

Fanshawe College

FIRST: Fanshawe Innovation, Research, Scholarship, Teaching

Documentation (Approvals etc...)

Cyber Security

2020

CYB1 Curriculum Modification for 2021-22




Fanshawe College

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CURRICULUM MODIFICATION REQUEST FORM

COURSE OR PROGRAM CURRICULUM "RATIONALE FOR CHANGE"

Program Requiring Changes

Program Title: Cyber Security		
Program Number: CBY1	Date Submitted: 11/1/2019	
Dean responsible for program: Mary Pierce	Chair: Dev Sainani	
Credential Provided: <input type="checkbox"/> Declaration of Academic Achievement <input type="checkbox"/> Local Certificate <input type="checkbox"/> Ontario College Certificate <input type="checkbox"/> Diploma <input checked="" type="checkbox"/> Advanced Diploma <input type="checkbox"/> Grad Certificate <input type="checkbox"/> Degree <input type="checkbox"/> Apprenticeship		
Program Intakes: <input checked="" type="checkbox"/> F <input checked="" type="checkbox"/> W <input type="checkbox"/> S Other:	Catalogue Year(s) Impacted: 21/22	
Residency Requirement: <input checked="" type="checkbox"/> Met or <input type="checkbox"/> Not Met	Date of Last Program Review: NA	
<i>I have read the reasons for the change and...</i>		<i>Signature and date</i>
Associate Dean of School:	<input checked="" type="checkbox"/> Approve <input type="checkbox"/> Do Not Approve	 2020-11-13
Dean of Faculty (Lead program):	<input checked="" type="checkbox"/> Approve <input type="checkbox"/> Do Not Approve	 2020-11-20
Dean of Faculty (Affiliate program-impacted by change):	<input type="checkbox"/> Approve <input type="checkbox"/> Do Not Approve	
Senior Vice President Academic (required for major changes and late DAs):	<input type="checkbox"/> Approve <input type="checkbox"/> Do Not Approve	
Director, Centre for Academic Excellence:	<input checked="" type="checkbox"/> Supports <input type="checkbox"/> Does Not Support	 December 3, 2020
Office of the Registrar:	<input type="checkbox"/> Supports <input type="checkbox"/> Does Not Support	
Notes:		

Please answer each of the questions below, if applicable. Missing or incomplete information may delay review of the proposed changes.

As the first group of students gets set to graduate, the program team has completed an informal assessment of the program since its inception. Feedback from professors, students, co-op employers, and PAC members was discussed as ways to improve the program. The security industry is still growing and in order to keep up with technological changes, content needs to be realigned and some changes made. In addition, the inception of the SILEX projects and the Cyber Range have created new and exciting opportunities for students.

Listed below are some minor changes that we can make to the program to address these issues and create the best experience possible for the students.

SRTY-5007 - Penetration testing moved to level 3, as students need some experience in this area before they go on coop. Content of this course focuses on the EC council, CEH (Certified Ethical Hacker course). This course also does not need to be 60 hours, and will be reduced to 45 hours.

SRTY-3008 – Security Management moved from level 3 to level 2 as content needs to come before SRTY3007 Auditing & Security controls. Students need more experience understanding security policies and procedures before they are able to make connections to the content in this auditing course

In level 5 a new course SRTY-XXXX– Incident Response & Digital Forensics will be added. This new course will combine the content from INFO5117 and SRTY3012 because the courses are so closely related in content that there was too much overlap in the content.

INFO-5117 – Digital and Network Forensics in level 5 will be replaced with an Advanced Linux course. Linux is used extensively in security and as more and more security tools are being written with the Linux platform, students need a course that focuses on the advanced skill of Linux.

SRTY-5004 – Hacking Techniques and Exploits will be removed from the program. This course will be replaced with a new course in level 6 called SRTY-XXX - Integrated Project. This course will contain the Silex project for the program, and will integrate the program curriculum with the new Cyber Range.

INFO-5120 Security Architecture requires an additional 15 hours to provide students adequate time to complete the major project in this course. To allow for this hour INFO-5116 will be reduced from a 75 hour course to a 60 hour course. The name of the course will also change to Research for Security to better reflect the content being covered.

