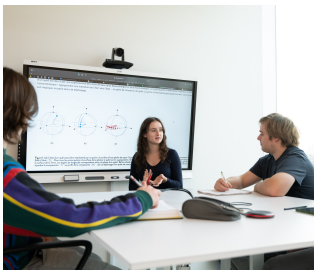
Co-op Program

COMPUTER SCIENCE
MATSER'S CYBERSECURITY


The Master of Computer Science program, Cybersecurity pathway, was designed in collaboration with the industry and is taught by professionals working in the cybersecurity industry.

Your future hires :

- Already have an undergraduate degree in computer science or a related discipline
- Specialize in cybersecurity for all kinds of businesses and public organizations (government and other public bodies)
- Have a mind for analysis and synthesis, intellectual rigour and listening and communication skills
- Can contribute to cybersecurity teams for both attack prevention and attack response
- Are available for work terms lasting four to six months

WHAT OUR STUDENTS CAN DO FOR YOU

- Establish incident management processes
- Manage vulnerabilities and take a proactive approach against cyber attacks
- Establish security metrics
- Demonstrate expert knowledge of the main operating systems on the market and know how to reinforce the security of these systems
- Provide security support for virtualization and mobile systems
- Research information on attack targets
- Differentiate between types of attacks
- Use hacking kits and tools ethically
- Use the right techniques to detect cyber attacks
- Understand the different stages of a hacking investigation
- Use diagnostic tools to identify malicious code
- Identify different types of cyber attacks
- Provide incident management support following an attack
- Apply enterprise architecture standards
- Design business-oriented security architecture
- Analyze and assess security architecture documents

About the program

- Imparts expert knowledge of the ins and outs of computer security and how to manage it
- Provides in-depth knowledge of exposed attack surfaces and effective protection and defence strategies using IT infrastructure
- Develops the ability to critique organizations' strategies
- Provides expert knowledge of the nature, pace and tools of cyber attacks
- Develops the ability to draw up and implement a security incident response plan

CEWIL ECAMT CANADA ACCREDITED PROGRAM PROGRAMME AGRÉÉ

USherbrooke.ca/stages

UDS Université de Sherbrooke

KNOWLEDGE AND SKILLS

Term	Description

S-1	• **IT Security Planning and Prevention**
	  ◦ Proactive incident management; vulnerability management; application of a proactive approach against cyber attacks; security evaluation measures.
	• **System Security**
	  ◦ Know, master and reinforce the security of the main operating systems; security issues surrounding virtualization and mobile systems.
	• **Introduction to Computer Attacks**
	  ◦ Understand the stages of a cyber attack; differentiate between types of attacks; use hacking kits and tools ethically; know the techniques to detect cyber attacks.
	• **Forensics in IT Security**
	  ◦ Concepts in forensic science; basic principles of technology laws and crimes; evaluate basic forensic security rules; investigate IT security incidents; rules and mechanisms for preserving evidence in criminal law.
	• **Cryptography**
	  ◦ Encryption systems, message authentication, key exchange, digital signatures, digital certificates, cryptographic hash functions; public key infrastructure; choosing the right cryptographic system for a situation; evaluating the potential security of a system.

S-2	• **Software Security**
	  ◦ Roles, tasks and implementation of data security; data security tools and techniques; software life cycle; description of software environments; web application features; foundations of application security.
	• **System and Network**
	  ◦ Characteristics of the architecture of computer network components in a security context; understand the principles of network architecture and security.
	• **Reaction to Attacks and Analysis of Attacks**
	  ◦ Characterize different types of cyber attacks; manage incidents following an attack.
	• **Security Architecture**
	  ◦ Architecture models; apply architecture standards; design business-oriented security architecture; analyze and assess security architecture documents.

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

Group	FALL	WIN	SUM	FALL
International combination (M1)	S-1	S-2	W-1 (4 or 6 months)	
Other combination	S-1	S-2	W-1 (4 months)	S-3 (elective courses)