

Job Description

Job Title:	Nanotechnology Engineering Laboratory Manager, Teaching
Department:	Chemistry
Reports To:	Chair, Department of Chemistry
Jobs Reporting:	None
Salary Grade:	USG 12
Effective Date:	May 2018

Primary Purpose

The Nanotechnology Engineering Laboratory Manager, Teaching is an instructor in one or more Nanotechnology Engineering (NE) courses, has oversight of all NE undergraduate laboratory operations within the Quantum-Nano Centre (QNC) and the Davis Centre (DC), and is responsible for NE laboratory course-content in addition to ensuring that the level of skill development is appropriate for students in the NE academic program. In this context, Senior Laboratory Instructors delivering laboratory components of NE courses or of NE stand-alone laboratory courses receive oversight and direction from the NE Laboratory Manager, Teaching.

Key Accountabilities

Organization and Administration of the NE Lab Program

- Organizes and administers the laboratory course component of the NE undergraduate program. This includes oversight, supervision, and management of all associated laboratory components of NE lecture courses and of all NE stand-alone laboratory courses.
- Collaborates with faculty, and staff members who are teaching related courses in order to ensure that material and skill development are properly coordinated and that a common format is maintained for NE laboratory manuals and other relevant documentation.
- Member of the Nanotechnology Engineering undergraduate curriculum committee.

Instructional Aids including safety

- Ensures the development of instructional aids for the enhancement of the laboratory experience, for maintaining the general infrastructure of all NE undergraduate laboratory space located in the QNC, for monitoring the day-to-day operations in and oversight of safety in all NE undergraduate laboratories.
- Provides the respective Departments with evaluations pertinent to the annual performance reviews for all Senior Laboratory Instructors involved in the operation of laboratory components of NE lecture courses and stand-alone NE laboratory courses.
- Maintains an awareness of current innovations in the area of nanotechnology engineering, and where feasible, incorporates them into the laboratory curriculum.

Mastery of Nanotechnology subject matter

- Provides an advanced level of guidance, instruction and technical assistance to undergraduate students enrolled in all NE lab courses, design projects and other activities that the students might encounter such as through Velocity startup companies, project-based courses, student teams or research work.
- Will be assigned academic tasks as required.

Lab maintenance and management

- Ensures smooth and safe operation of all undergraduate laboratories in the NE program which includes 19 different lab courses.

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- Coordinates laboratory instruction for all undergraduate NE laboratory operations.
- Provides performance review data on Senior Laboratory Instructors involved in the operation of the NE undergraduate laboratory facilities.
- Ensures that all NE laboratory sessions are properly and adequately supervised and that instructional resources are available when unexpected absences occur.
- Ensures an advanced level of guidance, instruction and technical assistance to the NE undergraduate students for lab courses and fourth year design projects.
- Supervises updates and improvements to the laboratory components of all NE laboratory courses and oversight of websites associated with other NE laboratory operations. Ensures that NE Senior Laboratory Instructors are able to demonstrate effectively both the use of equipment and the experimental techniques employed in their respective laboratory courses.
- Oversees the day-to-day operations of the NE undergraduate laboratory facilities located in the QNC and DC buildings.
- Provides mentorship, guidance, and leadership, and contributes to annual performance evaluations for the NE Senior Laboratory Instructors. This includes 4 instructors for 100% of their time, 1 at 50% and 2 at 25%.
- Supervises multiple coop students per year, hired to work with the Lab Instructor team.
- Liaises with the Director, the QNC Building Manager and members of the Waterloo Institute of Nanotechnology (WIN) with respect to the use of physical space and equipment.
- Directs the use of appropriate creative teaching techniques, student assessment tools, and technologies to enhance learning and improve efficiency in NE undergraduate laboratory operations.
- Applies and enforces academic regulations in terms of ensuring that this is consistent across the different lab courses.
- Oversees inventory maintenance, in conjunction with the Senior Laboratory Instructors.
- Approves the purchase for new laboratory equipment and makes recommendations for replacement of outmoded laboratory equipment to the NE executive committee.
- Oversees the coordination of WEEF (Waterloo Engineering Endowment Foundation) proposals and purchases.
- Identifies opportunities for, and contributes to, educational research via the development of new laboratory exercises.
- Aids students both with the ordering of materials and equipment for their projects and in the provision of access to appropriate work space and equipment needed for the development of their prototype designs.

