SIMON FRASER UNIVERSITY
JOB DESCRIPTION

Position Title: Manager, Research Laboratory Position #: 00137322
Employee Group: APSA

ABOUT SIMON FRASER UNIVERSITY:

- We are a leading research university, advancing an inclusive and sustainable future. Our purpose – the essence of SFU – is to create and connect knowledge, learning and community for deeper understanding and meaningful impact.
- We are committed to fostering excellence, innovation, belonging and community in all that we do.

POSITION SUMMARY

The Manager, Research Laboratory is responsible for the technical execution, integration, and operational continuity of a multi-year NSERC-funded project focused on developing miniaturized gravimeters for green mining. The role is responsible for the design, development, and troubleshooting of complex research instrumentation and systems. In addition to gravimeter development, the Manager is responsible for supporting other instrumentation and system integration efforts across the research group. The role manages lab activities, supports the design and test of precision systems, coordinates the setup and operation of experimental hardware, and guides students and researchers in safe and effective lab practices. The role collaborates with academic and industrial partners, manages procurement processes, maintains lab infrastructure and equipment, and ensures compliance with safety protocols and regulations, and the timely progress of technical milestones.

DUTIES AND RESPONSIBILITIES

1. **Leads the lab readiness and operational continuity, and accessibility by:**
   - Managing equipment calibration, upgrades, and repairs.
   - Ensuring lab safety compliance and managing safety policies/procedures relating to the use of the labs, equipment and supplies.
   - Coordinating and maintaining safety training records, report protocol and a schedule required for safety awareness and compliance.
   - Leading the design, equipment specification/installation, and implementation of laboratories and specialized facilities to satisfy project and university objectives.
   - Adhering to IT protocols, SFU financial policies, and/or granting agency rules and regulations, as well as Canadian government regulations.
   - Making recommendations on the acquisition of new resources, renovations and investment in development projects.
   - Developing and maintaining an inventory system to ensure sufficient laboratory supplies and consumables.
   - Overseeing the ordering of consumable stock components, materials, and supplies.
   - Managing, coordinating, resolving and prioritizing repair and maintenance of all laboratory equipment and technical systems.

2. **Executes lab-based technical system setup and troubleshooting and conducts field deployment and data collection by:**
   - Designing multi-layer PCBs, analog/digital circuits and microsystem prototypes.
   - Leading advanced PCB design and debugging techniques for full system and subsystem failures.
   - Assembling, debugging and optimizing prototypes at component and system levels.
   - Isolating faults rapidly in complex instrumentation (electrical, mechanical and software interfaces) and implementing corrective designs.
   - Calibrating, upgrading and repairing laboratory equipment to sustain peak performance.
   - Leading system-level troubleshooting across hardware/software/interfaces.
   - Designing, building and integrating electronic, optical, thermal, and mechanical subsystems for microsystem prototypes.
   - Managing fabrication workflows, coordinating with 4D LABS, SFU machine shops and external partners.
   - Conducting hardware-in-the-loop tests and developing custom test rigs and automation scripts.
   - Supporting HQP in hardware troubleshooting, prototyping, and assembly.
   - Preparing, testing, and deploying instrumentation for field tests in various environments.
   - Designing field-testing procedures and ensuring high-quality data collection under changing conditions.
   - Undertaking non-routine tasks requiring advanced techniques and specialization.

3. **Manages lab Infrastructure and procurement research logistics by:**
   - Preparing field equipment, managing data collection toolkits.
   - Assisting with procurement and vendor coordination.

- Planning and executing lab and field-testing protocols, taking into account varying environmental conditions.
- Overseeing project execution to deliver on timely progress of technical milestones and within budget.

4. Works on a variety of special projects, as assigned by the supervisor, that require the application of complex techniques and advanced knowledge of specialization.

IMPACT OF DECISION MAKING

The Manager, Research Laboratory makes decisions regarding:

- The technical feasibility of proposed designs and components and rapid prototyping strategies.
- Evaluations and selections of appropriate suppliers and fabrication options.
- Project management and task prioritization based on project timelines and technical deliverables
- Escalation to the Principal Investigator (PI) when broader challenges affecting multiple groups or budgets arise.
- Prioritization on tasks to meet tight research timelines and resource constraints.
- The scope of work that impacts group and system performance, timeline compliance, and resource utilization.

