University of Southampton

Job Description

Post title: **Engineer in Seabed Instrumentation (Software Systems)**

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Standard Occupation Code:	2134
School / Department:	SOES
Faculty / Directorate:	FELS
Job Family:	Management, Specialist and Administrative (MSA)
Grade:	Level 4
ERE Pathway (if applicable):	Not applicable
Post reporting to:	Professor of Geophysics
Post line report(s):	N/A
Post base location:	Other **:** Waterfront Campus with travel to Durham University as required

Job purpose:

The Ocean-Bottom Instrument Consortium is a joint enterprise between the Universities of Durham and Southampton. It supports experiments at sea from the shallowest water around the continents to some of the deepest parts of the remotest oceans. Our seabed equipment measures many different physical signals such as pressure, ground vibration, and electric and magnetic fields to investigate the solid Earth and overlying water.

This role is for an individual to join the existing team delivering at-sea acquisition through instrument deployment, and to develop firmware on the instruments to enable a range of sensors to be logged reliably, and the software needed for subsequent data download and conversion into the standard formats required for each project.

You will work both in a lab setting and at sea, bringing your skills in programming to join a vibrant multidisciplinary team.

Key accountabilities and indicative time allocation:

1. **50%**

Apply a full understanding of firmware and software to ensure that the Facility instruments can reliably record data from a range of sensors and generate the standard format data outputs required by end-users.

2. **30%**

Manage and deliver instrumentation mobilisation and operations at sea to ensure successful project outcomes. Define, develop, review and refine working practices to meet service and/or quality standards and objectives.

3. **5%**

Interact with clients of the Consortium during planning and operational phases.

4.	**5%**

Plan, organise, and manage the work environment.

5.	**10%**

Any other duties as allocated by the line manager following consultation with the post holder.

Internal and external relationships:

Management team of the Ocean-Bottom Instrument Consortium

Other team members within the Ocean-Bottom Instrument Consortium.

Departmental management and University senior management

Other members of the Ocean-Bottom Instrument Consortium team and department/University staff

External customers.

Relevant suppliers and external contacts.

Special requirements:

- Willingness to travel between and work at the Facility “sister” node in Durham for short periods as required.
- Willingness to undertake health and safety training specific to role.
- Willingness and ability to work flexibly to meet operational needs and deadlines when required.
- Willingness and ability to pass (within 4 weeks of appointment) and maintain ENG1 medical certification.
- Willingness and ability to pass (within 4 weeks of appointment) and maintain STCW95 or BOSIET personal survival certification.
- Willingness and ability to travel globally to support experiments and work at sea, typically once or twice a year for 30-40 days each, and up to 90 days total per year.
- Willingness to adapt and gain new skills and knowledge outside immediate specialism.

Person Specification – Skills and Competencies

All essential and desirable criteria outlined in this Person Specification will be assessed through a combination of recruitment application and CV, and where applicable numerical or written assessment.

Knowledge, Experience and Qualifications

Essential

- Substantial and authoritative practical knowledge in the design and development of firmware and/or software to achieve specified tasks.
- The required level of knowledge and understanding will normally have been gained through some or all of the following:
    - Relevant technical work experience.
    - Vocational training.
    - Formal qualification(s) equivalent to degree, HND, or NVQ4 level in a technical, engineering, or science-based subject.
- Knowledge and experience of software design and development.
- Either, or, or ideally both:
    i. Knowledge and experience of C/C++ programming, including embedded systems.
    ii. Knowledge and experience of Python programming including packaging.
- Experience of adapting to and learning new technologies, systems and ways of working.
- Experience of working in teams as well as on projects with sole responsibility.
- Experience of ensuring compliance with policies and guidelines including health and safety.
- Demonstrated rigorous approach to work to best practices and procedures.

Desirable

- Knowledge and experience in the design and realisation of new and innovative equipment and systems.
- Knowledge and experience of real-time firmware design using open platforms.
- Knowledge and experience of working with Linux-type operating systems, including networking, packaging, and data distribution.
- Knowledge and experience in the use of Git/Gitlab.
- Knowledge and experience of generic and application-specific data handling and visualisation.
- Knowledge and experience of integrating analogue and digital sensors including data handling and storage to ensure data integrity.
- Knowledge and experience of designing and implementing appropriate metadata schema.
- Knowledge and experience of data presentation and display including static and interactive outputs.
- Knowledge and experience of optimising handling of large datasets.
- Knowledge and experience of GUI design.
- Knowledge and experience of data format conversion to meet published interchange standards.
- Experience of electronic circuit debugging, characterisation and calibration.

