University of Southampton

Job Description

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

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Standard Occupation Code:	2124
School / Department:	School of Ocean and Earth Science
Faculty / Directorate:	FELS
Job Family:	Technical and Experimental (TAE)
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 contribute to the design, building, and testing of the next generations of these seabed instruments, particularly aiming to enable deployments that are longer, measure more parameters, and use more compact instruments.

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

Key accountabilities and indicative time allocation:

1. **50%**

Apply a full understanding of low power analogue and digital electronic systems to manage and deliver development and testing of new data acquisition systems that reliably sample and record data from a range of sensors.

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 analogue and digital electronics, supported by general theoretical understanding.
- The required level of knowledge and understanding will normally have been gained through some or all of the following:
    - Work experience.
    - Vocational training.
    - Formal qualification(s) equivalent to degree, HND, or NVQ4 level in a technical, engineering, or science-based subject.
- Knowledge, experience and competence may also be evidenced through professional registration:
    - Professional registration at the Registered Scientist (RSci) level will typically indicate partial competence at TAE Level 4.
    - Professional registration at the Incorporated Engineer (IEng) level will typically indicate full competence at TAE Level 4.
- Demonstrated experience in the design and/or development of analogue and digital electronics systems.
- Knowledge and expertise of PCB design and testing.
- Knowledge and expertise of circuit characterisation, debugging, and calibration across a range of frequencies including use of logic analysers, oscilloscopes, multimeters and similar devices.
- Experience in successful project management to deliver appropriate solutions.
- Experience of adapting to and learning new technologies, systems and ways of working.
- Experience of both working in teams to deliver projects as well as 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 in design and realisation of low power electronic systems.
- Experience of firmware development, and at least working knowledge of Python, Git/Gitlab and/or Linux-type operating systems.

Teamwork and Communication

Essential

- Collaborate effectively, understanding the 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 undertake 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 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 clear thinking 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) ^	Occasionally <30% Time
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	Occasionally <30% Time

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)	Occasionally <30% Time
Repetitive reaching below shoulder height	Occasionally <30% Time
Repetitive reaching at shoulder height	Occasionally <30% Time
Repetitive reaching above shoulder height	Not applicable