UNIVERSITY OF LINCOLN
JOB DESCRIPTION

JOB TITLE	High Performance Computing (HPC) Scientist and Computer Manager
DEPARTMENT	School of Mathematics and Physics
LOCATION	Brayford

JOB NUMBER	COS198	**GRADE**	7	**DATE**	July 2018

REPORTS TO	Head of School

CONTEXT

The new School of Maths and Physics is central to the University's strategy to extend its provision in STEM subjects. School of Mathematics and Physics delivers a range of undergraduate computational modules and conduct a wide range of modelling research using HPC. It is the intention to make HPC facilities available to a range of users to enhance research outputs and offer high-level training and outstanding student experience for appropriate undergraduate and postgraduate degree programmes.

JOB PURPOSE

The main focus of the role is the expert deployment of the HPC facility and other computational resources within the school and this encompassing the following main functions:

- Provision of expertise in the advanced operation of HPC facility

- Project Design and Delivery for commercial and academic collaborators from a range of scientific backgrounds

- Provision of high level training (for undergraduate, postgraduate and scientists) in specialised HPC techniques using a variety of modes.

- Management and supervision of all computational environment in the school including routine maintenance, troubleshooting and liaison with manufacturing/maintenance companies.

- Support and participation in UG and PG teaching of computational modules

KEY RESPONSIBILITIES

Computational Laboratory Management and Liaison

- Manage all computational environments to maintain efficient operation of equipment to appropriate quality standards.

- Demonstrate professional levels of knowledge and experience in operation and management of specialist instrumentation.

- Supervise Health and Safety management of specialist laboratory environments, including laboratory audit and liaison with the University's Health and Safety systems.

- Coordinate the operation of user groups to establish effective communication, collaborative working environment and effective exchange of best practice.

- Devise and implement training and supervision to ensure efficient and safe operation of facilities across a range of user abilities and backgrounds.

Project and Service Delivery

- Devise solutions to complex problems in areas of specialisation.

- Take responsibility for the production of project proposals with detailed task-scoping and decision-gate processes. Communicate proposals in multiple formats, as appropriate.

- Undertake review through consultation with internal and external stakeholders to develop and improve provision.

- Manage relationships with stakeholders ensuring project delivery is achieved to appropriate quality standards and timescales.

- Plan and organise the use of resources to deliver projects in a timely and efficient manner in line with client needs and project timelines.

- Perform projects to accredited professional standards.

- Prepare and deliver project reports through effective oral and written communication in multiple formats e.g. presentations, summary reports and full technical reports.

- Demonstrate advanced operation of HPC and other computational facilities.

Research and Knowledge Transfer

- Develop and use computational modelling in collaboration with other academics in the school.

- Provide specialist expertise in HPC techniques. Where appropriate, contribute to the advancement of these through academic outputs.

- Initiate and manage the introduction of the new service provision e.g. advance HPC facilities and/or service offerings to extend the University's portfolio.

- Participate in and, where appropriate, initiate academic networks and facilitate users to broaden expertise and share best practice in specialist techniques.

- Devise and deliver basic and advanced training provision for HPC research instrumentation for staff and students. Where appropriate, formulate this training into accredited UG/PG-t modules.

- Actively participate in continuing professional development to maintain discipline-leading provision for the University.

Learning and teaching support
• Maintain all teaching laboratories and software.
• Assist lectures in preparation and delivery of computational courses within the school.
• Support of UG, masters and PhD projects provision within the school relevant to HPC area.

In addition to the above, undertake such duties as may reasonably be requested and that are commensurate with the nature and grade of the post.

ADDITIONAL INFORMATION

Scope and dimensions of the role

- Responsible for maintenance and development of all computational facilities (both research and teaching) within the school
- Responsible for developing and advising on advanced methods for academic and other users of specialist facilities.
- Responsible for managing relationships with PIs/clients to understand requirements and to modify provision to address customer needs.
- Responsibility for health and safety management of specialist facilities and co-ordination of users including scheduling.
- Responsibility for training users in specialist techniques and identifying training needs in the context of systematic development of skills.
- Responsible for devising and delivering training materials as part of accredited modules for undergraduate and postgraduate students.

Key working relationships/networks	
Internal	**External**
- Head of College of Science - Head of School - Technical Manager(s) and technical support teams - Academic Principal Investigators and researchers in the context of research projects - Academic programme and module leaders in the context of accredited training programmes. - Health and Safety Department - Estates Maintenance and Estates Services	- Academic specialists in areas of chosen expertise - Commercial clients and project commissioners - Computer manufacturers - Commercial suppliers - Professional bodies including specialist interest groups

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PERSON SPECIFICATION

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Selection Criteria	Essential (E) or Desirable (D)	Where Evidenced Application (A) Interview (I) Presentation (P) References (R)
Qualifications:		
Honours degree or equivalent in a relevant subject.	E	A
A PhD (or equivalent) degree relevant to HPC	E	A
Experience:		
Relevant professional practice	E	A
Extensive HPC user experience	E	A
Extensive experience of Unix operating systems.	E	
Scientific programming experience in Fortran, C or C++.	E	A
Training others in computing	E	A/I
Skills and Knowledge:		
Technical working knowledge of HPC and other computing equipment	E	A/I
IT equipment management skills	E	A/I
Knowledge of and expertise in parallel programming including programming using MPI and OpenMP.	E	A/I/P
Expertise in optimisation of software for distributed memory parallel systems, including optimisation of communications, load balancing and input/output.	E	A/I
Good written communication skills to enable explanation of technical issues and processes	E	A/I
Competencies and Personal Attributes:		
Enthusiastic and flexible approach to work	E	I/R
Effective team worker	E	A/I/R
Able to work confidentially	E	A/I
Strong user focus	E	A/I/R
Professional and courteous manner	E	A/I
Proactive and able to demonstrate initiative	E	I
Enthusiastic approach to outreach activities, applicant and open days which may be out of working hours	E	I

Essential Requirements are those, without which, a candidate would not be able to do the job. **Desirable Requirements** are those which would be useful for the post holder to possess and will be considered when more than one applicant meets the essential requirements.

Author	AZ	HRBP	SP