Section 1
Role Overview

<table>
<thead>
<tr>
<th>Job title:</th>
<th>Lecturer or Senior Lecturer in Internet of Things</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacancy reference:</td>
<td>3391</td>
</tr>
<tr>
<td>School/Professional Service Unit:</td>
<td>School of Aerospace, Transport and Manufacturing</td>
</tr>
<tr>
<td>Job type:</td>
<td>Full time Permanent</td>
</tr>
<tr>
<td>Hours of work:</td>
<td>37 hours per week, normally worked Monday to Friday. Flexible working will be considered.</td>
</tr>
<tr>
<td>Salary details:</td>
<td>Lecturer: Salary level 6 – range £43,351 to £48,323 per annum with additional performance related pay up to £60,403 per annum</td>
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<tr>
<td></td>
<td>Senior Lecturer: Salary level 7 – range £53,205 to £59,302 per annum with additional performance related pay up to £74,126 per annum</td>
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<tr>
<td>Line Manager:</td>
<td>Professor Andrew Starr, Head of Through-life Engineering Services Institute</td>
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<tr>
<td>Start date:</td>
<td>As soon as possible</td>
</tr>
<tr>
<td>Closing date for applications:</td>
<td>13 September 2020</td>
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Section 2
About Cranfield University

As the UK’s only exclusively postgraduate university, Cranfield’s world-class expertise, large-scale facilities and unrivalled industry partnerships is creating leaders in technology and management globally. Cranfield’s distinctive expertise is in our deep understanding of technology and management and how these work together to benefit the world.

Find out more about Cranfield, our history, and our rankings and awards here.

Corporate Plan (415i)

Our corporate plan is designed to raise the ambition and enhance the distinctiveness of our University through our people (staff, students and alumni), the industry partners we work with and our unrivalled research facilities. To strengthen our distinctive position in higher education and to grow our University, we have raised our ambition through our 415i goals:

What we value

We value ambition, impact, respect and community. These values inform how we work together and our relationships with our partners and students. We believe that success is not only about what we achieve, but how we achieve it. Our values help to define who we are, guide the way we work.
together and help to shape our decisions. Our shared values were developed with the active engagement of colleagues across the University:

**Ambition** – We aim high. We do all we can to achieve excellence.

**Impact** – We change people’s lives. We make the world a better place.

**Respect** – We value everyone’s expertise. We support each other.

**Community** – We build and cherish our Cranfield community. We embrace diversity.

Our shared, stated values help to define who we are and underpin everything we do. Find out more [here](#).

## Section 3
### About School of Aerospace, Transport and Manufacturing

The School of Aerospace, Transport and Manufacturing (SATM) is a leading provider of postgraduate level engineering education, research and technology support to individuals and organisations. At the forefront of aerospace, manufacturing and transport systems technology and management for over 70 years, we deliver multi-disciplinary solutions to the complex challenges facing industry.

Visit the Cranfield website to learn more about the School’s current research activities, taught programmes and impact:

Cranfield Manufacturing (which includes major activities in Materials) has been following the ambitious strategy of developing a roadmap for a Sustainable Manufacturing Sector for 2050 by applying fundamental science and thought leadership via conceiving and maturing the concepts of Smart, Clean and Green manufacturing solutions agnostically across all sectors and through all tiers of the supply chain and with SMEs as well as OEMs. This is to support the national aspiration of Net Zero UK by 2050. Within the Theme there are a number of University and National facilities: namely

- Materials’ Characterisation in which the University has had a programme of investment of over £1.6 M in new facilities during 2019/2020.

- National High Temperature Surface Engineering Centre facility in the Surface Engineering and Precision Institute which is now an associate member of the Henry Royce Institute [http://www.royce.ac.uk](http://www.royce.ac.uk)

The research objectives for the Theme are to:

- Build on the strong synergy between manufacturing, materials, design and management supporting the transition from product service systems (PSS) to through life engineering services as a contributor to high value manufacturing; and

- Enhance our commitment to manufacturing technology (composites, welding and laser technology, advanced materials) in the context of sustainable, resource-efficient manufacturing.

