



**Faculty of Technology**

**Department of Mathematics**

**Research Associate in Applied Mathematics for Soil Modelling**

**ZZ004426**

**Information for Candidates**

**THE POST**

Please see the attached job description and person specification.

**TERMS OF APPOINTMENT**

Full-time

Fixed term

Salary is in the range from £26,495 to £28,936 per annum and progress to the top of the scale is by annual increments payable on 1 September each year. Salary is paid into a bank or building society monthly in arrears.

Working hours are normally from 8.30 a.m. to 5.15 p.m. Monday to Thursday and 8.30 a.m. to 4.15 p.m. Friday with one hour and ten minutes for lunch. As this post is research based, working hours will vary depending on the needs of the project so a flexible approach is required. Specific working hours will be agreed once an appointment has been made. Overtime is not normally payable but time off in lieu may be given.

Annual leave entitlement is 35 working days in a full leave year. The leave year commences on

1 October and staff starting and leaving during that period accrue leave on a pro-rata basis. In addition, the University is normally closed from Christmas Eve until New Year’s Day inclusive and on bank holidays.

The Appointee will be entitled to join the Local Government Pension Scheme. The scheme's provisions include a final salary based, index-linked pension with an option to exchange some pension for a lump sum on retirement together with dependants’ benefits. Contributions by the employee are subject to tax relief.

There is a probationary period of six months during which new staff are expected to demonstrate their suitability for the post.

There is a comprehensive sickness and maternity benefits scheme.

**All interview applicants will be required to bring their passport or full birth certificate and any other 'Right to Work' information to interview where it will be copied and verified.** The successful applicant will not be able to start work until their right to work documentation has been verified.

Please note if you are the successful candidate once the verbal offer of employment has been made and accepted, references will be immediately requested. It is the University’s policy that all employment covering the past three years is referenced. A minimum of two references is required to cover this three year period of employment or study (where there has been no employment). One of your referees mustbeyour current or most recent employer.

The successful candidate will need to bring documentary evidence of their qualifications to Human Resources on taking up their appointment.

To comply with UKVI legislation, non-EEA candidates are only eligible to apply for this post if it has been advertised for a total of 28 days.

If the position has a requirement for Disclosure and Barring Service check (DBS), this will be stated in the advert. The DBS Application Form will be provided once the selection process has been completed.

All applications must be submitted by Midnight (GMT) on the closing date published.



**UNIVERSITY OF PORTSMOUTH – RECRUITMENT PAPERWORK**

1. **JOB DESCRIPTION**

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| **Job Title:** | Research Associate in Applied Mathematics for Soil Modelling |
| **Grade:** | 5 |
| **Faculty/Centre:** | Technology |
| **Department/Service:**  **Location:** | Department of Mathematics |
| **Position Reference No:** | ZZ004426 |
| **Cost Centre:** | 14568 |
| **Responsible to:** | Dr Marianna Cerasuolo, Senior lecturer, Applied Mathematics |
| **Responsible for:** |  |
| **Effective date of job description:** | 10/01/2018 |

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| **Purpose of Job**: |
| The Research Associate will work on the Diverfarming project funded by European Commission, Directorate General for Research under Framework Programme H2020. This is a multi-disciplinary project that involves 25 European partners including the Mathematics Department of the University of Portsmouth.  The Diverfarming project (www.diverfarming.eu) aims to increase diversification and biodiversity in Europe and to foster a sustainable development of the bioeconomy. One of the project’s goal is to increase the long-term resilience, sustainability and economic revenues of agriculture across the EU. The consortium will identify, through the assessment of benefits, limitations, barriers and drawbacks, those diversified cropping systems that use low-input agricultural practices, are tailor-made to fit the unique characteristics of six EU pedoclimatic regions, and optimise the downstream value chains organization.  Diverfarming final objectives are to provide: i) increased overall land productivity; ii) more rational use of farm land and farming inputs (water, energy, machinery, fertilisers, pesticides); ii) improved delivery of ecosystem services by increments in biodiversity and soil quality; iii) proper organization of downstream value chains adapted to the new diversified cropping systems with decreased use of energy; and iv) access to new markets and reduced economy risks by adoption of new products in time and space.  The Research Associate will use an existing model (ECOSSE) to simulate C sequestration in soils under diversified cropping systems. New algorithms will be developed to simulate crop associations and agricultural practices that are not yet included in ECOSSE, and existing algorithms will be modified to include additional soils and land use types. The model will provide a useful tool to understand how the diversified cropping systems tested during the project case studies influence soil-water-atmosphere-plant interactions. The model will also allow to identify indicators that define sustainability of different diversified cropping systems.  The research fellow will be responsible for taking a lead in the development and coding of these algorithms, uncertainty analysis of simulations, parameterization and validation of the new model. The research associate will liaise with academics of the Department of Mathematics at the University of Portsmouth and the industrial/academic partners involved in the project in order to achieve this goal. The algorithms developed are expected to be of sufficient scientific novelty and application worth that they will lead to articles published in leading interdisciplinary scientific journals. The research associate is also expected to disseminate the research findings at project meetings, international conferences, and industrial events. |

