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| Last updated: | April 2024 |

**JOB DESCRIPTION**

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| Post title: | **Lecturer in Mathematical Foundations of AI and Machine Learning** | | |
| Standard Occupation Code: (UKVI SOC CODE) | 2311 - Higher education teaching professionals | | |
| School/Department: | School of Mathematical Sciences | | |
| Faculty: | Faculty of Social Sciences | | |
| Career Pathway: | Education, Research and Enterprise (ERE) | Level: | 5 |
| \*ERE category: | Balanced portfolio | | |
| Posts responsible to: | Head of School, Head of Pure Mathematics | | |
| Posts responsible for: | Research staff and students | | |
| Post base: | Office-based | | |

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| Job purpose |
| To develop and undertake internationally leading research in the broad area of Mathematical Foundations and Applications of AI and ML in line with School strategy.  To develop applications for external funding.  To contribute to teaching at undergraduate and postgraduate level (including project supervision), and to undertake leadership, management, and engagement activities. |

| Key accountabilities/primary responsibilities | | % Time |
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|  | Develop the research activities of the School/Department by sustaining a personal research plan. Manage the application of a range of research methodologies, approaches and techniques appropriate to the type of research personally being pursued. | 30 % |
|  | Support the teaching objectives of the School by managing a range of contributions to its learning and teaching activities. Deliver teaching of the highest quality across a range of modules and to all levels, for example through lectures, tutorials and practicals. | 20 % |
|  | Directly supervise students, providing expert advice on learning best practice and helping with learning problems. Identify the learning needs of students and define learning objectives. Promote the use of appropriate media to support student learning. Set and mark coursework and exams, providing constructive feedback to students. | 15 % |
|  | Contribute to the efficient management and administration of the School by performing personal administrative duties as allocated by the Head and by taking on appropriate School coordination roles. | 15% |
|  | Monitor, evaluate and revise course design to ensure excellence and coherence. Identify areas where current provision needs revision or improvement, planning and developing innovative contributions to learning, teaching and assessment methods within the School as appropriate. | 5 % |
|  | Establish an international reputation for research by disseminating findings through leading peer-reviewed publications, presenting results at conferences, or exhibiting work at other appropriate events. | 5 % |
|  | Plan, develop and implement innovative research proposals, projects, and funding bids as self-contained items or as part of a broader programme. | 5 % |
|  | Any other duties as allocated by the line manager following consultation with the post holder. | 5 % |

| Internal and external relationships |
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| Member of the School Board, Examination Board and of such School committees relevant to their administrative duties.  New appointees will be assigned a senior colleague to guide their development and aid their integration into the School, Faculty and University.  Research priorities will be agreed within the strategic framework of the research theme of which they are a member.  Teaching and administrative duties will be allocated by the Head of School/Group, within the context of the teaching programmes agreed by the School Learning and Teaching Committee and following consultation with the post holder. |

| Special Requirements |
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| To attend national and international conferences for the purpose of disseminating research results. |

**PERSON SPECIFICATION**

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| Criteria | Essential | Desirable | How to be assessed |
| Qualifications, knowledge, and experience | PhD or equivalent professional qualifications and experience in Mathematical Foundations of AI or an aligned discipline  Track record of published research. | Postdoctoral experience of doing research in applied mathematics, topological data analysis or similar  Teaching qualification (PCAP or equivalent).  Track record of attracting peer-reviewed research grant funding.  Track record of teaching at undergraduate and/or postgraduate level. | Application, interview, and references. |
| Planning and organising | Proven ability to plan and develop a range of high-quality research and teaching activities, ensuring plans complement broader research and education strategy.  Able to plan, manage, organise, and assess own teaching contributions. | Able to develop innovative research proposals and attract research funding.  Proven ability in the design of course units, curriculum development and new teaching approaches. | Application, interview, and references. |
| Problem solving and initiative | Able to develop understanding of complex problems and apply in-depth knowledge to address them.  Able to develop original techniques/methods. |  | Interview and references. |
| Management and teamwork | Able to manage and deliver own course units and team-taught course units.  Able to coach and support students/tutorial groups.  Able to undertake coordinating role in Group/School/University.  Work effectively in a team, understanding the strengths and weaknesses of others to help teamwork development. | Able to supervise work of junior research staff, delegating effectively. | Application, interview, and references. |
| Communicating and influencing | Communicate new and complex information effectively, both verbally and in writing, engaging the interest and enthusiasm of the target audience.  Track record of presenting research results at group meetings and conferences. | Able to provide expert guidance to colleagues in own team, other work areas and institutions to develop understanding and resolve complex problems.  Track record of delivering lectures and seminars in courses relating to different aspects of Statistical Learning. | Application, interview, and references. |
| Other skills and behaviours | Understanding of relevant Health & Safety issues.  Positive attitude to colleagues and students. |  | Interview and references. |
| Special requirements | Able to attend national and international conferences to present research results. |  | Application and interview. |

**JOB HAZARD ANALYSIS**

**Is this an office-based post?**

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| Yes | If this post is an office-based job with routine office hazards (e.g.: use of VDU), no further information needs to be supplied. Do not complete the section below. |
| No | If this post is not office-based or has some hazards other than routine office (e.g.: more than use of VDU) please complete the analysis below.  Hiring managers are asked to complete this section as accurately as possible to ensure the safety of the post-holder. |

## - HR will send a full PEHQ to all applicants for this position. Please note, if full health clearance is required for a role, this will apply to all individuals, including existing members of staff.

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| **ENVIRONMENTAL EXPOSURES** | **Occasionally**  (<30% of time) | **Frequently**  (30-60% of time) | **Constantly**  (> 60% of time) |
| Outside work |  |  |  |
| Extremes of temperature (e.g.: fridge/ furnace) |  |  |  |
| ## Potential for exposure to body fluids |  |  |  |
| ## Noise (greater than 80 dba - 8 hrs twa) |  |  |  |
| ## Exposure to hazardous substances (e.g.: solvents, liquids, dust, fumes, biohazards). Specify below: |  |  |  |
| Frequent hand washing |  |  |  |
| Ionising radiation |  |  |  |
| **EQUIPMENT/TOOLS/MACHINES USED** | | | |
| ## Food handling |  |  |  |
| ## Driving university vehicles (e.g.: car/van/LGV/PCV) |  |  |  |
| ## Use of latex gloves (prohibited unless specific clinical necessity) |  |  |  |
| ## Vibrating tools (e.g.: strimmers, hammer drill, lawnmowers) |  |  |  |
| **PHYSICAL ABILITIES** | | | |
| Load manual handling |  |  |  |
| Repetitive crouching/kneeling/stooping |  |  |  |
| Repetitive pulling/pushing |  |  |  |
| Repetitive lifting |  |  |  |
| Standing for prolonged periods |  |  |  |
| Repetitive climbing (i.e.: steps, stools, ladders, stairs) |  |  |  |
| Fine motor grips (e.g.: pipetting) |  |  |  |
| Gross motor grips |  |  |  |
| Repetitive reaching below shoulder height |  |  |  |
| Repetitive reaching at shoulder height |  |  |  |
| Repetitive reaching above shoulder height |  |  |  |
| **PSYCHOSOCIAL ISSUES** | | | |
| Face to face contact with public |  |  |  |
| Lone working |  |  |  |
| ## Shift work/night work/on call duties |  |  |  |