Position: Project Engineer
Department: Advanced Manufacturing Innovation Centre (AMIC)
Reference: 24/111760
Closing Date: 14 April 2024
Salary: £32,024 - £40,134 per annum
Anticipated Interview Date: Week commencing 29th April 2024
Duration: 3 years initially

We are seeking highly motivated Project Engineers to work across AMIC's capability groups to support the development of innovative and emerging industry-focussed solutions, which have direct economic and technical benefit for the Northern Ireland manufacturing sector:

- Digital Factory
- Smart Design
- Sustainable Polymers & Composites
- Nanotechnology & Photonics

Our initial recruitment will focus on building engineering capabilities in Digital Factory and Smart Design.

You will be an early career engineer with proven technical knowledge and experience who is excited to work in a centre that is a global destination for technology and innovation.

AMIC is a £100M investment through the Belfast Region City Deal - a collaborative, innovative powerhouse of advanced manufacturing set to elevate our region globally.

We are supporting economic growth and prosperity for Northern Ireland by creating high quality jobs and increasing inward investment through high value manufacturing innovation clusters.

We are driving industrial transformation, paving the way for future technologies and competing globally with a more sustainable focus.

When you join our team, you will have access to the latest advanced industrial technologies, and have the opportunity to grow and develop as an engineer and technology leader. Our mission is to provide you with the environment to innovate and create impact.

Our launch team of over 40 staff has core capabilities in digitalising manufacturing, smart design, sustainable polymers & composites and nanotechnologies & photonics. We're excited to be expanding the team throughout 2024.

JOB PURPOSE AND IMPACT:

You will support AMIC's advanced manufacturing activities in your selected engineering discipline(s), developing and implementing methods and processes to meet industry need, fuelling a pipeline of innovation activity for AMIC's state-of-the-art "Factory of the Future" facility, and contributing to solving wider societal challenges.

This will include:
1. Applying specialist knowledge and experience of methods and processes, to generate innovative research outputs which have direct economic and technical benefit.
2. In conjunction with senior engineering colleagues you will work collaboratively with academia, technology providers, national technology centres, and industry to deliver key projects focused on Advanced Manufacturing activities.
3. Development and implementation of your engineering discipline technologies
4. As part of the AMIC team significantly contribute to the development and implementation of your engineering discipline within the context of the Smart Factory.
5. Monitor, develop and implement best practices in the application of your engineering discipline within advanced manufacturing, including software, hardware and delivery.

MAJOR DUTIES:
1. Contribute to high quality industrial research, development, and knowledge transfer in your engineering discipline.
2. As part of the AMIC team significantly contribute to the development and implementation of Smart Design to meet industrial challenges.
3. Through senior colleagues engage with industrial partners to facilitate the transfer of AMIC capabilities into commercial R&D teams.
4. Contribute to the planning, development, delivery, maintenance, and monitoring of AMIC projects.
5. Participate constructively in multi-disciplinary research activities, including staff training and development.
6. Assist in fostering successful industry- academic engagement that will deliver at scale innovation projects.
7. Support advancing the international reputation of AMIC and QUB through presentations, attendance at tradeshows and visiting major companies and research & technology centres worldwide
8. Produce high quality technical reports and demonstrations to assist in generating funding opportunities to support further programme activity.
9. Carry out routine administrative tasks to ensure project goals are completed on time and within budget.
10. Undertake any other duties that may reasonably be requested by management.

ESSENTIAL CRITERIA (Education, Experience, Skills, Knowledge, etc.):
1. Honours Degree or equivalent, in a related engineering discipline with relevant industrial experience OR HND in related engineering discipline with significant relevant experience.
2. Demonstrable competence in the application of one of the Engineering Disciplines related to **Digital Factory** or **Smart Design** technology themes set out in the table below, with experience of using a range of the associated Industrial Digital Technologies.
3. Experience of using research/industrial tools and techniques resulting in high quality projects and technical reports.
4. Evidence of supporting successful delivery on multifaceted projects within deadlines and budget.

ESSENTIAL CRITERIA (Personal Qualities):
1. Strong breadth and depth of understanding of fundamental engineering concepts.
2. Demonstrable evidence of complex problem-solving skills obtained with a proven ability to develop innovative solutions.
3. Evidence of communicating complex technical information to a range of audiences.

DESIRABLE CRITERIA:
1. Hold or be about to obtain a relevant postgraduate qualification.
2. Experience of collaborative research and effective working in a multidiscipline engineering team
3. Proven competence in Industrial Digital Technologies beyond relevant engineering discipline

In your covering letter and CV, please ensure you indicate:

1. Relevant engineering disciplines you wish to be considered for
2. Your experience of Industrial Digital Technologies, including which tools you have used and in what context