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To meet these objectives, the main research strategies are:

- To enhance operations efficiency (smart) by researching the topics of business model innovation, resilient supply chains and reverse logistics, cloud manufacturing, sustainability as part of manufacturing company key performance indicators (KPI), circular economy and de-centralised manufacturing.

- To enhance process efficiency (clean) by researching sensors and big data for factory management, product service systems, factory modelling and artificial intelligence for eco-efficiency, internet of things for traceability and authenticity, intelligent micro-factories and autonomous manufacturing systems.

- To enhance resource efficiency (green) by researching energy efficient manufacturing, development of materials production with low carbon footprint, closed loop materials and circular economy, real-time life cycle analysis and advanced materials.

Learn more about Manufacturing

About the Through-life Engineering Services

Through-life Engineering Services (TES) works in asset management, condition based maintenance, digital systems, inspection and repair. Our team works closely with industry, to support operations through the long life of high value engineering assets, through design, manufacture, maintenance and life extension. We work with defence, aerospace, manufacturing and transport partners, using design, data, intelligence and experience, to create the best solutions for resilience in the presence of degradation. As well as a cross-sectoral research programme, TES is responsible for four MSc courses and a team of PhD students (typically 25). Further information can be found by visiting https://www.cranfield.ac.uk/centres/throughlife-engineering-services-institute.

Organisational Chart

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Professor Mark Jolly
Director of Manufacturing Theme

Professor Andrew Starr
Head, TES

New posts
3 Senior Lecturers
4 Lecturers
10 Research Fellows
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Job Details

Job Purpose

This role will have a significant impact on the shape and future direction of our programme of education and research in through-life support and manufacturing. The role will join the management and teaching team of our MSc courses. The role will also build an independent portfolio of research and PhD supervision. The contribution will be in the area of Internet of Things and Industry 4.0. Specific responsibilities will be:

- To provide leadership in teaching as Course Director for the MSc in Manufacturing Information Systems, and in module teaching.
- To work with colleagues to lead funding applications to research councils, industry and other research funders
- To build a personal portfolio of funded research, and develop new industrial and academic collaborations
- To work with the Head of TES to develop and support future strategy
- To supervise PhD and Masters students.

In turn, the successful applicant will have exciting opportunities for career development in this academic position, and to be at the forefront of world leading research and education, joining a supportive team and environment.

We are looking for suitably qualified and experienced individuals who would be responsible for the development and delivery of research and high-quality teaching at postgraduate level in one or more of:

- Internet of Things
- Industry 4.0
- Digital systems for manufacturing and maintenance
- Digital twin strategy
- Virtual and/or augmented reality
- Visualisation of complex information and data
- Standards including ISO 55000, PAS 55 and/or PAS 280

At Senior Lecturer level, we expect the candidate to provide leadership, such as course management, business development, preparing large funding bids, acting as a Principal Investigator on funded research projects and managing collaborative networks of researchers linked with industry. We particularly welcome applicants with related industry experience.
# Key Deliverables

<table>
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<tr>
<th>Description of Deliverables</th>
<th>% of time</th>
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| **1** Bidding for, leading and delivering high-quality research and consulting, including:  
  - application for new externally funded research projects;  
  - production of high quality journal publications;  
  - liaison with research clients including on-site meetings;  
  - presentation of work at international conferences;  
  - staff supervision, project management and administration associated with the research;  
  **Supervision of PhDs**  
  **Senior Lecturer:** Fostering, leading and supervising research and development including supervision of PhDs and EngDs | 40% |
| **2** Leadership and delivery of MSc modules and short courses, including curriculum development, teaching, coaching, and mentoring. This will include:  
  - creation of new short and long courses, online and face-to-face;  
  - preparation of materials;  
  - teaching online and face-to-face, travelling to customer sites where appropriate;  
  - creating assessments (coursework and exams); marking and provision of timely feedback;  
  - supervision of Masters student’s projects, individually and in groups; | 20% |
| **3** Direct the MSc Manufacturing Information Systems course | 10% |
| **4** Publication, professional activities and administrative duties as required | 20% |
| **5** Support the Head of the Centre and the Director of Theme as required. | 10% |

Please be advised that the percentages allocated for the key deliverables may be adapted to take into account the needs of the PSU/School* and / or University

## Planning and organising

You will be expected to demonstrate excellent organisational, planning, presentation and communication skills in order to co-ordinate research activities and liaise with partner universities. As course director for the MSc you will need to coordinate all teaching and project activities, liaising with academic and administrative staff.