1.0 Describe proposed change(s). Complete Appendix A (if necessary) and amend SDAR (Refer to Appendix C).

2.0 Reason/Rationale for Changes

2.1 The reason for the change is based on:

- A recent program review
- Program Advisory Committee feedback
- Student feedback
- KPI results
- Accreditation or other regulatory requirements
- Shared curriculum
- Trends in the field/industry
- Other (please describe):

2.2 Does the change support the College's Strategic Framework (mission, vision, values)?

- Yes
- No (If no, please explain)

2.3 What strategic goal(s) does the proposed change support?

- Goal 1 – Enhance innovative practices for exceptional student learning
- Goal 2 – Manage enrolment growth
- Goal 3 – Optimize use of resources
- Goal 4 – Build sustainable sources of alternative revenue

3.0 Students

3.1 Will the change affect the cost of the program for students?

- Yes
- No

3.2 If yes, there will be an additional cost for:

- Materials (Include details):
- Equipment (Include details):
- Other (Please describe):

4.0 Program Learning Outcomes

4.1 Will the proposed change meet the Program Vocational Learning Outcomes? (Complete Appendix B and mark the changes in the mapping [e.g. red font])

- Yes
- No

4.2 Are there any implications related to progression because of pre-requisite courses (and/or co-requisite courses)?

- No
- Yes (If yes, please explain)

5.0 Relationships with Other Programs

5.1 Are any of the courses impacted by the change provided by another School (e.g., SLLS, LKSB) and/or delivered at another campus?

- No
- Yes

5.2 What Schools/Campuses will be impacted by the proposed change?

- Lawrence Kinlin School of Business
- School of Information Technology
- School of Contemporary Media
- School of Design
- School Digital and Performing Arts
- School of Tourism, Hospitality and Culinary Arts
- School of Community Studies
- School of Health Sciences
- School of Nursing
- School of Public Safety
- Donald J. Smith School of Building Technology
- Norton Wolf School of Aviation Technology
- School of Applied Sciences and Technology
- School of Transportation Technology and Apprenticeship
- School of Language and Liberal Studies
- English Language Institute
- London South Campus
- Simcoe/Norfolk Regional Campus
- St Thomas/Elgin Regional Campus
- Woodstock/Oxford Regional Campus
- Huron/Bruce Regional Sites

5.3 Will the change affect pathway agreements (e.g., bridging, articulations, laddering, advanced standing) with other Fanshawe program(s) and/or other institution(s)?

(Refer to the pathway agreements listed here: <http://transferagreements.fanshawec.ca/>)

- No

Yes (If yes, indicate when you will notify the other Fanshawe program(s) and/or other institution(s) and the Pathways Coordinator in the Centre for Academic Excellence of the change)

5.4 If this program is a Co-Operative Education program, will the proposed change impact Co-op?

No

Yes (If yes, consult with the Co-op office prior to submission)

6.0 Resource Implications of Proposed Changes

6.1 Will the proposed change have staffing implications?

No

Yes (If yes, please explain)

6.2 Will the proposed change impact any of the Enabling areas?

No

Yes (If yes, please explain)

6.3 Will the proposed change affect space and/or technology requirements?

No

Yes (If yes, please explain)

7.0 General College Requirements

7.1 Are changes consistent with Colleges policies?

Yes

No (If no, please explain)

7.2 Will the program meet the General Education requirements (Policy A126) as listed below?

No

Yes

Local Certificate, Ontario College Certificate and Graduate Certificate - none required)	Diploma - 3 required (minimum of 1 must be an elective)	Advanced Diploma - 4 required (minimum of 2 must be electives)
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7.3 Will the program have 25% distinct curriculum to meet the Residency Requirement of 25% credit units? Consider all pathway agreements (e.g., bridging, internal articulations, laddering, advanced standing) with other Fanshawe programs and/or other institutions.

- No
- Yes

Note: In accordance with POLICY NUMBER: A122 Graduation from Approved College Programs

...to be eligible for any College Credential a student must be enrolled and complete at least 25% of that program’s credit units at Fanshawe College, unless stipulated differently by other approving bodies such as the Postsecondary Education Quality Assessment Board (PEQAB).

