#### Trent University LogoOPSEU JOB DESCRIPTION

**Job Title:** Chemical Technician

**Job Number:** SS-055 | VIP: 1307

**Band:** OPSEU- 8

**NOC:** 2211

**Department:** Chemistry

**Supervisor Title:** Chair, Chemistry

**Last Reviewed:**  September 26, 2022

#### **Job Purpose:**

As assigned by the Chair, the Chemical Technician provides technical support for the laboratories of undergraduate Chemistry courses including the following: sets up laboratory equipment and experiments for laboratory courses; calibrates, troubleshoots, and repairs equipment for undergraduate labs; maintains inventory of required chemicals and glassware; and prepares and standardizes reagents for various levels of undergraduate labs.  Under the general direction of course instructors, the Chemical Technician develops experiments for undergraduate courses which includes design assistance, researching literature for existing methods, modification of existing experiments, and preliminary trials of new experiments.  Furthermore, the Chemical Technician provides overviews of experiments, equipment, and safety information regarding laboratory protocols for Graduate Teaching Assistants and Academic Assistants. As delegated by the Chair, the Chemical Technician also supervises the work of Chemical Technician Assistants, and assists in the operation of Science Stores, as needed.

#### Key Activities:

##### Technical Support

1. Performs a variety of duties essential for the preparation and operation of undergraduate laboratory experiments in various undergraduate Chemistry courses.
2. Sets up, calibrates, and troubleshoots equipment for undergraduate laboratories including pH meters, analytical balances, spectrophotometers, water baths, ovens, incubators, centrifuges, and other instruments specific to assigned courses, including but not limited to conductivity meters, potentiostats, and rotary evaporators. Demonstrates operation of these instruments to other technicians, researchers, teaching assistants, and students. Performs technical support and/or repairs on minor equipment, as required. Prepares computer hardware and software for designated Chemistry courses.
3. Instructs Graduate Teaching Assistants, Academic Assistants, and students on procedures and safety policies in laboratories for assigned courses.
4. Co-ordinates and works with the course instructor to train and supervise teaching assistants (TAs) when teaching undergraduate courses. Monitors progress and troubleshoots problems as they arise.
5. Acts as point of first contact for teaching assistants when issues arise in the laboratory setting (unexpected results, equipment error, broken or missing equipment, etc.).
6. Responds to course instructor/faculty correspondence regarding laboratory content, Trent policies, and technical issues. Responds to teaching assistant correspondence regarding laboratory specific content.
7. Develops experiments for implementation in undergraduate courses including design assistance, modification of existing experiments, researching literature for existing methods, and preliminary trials of new experiments under general direction from the course instructor. Troubleshoots experiments when necessary.
8. Prepares and standardizes reagents for a variety of undergraduate laboratories. Prepares reagents and equipment for lecture demonstrations.
9. Maintains records of technical notes for preparation of laboratory experiments for various courses.
10. Responsible for filming and editing virtual laboratory experiments or technique videos for assigned courses using video editing software, when needed.
11. Schedules laboratory partners and rotation schedules for assigned courses, under direction of course instructors.
12. Responsible for designing and providing caddy/equipment sign-out sheets for students during laboratory sessions.
13. Responsible for obtaining, the safe dispensing of, and transportation of small amounts of hazardous chemicals such as liquid nitrogen.

##### Health & Safety

1. In co-operation with instructors, teaches health and safety awareness and procedures to teaching assistants and students, and monitors student safety in the laboratory setting.
2. Oversees implementation of Health and Safety regulations in designated laboratory courses with respect to WHMIS and hazardous waste. Responsible for collection, categorization, and disposal of laboratory hazardous waste in assigned courses (e.g., chemical waste, biohazardous waste, biological waste). Works with the Science Facilities department, Biosafety Officer, and suppliers to develop handling, disposal, spill, and emergency protocols for new laboratory chemicals.
3. Helps ensure laboratory safety regulations are observed, and teaching laboratory equipment is in safe working order.
4. Keeps and maintains record sheets of controlled substances, such as ethanol.
5. Works with students to accommodate medical and physical conditions to allow for safe completion of laboratory exercises.

##### Laboratory Equipment & Inventory

1. Establishes and maintains an inventory of laboratory supplies, chemicals, glassware, consumables, and equipment required for assigned courses. Tracks and records student equipment breakage. Replaces broken glassware as needed.
2. Responsible for using the HECHMET inventory system for tracking of chemical inventory.
3. Drafts a yearly equipment budget for recommended purchases and upgrades for assigned courses, as necessary, for the chair’s approval.
4. Communicates with external companies to obtain quotes for potential equipment, and/or to obtain information for troubleshooting equipment issues.
5. Obtains and organizes Safety Data Sheets in chemistry teaching laboratories for assigned courses and corresponding preparation area. Supplies supplementary reference material.
6. Works with other staff members to ensure upkeep, repair, and organization of Chemistry laboratories and computer equipment and facilities.
7. Works with other university members to secure repairs to existing Chemistry laboratory spaces.
8. Designs operating and safety instructions for minor equipment for teaching assistant and student use.
9. Instructs faculty, researchers, and graduate students how to use minor departmental equipment.
10. May be required to move heavy equipment between laboratory spaces depending on course need.