You will be expected to help researchers and students organise their time, so that deadlines can be met and the research is delivered on time. In addition you will contribute to the research strategy and direction of TES, as well as planning and organising your own research projects and workload including publication and proposal writing.

The role has independence in terms of time planning, but needs you to deliver on time and at high quality. You will be part of a team which has many deadlines throughout the year.
**Communicating and influencing**

You will be required to have excellent communication skills, including written, spoken and presentation media, in person and online. You will interact effectively with academic and industry partners, and colleagues at all levels to meet work requirements. The ability to communicate, rapidly assess information, resolve problems and respond in a timely manner is essential.

You will need to be persuasive, persistent and professional. You will interact effectively with industrial clients and academics from partner institutions. You will frequently interact with line management and seek approval for solutions to significant problems which impact on research or resource plans. You will also interact frequently with peer academics, professional service colleagues and technicians, including: other MSc Course Directors and Module Leaders; Marketing colleagues, Communications & Development, and Student & Academic Support colleagues.

The successful candidate will have a growing track record of publications in high-quality peer-reviewed journals, as well as international conferences, and possibly also a professional social media presence.

A Senior Lecturer will be expected to play an active ambassadorial role for the University which may include presenting or chairing sessions at international conferences; acting as an expert in their field; and in the development of new business / research opportunities. This may also include acting as a University expert in the news media, or as part of professional institutions’ activities.

You must communicate effectively with MSc/PhD students so that teaching inspires their interest in the subject. Supervision skills are required so that students clearly know what is required of them and the approach they should take.

**Problem solving**

You will be a confident and independent professional, who handles the problem solving involved in research and education with confidence and efficiency. Most problems will be solved through experience and with the guidance and mentoring available within the collegiate team.

As director of an MSc course, module or short course, you may deal with students who are struggling with their work and deal with any issues regarding content and delivery of some of the lectures. Many students are mature, industry-based students who are returning to study, who may need additional mentorship to help them achieve their potential.

You will need to identify funding sources and write proposals that are clear, accurate and competitive. This will balance intellectual rigor with a commercial focus. You will identify suitable journals, conferences, and media for publication.

**Decision making**

1) **Decisions you will take without reference to others**

- Developing new research proposals, education offerings, consultancy work, industry liaison and sources of funding.
- Activities to enable the dissemination and exploitation of research results. Writing and managing the preparation of journal and conference papers.
- Budgetary issues related to your research contracts.
- Managing staff employed on your contracts.

[www.cranfield.ac.uk](http://www.cranfield.ac.uk)
- Balancing your main responsibilities on a day-to-day basis.

II) Decisions you will refer to your manager/colleagues
- Annual budgeting
- Contractual arrangements.
- Decisions that involve modifications to contracted deliverables.
- Costing and recruiting new staff.
- Development of new strategic research areas.

Guiding framework

Our performance and development review scheme provides annual objectives agreed with your line manager and will include expected SMART targets towards milestones. The School strategy is the principal reference point for all our activity, and this sets out our School’s ambitions, operating strategy and tone of delivery. It supports the University’s strategy which is focused on the application of scientific excellence in a financially viable operating environment. You can expect close support from your line manager in research, career development, and management responsibilities. All staff are expected to conform to the requirements of the Financial Manual.

Impact

Your work will determine the future growth of our research, education and exploitation in your specialist field. You will have management responsibility for your projects, education products, and associated staff. You will have responsibility for the budgets of your projects. You will supervise and co-supervise PhD and MSc students. You will be instrumental in communicating the results of your research and education worldwide, through a wide range of media.

