teaching/knowledge exchange to achieve full personal commissioning at Full Economic Cost according to the five-year M³4Impact strategy.
- Lead the supervision of research students at doctoral level.
- Make significant contributions to the development of novel MSc programmes and CPD courses, integrating research, enterprise, and innovation, in support of teaching and knowledge exchange programmes developed as part of M³4Impact.
- Contribute to the development of the urban environment academic discipline.

Generic:

The post holder will:

- Maintain and develop their reputation as an authority and leading figure within the international academic or professional community in their specific subject.
- Have accountability for the acquisition and management of external funding.
- Maintain high professional standing in their discipline and develop their own scholarly profile, including a program of high-quality scholarship, disseminated primarily in professional refereed journals.

- Implement approved policies, guidelines, and standard operating procedures efficiently in relation to their own academic duties.
- Maintain an overview of the welfare, progression, examination, and assessment of allocated students.
- Keep abreast of development within the disciplines in their work area and seek continuous improvement of their own professional practice.

Managing self:

- Keep abreast of developments within the field and seek continuous improvement of own professional practice.
- Actively participate in established professional development framework activities.
- Behave in a manner that reflects the University values and creates a positive environment for work and study.

Core Requirements

- Commitment to key strategic priorities of the Faculty and University.
- Adhere to and promote the University's policies on Equality and Diversity and Information Security.
- Ensure compliance with Health and Safety regulations and Data Protection legislation.
- Support and promote the University's Sustainability policies, including the Carbon Management Plan, and carry out duties in a resource efficient way, recognising the shared responsibility of minimising the university's negative environmental impacts wherever possible.
- Adhere to current legal requirements and best practice relating to digital content and accessibility, including Web Content Accessibility Guidelines when creating digital content.

Additional Requirements:

Undertake any other duties as requested by the line manager or appropriate senior manager, commensurate with the grade.

This is a professional, demanding role as part of a project, M³4Impact, that has a specific and ambitious strategic plan and agenda. The role holder will be expected to show flexibility in working arrangements, including working hours, to ensure that M³4Impact delivers against this plan.

KEY PERFORMANCE INDICATORS:

Performance Indicators will be established in consultation with the Digital Cities (DC) lead, the line manager and the other M³4Impact leads, as part of the post holder's annual Appraisal and Professional Development Review and with due regard to the University's KPIs.

KEY RELATIONSHIPS (Internal & External):

- Faculty Management Team
- M³4Impact Management Team
- M³4Impact Staff
- GRI
- External funders and External Partners.

PERSON SPECIFICATION
Essential
Experience

- Demonstrable international recognition and expertise with a substantial overlap in the research topics listed in the post role specification.
- Significant experience of conducting research in the general urban and/or built environments, including algorithm development.
- Proven and sustained track record of generating substantial research or enterprise income from a range of sources, such as funding councils, commercial and government/public sector sources.
- Proven track record of sustained academic publications with international impact at the highest levels of excellence, including world leading work.
- Experience of using and/or developing scientific software for the transport of mass, momentum and energy in the atmospheric and build environments.
- Experience in the use of HPC and parallel computing techniques for large multi-scale simulations.
- Proven leadership of significant research and/or enterprise projects with a range of stakeholders, including commercial, government and public sector.
- Proven track record of leading research or professional teams.
- Proven track record of delivering a significant and sustained body of impacts or outcomes with demonstrable benefits to businesses, the public sector, or society in general, at the highest levels of international excellence in

Desirable
Experience

- Knowledge and experience of agent-based modelling.
- Understanding of HE in the UK and in a business enterprise role.
- Working knowledge of academic standards.
- Working knowledge of quality assurance and academic standards.

terms of reach and significance.

- Evidence of strong stakeholder relationships at regional, national, and international level, across enterprise and professional disciplines.
- Proven track record in effective financial management of own projects
- Proven, sustained track record of successful supervision of research activities of students at various levels, including PhD.
- Experience of managing, defining and specifying appropriate ethics standards associated with human factors research.
- Experience of teaching in HE, at a range of levels including, undergraduate, masters and summer schools.
- Experience of computer programming in a structured language such as Fortran, C, or C++.

Skills

- Outstanding knowledge of the mechanisms of applying for research funds including the preparation of grant proposals.
- Excellent organisational and management skills.
- Outstanding interpersonal skills and ability to motivate others.
- Excellent written and oral communication skills.
- Commitment to the promotion of high standards and excellence.
- Ability to think strategically and conceptually.
- Capacity to listen and consult, good negotiation skills.
- Capacity to make informed decisions.
- Ability to work effectively and deliver under pressure.
- Able to use IT effectively.
- Well-developed project management skills.

Skills

- N/A

<p>Qualifications</p> <ul style="list-style-type: none">• PhD degree in environmental modelling or related field.• Membership of appropriate professional bodies <p>Personal attributes</p> <ul style="list-style-type: none">• We are looking for people who can help us deliver the values of the University of Greenwich: Inclusive, Collaborative and Impactful	<p>Qualifications</p> <ul style="list-style-type: none">• Postgraduate teaching qualification• Chartered status with an appropriate body <p>Personal attributes</p> <ul style="list-style-type: none">• N/A
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