

THE UNIVERSITY OF MANCHESTER
PARTICULARS OF APPOINTMENT
FACULTY OF SCIENCE & ENGINEERING
SCHOOL OF ENGINEERING
DEPARTMENT OF CHEMICAL ENGINEERING
LECTURER IN CHEMICAL ENGINEERING
VACANCY REF: SAE-029023

Salary:	Grade 7, £47,389 to £58,225 per annum (according to relevant experience)
Hours:	1 FTE
Duration:	Permanent
Location:	Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:

Manager: Professor Philip Martin, Head of Department

Email: phil.martin@manchester.ac.uk

Background

Applications are invited for a lecturer level appointment in chemical engineering in the Department of Chemical Engineering within the School of Engineering at the University of Manchester, with a research focus on digital manufacturing, artificial intelligence and machine learning. The successful candidate will join a dynamic research environment at an exciting time to further develop the Department's research profile. The ideal candidate will be expected to develop their own academic research programme and will be expected to collaborate with other researchers within the Department and further afield in the University. The University actively fosters a culture of inclusion and diversity and seeks to achieve true equality of opportunity for all members of its community. In addition, the School's Athena SWAN Bronze Award recognises its commitment to promote women in science, engineering and technology. We, therefore, welcome applications from all sections of society.

The University of Manchester

The University of Manchester (www.manchester.ac.uk) enjoys a global reputation for its research and its innovative approach to learning, with an on-going £1 billion investment in facilities, staff and buildings. This builds on our tradition of success that stretches back over 180 years. The

birth of the modern computer, the splitting of the atom, the founding principles of modern economics, the discovery of graphene, and the birthplace of chemical engineering – these and many more world changing innovations have their roots at our University. We are at the forefront of the search for solutions to some of the world's most pressing problems, boasting strong collaborative links with industry and public services.

School of Engineering

The School of Engineering is one of two large, multi-disciplinary Schools within the Faculty of Science and Engineering. The School delivers teaching and research activities across five departments; Chemical Engineering, Computer Science, Electrical and Electronic Engineering, Mechanical and Aerospace Engineering and Civil and Engineering Management.

The School's purpose is to foster an environment and culture where people use curiosity and imagination to create engineering solutions and develop skills that have a positive impact on society and we believe we can't do this without our people.

The School hosts around seven thousand undergraduate and postgraduate students with nearly 350 academic, 230 research and 180 professional services staff including technicians. Our interdisciplinary, research spans multiple themes including, robotics, nuclear, bioengineering, modelling, virtual engineering and resilient systems and is enabled by our world-class facilities and technical support. Social responsibility is at the centre of everything we do within the School whether that is our teaching and learning incorporating the UNs sustainable development goals, our research addressing societal grand challenges such as plastic usage, climate change or the ageing population as well as our commitment to supporting our students, staff and communities.

The School has initiatives to enhance the working environment of all staff including; staff engagement lunches, focused support groups, away days, wellbeing activities, training and development opportunities, mentoring, flexible working, social spaces, seminars, and volunteering opportunities.

The School welcomes applications from all sections of the community and are committed to having a representative workforce. We hold a Bronze Athena SWAN Award recognising our commitment to equality, diversity and inclusion.

Department of Chemical Engineering

CE (<https://www.ce.manchester.ac.uk>) is the largest department of chemical engineering in the UK, and one of nine departments in the Faculty of Science and Engineering. Students have access to state-of-the-art facilities and are taught by world-leading academics, whose expertise covers a wide range of chemical engineering topics.

The most recent Research Excellence Framework (REF 2021) confirmed the position of the department as one of a small group of elite chemical engineering departments in the UK and it ranks in the top 15 in the world according to the latest QS rankings. Our success capitalises on the synergies between chemical engineering and bioscience, chemistry, mathematics, materials and analytical and measurement science. Our broad research base enables us to study the design, operation and integration of different complex systems in wide range of

applications from oil and gas, energy systems, manufacturing and healthcare and apply chemical engineering to address global sustainability challenges.

