

Job Description

Job Title:	Electronics Technologist – Structures, Materials, Concrete, and Fatigue
Department:	Civil and Environmental Engineering
Reports To:	Technical Resources Manager
Jobs Reporting:	None
Salary Grade:	USG 8
Effective Date:	January 2023

Primary Purpose

The Electronics Technologist – Structures, Materials, Concrete, and Fatigue provides support for the Civil and Environmental Engineering Department, with a focus on Structures, Materials, Concrete, and Fatigue laboratories. Support encompasses assisting in the planning, implementation and management of the data acquisition systems and servo hydraulic controllers. The areas of research and the types of electronics used are continuously evolving and changing to keep pace with technology and institutional requirements, and the Electronics Technologist is expected to be responsive to these changing needs. Responsibility for the electronic equipment includes: electronic design, sourcing, programming application software, fabrication, troubleshooting, and maintenance of complex digital and analogue electronic testing equipment. This includes assisting faculty, staff, undergraduate and graduate students, and contract technicians working in the labs.

The Electronics Technologist – Structures, Materials, Concrete, and Fatigue is also expected to assist with the management of facilities, equipment, and supplies for a multi-user, multi-disciplined research area.

Key Accountabilities

Provide Technical Support for Research Activities

- Assist graduate students with their research and the use of laboratory equipment
- Assist in the assembly and commissioning of research apparatus
- Assist in the maintenance, service, and repair of research and teaching equipment
- Develop and demonstrate advanced operation of PID servo-hydraulic digital controllers which involve a PC based software controller interface, look after maintenance, trouble-shooting and calibration
- Be responsible for the maintenance, calibration and troubleshooting operations of legacy analogue controller electronics and equipment including upgrading to newer consoles, system cards and fabricating cable assemblies with connectors
- Be responsible for hydraulic manifold maintenance, changing of oil filters and hoses, test frame grip alignment, pump control interfacing
- Be responsible for programming servo-hydraulic and electromechanical controller software to meet user requirements and fulfill test program parameters and procedures
- Work with other technicians, students, and faculty to design and implement physical configuration of materials and structural test setups
- Operate the forklift and overhead cranes
- Provide technical assistance in all CEE labs, as required

Provide Technical Support for Students

- Supervise, instruct, and assist undergraduate and graduate students in the use of specialized testing equipment within the Structures, Materials, Fatigue & Concrete Laboratories

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- Assist students to independently and efficiently perform test measurements using sophisticated instrumentation, including: voltage transducers (e.g., strain gauges, LVDT's, string pots, DCDTs), data acquisition hardware systems, LabVIEW™ programming, calibrations and setup
- Provide instruction and act a resource for strain gauge installation techniques, which include temperature compensation, strain limits, surface preparation, adhesive selection, gauge installation, soldering and clamping
- Maintain transducer inventory in good working condition signing in and out of equipment as it cycles through projects
- Provide expert assistance in the use of LabVIEW™ in order to ensure that standardized programming is utilized throughout projects and test set-ups
- Provide advice and guidance to graduate and undergraduate students in creating and modifying test instrumentation software applications as well as ordering and specifying National Instruments hardware for the specific application at hand
- Assist the Structures, Materials, Concrete and Fatigue (SMCF) Group with lab development
- Assist with the construction, fabrication, test set-up, repair, trouble-shooting, problem-solving, test modification, equipment calibration, evaluation and handling of research and test equipment, with guidance and oversight of senior staff
- Work with other technical staff and teaching assistants to ensure that all experiments in all courses work properly before classes meet
- Assist with the setup and running of departmental competitions and special events: Capstone Design Symposium, Design Days, Explorations, Open Houses, and student teams

General Accountabilities

- Promote and maintain safety standards
- Assist in the management of labs, including
 - maintenance of Chemical and SDS inventory
 - maintenance of equipment inventories
 - supporting workplace inspections
- General consulting, design, assembly, and rework
- Be flexibly responsive to evolving research and teaching needs
- Complete and maintain all HSE training required for the position
- Responsible for the safety of all users of the Structures, Materials, Concrete and Fatigue (SMCF) labs. This includes ordering safety materials, cleaning up work areas, removal and proper disposal of refuse, and overseeing user clean up
- Other duties as assigned by the Technical Resources Manager

**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

- 3+ year Technologist diploma in Civil Engineering Technology, Electronics Technology, or an equivalent combination of education and experience

Experience

- Several years of experience in a research or related industrial setting

Knowledge/Skills/Abilities

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- Experience in programming and configuring test instrumentation and data acquisition systems , servo hydraulics, destructive and fatigue testing
- Strong computer skills
- Ability to manage multiple, competing priorities
- Ability to maintain attention to detail in a fast paced, multitasking environment
- Flexible in assisting with new tasks as assigned
- Excellent written and oral communications
- Excellent organizational, time management, interpersonal, and analytical skills
- Experience working with hand and power tools
- Valid G Driver's License required
- Knowledge and experience in destructive structural testing and materials testing an asset
- Knowledge of instrumentation and data collection systems and methods an asset
- Experience in lab course development and instruction an asset
- First Aid Certification is an asset

Nature and Scope

- **Contacts:** Provides technical assistance and support to students, staff, and faculty within the department. Must be able to effectively communicate with people at all levels of expertise
- **Level of Responsibility:** Responsible for assisting in the maintenance of equipment within CEE's Structures, Materials, Concrete, and Fatigue, and other CEE labs, as required. Responsible for assisting with health and safety oversight within lab. Responsible for completing assigned tasks on the required schedule, on their own initiative with minimal daily supervision. Accountable for the smooth operation of the laboratories.
- **Decision-Making Authority:** : Able to use work experience and education to make technical decisions. Will report to the Technical Resources Manager for direction if something is out of their scope of knowledge
- **Physical and Sensory Demands:** Some tasks may be physically challenging requiring considerable strength and endurance; use of hand tools and power tools, lifting of heavy materials, extended non-regular work hours. The demands within the laboratory setting may involve some lifting of equipment, rearranging of furniture, and standing for extended periods of time.
- **Working Environment:** Working conditions vary and range from working at a computer, to bench work, to work in heavy labs. Working outside of normal hours might be occasionally required to deal with emergencies, maintenance, extended run experiments, or upgrades. The job involves working in both indoor and outdoor environments. The job typically runs during regular working hours but there is the potential for some evening/weekend work.