##### Other

1. Assists in the operation of Science Stores. Dispenses chemicals and equipment to faculty, students, and researchers. Ensures proper paperwork is completed for account billing and regulatory purposes. Acts as backup Science Stores Manager, as required.
2. Liaises with technicians, demonstrators, and faculty from other departments regarding the sharing of laboratory spaces and equipment.
3. Works with the Chemistry Academic Administrative Assistant with respect to laboratory section scheduling based on equipment needs and limitations.
4. Provides tours of the department and laboratory spaces, as required by chair.
5. Acts as backup Instrument Technician, as required.
6. Fills in for Laboratory Demonstrator, as required.
7. Functions as a Fire Warden in a designated area of the Chemical Sciences Building
8. Other duties as assigned.

#### Education Required:

* Master of Science Degree in Chemistry or related discipline required.

#### Experience/Qualifications Required:

1. Minimum of two years’ experience as a Chemical Technician, including general scientific equipment maintenance.
2. Excellent general scientific knowledge related to experiments and their preparation.
3. Thorough working knowledge of the different subdisciplines in Chemistry.
4. Specific knowledge of the operational methods and maintenance for a variety of scientific equipment.
5. Proven ability to instruct students in laboratory techniques and Health and Safety protocols.
6. Excellent interpersonal and communications skills (both oral and written).
7. Excellent problem-solving skills.
8. Proven ability to work both independently and as part of a team.
9. Demonstrated initiative.
10. Excellent computer skills: demonstrated proficiency with Microsoft Office Suite; E-mail and Internet applications essential.
11. Good administrative skills.
12. Able to commit and be flexible in work schedule, including working daytime and evenings.

**Job Evaluation Factors:**

**Responsibility for the Work of Others**

Direct Responsibility

Chemical Technician Assistants (authority for direct responsibility is delegated by the chair)

Indirect Responsibility

Teaching Assistants (Including Graduate Teaching Assistants, CUPE Laboratory Demonstrators, and Academic Assistants), Student Researchers

**Communication**

Internal:

* Students: explains complex concepts, demonstrates the operation of instruments or laboratory techniques, provides safety information, answers student queries.
* Staff and faculty: discuss changes to laboratory exercises (either technical or logistical), discusses sharing of equipment during simultaneous laboratory sections, answer queries regarding departmental business pertaining to undergraduate laboratories.
* Teaching Assistants: demonstrates and provides overview of experiments, equipment, and safety; troubleshoots problematic situations .
* Technicians and demonstrators from other departments: discusses sharing of space and equipment; provides expertise on chemistry-related matters.
* Science Workshop/Science Facilities: arranges for minor repairs or upgrades to instruments, consults on chemical/biohazard handling, storage and disposal, protocol development.
* Fix-It: reports issues with facilities.
* Information Technology: consults with IT on hardware/software issues such as failure or compatibility.

External

* Suppliers/Manufacturers gathers information, determines price and availability of supplies/equipment, troubleshoots issues and secures supplies/repairs for assigned courses.
* Technical Staff from other companies/institutions: research products and techniques, troubleshoots technical and equipment problems
* Trent Community: act as a resource for chemistry-related topics.
* Parents and prospective students: act as a resource in recruitment efforts.

**Motor/ Sensory Skills**

* Fine Motor Skills: manipulation of equipment and measuring devices, accurately preparing solutions and chemicals, keyboarding and data entry.
* Dexterity: precision in manipulating equipment and measuring devices, labelling and manipulation of small vials, demonstrate difficult techniques
* Coordination - lifting equipment and instruments on and off of carts moving to different locations in the building requires skilled manual action.
* Hearing: responding to student, teaching assistant, and faculty queries, detecting changes in sounds of operating equipment to prevent accidents/injuries.
* Smell: identification of the nature and source of a smell in the case of a spill or an experiment gone wrong and acting on that information can reduce the danger from such a situation and alerting one to possible fume hood failure or container leakage.
* Touch: precision in manipulating equipment and measuring devices.
* Visual: reading reports, precision in manipulating equipment and measuring devices, fine adjustments of small screws or dials during instrument repair and calibration, reading small display panels and fine scales on instruments to obtain accurate results, requires accurate focus on small number markings, precise focus on fine etched markings on analytical volumetric glassware necessary for accurate preparation of chemical solutions and samples.

**Effort**

Mental:

* Attention to detail and accuracy: for example, the preparation of solutions with accurate chemical compositions.
* Sustained concentration: reading new material, analyzing problems, using equipment, troubleshooting analytical results and equipment issues, using software, and working with analytical equipment, development of laboratory procedures from obtaining experimental results to inputting procedures into Microsoft Word/PDF documents, calculations for solution dilutions, keeping up to date technical notes, preparing accurate analytical solutions.

Physical:

* Standing, walking: administering labs when duties involve work in more than one location within the department, disposing of chemical waste.
* Bending, lifting, carrying - moving equipment and rearranging labs/classrooms, moving heavy containers containing chemicals.

**Working Conditions**

Physical:

* Dangerous equipment
* Risk of exposure: exposure to dangerous materials and chemicals when spilled. These materials must be cleaned up and even when done in as safe a manner as possible, there is a risk of exposure.
* Repetitive strain: prolonged standing during laboratory preparation and delivery, data entry and keyboarding.
* Odors: working in the chemistry teaching laboratory involves exposure to noxious odors when certain experiments are done.
* Poor lighting and noise conditions.

Psychological:

* Complaints: from faculty, staff, and students.
* Conflicting priorities: labs, manuals.
* Interruptions: from students, staff and faculty.
* Lack of control over pace of work: deadlines and nature of the work results in unavoidable busy periods, for example the academic term “end rush”.
* Multiple competing demands: providing simultaneous support in several courses.
* Variable work schedule: laboratory coverage required from 9 am to 8 pm, may need to shift schedule to accommodate laboratory needs