The department comprises over 50 academic staff, and our research is grouped around the following themes:

- Biotechnology and bioprocess engineering
- Catalysis and advanced materials
- Electrochemical energy
- Multiscale modelling
- Nuclear energy and processes
- Process integration
- Subsurface energy
- Sustainable Industrial Systems

The undergraduate programmes are in Chemical Engineering, both 3 year BEng Hons and 4 year MEng Hons, as well as MEng programmes with a year in industry or in a European university. The department currently has over 700 undergraduates from 30 countries spanning the globe. The undergraduate chemical engineering programme is regarded as being amongst the best in the UK with our students being recognised nationally, having won Salter's Institute Graduate Awards and our Year 3 Design Project Student Teams have won the IChemE MacNab-Lacey award several times in recent years. A recent IChemE accreditation report highlighted: "The pilot plant facilities, IT facilities, and problem-based learning spaces and equipment are best-in-class." In addition, we run three highly successful MSc programmes and an extensive postgraduate research activity attracting a significant number of government, industrially and self-funded students who choose to study in Manchester.

The department is housed in the new state-of-the-art £450M engineering building (Nancy Rothwell Building) and adjoining this is the James Chadwick Building which houses the chemical engineering pilot plant and teaching laboratories. The pilot hall is one of the largest of its kind amongst UK universities and has a new distributed control system as well as the latest in situ and on-line process analytics. Academics in the department also work in research institutes such as the Manchester Institute of Biotechnology, the National Graphene Institute, the Henry Royce Institute for Advanced Materials and the Photon Science Institute.

Overall Purpose of the Job:

You will be expected to establish and sustain a high quality, independent research programme within the broad field of Chemical Engineering. While we welcome applicants from across the discipline, preferences will be given to candidates whose research support the advancement of digital manufacturing with clear industrial applications, in particular approaches that leverage artificial intelligence and machine learning to address challenges in chemical process industries, innovations in process systems engineering that enable improved modelling, optimisation and control, and advances in mixing and fluid mechanics.

The Department of Chemical Engineering and the wider University of Manchester has a rapidly expanding interest in these areas.

The ideal candidate should provide a complementary skill set to this group of collaborators, in addition to forging a wider collaborative network. The successful candidate is expected to contribute to the teaching of core chemical engineering modules within the chemical engineering curriculum at the Department of Chemical Engineering at the undergraduate and postgraduate

Key Responsibilities, Accountabilities or Duties:

Research

- (i) Undertake and direct high quality research in an area, which complements the current research activities in the department, particularly in an area of chemical engineering with preference for digital manufacturing; process systems engineering; or mixing/fluid mechanics
- (ii) Publish research in high quality academic journals and through presentations at conferences and seminars;
- (iii) Identify and secure significant external research funding;
- (iv) Attract and supervise postgraduate students and postdoctoral research assistants; and
- (v) Develop the impact of your research through suitable collaborations and partnerships.

Teaching

- (i) Teach on the Department's undergraduate and postgraduate programmes, with an emphasis on core chemical engineering units;
- (ii) Design and deliver high quality teaching and learning materials including textual and multimedia materials and provide timely and effective support and feedback to students;
- (iii) Contribute to teaching-related administration, examination and curriculum design; and
- (iv) Supervise undergraduate and taught postgraduate student projects and tutorials.
- (v) Set, mark and assess courseworks

Other responsibilities

- (i) Contribute to the Department's organisation and administration.

PERSON SPECIFICATION

Essential Knowledge, Skills and Experience:

The appointed person will be highly self-motivated with demonstrable expertise in his/her field and clear potential for development at the international level. He/she will have:

- A first degree and PhD (or equivalent) in chemical engineering or related discipline;
- Excellent interpersonal and communication skills;
- An ability to work collaboratively as part of a team;
- A demonstrable research track record in an area of chemical engineering with preference for digital manufacturing; process systems engineering; or mixing/fluid mechanics, which includes:
 - A successful record of relevant high quality publications; Experience of presenting at national and international conferences; Recognition within the relevant research community;
 - A commitment to developing and maintaining a programme of research and disseminating the results;
 - The ability, or potential, to obtain significant research funding and evidence of managing research projects.
- Enthusiasm for teaching and evidence of teaching ability.

Desirable Knowledge, Skills, Experience and Qualifications:

- Experience of a range of teaching methods, including demonstrating the ability to teach core chemical engineering design;
- Postdoctoral research or relevant industrial experience;
- Experience of planning and developing a range of teaching materials;
- Experience of supervising postgraduate students/undergraduate project students;
- Experience of working in or with industry;