University of Victoria

CUPE951

University of Victoria
Cupe Local 951 Position Description

JOB: **Scientific Machinist Technician/PB13B**	**TITLE:** **Scientific Machinist**
DEPARTMENT: **Physics and Astronomy**	**POSITION NO:** **993325**
SUPERVISOR: **Scientific Machinist Technician Supervisor**	**LAST UPDATED:** **November 20, 2017**

SUMMARY: (*Provide a brief summary of the primary functions and purpose of the position)*

The Faculty of Science Machine Shop provides support to the teaching and research programs within the departments of Physics & Astronomy, Chemistry, School of Earth and Ocean Sciences, Biology, and Biochemistry & Microbiology.

As part of the lab team, this position maintains and repairs teaching and research laboratory equipment; designs and fabricates custom scientific equipment (using both manual and CNC machines) based on verbal descriptions, samples, prototypes, or drawings; tests finished products for performance and safety; operates a variety of machines to perform machining, welding, sheet metal, and woodworking tasks in a timely manner; and must regularly service, repair, clean and upgrade shop equipment. This position also provides supervision and assistance/guidance to students (graduate and undergraduate), and other shop users with their projects in the shop, andliaises with faculty, staff, researchers and students the Faculty of Science and within the university community.

MAJOR RESPONSIBILITES AND DUTIES: (In order of importance to a maximum of 8)

1. Responsibility: Designs and fabricates custom scientific equipment

Duties:

- Meets with the client to discuss the project and including deadlines and budget
- Invests time into understanding the process and function of their research to better advise them
- Provides a cost estimate for the time and labour and discusses those details with the client
- Sources and purchases materials both regionally and online
- Machines parts with the use of CNC programming and manual machines
- Assembles parts
- Manages outsourcing of specialty processes and services
- Tests completed equipment with the client
- Makes any modifications if necessary
- Generates invoice for labour and materials

2. Responsibility: Repairs, modifies and maintains existing scientific equipment

Duties:

- Discusses the nature of the problem with the client
- Tests the equipment, confirms the reported problem, and confirms that there aren't other problems
- Disaasembles the equipment and removes the failed item
- Determines the best solution for a repair
- Sources/purchases or machines parts that are needed
- Installs the new parts
- Reassembles the equipment
- Tests the equipment
- Re-tests the equipment with the client
- Makes any necessary changes
- Generates invoice for labour and materials
- Creates new parts that do not exist
- Keeps abreast of an in-depth knowledge of manufacturing and metallurgical practice
- Works closely with the Electronics shop technicians in order to properly diagnose and trouble-shoot malfunctioning equipment
- Maintain a thorough understanding of various types of oils and their process capatibility
- Trouble-shoots, repairs, or rebuilds vacuum pumps and systems
- Educates users on correct maintenance, practice, and safety of their equipment
- Correct improperly installed equipment in teaching and research labs

3. Responsibility: Sources and purchases equipment, parts, and materials

Duties:

- Prioritzes equipment purchases
- Researches/sources and orders parts and materials, particularly for any project requiring the CNC mill
- Evaluates and selects appropriate software for solid geometric design
- Evaluates and selects appropriate software for CNC design
- Maintains an inventory of raw materials (metal, plastic, wood, ceramic and composites)
- Maintains an inventory of consumables (oils, abrasives, paints and coatings, coolants etc.)
- Works closely with UVic assets recovery to repurpose equipment and parts
- Properly dispose of contaminated hydrocarbon oils as per OHS requirements
- Maintains a thorough understanding of various types of parts, materials, and consumables

4. Responsibility: Services, repairs, cleans and upgrades shop equipment

Duties:

- Schedules equipment maintenance
- Researches, sources, and costs new equipment
- Secures competing quotes for new equipment and accessories
- Secures competing quotes for design and operating software
- Inventories machine tooling (manual and CNC)
- Inspects and adjusts coolant ratios with refractometer to ensure corrosion inhibitancy
- Orders and purchases new equipment
- Modifies equipment or tooling to perform specialized functions
- Calibrates analogue and digital vacuum gauges

5. Responsibility: Provides supervision, assistance, and guidance to shop users

Duties:

- Instructs and observes all safety procedures in the shop
- Informs users of potential hazards or precautions taken with specific processes
- Instructs users on specific machine operation and safety
- Instructs users on proper machine tool practices (theory and application)
- Consults clients on mechanical design and manufacturing processes

6. Responsibility: Contributes to the fiscal management of the machine shop

Duties:

- Produces a reconciled statement of purchases each month and generates a report
- Manages card security
- Works with Purchasing to include verified vendors for local, national, and international vendors
- Reports purchases to supervisor to ensure they fall within monthly and annual shop budgets
- Proposes and priotizes budget plans to work within monthly purchasing limits
- Generates invoices to recoup labour and material costs
- Assists supervisor to create protocol, procedures and forms related to budgetary considerations
- Establish accounts with over a dozen specialty vendors for parts and service
- Assists supervisor to establish and prioritize major capital purchases

7. Responsibility: Consulting and Advising

Duties:

- Discusses with client alternative solutions to problems
- Determines the best way to achieve client's goals within their means
- Visits client's workspace to better serve them
- Sorts out the client's needs from what they think they need and provide new ideas
- Meets with faculty and students to find ways to mediate solutions based on varied priorities
- Keeps abreast of the local industry to know where to outsource services that are beyone our shop's capabilities

REQUIRED QUALIFICATIONS:

(Identify the qualifications required to perform the job. These should be directly related to the work and not to the education and experience level of the current incumbent.)

Skills:

- Must be a highly creative, flexible individual with the ability to improve, adapt and/or design equipment, methods, and procedures in response to changing user demands.
- Requires an individual with initiative and vision who will continually work towards improving services for our instructors, students and researchers.
- Must have excellent communication skills are essential in order to work effectively with a wide variety of shop users including students (both undergraduate and graduate), researchers, staff, and faculty.
- The ability to work efficiently and accurately in spite of interruptions and tight deadlines is expected.

- Familiar with all aspects of conventional machining on both milling machines and lathes. A strong technical/mechanical aptitude is essential.
- Proficiency in SolidWorks, Mastercam or GibbsCAM, and operation of HAAS CNC mill.
- Must have a thorough knowledge of established safety practices.

Specialized Knowledge/Education:
Red Seal, Interprovincial Standard Certificate

Experience:
Preference is given to skills developed in a professional environment though self-taught skill development is an added benefit that demonstrates a passion for the trade.

Experience with welding (TIG, MIG, plasma-arc, oxy-acetylene, silver solder, stick welding and plastic welding), sheet metal fabrication, plastic fabrication (acryllics and other polymers), and finished woodworking are a preferred asset.

Employee's Signature:	**Date:**
Supervisor's Signature:	**Date:**