Overview

The “Lab Instructor – Biomedical” is a key educator and resource for the undergraduate students in the Biomedical Engineering program within the Department of Systems Design Engineering. The Lab Instructor – Biomedical provides instruction, guidance, and technical assistance for courses with labs in the Biomedical Engineering program, for design-project and workshop courses, and is responsible for ensuring safe lab practices are taught and maintained at all times. In particular, the incumbent will be the primary wet-lab instructor in the program and must be experienced in Biosafety Hazard Level 1 labs at a minimum.

The Lab Instructor – Biomedical should have comprehensive theoretical and practical knowledge of biomedical systems and equipment, tissue mechanics, human physiology and anatomy, biochemistry and cell biology, biomedical design principles, medical imaging, biomechanics of human movement and instrumentation, analogue and digital circuits, control systems, software design, sensors, actuators, mechanical components, and fabrication techniques along with other common technical areas found in the Biomedical curricula. The Lab Instructor – Biomedical is responsible for the operation of several laboratory spaces offering Biomedical Engineering courses and acts as the primary manager and mentor to the associated Teaching Assistants.

Responsibilities

Provide instructional support and mentoring to students in all Biomedical Engineering laboratory courses

- Present theory and concepts to students pertaining to laboratory experiments
- Demonstrate safe laboratory practices and ensure safety protocols are maintained
- Demonstrate all laboratory experiments in all assigned Biomedical Engineering courses with labs
- Present and develop information for students concerning laboratory safety
- Prepare and modify laboratory manuals and procedures as needed
- Apply pedagogical expertise to continuously improve lab course structure and content; this may include independent and significant modification or redesign of lab material in addition to development of innovative material for new or existing courses
- Collaborate with academic counterparts of lab courses to synchronize the presentation of material
- Enrich the student experience of the lab component through the development of multimedia instructional aids such as videos, demonstrations, web content, etc.
- Resolve student/lab issues such as attendance and special situations
Management of the Biomedical Engineering teaching assistants
- Manage laboratory teaching assistants with regard to lab schedules and procedures
- Train teaching assistants in the safe and proper usage of lab equipment and software
- Participate in the selection of teaching assistants and in their performance evaluations
- Assume an active leadership role in the mentorship and development of teaching assistants

Management of the Biomedical Engineering undergraduate labs
- Prepare and maintain lab experiments and equipment for scheduled lab times
- Lead in and provide assistance in the design, development and fabrication of complex laboratory experiments
- Participate in keeping the labs and experiments current with new technology
- Responsible for setup and maintenance of equipment per manufacturers’ design specifications
- Maintain lab spaces in accordance with University health and safety standards
- Maintain current First Aid certification and act as first point of contact for incidents

Provide mentoring and technical support to students in Biomedical Engineering design project and workshop courses
- Participate as a technical consultant for students taking Biomedical Engineering workshop and design courses distributed throughout the entire undergraduate program
- Participate as a supervisor/advisor for student design projects as time permits
- Resolve unstructured technical problems
- Ensure that safe practices are followed in the Biomedical Engineering workshops and labs
- Demonstrate the proper use of lab and workshop equipment and tools
- Manage and track departmental funds used to supplement student design project costs

Other duties include, but are not limited to
- Participates in special projects (e.g. curriculum development, faculty-wide initiatives, special reports, etc.) as assigned by the Lab Director or Program Director
- The incumbent will occasionally be required to serve on committees pertaining to lab and workshop outcomes, safety, departmental staffing, student experience reviews, and others as the need arises
- Occasionally technical staff are required to move equipment and furniture as well as set up displays and help with outreach events
Qualifications

- Bachelor’s and Master’s degree in Biomedical Engineering or equivalent
- Must be a licensed Professional Engineer in the Province of Ontario or be eligible and licensed within two years of hire
- Valid First-Aid certification is an asset
- 2 years of experience in running labs, giving tutorials/lectures and demonstrations, writing and updating lab manuals, developing new labs, marking reports and evaluating technical presentations
- Experience in Biosafety Hazard Level 1 laboratories
- Experience monitoring and enforcement of safety standards in labs or in an academic environment is required
- Demonstrated experience in safe handling of biological materials and chemical substances and performing chemistry and biology lab experiments
- Must have experience collecting and analyzing a broad array of bio-signals and data
- Must have experience working with electro-mechanical components and systems
- Should have practical experience with and sound knowledge of sensors, actuators, hardware design and fabrication, software design, embedded systems, mechanical systems, and mechanical system fabrication
- Should have experience with biomechanical measures and analyses
- Should have experience with biomedical signals such as ECG, EEG, and measures such as X-rays and MRI
- Should have experience with biomedical devices such as assistive devices, implants, prostheses/orthoses, biomedical equipment and design for older adults
- Demonstrated experience and competency using scientific and lab software applications such as Matlab, various simulators, and CAD
- Must have fundamental knowledge of the core Biomedical Engineering lab material
- Proven aptitude for teaching and a demonstrated interest in working with students in a professional manner to provide technical advice and instructional material
- Extensive knowledge and understanding of biological materials and bio-material testing, electro-mechanical systems and modelling and chemical reactions and procedures for experiments
- Solid knowledge of human anatomy and physiology, movement and biomechanical measurements
- Solid knowledge of biosignal collection and processing
- Proficiency with Microsoft Office suite of programs required
- Demonstrated ability to work independently and as part of a team within a busy and dynamic environment
- Excellent and demonstrable oral and written communication skills, including strong technical documentation and presentation/facilitation skills
- Strong leadership and supervisory skills with the proven ability to mentor and develop staff
- Excellent interpersonal, analytical, research, organizational, and creative problem-solving skills
- Must have a strong sense of pedagogy and how it is applied to diverse and changing student group
• Occasional after hours and weekend work will be required

**Equity Statement**

The University of Waterloo is committed to implementing the Calls to Action framed by the Truth and Reconciliation Commission. We acknowledge that we live and work on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land granted to the Six Nations that includes six miles on each side of the Grand River.

The University values the diverse and intersectional identities of its students, faculty, and staff. The University regards equity and diversity as an integral part of academic excellence and is committed to accessibility for all employees. The University of Waterloo seeks applicants who embrace our values of equity, anti-racism and inclusion. As such, we encourage applications from candidates who have been historically disadvantaged and marginalized, including applicants who identify as First Nations, Métis and/or Inuit/Inuk, Black, racialized, a person with a disability, women and/or 2SLGBTQ+.

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

The University of Waterloo is committed to accessibility for persons with disabilities. If you have any application, interview, or workplace accommodation requests, please contact Human Resources at hrhelp@uwaterloo.ca or 519-888-4567, ext. 45935.