Teamwork and Communication

Essential

- Collaborate effectively, understanding the specific skills, strengths and weaknesses of colleagues.

- Work proactively with colleagues and other stakeholders, within and beyond the Facility, to achieve outcomes.
- Provide clear specialist advice, guidance and recommendations on complex issues.
- Able to take initiative and also to recognise when queries need to be referred upward.
- Use operational expertise to lead and participate in meetings, working groups etc.
- Demonstrate experience of sharing and developing good practice and strong and productive working relationships.
- Communicate effectively to develop understanding and achieve cooperation.
- Excellent spoken, written, and presentation communication skills in the English language.
- Able to teach or train colleagues and users in specific technical skills when required.
- Contribute to promotional events and presentations.
- Collaborate with internal and external academics, industry and technical specialists to support the delivery of Facility services and to contribute to the generation of external income.

Planning, Organisation and Resource Management

Essential

- Proactively plan and progress a range of work activities within broad professional guidelines and established Facility policies and procedures.
- Provide specialist advice to resolve technical problems, plan projects and continually develop and improve the Facility.
- Demonstrate experience of successful project management to achieve appropriate solutions.
- Seek feedback from Facility users so that Facility operations evolve to meet changing user expectations and meet future instrumentation requirements.
- Able to work with others to:
    - Agree requirements.
    - Plan and deliver work packages.
    - Meet project deadlines.
    - Design and carry out testing procedures.
    - Produce documentation to required standards.
- Demonstrate commitment to continuing technical development, formulating development plans to meet current skill requirements and undertaking self-directed learning as needed.
- Manage budgets and expenditure including purchasing goods and services.

Problem Solving and Initiative

Essential

- Develop a detailed understanding of long-standing and/or complex problems and apply professional knowledge and experience to analyse and resolve them.
- Able to recommend solutions and plans of action, coordinating with other team members.
- Demonstrate an awareness of principles and trends in a professional or specialist field and awareness of how this affects activities in the Facility.
- Apply systematic approaches to solve problems and decide on and plan appropriate solutions.
- Demonstrate ability to work methodically, and be calm and think clearly under pressure.

Job Hazard Assessment

A full health clearance is required for this role where any hazards marked "^", using the agreed Occupational Health referral template available from here. Where a full health clearance is required, this will apply to all role holders, including existing members of staff.

Physical Environment

Working outside ^	Occasionally <30% Time
Exposure to noise levels >80dbA ^	Not applicable
Working with dust or fumes ^	Not applicable
Working with skin irritants ^	Not applicable
Working with chemicals (industrial or cleaning) ^	Not applicable
Working in a confined space ^	Not applicable
Working at height ^	Occasionally <30% Time
Working with sewage ^	Not applicable
Contact with cytotoxins ^	Not applicable
Exposure Prone Procedure (EPP) work ^	Not applicable
Contact with clinical specimens or pathology work ^	Not applicable
Direct patient care or patient contact	Not applicable
Exposure to temperature extremes	Occasionally <30% Time
Frequent hand washing	Not applicable
Ionising radiation	Not applicable

Psychological and Social Environment

Working shifts ^	Occasionally <30% Time
Working nights ^	Occasionally <30% Time
Lone working	Occasionally <30% Time
Working with children	Not applicable
Exposure to persons with challenging behaviour	Not applicable
Working with larger groups	Not applicable

Equipment, Tools and Machines

Working with vibrating machinery or tools ^	Not applicable
Driving duties e.g. LGV, PCVs, forklift trucks ^	Not applicable
Food handling	Not applicable
Contact with latex	Not applicable

Physical Abilities

Prolonged physical movements or actions e.g. walking ^	Not applicable
Prolonged Standing or Sitting ^	Not applicable
Moving or handling heavy loads ^	Occasionally <30% Time
Repetitive pulling or pushing ^	Not applicable

Repetitive climbing (steps, stools, ladders, stairs) ^	Not applicable
Repetitive crouching, kneeling or stooping	Occasionally <30% Time
Repetitive lifting	Occasionally <30% Time
Fine motor grips (e.g. pipetting)	Not applicable
Repetitive reaching below shoulder height	Occasionally <30% Time
Repetitive reaching at shoulder height	Occasionally <30% Time
Repetitive reaching above shoulder height	Not applicable