Electrical Engineer for Scientific Research Instrumentation

The McGill University Department of Physics maintains a strong research component in experimental physics that requires the design and construction of scientific instruments and/or test and measurement devices. The Department of Physics at McGill University invites applications for an electrical engineer to facilitate the design and implementation of scientific instruments or devices to complement the research in the department and create a “maker-space” where researchers can develop their instrumentation with support and mentorship from the engineer. The engineer will primarily act as a guide and mentor to researchers developing electronics for scientific instruments, but will also design circuits (both analog and digital). The engineer will report to the technical staff committee (composed of faculty members) and the chair of the physics department. The successful candidate will have the broadest possible skillset (or the potential to develop it) spanning circuit design and simulation, schematic capture, circuit board layout, fabrication, and system characterisation/commissioning.

The primary responsibilities of the position are:

- Support faculty members, postdoctoral researchers, and graduate students in the realization of electronics design related to scientific instrumentation including conceptualization, implementation, manufacture, and commissioning. Act as a consultant to department members; provide feedback to research teams.
- Strong mentorship skills to guide students and other researchers one-on-one in the design and implementation of electronic circuits.
- Design and implement electronic circuits using schematic capture and circuit board layout software such as Altium designer (for complicated circuits) and free online tools (when mentoring students).
- Simulate electronic circuits with simulation software such as SPICE.
- Liaise with local and online industry for the manufacture and assembly of circuit boards and contracting of other electronic work.
- Collaborate with research team members to commission and debug electronic systems and assure the successful delivery of instruments.

The successful candidate will

- Demonstrate strong potential to develop the required technical skills and to act as an independent developer.
- Be self-motivated and have the demonstrated ability to work on different projects concurrently and manage deadlines.
- Have excellent communication, organizational, and interpersonal skills in English (spoken and written). French an asset.
• Have experience in troubleshooting operational anomalies in real time with no supervision, the ability to work in a fast-changing environment and to learn new tools and applications quickly and independently, and have strong problem solving skills and attention to detail.

Experience requirements:

• Bachelors degree in Engineering and 5 years plus experience OR
• Masters and/or PhD in Engineering and relevant experience

Other Qualifying skills:

• Experience and/or training in both digital and low noise analog circuits will be an asset, as will high speed signal processing, computer interface and control experience.
• Ability to make connections (or have existing connections) with local outsourcing facilities, such as circuit board fabrication, cable assembly, and enclosure automated fabrication.
• Experience design, test and implementation of firmware logic and signal processing with VHDL and FPGA design tools such as Xilinx Vivado design suite, Altera Quartus and/or the Casper open source library.

The successful candidate will be based full-time at McGill University, Montréal, Canada and employed as an Academic Associate.

Interested applicants should submit a curriculum vitae with a description of experience and motivations, a list of references, and a report summarizing a relevant completed project in a related area to diane.koziol@mcgill.ca. All materials will be kept confidential. Applications will be accepted starting immediately until the position is filled. The initial appointment will be a 6 month contract with a possibility of extension.

We thank all applicants for their interest, however, only those applicants selected for an interview will be contacted.

McGill University is committed to equity in employment and diversity. It welcomes applications from indigenous peoples, visible minorities, ethnic minorities, persons with disabilities, women, persons of minority sexual orientations and gender identities, and others who may contribute to further diversification.

All qualified applicants are encouraged to apply; however, in accordance with Canadian immigration requirements, Canadians and permanent residents will be given priority.