PROBLEM SOLVING AND LEVEL OF SUPERVISION

The Manager, Research Laboratory solves problems related to:

- Design, fabrication, integration, and troubleshooting of prototypes and final systems with minimal supervision.
- New systems designs and components to meet the project requirements.
- Troubleshoot circuits and systems to identify design issues and paths to improve performance to meet the project requirements.
- Troubleshoot subsystem performance and implement corrective measures.
- Investigate performance and troubleshoot various laboratory equipment.
- Regular and independent operations while escalating broader challenges to the Principal Investigator (PI).
- Investigation and resolution of unique challenges where using external service providers may not be possible for performance, cost, or time issues.

RELATIONSHIPS

Establishes and maintains relationships and alliances. Maintains effective communication. Shares information and readily determines to whom to go for relevant information. Seeks assistance and feedback in the problem- solving process. Partners with others to achieve expectations.

Supervisory

Supervises staff by providing guidance and mentorship, ensuring the appropriateness and currency of job responsibilities, initiating recruitment for temporary and continuing staff, hiring staff, providing or directing the provision of training and development, evaluating performance, approving leaves of absence, and responding to grievances.

Primary Working Relationships

Works under broad direction with the supervisor and the Principal Investigator (PI). Collaborates with technical and managerial staff from the industrial partner, postdoctoral fellows, PhD/MSc students, and undergraduate researchers, as well as students, Faculty staff.

Internal Connections

Provides professional advice, guidance and consultation to staff and as a member of the senior management team. Engages with staff at SFU facilities, including 4D LABS, the Centre for Natural Hazards, and prototyping facilities across the university campuses (e.g., machine shops, 3D-printing, etc.) to coordinate project activities.

External Connections

Seeks and interfaces with external vendors for products and services needed for the project. Communicate results and exchange information with the engineering team of the industrial collaborators. Maintains regular, technical-level communication with engineering teams at industrial partner sites to ensure harmonized system development and timely feedback.

QUALIFICATIONS

Bachelor's degree in Electrical or Mechatronics Engineering or a related field and five years of related experience in instrumentation, mixed signal circuit design, system integration, or precision hardware development, or equivalent combination of education, training and experience.

- Excellent knowledge of precision instrumentation design, electronics assembly, and system-level integration.
- Excellent knowledge and experience in developing precision instrumentation and data collection.
- Experience in designing, assembling and troubleshooting multi-layer printed circuit boards.
- Familiarity with engineering CAD tools for circuit design, finite element analysis, reduced order models, etc.
- Strong organizational (documentation and planning) as well as interpersonal and communication (oral, written, and presentation) skills.
- Excellent knowledge of best practices for hardware design, including standard applications for engineering design and version control.
- Demonstrated experience in best practices and industrial standards in engineering design protocols, processes and quality assurance cycles for engineering-specific applications, systems and development platforms.
- Demonstrated experience in microfabrication techniques and microsensors.
- Demonstrated experience in mentoring junior researchers or co-op students.
- Team facilitation and management skills.
- Demonstrated skills in project management, budget planning and financial management.
- Familiarity with lab safety procedures.
- Ability to design, assemble, and troubleshoot analog/digital systems and coordinate fabrication workflows.
- Ability to work in the lab and the field, including the ability to lift and move heavy objects.
- Ability to manage large, complex projects with multiple stakeholders and partners.
- Ability to interpret and apply complex policies and procedures.
- Ability to arrange suitable and cost-efficient transportation to various work locations.
- Ability to supervise and manage a multidisciplinary group.
- Ability to work independently, collaboratively and effectively with others.

❖ ***Simon Fraser University respectfully acknowledges the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh Úxwumixw (Squamish), səlilwətaɬ (Tsleil-Waututh), q̓íc̓əy̓ (Katzie), kʷikʷəƛ̓əm (Kwikwetlem), Qayqayt, Kwantlen, Semiahmoo and Tsawwassen peoples on whose unceded traditional territories our three campuses reside.***

❖ ***Simon Fraser University is committed to the principle of Employment Equity.***