

The Department of Electronics is seeking qualified contract instructors for the following courses. **To satisfy program accreditation requirements instructors for all undergraduate courses must have current P.Eng. status in Canada.**

Fall Term 2017

For fall and winter term courses, applications will be accepted until July 1, 2017.

ELEC 3605 [0.5 credit]

Electrical Engineering

DC circuits: elements, sources, analysis. Single phase AC circuits: phasors, RLC circuits, real and reactive power, impedance, network analysis, three phase systems. Power transformers. DC motors: operation and characteristics. AC motors: single phase and three phase.

Precludes additional credit for [ELEC 2501](#).

Prerequisite(s): [MATH 1005](#) and ([PHYS 1004](#) or [PHYS 1002](#)).

Lectures three hours a week, problem analysis 1.5 hours a week.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

ELEC 4506 [0.5 credit]

Computer-Aided Design of Circuits and Systems

Basic principles of Computer-Aided Design tools used for analysis and design of communication circuits and systems. Frequency and time-domain analysis. Noise and distortion analysis. Transmission line effects. Sensitivity analysis, and circuit performance optimization. Digital simulation.

Prerequisite(s): fourth-year status in Engineering.

Lectures three hours a week, laboratory three hours alternate weeks.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

ELEC 4602 [0.5 credit]

Electrical Power Engineering

The electric power system. Major components: induction and synchronous machines, power transformers and connections, transmission. Analysis: balanced and unbalanced three-phase systems, symmetrical components, load flow. Operation: frequency control, steady state and transient generator stability, voltage collapse, thermal constraints. Variable speed drives, power quality.

Prerequisite(s): [ELEC 2501](#) or [ELEC 3605](#).

Lectures three hours a week, problem analysis two hours every week.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

ELEC 4704 [0.5 credit]

Nanoscale Technology and Devices

Engineering at the nanoscale. Quantum confinement and the effect of scale. Analysis tools: microscopy, spectroscopy. Fabrication: thin films, nanoparticles, nanotubes, graphene, organics. Structures and properties: quantum wells, nanocrystals, nanostructuring. Applications and devices: electronics, optoelectronics, photonics.

Prerequisite(s): [ELEC 3908](#).

Lectures three hours a week, problem analysis 1.5 hours a week.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

Winter Term 2018

ELEC 2607 [0.5 credit]

Switching Circuits

Boolean algebra, gate, combinatorial circuits. DeMorgan notation, sum-of-product and product-of-sum forms. Logic arrays, PLAs and PALs. Flip-flops, latches, sequential circuits, state graphs and state minimization. Counters and controllers. Hazards. Asynchronous sequential circuits, race free assignment, realization.

Precludes additional credit for SYSC 2607/SYSC 3607 or ELEC 3607.

Prerequisite(s): [PHYS 1004](#) or [PHYS 1002](#).

Lectures three hours a week, laboratory three hours alternate weeks.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

ELEC 4504 [0.5 credit]

Avionics Systems

Electromagnetic spectrum. Air data sensing, display. Communications systems. Navigation and landing systems; ground-based, inertial and satellite systems. Airborne radar. Guidance, control for aircraft, autopilots; stability augmentation; active control; sensor requirements; display techniques. Aircraft power systems. Safety systems. Vehicle/systems integration, certification.

Precludes additional credit for AERO 4504.

Prerequisite(s): fourth-year status in Engineering. Not open to students in Electrical Engineering, Computer Systems Engineering, Aerospace Stream C Engineering, Engineering Physics or Communications Engineering.

Lecture three hours a week.

ELEC 4702 [0.5 credit]

Fiber Optic Communications

Fundamentals of optoelectronics with application to fiber optic communications. Optical fibre: modes, losses, dispersion, splices and coupling to sources. Optical sources: LEDs and laser diodes. Optical detectors: photoconductor, pin and avalanche photodiodes. Optical receiver design. Fiber optic communications systems: intensity modulation/direct detection; coherent homodyne or heterodyne detection.

Prerequisite(s): [ELEC 3908](#) and [ELEC 3909](#).

Lectures three hours a week, laboratory three hours alternate weeks.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

ELEC 4706 [0.5 credit]

Digital Integrated Electronics

Lectures and hands-on experience introduce advanced concepts in digital interfacing and hardware simulation. Industry standard programmable ASIC design tools, interfacing techniques and System on a Chip are introduced along with hardware modeling and design flow. A modern laboratory includes software and hardware digital design tools.

Prerequisite(s): [ELEC 3500](#).

Lectures two hours a week, laboratory three hours a week.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

SREE 3002 [0.5 credit]**Electricity: Use, Distribution, Integration of Distributed Generation**

Electricity use in Ontario: rates, government incentives, smart use. Electricity Distribution: topology, reliability, load characteristics, voltage regulation, power loss, capacitors, economics of optimum choice, system protection. Distributed Generation: guides and regulations, case study.

Prerequisite(s): [SREE 3001](#), [ELEC 4602](#) and ([ELEC 2501](#) or [ELEC 3605](#)).

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

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.

ECOR 4995 [0.5 credit]**Professional Practice**

Presentations by faculty and external lecturers on the Professional Engineers Act, professional ethics and responsibilities, practice within the discipline and its relationship with other disciplines and to society, health and safety, environmental stewardship, principles and practice of sustainable development. Communication skills are emphasized.

Precludes additional credit for MAAE 4905, CIVE 4905, SYSC 3905 or ELEC 3905.

Prerequisite(s): fourth-year status in Engineering.

Lectures three hours a week.

For accreditation purposes, eligible instructors must have P.Eng. status in Canada.