Relationship management and outreach

- Ensures that relationships with alumni and industrial partners are maintained and enhanced.
- Acts as an outreach liaison for the NE program, assists the Director and Associate Director, External, in developing public relations tools and activities for promoting student recruitment, alumni and industrial relations.

**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

- Ph.D. degree in an academic discipline pertinent to the NE academic program, or a Master's degree with 5+ years' experience in an academic or industrial setting pertinent to the NE academic program

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<ul style="list-style-type: none">• Must hold, or must be qualified to acquire Professional Engineering licensure (Peng or LEL) status in the Province of Ontario
Experience <ul style="list-style-type: none">• Familiarity and experience with nanotechnology and nano-science measurement equipment and supplies
Knowledge/Skills/Abilities <ul style="list-style-type: none">• Extensive practical and theoretical knowledge acquired through multi-disciplinary science or engineering background• Extensive hardware and software knowledge in the area of nanotechnology engineering and/or science• Aptitude for teaching and an interest in working with undergraduate students• Proficiency in MS Word, Excel, and PowerPoint or other word processing packages• Excellent oral and written communication skills• Excellent organizational, time management, interpersonal, and analytical skills• Fundamental knowledge in one or more areas of nanotechnology• Ability to communicate clearly and effectively with students, staff, course instructors, and administrators associated with the NE academic program• Ability to present and represent the NE program and its goals to alumni, the general public, and industry• Must have detailed knowledge of all relevant courses• Extensive practical and theoretical knowledge acquired through multi-disciplinary science or engineering background

Nature and Scope

- **Contacts:** Works closely with the Director and Associate Director(s) of the Nanotechnology Engineering program. Internal working relationships involved are with the Chair of the Department of Chemistry, the Director and Associate Directors of the Nanotechnology Engineering academic program, the department of Chemical Engineering and Electrical & Computer Engineering via, the provision of annual performance review data for Senior Laboratory Instructors involved with the NE academic program, the Administrative Assistant for the Nanotechnology Engineering program, the Administrative Assistant in the Chemistry department and the Administrative Coordinator, Nanotechnology program.
- **Level of Responsibility:** Has the authority and responsibilities to coordinate purchases and facility access for the NE capstone engineering design projects. Acts as an ambassador for the NE program to potential employers of NE coop students, prospective students, and external visitors. Nanotechnology Engineering program is run by 2 Faculties (Faculty of Engineering and Faculty of Science) and 3 Departments (Chemical Engineering, Electrical and Computer Engineering and Chemistry). At any given time, there might be upwards of 500 students for advising and mentoring.
- **Decision-Making Authority:** This position has budgetary authority to approve purchases up to \$1000 and is responsible to recommend major purchases to the Director of the NE program for all NE labs. Has the financial authority for over 400 of transactions annually with an annual purchasing cost of approximately \$200,000.
- **Physical and Sensory Demands:** There are potentially heavy workloads associated with the operation of the full set of undergraduate laboratories within the teaching environment due to the multifaceted nature of the program. This is a broad-based position, and in-depth technical expertise is required to resolve ill-defined and highly unstructured problems that surface regularly.
- **Working Environment:** Due to the hazardous nature of chemicals that may be employed in NE undergraduate laboratory operations, must be available for consultation during all laboratory sessions.

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Space and scheduling restrictions and other factors may mean work in the evenings. Arranges hours of work during scheduled undergraduate laboratory hours of operation. The role may require working more than seven hours on a given day, meaning arranging with the Director of the NE program for compensation via a reduction in the number of hours worked on another day, or may arrange to recoup accumulated overtime during a later term in which the assigned course load is lighter.