Seneca POLYTECHNIC

HONOURS BACHELOR OF INFORMATION TECHNOLOGY - CYBERSECURITY (IFS)

About the Program

In this four-year honours bachelor degree, you will learn the critical knowledge and practical skills required for a successful career in information security. You will develop comprehensive knowledge of vulnerability and threat assessment, risk management, data analysis and network and operating system infrastructure. This program focuses on practical applications that solve a variety of technological threats including hackers, malware and data breaches.

Computer Requirements

- 16 GB RAM minimum
- 256 GB SSD Hard Drive (500+ GB would be better)
- Quad-core i7 2.4GHz or better
- Video card (2GB RAM minimum/4GB RAM recommended)
- Webcam

Credential Awarded

Honours Bachelor Degree

Duration

8 Semesters (4 Years)

Starts

January, September

Program and Course Delivery

This program is offered in Seneca's hybrid delivery format. Some coursework is online and some must be completed in person. Students will need to come on campus to complete in-person learning requirements.

Skills

Throughout this program you will develop the following skills:

- Internal and external security needs
- Analysis and implementation of distributed computer systems
- Understanding data communication principles and operation systems
- Understanding security of infrastructure components
- Design and implement secure information acquisition, transmission and storage practices
- Analysis of project and system requirements
- Deployment of security on a variety of platforms
- Project planning and management
- Research methodology
- Technology planning and acquisition

Work Experience
Mandatory Degree Co-op

A work experience that includes at least one term in a formal work environment. In most cases the work term(s) is a paid position that is completed between two academic semesters and requires a minimum of 420 hours of work. Students must be in good standing and meet all identified requirements prior to participating in the work experience. The successful completion of the co-op work term(s) is required for graduation. Eligibility for participation does not guarantee that a work position will be secured. Additional fees are required for those participating in the mandatory co-op stream regardless of success in securing a work position.

Your Career

Graduates of the program can explore the following career options:

- Cyber security analyst
- Security operations centre analyst
- Compliance and controls analyst
- Network and systems administrator
- Infrastructure and cyber defence operations
- Information security co-ordinator
- Network security administrator
- Information security analyst
- Cybersecurity intelligence and analytics analyst
- Information technology security analyst
- Information security consultant

Program of Study

Course Code	Course Name	Weekly Hours
Semester 1		
ENG106	Writing Strategies	3
OPS105	OS-Unix	4
OPS110	OS-Windows	4
SPR100	Introduction to Security	4
SRT111	Introduction to Problem Solving and Programming	4
Semester 2		
DCN230	Protocol and Standards	4
LSP200	Critical Thinking	3
SPR200	Basic Cryptography	4
SRT205	Deployment Automation	4
SRT210	Infrastructure Administration	4
Semester 3		
DCN330	Building Networks	4
LSP400	Presentation Skills	3
OPS300	Enterprise Infrastructure and Security	4
RIS330	Data Services and Management	4
SPR320	Endpoint Security	4
Semester 4		
BTC440	Business and Technical Writing	3
RIS430	Vulnerability and Threat Analysis	4

RIS440	Network Security	4
SPR400	Intro to DFIR	4
SRT411	Digital Data Analytics	4
Semester 5		
SPR500	Security Principles: Defenses	4
SRT521	Advanced Data Analysis	4
SRT551	Privacy and Confidentiality	4
WAS500	Web Application Scripting	4
plus: Liberal Studies Course (1)		3
Semester 6		
REA610	Research Methodologies	4
RIS602	Security Assessment	4
SPR600	Detection	4
WAS600	Web Security	4
WTP200	Work Term Preparation	1
plus: Liberal Studies Course (1)		3
Work-Integrated Learning Term 1		
IFS771	Informatics and Security, Co-op	35
Semester 7		
SPR708	Attack and Defense	4
SRT751	Ethics and Law	3
WAS705	Application Security Methodology	4
plus: Professional Options (1)		4
plus: Liberal Studies Course (1)		3
Work-Integrated Learning Term 2		
IFS772	Informatics and Security, Co-op II	35
Semester 8		
SPR800	Security Audits	4
SPR888	Applied Security Project	4
SRT811	Risk Management	4
plus: Professional Options (1)		4
plus: Liberal Studies Course (1)		3

