



ENGINEERING

DEPARTMENT OF ELECTRICAL & COMPUTER  
FACULTY OF ENGINEERING AND APPLIED SCIENCE

Term Adjunct Position  
Academic Year 2022-2023

**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 2022-2023 session.

**Qualifications:**

Minimum of a Ph.D. in Electrical & Computer Engineering or a related field, expertise in the field relevant to the course, and appropriate teaching experience. Previous educational background and/or experience must be suited to teaching the course described below. Candidates must have excellent communication and presentation skills, as well as be capable of working as a member of a teaching team. Prior teaching experience in project-based engineering courses and lecture-based engineering courses would be a strong asset. Preference will be given to candidates who are registered as professional engineers in the province of Ontario.

**Teaching requirement:**

Winter Term Course: January 1, 2023 – April 30, 2023

Anticipated course enrolment: 140

**Course Description**

**ELEC 280 Fundamentals of Electromagnetics                      W3.75**

**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 behavior 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

Winter term classes begin 09 January 2023.

Queen's University is committed to employment equity and diversity in the workplace and welcomes applications from women, visible minorities, aboriginal people, persons with disabilities, and persons of any sexual orientation or gender identity. All qualified candidates are encouraged to apply; however, Canadians and permanent residents of Canada will be given priority. Academic staff at Queen's University is governed by a collective agreement between QUFA, [QUFA](#) and Queen's University.

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).

Prior to May 1, 2022, the University required all students, faculty, staff, and visitors (including contractors) to declare their COVID-19 vaccination status and provide proof that they were fully vaccinated or had an approved accommodation to engage in in-person University activities. These requirements were suspended effective May 1, 2022, but the University may reinstate them at any point.

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 at [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

C/o Mary Gillespie, Administrative Assistant

Department of Electrical and Computer Engineering

Walter Light Hall, Room 416

19 Union Street

Queen's University

Kingston, ON K7L 3N6

Tel.: 613-533-6000 ext.75344

Fax: 613-533-6615