



**DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING**  
**FACULTY OF ENGINEERING AND APPLIED SCIENCE**  
**Teaching Fellow Position**  
**Academic Year 2022-23**

**Posting Date: September 01, 2022**

**Closing Date: September 30, 2022**

The Department of Electrical and Computer Engineering in the Faculty of Engineering and Applied Science at Queen's University requests applications from suitably qualified candidates interested in teaching **the following undergraduate course** in the 2022-23 session.

**ELEC-280 Fundamentals of Electromagnetics**  
**Winter Term Course: January 1, 2023 – April 30, 2023**

**Course Description**

This is a first course on the fundamental aspects of electromagnetic fields. The following topics are covered: vector analysis, including orthogonal coordinate systems, and the calculus of field quantities; electrostatic fields including the concepts of electric potential, capacitance, and current and current density; magnetostatic fields including inductance; time varying fields and the complete form of Maxwell's equations; basic transmission line phenomena including steady-state sinusoidal behaviour and standing waves, transient performance and impedance matching. This course builds on and supplements knowledge from other courses, including APSC 111, APSC 11, APSC 171, APSC 172, and APSC 174.

**Course Learning Outcomes (CLOs)**

- Understand the transmission of the electromagnetic energy along transmission lines.
- Use the Smith chart to analyze the transmission lines and to develop an impedance matching network.
- Describe the three orthogonal coordinate systems, and transform between the systems.
- Describe the gradient of a scalar field, the divergence of a vector field, and the curl of a vector field.
- Describe the fundamental concepts of electrostatic field theory including capacitance, electric potential, current, and boundary conditions.
- Describe the fundamental concepts of magnetostatic field theory including inductance and boundary conditions.
- Understand the concepts of time-varying electromagnetic fields, and apply Maxwell's equations to analyze the time-varying circuits.

**Credit Breakdown**

Lecture: 3

Lab: 0.25

Tutorial: 0.5

**Academic Unit Breakdown**

Mathematics 10

Natural Sciences 27

Complementary Studies 0

Engineering Science 18

Engineering Design 0

Anticipated course enrolment: 140

**Qualifications:**

Minimum of a M.A.Sc. Degree in Engineering or a related field, OR a B.A.Sc. Degree in Engineering with extensive practical experience in engineering communications. Registered as a Professional Engineer (or an Engineer in Training) in the Province of Ontario. Previous teaching experience at the University level will be preferred. Candidates should have excellent communication and presentation skills. Preference will be given to candidates who are registered as professional engineers in the province of Ontario.

Course Syllabus can be found at: <https://www.ece.queensu.ca/undergraduate/courses/elec-280.html>

**Teaching requirement:**

The above advertised course will be taught on campus. Winter term classes begin on January 09, 2023.

Queen's University is committed to employment equity and diversity in the workplace, and it invites applications from all qualified individuals. Queen's is strongly committed to employment equity, diversity, and inclusion in the workplace and encourages applications from Black, racialized/visible minority and Indigenous/Aboriginal people, women, persons with disabilities, and 2SLGBTQ+ persons. All qualified candidates are encouraged to apply; however, Canadians and permanent residents of Canada will be given priority. Teaching Fellows at Queen's University are governed by a collective agreement between Public Service Alliance of Canada (PSAC), and Queen's University.

Link: <http://www.queensu.ca/humanresources/employees/unions.html>

The [Queen's University Policy Regarding Mandatory Vaccination Requirements for In-person University Activities](#) requires **ALL** Community Members, including employees, to be Fully Vaccinated against COVID-19 prior to participating in any In-person University Activities. This is a condition of employment for all employees who are required to attend University Property to perform their employment responsibilities. Individuals who cannot be vaccinated due to **substantiated grounds** (medical and other protected grounds under the Ontario Human Rights Code) **may ask the University to validate the exemption** and request an accommodation for these rare circumstances. If approved, they will be subject to additional health and safety measures.

The University will provide support in its recruitment processes to applicants with disabilities, including accommodation that takes into account an applicant's accessibility needs. If you require accommodation during the interview process, please contact Mary Gillespie [mary.gillespie@queensu.ca](mailto:mary.gillespie@queensu.ca).

To comply with Federal laws, the University is obliged to gather statistical information about how many applicants for each job vacancy are Canadian citizens/ permanent residents of Canada. Applicants need not identify their country of origin or citizenship; however, all applications must include one of the following statements: I am a Canadian citizen/permanent resident of Canada; OR I am not a Canadian citizen/permanent resident of Canada. Applications that do not include this information will be deemed incomplete.

Applications should include a complete and current curriculum vitae, a statement of teaching experience, the names and contact details of two referees who may be contacted, and any relevant other materials the candidate wishes to submit for consideration. Applications can be submitted to the ECE Appointments Committee at the address below, or by email to Mary Gillespie [mary.gillespie@queensu.ca](mailto:mary.gillespie@queensu.ca).

Applications should be received no later than September 30, 2022.

Electrical and Computer Engineering Appointments Committee  
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