Job title: Assistant Professor in Design and Dynamics of Mechanical Systems for Manufacturing Processes

Job family and level: Research and Teaching
Extended Level 5

Department: Department of Mechanical, Materials and Manufacturing Engineering

Location: Jubilee Campus, Institute for Advanced Manufacturing

Purpose of role
This appointment will complement and strengthen research related to the expansion of activities within The Rolls-Royce University Technology Centre (UTC) in Manufacturing and On-Wing Technology as well as teaching in manufacturing, mechanical design and simulation related disciplines at the Department of Mechanical, Materials and Manufacturing Engineering (M3).

The Rolls-Royce UTC at Univ. of Nottingham, a university flagship research unit, has been very successful in attracting significant research funding from research organisations as well as industry while publishing high-impact papers in leading academic journals, filing a high number of international patents and attracting the interest of mass-media.

The successful candidate will be expected to join the fast-expanding Rolls-Royce UTC in Manufacturing and On-Wing Technology and contribute to high quality research. In particular he/she will be expected to contribute to the expansion of activities in the area of design and dynamic analysis of mechanical systems (e.g. machine tools, industrial robots, bespoke manipulators/end-effectors) for manufacturing processes.

Candidates should have an established track record of independent research, appropriate number of publications in high-impact academic journal, ability to work with industrial/academic partners, and experience of developing successful proposals and applications for research funding.

The successful candidate will also contribute to the delivery of teaching for the M3 Department’s undergraduate and postgraduate taught courses. The role holder will take responsibility for delivering high quality teaching and contributing to the planning, design, development and delivery of materials for undergraduate programmes in the Department of Mechanical, Materials and Manufacturing Engineering. The role will include the development of course curricula and teaching materials as required.

The post holder may also make a significant contribution to their academic unit via leadership and/or administrative management and/or co-ordination of specific initiatives.

Main responsibilities
(Primary accountabilities and responsibilities expected to fulfil the role)

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<th>% time per year</th>
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<td>typically 30 – 70%</td>
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1. Conduct successful research
   - Identify, conduct and lead original research to further support the expansion of the Rolls-Royce UTC in Manufacturing and On-Wing Technology
- Seek and secure external research funding through the development of applications to external funding bodies
- Conduct and supervise others conducting original research, resulting in high quality publications in nationally and internationally recognised peer reviewed journals
- Supervise postgraduate research students engaged in original research
- Work alone or in a diverse team (e.g. academia and industry) to meet deadlines and to prioritise tasks to enable the further expansion of Rolls-Royce UTC at Univ. of Nottingham.
- To be responsible for administrative duties as required in the leadership and operation of research

### Deliver teaching, administration and leadership roles to a high standard

- Lead/support the development/delivery of teaching in the Department, including close liaison with other members of the course development teams.
- Deliver consistently excellent teaching and support for student learning, influencing others via own practice; develop and apply high quality and appropriate teaching techniques and materials.
- Proactively identify the need for developing the aims, delivery or assessment of existing modules and make proposals on how this should be achieved.
- Supervise final year undergraduates and taught postgraduates conducting individual projects
- Provide tutorials and pastoral care of students.
- Design and undertake assessments, marking and feedback that is robust and valid. Evaluate and respond to feedback to ensure student engagement with assessment.
- Take responsibility for administrative duties as required in the leadership and operation of the Department
- Deliver any other duties appropriate to the grade and role as required

*typically 30 – 70%*
### Person specification

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<th>Skills</th>
<th>Essential</th>
<th>Desirable</th>
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<td>▪ Passion for student teaching and learning including the ability to engage constructively with students to facilitate learning</td>
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<td>▪ Excellent oral and written communication skills, including the ability to communicate complex information with clarity</td>
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<td>▪ Self-starting and pro-active, demonstrating an ability to work alone or in a team to meet deadlines and to prioritise tasks to enable the further expansion of Rolls-Royce UTC at Univ. of Nottingham</td>
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<td>▪ Able to professionally undertake leadership and management roles within the department and demonstrate excellent collegiality</td>
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<td>▪ Ability to teach other subjects within the Department of M3</td>
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<td>▪ Skill in developing research proposals in academia and/or industry, defining personal research plans and knowledge of research funding sources.</td>
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<td>▪ Skills in CAD, FEM packages and analytical modelling</td>
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<td>▪ Skilled in building electromechanical systems for manufacturing lines.</td>
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<td>▪ Relevant postdoctoral research experience and/or appropriate industrial experience</td>
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<td>▪ Track record of high quality publications in peer reviewed journals</td>
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<td>▪ Track record in participating in projects with partners from both academia and industry and experience to lead industry focused projects</td>
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<td>▪ Experience relevant to implementing teaching activities in mechanical/manufacturing/aerospace engineering</td>
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<td>▪ Extensive knowledge and skills to undertake original, high-quality research in the area of design and dynamic analysis of mechanical systems (e.g. machine tools, industrial robots, bespoke manipulators/end-effectors) for manufacturing processes to enable further expansion of the Rolls-Royce UTC at Univ. of Nottingham</td>
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<td>▪ Extensive knowledge and skills to contribute high quality teaching to the Department’s programmes, in particular in the areas of manufacturing, engineering design and computational modelling and simulation.</td>
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<td>▪ Research track record in an area compatible with current research portfolio of Rolls-Royce UTC in Manufacturing and On-Wing Technology</td>
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<td>▪ Experience in grant proposal writing and the acquisition of own research funding and the management and leadership of research programmes</td>
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<td>▪ Experience in design, analytical/numerical simulations of dynamics for mechanical systems that support manufacturing processes with relevance to real industrial application</td>
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<td>▪ Relevant teaching experience in higher education</td>
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<td>▪ Experience of undergraduate and/or postgraduate project supervision.</td>
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<td>▪ Extensive knowledge and skills to perform research in design and dynamics of machine tools, industrial robots, bespoke manipulators/end-effectors for manufacturing processes</td>
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### Qualifications, certification and training (relevant to role)

- Degree in a relevant discipline
- PhD in manufacturing/mechanical engineering or a related discipline
- First degree or equivalent and/or postgraduate study in mechanical/manufacturing engineering with expertise in design and dynamic analysis of mechanical systems (e.g. machine tools, industrial robots, bespoke manipulators/end-effectors) for manufacturing processes.

The University of Nottingham is focused on embedding equality, diversity and inclusion in all that we do. As part of this, we welcome a diverse population to join our work force and therefore encourage applicants from all communities, particularly those with protected characteristics under the Equality Act 2010.
Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

Valuing people  
Is always equitable and fair and works with integrity. Proactively looks for ways to develop the team and is comfortable providing clarity by explaining the rationale behind decisions.

Taking ownership  
Is highly self-aware, looking for ways to improve, both taking on board and offering constructive feedback. Inspires others to take accountability for their own areas.

Forward thinking  
Driven to question the status quo and explore new ideas, supporting the team to “lead the way” in terms of know-how and learning.

Professional pride  
Sets the bar high with quality systems and control measures in place. Demands high standards of others identifying and addressing any gaps to enhance the overall performance.

Always inclusive  
Ensures accessibility to the wider community, actively encouraging inclusion and seeking to involve others. Ensures others always consider the wider context when sharing information making full use of networks and connections.

Key relationships with others

Line manager  
Role holder  
Key stakeholder relationships

Head of Department  
Assistant Professor  
Admin  
Technical  
Students  
Colleagues