7.4 Indicate:

- i) Total program hours before proposed change: __2031__
- ii) Total program hours after proposed change: __2031__
- iii) Level(s) in which the proposed change(s) occurs: __2,3, 5, 6__

7.4.1 Are the total program hours consistent with the requirements as listed below?

- Yes
- No (If no, please explain)

Local Certificate - 300 hours	Ontario College Certificate - 600 hours
Diploma - 1200 to 1400 hours	Advanced Diploma - 1800 to 2100 hours
Graduate Certificate - 600 hours	DOAA - less than 200 hours

APPENDIX A: PROPOSED CURRICULUM MODIFICATION

Course Code	Existing DA Courses	Total Hours	Total Credits	Describe proposed changes	Course Code	Proposed DA Courses	Total Hours	Total Credits
Level 1								
TOTAL		0	0		TOTAL		0	0
Level 2								
				Moved from level 3	SRTY-3008	Security Management	45	3
TOTAL		0	0		TOTAL		45	3
Level 3								
SRTY-3008	Security Management	45	3	Moved to Level 2				
				Add	SRTY-3014	Penetration Testing	45	3
TOTAL		45	3		TOTAL		45	3
Level 4								
TOTAL		0	0		TOTAL		0	0
Level 5								
INFO-5117	Digital & Network Forensics	45	3	Remove				
SRTY-3012	Incidence Handling & Response	45	3	Remove				
SRTY-5007	Penetration Testing	60	4	Remove				
				Add	SRTY-5011	Incident Response & Digital Forensics	45	3
				Add	INFO-5149	Linux Security-Adv	60	4
TOTAL		150	10		TOTAL		105	7
Level 6								
INFO-5116	Research Project	75	5	Replace with	SRTY-5012	Research for Security	60	4
INFO-5120	Secure Network Architecture	45	3	Increase hours	INFO-5150	Secure Network Architecture	60	4
SRTY-5004	Hacking Techniques & Exploits	60	4	Replace with	SRTY-5013	Integrated Project	60	4
TOTAL		180	12		TOTAL		180	12

PROGRAM TOTAL 330 22

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COMMS - Vocational Learning Outcomes by Program, Level and Course

Program Name: Cyber Security

Program Code: CYB1

Academic Year: 2021-22

Date Generated 10/29/2020 2:16:11 PM

Only Display Courses: Courses:

Level 1										
Course Number	Course Name	1	2	3	4	5	6	7	8	9
INFO-1218	Operating Systems for Security	I	I		I		I			
INFO-1220	Networking Fund for Security	I	I		I		I		I	
INFO-1279	Programming Fund for Security	I	I		I	I	I			
INFO-1222	Database Fund for Security	I	I		I					
SRTY-1021	Cyber Security	IB	IB		IB		IB	IB		
Level 2										
Course Number	Course Name	1	2	3	4	5	6	7	8	9
CRIM-1036	Cybercrime		I		I					
INFO-1207	Network Components	IB	IB		IB		IB		IB	
INFO-3174	Scriting for Web Security	1	1			1				
INFO-1209	Cryptography & Authentication	IB	IB		IB		IB			
INFO-1210	Securing Linux	BC	BC		BC		BC		B	
SRTY-3008	Security Management		B	B	IB		IB	I		IB
INFO-1212	Securing Windows Systems	I	I		I	I	I			
Level 3										
Course Number	Course Name	1	2	3	4	5	6	7	8	9
COMM-3077	Communications for IT									
COOP-1020	Co-op Educ. Employment Prep									
INFO-3127	Network Protocols	B	B		B		B		B	

SRTY-5004	Hacking Techniques & Exploits	B	B	B	B	B	B	B	B	B
SRTY-5013	Intrigred Project	C	C	C		C	C		C	
SRTY-5005	Penetration Testing-Adv		IBC			IBC				
SRTY-5006	Malware Analysis & Response		C				C			

Vocational Learning Outcomes

1	Configure, implement, and manage security devices and equipment considering the unique features of the computer operating systems, networks, applications and software.
2	Implement and evaluate security solutions for business processes, applications and communications to protect business resources and respond to the needs of all the internal stakeholders.
3	Use project management principles to implement security strategies and processes that address the organization's information security requirements.
4	Develop, implement and evaluate organizational security policies, standards and regulations to promote internal security.
5	Perform vulnerability assessments and penetration testing for infrastructures, web and applications, using both manual and automated techniques.
6	Evaluate and apply tools and techniques to formulate countermeasures to secure information systems against security threats.
7	Perform security audits and forensic analysis to evaluate the effectiveness of a security system, and identify and correct security vulnerabilities.
8	Monitor and analyze logs and alerts from security devices to determine the extent of a security breach and what data has been compromised.
9	Identify, collect and log relevant data as evidence for a sample case within a business or in the Canadian Justice System.

