



Job title	Research Associate/Fellow in Design of Mechatronics Systems for Aero-Engines Manufacturing	Job family and level	Research & Teaching Level 4 Training Grade/Level 4
School/ Department	Faculty of Engineering, Division of Manufacturing - Rolls-Royce University Technology Centre in Manufacturing and On-wing Technology	Location	Jubilee Campus Advanced Manufacturing Building

Purpose of role

To coordinate and carry out original research of innovative design for Mechatronics systems solutions related to advanced manufacturing technologies of gas turbine engines.

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year
1	Original research on mechatronics systems <ul style="list-style-type: none"> Conduct original research to develop advanced Mechatronic systems for intelligent manufacturing of gas turbine engines. 	25%
2	Simulation of mechanical behaviour <ul style="list-style-type: none"> Simulate the mechanical behaviour of the Mechatronics systems (e.g. performance of actuation loads, effects of thermal fields on the Mechatronics systems) under conditions generated by the production process of the components. 	15%
3	Organise and conduct experimental trials <ul style="list-style-type: none"> Organize and conduct trials to evaluate the performance of prototype and demonstrators of the novel Mechatronics systems. 	10%
4	Original design of intelligent production systems <ul style="list-style-type: none"> To conduct original design of intelligent production systems for components as specified by Rolls-Royce to meet their production requirements. 	20%
5	Write of research reports and publications in peer reviewed journals <ul style="list-style-type: none"> To write research reports and original research papers to disseminate research results and develop a track record of published research findings in international reputable peer-reviewed journals. Furthermore, dissemination of the results should also occur through invited oral and poster presentations at well-known international meetings, conferences and seminars. 	15%
6	Write reports corresponding to the development of research work	3%

	<ul style="list-style-type: none"> To write reports corresponding to the development of the research work as part of the deliverables of the Rolls-Royce assigned projects. 	
7	Meeting participation <ul style="list-style-type: none"> Participate in the regular meetings of the UTC and research groups. 	2%
8	Contribution/collaboration to other projects <ul style="list-style-type: none"> Contribute to the research work of the UTC and collaborate on projects with colleagues within the UTC and their partners as required. 	3%
9	Operation within the established IT protocols <ul style="list-style-type: none"> Operate within the safety systems, IT code of practice etc. as required by the Division, Department and University. 	2%
10	Contribution to the growth of the UTC <ul style="list-style-type: none"> Facilitate the growth of the UTC through research excellence and contributing to funding proposals. 	5%

Person specification

	Essential	Desirable
Skills	<ul style="list-style-type: none"> Excellent general IT skills, including excellent working knowledge of word processing, spreadsheets, and Email systems Skilled in the use of relevant 3D CAD packages (SolidWorks, NX) Basic computer programming skills 	<ul style="list-style-type: none"> Skilled in research methods and conducting experiments A background and understanding of numerical modelling techniques (e.g. Finite Element)
Knowledge and experience	<ul style="list-style-type: none"> Strong mechanical and Mechatronics engineering knowledge Excellent mechanical and Mechatronics design skills Excellent analytical skills and ability to evaluate/simulate mechanical and Mechatronics systems Problem-solving skills, with a track record in producing innovative mechanical and Mechatronics designs Ability to read and produce engineering drawings Ability and willingness to do both practical experimental research and computer-based simulations Knowledge in production/manufacturing processes 	<ul style="list-style-type: none"> Knowledge of intricate mechanical design for production Knowledge of intelligent manufacturing processes and design for manufacture Understanding of variation propagations through tolerancing of assemblies to produce functional prototypes Proven experience of on the development of integrated Mechatronic systems using off-the-shelf control units (e.g. Arduino boards and sbRlos) Experience of using: <ul style="list-style-type: none"> FE package for design optimisation (static/dynamic analysis) Working knowledge of at least one programming language (e.g. Python)

		<ul style="list-style-type: none"> - Experience on programming in Matlab/Labview
Qualifications, certification and training (relevant to role)	<ul style="list-style-type: none"> ▪ Undergraduate degree (BEng /BSc) in Mechanical/Mechatronics Engineering or a closely related discipline ▪ Relevant PhD (or near completion) or have substantial relevant prior experience 	<ul style="list-style-type: none"> ▪ Postgraduate degree (MPhil/PhD) in Mechanical/Mechatronics Engineering or a closely related discipline ▪ Higher degree (MEng/ MSc) in Mechanical or Mechatronics Engineering or a closely related discipline
Other	<ul style="list-style-type: none"> ▪ Innovative and creative thinker ▪ Dedicated and hardworking with an excellent working attitude for a demanding role ▪ Excellent planning and organisational skills with an ability to ensure deadlines are met ▪ Excellent communication skills; able to effectively communicate technical information to a variety of audiences ▪ Ability to work in a team as well as on their own initiative 	<ul style="list-style-type: none"> ▪ Have a genuine interest in engineering ▪ Desire to develop expertise in this area of engineering research



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