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| **Key Responsibilities:** |
| 1. To manage and be responsible for the completion of the proposed research project, ensuring that aims, objectives and deliverables are met in a timely manner. 2. To present algorithms, decision support tools, and research project findings at project meetings and international conferences and to write papers for refereed journals and project reports. 3. Model development based on review of current literature; implementation, documentation of model; writing papers (review, research articles), reports.   **Additional expectations of the role holder**   1. To communicate with team members and liaise and network with relevant others, ensuring effective working relations professional bodies. 2. To contribute to both internal and external project meetings providing relevant and timely information, in order to aid decision-making. 3. To solve predictable problems that may occur during the length of the research project applying knowledge of subject area. 4. To contribute to seminars and discussions in the Department. 5. To contribute to public outreach activities. 6. To participate in and contribute to a performance & development review (PDR), ensuring that work produced is in line with the Department/Faculty/University aims 7. To comply with the University's Health and Safety Policy and pay due care to own safety and the safety of others. Report all accidents, near misses and unsafe circumstances to line management. 8. Any other duties as required by the Head of Department. |

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| **Working Relationships:** |
| 1. Managed by Prof. Andrew Osbaldestion, Head of the Department of Mathematics, Dr. Marianna Cerasuolo for day-to-day management. 2. Other partners of Diverfarming project. 3. Liaising with support/technical staff on day-to-day issues and associates operating in the related areas. |

**PERSON SPECIFICATION**

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| **No** | **Attributes -** | Rating | Source |
| **1.** | **Specific Knowledge & Experience** |  |  |
| 1.1 | Knowledge of Mathematics applied to Biology and related disciplines | E | AF,S |
| 1.2 | Knowledge of Soil Science | D | AF, S |
| 1.3 | Knowledge of Environmental science | D | AF, S |
| 1.4 | Experience in developing mathematical models and algorithms for biological/ecological problems | E | AF, S |
| 1.5 | Experience in writing research articles for leading international journals | E | AF, S |
| **2.** | **Skills & Abilities** |  |  |
| 2.1 | Computational and programming skills | E | AF,S |
| 2.2 | Ability to understand biological/physical concepts | E | AF |
| 2.3 | Ability to plan, organise and prioritise workloads | E | AF, S |
| 2.4 | Good Communication and Interpersonal skills | E | AF, S |
| 2.5 | Writing research papers and/or project reports | E | AF,S |
| 2.6 | Excellent presentation skills | E | S |
| 2.7 | Statistical data analysis skills | D | AF,S |
| **3.** | **Qualifications, Education & Training** |  |  |
| 3.1 | Completed PhD in relevant subject | E | AF |
| 3.2 | Refereed publications in leading international journals | D | AF |
| **4.** | **Other Requirements** |  |  |
| 4.1 | Highly motivated and committed to undertaking research | E | AF, S |
| 4.2 | Ability to motivate and engage others in research | D | AF, S |

**Legend**

Rating of attribute: E = essential; D = desirable

Source of evidence: AF = Application Form; S = Selection Programme (including Test, Presentation, References)

**JOB HAZARD IDENTIFICATION FORM**

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| **Please tick box(s) if any of the below are likely to be encountered in this role. This is in order to identify potential job related hazards and minimise associated health effects as far as possible. Please use the** [**Job Hazard Information**](http://www.port.ac.uk/departments/services/humanresources/recruitmentandselection/informationforrecruiters/essentialinformationandformsforrecruiters/) **document in order to do this.** | | | |
| 1. International travel/Fieldwork | x | 13. Substances to which COSHH regulations apply (including microorganisms, animal allergens, wood dust, chemicals, skin sensitizers and irritants) |  |
| 1. Manual Handling (of loads/people) |  | 14. Working at height |  |
| 1. Human tissue/body fluids (e.g. Healthcare workers, First Aiders, Nursery workers, Laboratory workers) |  | 15. Working with sewage, drains, river or canal water |  |
| 1. Genetically Modified Organisms |  | 16. Confined spaces |  |
| 1. Noise > 80 DbA |  | 17. Vibrating tools |  |
| 1. Night Working   (between 2200 hrs and 0600 hrs) |  | 18. Diving |  |
| 1. Display screen equipment | x | 19. Compressed gases |  |
| 1. Repetitive tasks (e.g. pipette use, book sensitization etc) |  | 20. Small print/colour coding |  |
| 1. Ionising radiation/ non-ionising radiation/lasers/UV radiation | | 21. Contaminated soil/bioaerosols |  |
| 10. Asbestos and lead | | 22. Nanomaterials | |
| 11. Driving on University business (mini-bus, van, bus, forklift truck etc) | | 23. Workplace Stressors (e.g. workplace demands, role clarification, relationships etc) | |
| 12. Food handling | | 24. Other (please specify) | |

**Completed by Line Manager/Supervisor:**

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| **Name (block capitals)** | Dr. MARIANNA CERASUOLO |
| **Date** | 10 JAN 2018 |
| **Extension number** | 2814 |

Managers should use this form and the information contained in it during induction of new staff to identify any training needs or requirement for referral to Occupational Health (OH).

Should any of this associated information be unavailable please contact OH (Tel: 023 9284 3187) so that appropriate advice can be given.