Legend

I	Introductory
B	Building
C	Culminating

SRTY-3014	Penetration Testing	X	X		X	X		X		X	X	X
SRTY-3008	Security Management	X	X		X	X	X	X	X	X	X	X
Level 4												
Course Number	Course Name	1	2	3	4	5	6	7	8	9	10	11
COMM-1127	Tech Writing & Presentation	X	X		X	X	X	X	X	X	X	X
CRIM-3001	Criminology	X	X		X	X	X	X	X	X	X	X
INFO-3126	Wireless & Mobile	X	X		X	X	X	X		X	X	X
INFO-3129	Network Security Monitoring	X	X		X	X		X		X	X	X
INFO-3131	Evolving Technologies/Threats	X	X		X		X	X		X	X	X
SRTY-3009	Comp Intelligence for Security				X	X	X	X			X	X
SRTY-5008	Web Security 2	X	X		X	X		X				X
Level 5												
Course Number	Course Name	1	2	3	4	5	6	7	8	9	10	11
INFO-5117	Digital & Network Forensics	X	X		X	X	X	X			X	X
INFO-5118	Perimeter Defence & Design	X	X		X	X	X	X		X	X	X
INFO-5119	Attack Vectors & Analysis	X	X		X	X	X	X	X		X	X
INFO-5127	Windows Security-Adv		X		X	X		X			X	X
SRTY-3012	Incidence Handling & Response	X	X		X	X	X	X		X	X	X
SRTY-5011	Digital Forensics & Incident Respons	X	X		X	X	X	X		X	X	X
INFO-5149	Linux Security- Adv		X		X	X		X			X	X
SRTY-5007	Penetration Testing	X	X		X	X		X		X	X	X
Level 6												
Course Number	Course Name	1	2	3	4	5	6	7	8	9	10	11
INFO-5116	Research Proj/Entrepreneurship	X	X		X	X	X	X	X	X	X	X
SRTY-5012	Research for Security	X	X		X	X	X	X	X	X	X	X
INFO-5120	Secure Network Architecture	X	X		X	X	X	X	X	X	X	X
INFO-5150	Secure Network Architecture	X	X		X	X	X	X	X	X	X	X
SRTY-5004	Hacking Techniques & Exploits											
SRTY-5013	Integrated Project	X	X		X	X	X	X	X	X	X	X
SRTY-5005	Penetration Testing-Adv	X	X		X	X	X	X				X
SRTY-5006	Malware Analysis & Response	X	X		X	X	X	X	X	X	X	X

Essential Employability Skills

1	Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience.
2	Respond to written, spoken or visual messages in a manner that ensures effective communication.
3	Execute mathematical operations accurately.
4	Apply a systematic approach to solve problems.
5	Use a variety of thinking skills to anticipate and solve problems.
6	Locate, select, organize and document information using appropriate technology and information systems.
7	Analyze, evaluate and apply relevant information from a variety of sources.
8	Show respect for diverse opinions, values, belief systems and contributions of others.
9	Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
10	Manage the use of time and other resources to complete projects.
11	Take responsibility for one's own actions, decisions and consequences.

Legend

I	Introductory
B	Building
C	Culminating

Degree Audit Report

Catalog: 2021/2022

Program: CYB1	Name: Cyber Security
Department: ITY - Information Technology	
Academic Level: PS	
CCD: 9 - 6AcadSem/1800-2100hrs	
Credential: Ontario College Advanced Dipl	
Grade Scheme: LG2	
Major: CYB1 - Cyber Security	Div: ITY - Information Technology Division
Co-Op Indicator: Mandatory Co-op	

Academic Program Requirement

Total Credits: 138.00	Residency Reqmt: 35.00
GPA Requirement: 2.00	Residency Reqmt GPA: 2.00
Minimum Grade: D	

Academic Requirement: CYB1.20 Cyber Security

Major: CYB1
Grade Scheme: LG2
Minimum GPA: 2.00

Level 1

Take all of the following Mandatory Courses:

