

Department of Electronics, Contract Instructor Positions Summer 2023 (May-Aug 2023)

The Department is seeking qualified contract instructors with strong communication and teaching skills established through successful teaching of engineering courses at the university level. Candidates should have current expertise in the subject area of the course, which might be attained through industrial experience or research in academia or government labs. Candidates must have a degree in a relevant field of engineering. **To satisfy program accreditation requirements instructors for all undergraduate courses must have current P.Eng. status in Canada.**

Applications will be accepted until March 15, 2023. Applications with a covering letter and curriculum vitae including educational background, employment history, and related work experience, should be sent via email to chair@doe.carleton.ca.

These courses will be delivered in-person.

Carleton University is committed to fostering diversity within its community as a source of excellence, cultural enrichment and social strength. We welcome those who would contribute to the further diversification of our University including but not limited to women, persons with disabilities, visible minorities, Aboriginal peoples, and persons of any sexual orientation or gender identity.

Contract instructor hiring is governed by the CUPE 4600 Unit 2 collective agreement (<https://carleton.ca/hr/labour-relations/academic-staff-agreements/>).

Early Summer (May-June)

ELEC 2501 [0.5 credit]

Circuits and Signals

Properties of signals. Basic circuit elements: voltage and current sources. Kirchhoff's laws, linearity, superposition. Thevenin and Norton's theorems. Circuit simplification. AC steady-state analysis: impedance, admittance, phasors, frequency response. Transient response of RL and RC circuits: form of response, initial and final conditions. RLC circuits: resonance.

Lectures three hours a week, laboratory and problem analysis three hours a week.

Late Summer (July-August)

ECOR 1043 [0.25 credit]

Circuits

Electrical Quantities (Voltage, Charge, Current, Power). Conservation of charge and energy. Mathematical models of simple devices. Elementary circuit theory for passive elements. Thévenin's and superposition theorem. Signal filtering and amplification. Time and frequency domain. Circuit design and simulation.

Lectures three hours per week, laboratories three hours per week.

ECOR 1044 [0.25 credit]

Mechatronics

Mechatronics applications. Analog to digital signal conversion. Control systems and PID controllers. Input devices, including sensors. Data collection and processing. Output devices, including displays, actuators, and motors. Project design and economics. Environmental Impact of mechatronics engineering. System failures and failsafe design.

Lectures three hours per week, laboratories three hours per week.

ELEC 2507 [0.5 credit]

Electronics I

Qualitative semiconductor physics, leading to the diode equation. Diode applications. Operational amplifiers and their application in feedback configurations including active filters. Introduction to bipolar transistors and MOSFETs, analysis of biasing circuits. Transistor applications including small signal amplifiers.

Lectures three hours a week, laboratory and problem analysis three hours a week.