Facts and Figures

Cranfield University excels in strategic and applied research. In the latest 2014 Research Excellence Framework (REF), 81% of our research was considered ‘world leading’ or ‘internationally excellent’ in its quality. We are in the top 40 in the world for Engineering - Mechanical, Aeronautical and Manufacturing (QS world rankings 2019). The only other UK institutions in the top 40 are Cambridge, Oxford, Imperial College London and Manchester.

Cranfield is a ‘Top 5’ research institute, based on commercial income. We were second only to Imperial College London, in terms of research power in REF 2014.

Our world class academics, with proven research records, are in constant touch with industry through research, consultancy and product development. Over 5000 students from over 100 countries study either full- or part-time, or in parallel with their career.

At Cranfield, we value Diversity and Inclusion, and aim to create and maintain a culture in which everyone can work and study together harmoniously with dignity and respect, and realise their full potential. We particularly welcome female applicants and actively consider flexible working options such as part-time, compressed or flexible hours and/or an element of homeworking. To further demonstrate our commitment to progressing gender diversity in STEM, we are members of WES & Working Families, and sponsors of International Women in Engineering Day.
# Section 5

## Am I suited to this role?

<table>
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<tr>
<th>Criteria</th>
<th>Essential</th>
<th>Desirable</th>
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| **Education / Qualifications** | A PhD or EngD in engineering, mathematics, computer science or similar. | - Chartered Engineer  
                     |                                                                             | - Membership of a professional body                                           |
| **Experience**    | A growing track record in conducting research projects, and publishing the results. | A sustained track record in winning and managing research grants, running collaborative projects, and publishing in peer-reviewed international journals; |
|                   | Delivery of teaching and assessment.                                       | Development of taught courses for postgraduates and/or professional audiences; |
|                   | Evidence of partnership work with academia and/or industry.               | Working with industry, and of applying research to industrial problems; |
|                   | A growing international reputation with evidence of recognition.          | A strong international profile including leadership roles in professional and academic organisations, working in partnerships with industry, and acting as an international expert. |
|                   | Senior Lecturer: evidence of building and maintaining industry partnerships. Leading significant research projects and/or education leadership |                                                                 |
| **Knowledge**     | IoT technologies                                                          | Networks of sensors.  
                     | Use of rich data to describe the health of physical assets and the services they provide; | Intelligent and distributed systems including wireless sensor networks;  
                     | Understanding of degradation characteristics of machines and/or processes. | Analytics including event detection, signal and image processing, diagnostics and prognostics;  
                     | A growing network of industry partners for developing the above in research, consultancy and education. | Human-computer interaction and visualisation.  
                     |                                                                                         | Communication of information to decision-makers.  
                     |                                                                                         | Engineering asset management systems; |
### Skills / Aptitudes

- Excellent written, oral and presentation skills;
- Excellent organisational skills;
- Communication with partners across several organisations to achieve active collaboration to bridge between academia and industry;
- Excellent networking skills in order to develop strong relationships with partners;
- Reporting research in high quality media to achieve a range of impacts for academic and industrial partners.
- Reporting research in high quality media to achieve a range of impacts for academic and industrial partners.

### Values

- Ability to demonstrate our values: Ambition, Impact, Respect and Community.

As part of Cranfield’s continuing commitment to developing excellence in learning and teaching, members of staff with teaching responsibilities are expected to obtain formal recognition of their professional expertise in teaching. It is normal expectation, during probationary period, that individuals will enrol for and successfully complete module 1 (Teaching, Learning and Student Support) of the PGCert in Academic Practice, which leads to Associate Fellow of the Higher Education Academy (HEA) unless an equivalent qualification is held already.

The module focuses on student learning, teaching methods and support of students, consists of 5 one day workshops, and assessment of two written submissions of approximately 3000 and 5000 words. Additional modules may be taken to gain Fellowship of the HEA, and the PGCert in Academic Practice if appropriate to the individuals continued development.