Group 1

	Total Hours	Total Credits	GE
INFO-1218 Operating Syst Fundamentals for Security	45.00	3.00	
INFO-1220 Networking Fundamentals for Security	75.00	5.00	
INFO-1279 Programming Fundamentals for Security	60.00	4.00	
INFO-1222 Database Fundamentals for Security	45.00	3.00	
PHIL-1019 Ethics	45.00	3.00	**
SRTY-1021 Cyber Security	45.00	3.00	

Group 2

TAKE WRIT-1043 OR WRIT-1034

	Total Hours	Total Credits	GE
WRIT-1043 Reason & Writing 1 for IT	45.00	3.00	
WRIT-1034 Reason & Writing 1-EAP	60.00	4.00	

Subrequirement: Level 2

Take all of the following Mandatory Courses:

	Total Hours	Total Credits	GE
CRIM-1036 Cybercrime	45.00	3.00	
INFO-1207 Network Components	60.00	4.00	
INFO-3175 Scripting for Web Security	45.00	3.00	
INFO-1209 Cryptography & Authentication Systems	45.00	3.00	
INFO-1210 Securing Linux	60.00	4.00	
INFO-1212 Securing Windows Systems	45.00	3.00	
SRTY-3008 Security Management	45.00	3.00	

Subrequirement: Level 3

Take all of the following Mandatory Courses:

Degree Audit Report

	Total Hours	Total Credits	GE
COMM-3077 Communications for IT	45.00	3.00	
COOP-1020 Co-operative Education Employment Prep	6.00	1.00	
INFO-3127 Network Protocols	45.00	3.00	
INFO-3128 Scripting for Security	45.00	3.00	
SRTY-3004 Web Security 1	45.00	3.00	
SRTY-3013 Security Mechanisms	60.00	4.00	
SRTY-3007 Auditing & Security Controls	45.00	3.00	
SRTY-3008 Security Management	45.00	3.00	
SRTY-3014 Penetration Testing	45.00	3.00	

Subrequirement: Level 4

Take all of the following Mandatory Courses:

	Total Hours	Total Credits	GE
COMM-1127 Technical Writing & Presentation	45.00	3.00	
CRIM-3001 Criminology	45.00	3.00	**
INFO-3126 Wireless & Mobile	45.00	3.00	
INFO-3129 Network Security Monitoring	60.00	4.00	
INFO-3131 Evolving Technologies & Threats	45.00	3.00	
SRTY-3009 Computational Intelligence for Security	45.00	3.00	
SRTY-5008 Web Security 2	60.00	4.00	

Subrequirement: Level 5

Gen Ed - Take a 3 credit General Education elective course. Take all of the following Mandatory Courses:

	Total Hours	Total Credits	GE
INFO-5117 Digital & Network Forensics	45.00	3.00	
INFO-5118 Perimeter Defence & Design	60.00	4.00	
INFO-5119 Attack Vectors & Analysis	45.00	3.00	
SRTY-3012 Incidence Handling & Response	45.00	3.00	
SRTY-5011 Incident Response & Digital Forensics	45.00	3.00	
SRTY-5007 Penetration Testing	60.00	4.00	
INFO-5127 Windows Security-Adv	45.00	3.00	
INFO-5149 Linux Security-Adv	60.00	4.00	

Subrequirement: Level 6

Gen Ed - Take a 3 credit General Education elective course. Take all of the following Mandatory Courses:

	Total Hours	Total Credits	GE
INFO-5116 Research Project	75.00	5.00	
SRTY-5012 Research for Security	60.00	4.00	
INFO-5120 Secure Network Architecture	45.00	3.00	
INFO-5150 Secure Network Architecture	60.00	4.00	
SRTY-5004 Hacking Techniques & Exploits	60.00	4.00	
SRTY-5013 Integrated Project	60.00	4.00	
SRTY-5005 Penetration Testing-Adv	60.00	4.00	
SRTY-5006 Malware Analysis & Response	60.00	4.00	

Subrequirement: Gen Ed - Electives

Degree Audit Report

Take 6 General Education credits - Normally taken in Levels 5 and 6

Subrequirement: Program Residency

Students Must Complete a Minimum of 35 credits in this program at Fanshawe College to meet the Program Residency requirement and graduate from this program

Approved By Chair/Manager:

Department and Date:

Approved by Dean:

Date:

General Education Approved By(as appropriate):

Date: