Co-op Program

ELECTRICAL ENGINEERING



The program in Electrical Engineering at the Université de Sherbrooke is unique in Canada. To develop students' skills, it uses an innovative pedagogical approach, the Engineering Problem and Project-Based Learning (EPPBL). This pedagogical framework promotes individual learning and allows the development of skills needed in teamwork through project-based learning. The future engineer is thus prepared to face complex engineering situations that include scientific, technical, economic, social, human and ethical components.

The program focuses on the design of systems and services in the fields of system engineering, analog and digital electronics, integrated systems, telecommunications, signal processing and electrical energy. It includes specialization activities in microelectronics and bio-engineering, automatic and robotic, advanced telecommunications and electrical energy.

WHAT OUR STUDENTS CAN DO FOR YOU

Design

- Designing electrical control systems
- Designing electronic circuits and feedback systems
- Designing and integrating telecommunication systems
- Assessing, choosing and setting up equipment
- Preparing plans and estimates
- Developing products
- Computer-aided design and computer-based training (CAD/CBT), AutoCAD and CircuitMaker
- Programming microprocessors
- Designing C/C++ software
- Designing digital filters

Production and Maintenance

- Studying and solving problems
- Programming automatons and other systems
- Developing and controlling processes
- Setting up electromechanical equipment
- Operating industrial computer systems
- Providing preventive maintenance and analyzing breakdowns
- Providing technical assistance
- Performing inspection and quality control
- Providing plant engineering and technical support
- Applying health and safety norms related to electrical systems
- Implementing procedures

Management

- Planning, organizing, supervising and following up on projects
- Controlling and supervising work sites
- Coordinating installations of equipment
- Writing reports, guides, technical and training manuals

Research & Development

- Collating information
- Identifying and analyzing problems; interpreting results
- Developing prototypes
- Assembling and testing
- Preparing feasibility and profitability studies

CEWIL | ECAMT CANADA
ACCREDITED PROGRAM
PROGRAMME AGRÉÉ

USherbrooke.ca/ssdp/en

UDS Université de Sherbrooke

KNOWLEDGE AND SKILLS

Term	Description
S-1	**Introduction to electrical engineering** Design and problem-solving process; analyzing, designing and creating simple electronic circuits; assembling electromechanical prototypes; developing C/C++ software and programming in microprocessor high-level language; applied communication; collating information; teamwork; CircuitMaker, Matlab and Visual C++.
S-2	**Signals and circuits** Designing, developing and creating electronic systems and software; project management; designing and creating logic circuits on FPGA and analog filters; analyzing signals; analyzing, modelling and testing for object-based software development; UMLMS Project, Visual C++, Matlab, Xilinx, CircuitMaker and TraxMaker.
S-3	**Electrical electronic systems** Designing, developing, creating and integrating modules of an electronic system; analyzing, simulating and assessing performances of electronic circuits; solid-state physics; electrotechnics (transformers, engines, generators); heat exchange notions; statistic elements; graphic communication; AutoCAD, PSPICE and Excel.
S-4	**Feedback control** Designing, developing and creating a digital simulation system of feedback control with ECSS project management (similar to PMBOK); mathematical modelling of mechanical and electrical systems; discreet signal processing and digital processing of signals (filters); the role of the engineer in society; MatLab and Simulink.
S-5	**Systems and digital circuits** Designing, developing and creating an integrated system; digital processing of signals (filters); programming a microprocessor using an assembly language; peripheral interfacing, UART, link SPI, RS232; analog/digital conversion circuits; law, health and safety; Matlab, CodeComposer Studio and Minidebugg.
S-6	**Telecommunication systems** Designing, developing and creating a wireless communication system; analog and digital communications; guided propagation of electromagnetic waves; antennas and standard propagation, health and safety (electromagnetic waves); introduction to networks and protocols; calculation of statistical indexes of stochastic processes; ethical problem solving in engineering; SystemView and Ethereal.
S-7	**Specialized design projects I** Economic analysis in engineering; MS Project.
S-8	**Specialized design projects II** MS Project.

Two specialization fields (optional)

- Microelectronics and bio-engineering
- Automatics and robotics
- Advanced telecommunications
- Artificial intelligence and robotics
- Energy and automatics
- Electrical energy with the Institut en génie de l'énergie électrique

ORGANIZATION OF STUDY (S) AND WORK TERM (W)

GROUP	1st year			2nd year			3rd year			4th year			5th year
	FALL	WIN	SUM	FALL	WIN	SUM	FALL	WIN	SUM	FALL	WIN	SUM	FALL
A	S-1	S-2	W-1	S-3	W-2	S-4	W-3	S-5	S-6	W-4	S-7	W-5	S-8
B	S-1	S-2	S-3	W-1	S-4	W-2	S-5	W-3	S-6	W-4	S-7	W-5	S-8