

## Job Description

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<b>Job Title:</b>	Laboratory Instructor/Hardware Specialist
<b>Department:</b>	Electrical & Computer Engineering
<b>Reports To:</b>	Lab Director, Teaching
<b>Jobs Reporting:</b>	Graduate Teaching Assistant(s)
<b>Salary Grade:</b>	USG 8-12
<b>Effective Date:</b>	January 2021

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### **Primary Purpose**

The Electrical and Computer Engineering (ECE) undergraduate curriculum has two core programs and four interdisciplinary programs. Reporting to the Lab Director, Teaching (Lab Director) and to the theme area Laboratory Instructor/Coordinator (Coordinator), the Laboratory Instructor/Hardware Specialist (Lab Instructor) enhances student success through a positive learning environment and teaches undergraduate (undergrad) laboratory (lab) courses within the established scope and guidelines of the professional degree program.

These positions are responsible for laboratory course delivery and other academic responsibilities, and the technical operation and maintenance of the ECE undergraduate laboratory facilities in support of assigned lab courses. The Lab Instructor collaborates with course faculty for lecture-laboratory synchronization and works in conjunction with faculty members on lab content and development and design of any new experiments to be introduced into the undergraduate laboratory.

### **Key Accountabilities**

#### **Instruction of Students and Assessment of their Academic Performance**

- Prepares and teaches assigned undergrad lab courses
- Collaborates with faculty course instructors for lecture-laboratory synchronization
- Monitors students' laboratory progress by assessing reports and lab assignments in the technical and theoretical aspects of the subject matter
- Ensures academic integrity is maintained in the laboratories
- Marks student work term reports
- Assists students on an individual or group basis with lab and related assignments/problems
- Evaluates student technical presentations and symposium poster marking
- Supervises/consults/advises/marks fourth year student design projects
- Develops experiments and writes laboratory materials/manuals in conjunction with faculty
- Recommends and/or makes necessary changes in materials, techniques or procedures to optimize the value of the lab exercise
- Plans new labs, conducts and evaluates prototype labs
- Keeps course content and resources current

#### **Supervises Teaching Assistants who Oversee Students performing the Experiments and Exercises**

- Ensures the effective utilization and development of TAs who assist with undergrad laboratories from term-to-term on a changing basis
- Directs laboratory TAs through the academic term cycle: assigning duties, coordinating their laboratory activities, etc.

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- Provides new teaching assistants with training in lab equipment procedures and/or theory, and instruction on experiments and design exercises before each term's laboratory sessions begin
- Participates in TA interviewing, ranking, and rating their performance
- Mentors new or sessional staff in area of expertise
- Trains other Laboratory Instructors in the use of specialized hardware or software as required

### **Lab Maintenance**

- Monitors and updates the laboratory equipment inventory
- Monitors performance to ensure adequate quality control and arranges maintenance of technical equipment
- Oversees teaching inventory, researches and recommends purchases
- Maintains the technical and safe operation of the assigned laboratories
- Recommends and implements approved upgrades and improvements to lab facilities and practices

### **Other Duties**

- Attend lab planning and review sessions
- Participate in class prof/student rep meetings
- Trains for other specializations as required by the department
- Assist with other duties or special projects which may be assigned by the Lab Director or Coordinator

*\*All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

## **Required Qualifications**

### **Education**

- Bachelor of Applied Science degree in Electrical or Computer Engineering, or equivalent combination of education and experience. MASc degree or relevant industrial experience is an asset
- Area of specialization should encompass one of the following areas: communication systems, power systems, control systems and robotics; or digital hardware; or analog hardware, radio frequency, circuits, and systems

### **Experience**

- Five years of experience managing lab operations
- Experience in working with different measurement instruments in the area of specialization is required
- Experience with hardware design procedures and software packages related to the area of specialization
- Experience in running labs, troubleshooting electrical circuits; software; and equipment, giving tutorials/lectures and demonstrations, writing and updating lab manuals, developing new labs, marking reports, and evaluating technical presentations is strongly preferred
- Experience monitoring and enforcing safety in the labs or a similar environment is a strong asset
- Experience in purchasing hardware and software in the area of specialization is an asset
- Previous teaching experience is highly desirable

### **Knowledge/Skills/Abilities**

- Knowledge of computer interfacing with measurements instrumentation is required
- Proven aptitude for teaching and a demonstrated interest in working with undergraduate students
- Well-developed interpersonal, oral, and written communication skills

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- Proven ability to establish and maintain procedures for ensuring safety of students and staff in the lab
- Strong organizational, problem-solving, and analytical skills are essential
- Demonstrated ability to work independently and as part of a team within a busy and dynamic environment
- Approachability, consistency, and the ability to motivate and earn students' trust.
- Self-motivation in taking initiatives to improve the quality of labs, teaching, and working environment is required
- Demonstrated ability to specify, evaluate, install, test and service the required hardware for labs is required
- Willingness to train for other specializations as required by the department
- Broad knowledge of current computer hardware and software applications used in an undergraduate computer or electrical engineering environment
- Intermediate proficiency with Databases
- Intermediate proficiency with Microsoft Office Suite
- Intermediate proficiency with SharePoint, FileMakerPro, or Oracle

### Nature and Scope

- **Contacts:** Internally, the incumbent communicates regularly with undergraduate students, Lab Coordinators, faculty and sessional instructors teaching undergraduate classes/labs, lab teaching assistants, Electronic Service Technician/Stores Keeper, technical and other staff within ECE. The Lab Instructor works collaboratively with the other Instructors on the team. Externally, the incumbent will have contacts relevant to accomplishing laboratory delivery objectives, as well as equipment and/or software suppliers.
- **Level of Responsibility:** The Lab Instructor is responsible for the administrative operations of undergraduate teaching labs and works per the assigned lab instruction schedule, on his/her own initiative, with minimal daily supervision. The incumbent is responsible for laboratory exercises and other academic responsibilities within the program. S/he supervises teaching assistants assigned to assist with the undergraduate laboratories from term-to-term on a changing basis. Individual actions may have a direct impact on the success of the students.
- **Decision-Making Authority:** The Lab Instructor works independently in the operation of assigned labs. The incumbent makes independent decisions typical of those associated with an undergraduate lab instructor e.g. assignments. The incumbent must identify solutions e.g. lab exercises not working well. Work is based on course objectives and performed in accordance within defined practices, procedures and policies.
- **Physical and Sensory Demands:** Moderate demands typical of a technical position operating within a teaching laboratory environment that may involve some lifting of equipment, rearranging of furniture, and standing for extended periods of time. The incumbent must be able to project his/her voice to communicate with students in a relatively noisy laboratory setting.
- **Working Environment:** Some laboratories may require working with hazardous voltage levels, electro-mechanical equipment, soldering, or other hazards. In certain cases, safety procedures must be strictly enforced. Most time is spent in teaching labs or in the office, working with teaching assistants and undergraduate students, or preparing equipment and materials for the labs. Hours of work: 37.5 hours per week. Lab space and scheduling restrictions may necessitate after hours work. Work outside of normal hours may be occasionally required to deal with emergencies, maintenance, or upgrades.