Technology Theme: Digital Factory

Job Title	Engineering Discipline	Industrial Digital Technologies
Digital Manufacturing	Factory Simulation	Discrete Event Simulation (DES), 3D Factory Simulation, Factory Physics, Lean Thinking, Factory Flow optimisation, real time simulation modelling, Data analytics, Operational Research, Mathematical and Statistical Modelling, Spreadsheet Modelling, Kinematic modelling, virtual build simulation / virtual validation and commissioning, 3D modelling;
	Manufacturing Simulation	Robotic Simulation, Automation Simulation, Process Simulation, Work Instructions
	Augmented/Virtual/X Reality	AR/VR Technology, CAD, 3D Engines, Hardware Devices, Programming (C#, objective C, python etc)
	Cost Modelling	Should Cost Estimation, Activity Based Costing, Analogous costing, Parametric Cost Estimating, bottom-up or engineering build-up methods, Feature-based modelling, Fuzzy logic / uncertainty modelling, Cost regression analysis, Monte Carlo Analysis, Design Optimization
Digital Engineering	Systems Engineer	Knowledge of Enterprise and low cost company systems, integrations, emerging developments
	Solutions Architect	Architecting scalable resilient and appropriate cloud, on premise and hybrid solutions
	Data Analytics	Novel Data visualisation, data querying and pattern determination. Context based interpretation
	Data Scientist	Data mining to create ETL pipelines, Glean business value using ML tools and algorithms
	IT/IOT	Cybersecurity, network, asset, storage and server management. Connectivity IOT protocols
Automation & Robotics	Automation & Robotics	Industrial Robots, Collaborative Robots, End Effectors, Conveyors, Automated/Self-Guided Vehicles
	Mechatronics Engineering	Integration of Electromechanical systems into advanced tools, fixtures and machines, Sensing Technologies, Actuation, electronic and mechatronic devices and systems, Data acquisition, PLC Programming,
	Control engineering	PLC, SCADA,
Advanced Machining	Advanced Machining Processes	CAM Programming, CNC controls, Simulation and Verification, Muti-axis Machining, 5 axis Machining, , Multi-axis Mill-turn, GD&T, Milling, turning, probing, Drilling, Tapping, Modal Analysis, Cutting Forces, Tooling, Fixtures, Machining Dynamics,
	Advanced Machining Simulation	CAM Programming, Simulation and Verification, Computer aided engineering
Additive	Additive Manufacturing	Additive Manufacturing Technology, Additive Manufacturing Software, CAD, International Design Standards (API, ASTM, ISO), Metal AM, DED, WAM,
	Design for Additive	Design Engineering, CAD, CAE
Metrology	Metrology	Tactile measurement technologies (such as CMMs), non-contact 3D point cloud gathering systems (such as structured light scanners, laser line scanners) and surface metrology technologies (such as focus variation, confocal and interferometry). CAM

Technology Theme: Sustainable Polymers and Composites		
Job Title	Engineering Discipline	Industrial Digital Technologies
Material Science	Material Scientist	Chemistry, Chemical Engineering, Material Testing
Polymer Manufacturing	Polymer Process Engineer	Rotational, Injection Moulding, Extrusion Moulding, Blow Moulding, Thermoforming,
Material Science		
Composite Manufacturing	Automation in Composites	Fiber Placement, Filament Winding, Ply Placement, Tape Laying, Braiding, 3D weaving
	Composites Manufacturing	Wet-Lay-up, Autoclave, Out-of-Autoclave, Resin Transfer Moulding, Resin Transfer Infusion, Thermoforming, Over moulding

Technology Theme: Smart Design		
Job Title	Engineering Discipline	Industrial Digital Technologies

Engineering Design	Computational Design Engineer (FEA)	FEA using commercial software; interpret output for the identification of critical loads / stresses; prediction of structural failure, damage initiation and propagation (structural integrity assessment); structural optimisation; simulation of isotropic (metal, polymer, etc.) materials, or composite materials; nonlinear material behaviour; working knowledge of CAD packages; generation of automated analysis workflows; Use of theory and other methods for model verification.
Engineering Design	Computational Design Engineer (CFD)	CFD using commercial software; modelling of internal and external flows; geometry preparation; Meshing and solution set-up; post-processing; DNS; LES; modelling transition and turbulence, fluid structure interaction, noise and vibrations; high performance computing; working knowledge of CAD packages; generation of automated analysis workflows; Use of theory and other methods for model verification.
Data Integration	Process Simulation Engineer	Numerical modelling of manufacturing processes; variety of CAE analyses, including Multiphysics, FEA, CFD simulations; process optimisation; robust design techniques (e.g. Six Sigma, DOE, Monte Carlo Analysis); Working knowledge of CAD packages; generation of automated analysis workflows; Use of theory and other methods for model verification.
Design Automation	Design automation	Automation of elements of the concept design and detailed design process and integration of manufacturing and materials data into design tools. the creation of scripts to automate the generation of design and manufacturing CAD models in a range of commercial applications such as AutoCAD, CATIA, NX etc. development of software platforms which can be used to underpin further capability developments either by the AMIC team or customers. Development of UI & UX tools to enable rapid deployment of the scripting tools and platforms in a range of industry sectors.
Technology Theme: Decarbonisation of Manufacturing (including Hydrogen and Green Manufacturing)		
Job Title	**Engineering Discipline**	**Industrial Digital Technologies**
Sustainability Manufacturing		Life Cycle Analysis (LCA), Carbon accounting, Green Manufacturing, Net Zero, Sustainability, Circular Economy, Value Mapping,