Professional Options

Course Code	Course Name	Weekly Hours
DPI905	CISCO Network Security	4
DPI906	Malware Analysis and Response	4
DPI907	IT Physical and Environmental Security	4
DPI911	Incident Response	4
DPI912	Python for Programmers: Sockets and Security	4
DPI913	Cloud Infrastructure and Security	4
DPI914	Social Engineering	4
DPI970	Cybersecurity System Analysis	4
DPS950	Introduction to Microsoft Cloud Technologies	4

Seneca has been granted consent by the Minister of Colleges and Universities to offer this applied degree for a seven-year term starting December 18, 2019. Seneca shall ensure that all students admitted to the above-named program during the period of consent will have the opportunity to complete the program within a reasonable time frame.

Program Learning Outcomes

This Seneca program has been validated by the Credential Validation Service as an Ontario College Credential as required by the Ministry of Colleges and Universities.

As a graduate, you will be prepared to reliably demonstrate the ability to:

- Apply networked computing concepts to install, configure and maintain IT infrastructure as required in common business environments.
- Apply information security theory and concepts to meet organizational needs with respect to confidentiality, integrity, availability, and privacy in IT infrastructures.
- Build scalable tools to automate tasks performed in IT infrastructure.
- Implement data management practices throughout the data lifecycle to secure information assets.
- Recommend security controls to comply with industry standards and mitigate risks.
- Implement identity and access management controls to protect systems from unauthenticated and unauthorized access.
- Create attack scenarios to test defensive capabilities of an organization.
- Analyze monitored systems to conduct security incident investigations.
- Create reports by aggregating, analyzing and visualizing data from diverse large-scale sources to support organizational decision-making.
- Model legal, ethical, professional and organizational codes of conduct as a security professional.
- Evaluate different approaches for solving problems using established ideas and methodologies to present oral and written recommendations.
- Apply interpersonal, teambuilding, and leadership skills when participating in diverse organizational environments.

Admission Requirements

- Ontario Secondary School Diploma (OSSD) or equivalent, including six Grade 12 U or M courses with a minimum overall average of 65%, or a mature applicant (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/mature-applicants.html).
- Required courses with minimum final grade of 65% in each:
    - English: Grade 12 ENG4U
    - Mathematics: any Grade 12 U

Learn about Seneca's free English upgrading course (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/upgrading-options/english-12u-equivalency.html) and math upgrading course (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/upgrading-options/math-12u-equivalency.html) for applicants who don't meet the high school requirements, as well as recommended upgrading for applicants who don't meet their academic subject requirements. (https://www.senecapolytechnic.ca/registrar/canadian-applicants/admission-requirements/upgrading-options.html)

International Student Information

International admissions requirements vary by program and in addition to English requirements (https://www.senecapolytechnic.ca/international/apply/how-to-apply/admission-requirements/english-requirements.html), programs may require credits in mathematics, biology, and chemistry at a level equivalent to Ontario's curriculum, or a postsecondary degree

or diploma, equivalent to an Ontario university or college. Program-specific pre-requisite courses and credentials are listed with the admission requirements on each program page. To review the academic requirements please visit: Academic Requirements - Seneca, Toronto, Canada (senecapolytechnic.ca) (https://www.senecapolytechnic.ca/international/apply/how-to-apply/admission-requirements/academic-requirements.html).

Pathways

As a leader in academic pathways, we offer a range of options that will allow you to take your credential further in another Seneca program or a program at a partner institution.

To learn more about your eligibility, visit the Academic Pathways (https://www.senecapolytechnic.ca/pathways.html) web page.

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