

Fanshawe College

FIRST: Fanshawe Innovation, Research, Scholarship, Teaching

Documentation (Approvals etc...)

Cyber Security

2017

CYB1 Curriculum Modification for 2018-19

Fanshawe College

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CURRICULUM MODIFICATION REQUEST FORM

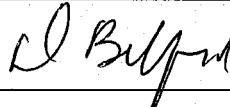
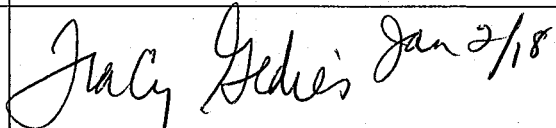
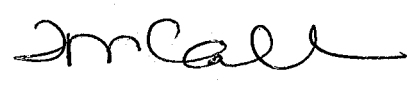
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COURSE OR PROGRAM CURRICULUM "RATIONALE FOR CHANGE"

DEC 18 2017

Program Requiring Changes

Office of the Registrar

Program Title: Cyber Security		
Program Number: CYB1	Date Submitted: 10/27/2017	
Dean responsible for program: David Belford	Chair: Jim Edwards	
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: 2018/19	
Residency Requirement: <input checked="" type="checkbox"/> Met or <input type="checkbox"/> Not Met	Date of Last Program Review: Click here to enter a date.	
<i>I have read the reasons for the change and...</i>	<i>Signature and date</i>	
Dean of Faculty (Lead program):	<input checked="" type="checkbox"/> Approve <input type="checkbox"/> Do Not Approve	 Dec. 8/17
Dean of Faculty (Affiliate program-impacted by change):	<input type="checkbox"/> Approve <input type="checkbox"/> Do Not Approve	
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	 Jan 2/18
Office of the Registrar:	<input checked="" 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.

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

2.0

[Move SRTY1021 - CYBER SECURITY course from semester 2 to semester 1. We would like to move the Cyber Security course to semester 1 so the students have an earlier introduction to cyber security concepts. In the original program proposal semester 1 was common to all ITY programs, security specific courses did not start until semester 2. From discussions with the students, they are eager to start exploring more security related activities and not just information technologies that are common to all programs. With the decision to no longer have a common first semester it seems appropriate to add a course that is specifically focused on security to semester 1 to keep the students engaged in the program. There are currently 7 courses in second semester but only 5 courses in first semester (not counting WRIT). Moving the Cyber Security course to first semester would balance out the course work load in the first year. These changes do not affect the total hours in the program nor impact staffing, Co-op, or space and technology requirements.

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 Tourism, Hospitality and Culinary Arts
- School of Community Studies
- School of Health Sciences
- School of Nursing
- School of Public Safety
- School of Contemporary Media
- School of Design
- School of Language and Liberal Studies
- 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
- Continuing Education
- 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 2-B-02) 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: 2-B-17 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: 2021_____
- ii) Total program hours after proposed change: 2021_____
- iii) Level(s) in which the proposed change(s) occurs: Levels 1 & 2_____

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	

APPENDIX A: PROPOSED CURRICULUM MODIFICATION

Course Code	Existing DA Courses	Total Hours	Total Credits		Course Code	Proposed DA Courses	Total Hours	Total Credits
Level 1								
INFO-1218	Operating Systems Fundamentals for Security	45	3		INFO-1218	Operating Systems Fundamentals for Security	45	3
INFO1220	Networking Fundamentals for Security	75	5		INFO1220	Networking Fundamentals for Security	75	5
INFO-1221	Programming Fundamentals for Security	75	5		INFO-1221	Programming Fundamentals for Security	75	5
INFO-1222	Database Fundamentals for Security	45	3		INFO-1222	Database Fundamentals for Security	45	3
PHIL-1019	Ethics	45	3		PHIL-1019	Ethics	45	3
WRIT-1043	Reason & Writing 1 for IT	45	3		WRIT-1043	Reason & Writing 1 for IT	45	3
				add - moved from Level 2	SRTY-1021	Cyber Security	45	3
TOTAL		330	22		TOTAL		375	25
Level 2								
SRTY 1021	Cyber Security	45	3	REMOVE- moved to Level 1				
CRIM-1036	Cybercrime	45	3		CRIM-1036	Cybercrime	45	3
INFO-1207	Network Components	60	4		INFO-1207	Network Components	60	4
INFO-1208	PHP Fundamentals	45	3		INFO-1208	PHP Fundamentals	45	3
INFO-1209	Cryptography & Authentication Systems	45	3		INFO-1209	Cryptography & Authentacation Systems	45	3
INFO-1210	Securing Linux	60	4		INFO-1210	Securing Linux	60	4
INFO1212	Securing Windows System	45	3		INFO1212	Securing Windows System	45	3
TOTAL		345	23		TOTAL		300	20
Level 3								
COMM-3077	Communications for IT	45	3		COMP-3077	Communications for IT	45	3
COOP-1020	Co-op Education Prep	6	1		COOP-1020	Co-op Education Prep	6	1

APPENDIX A: PROPOSED CURRICULUM MODIFICATION

INFO-3127	Network Protocols	45	3		INFO-3127	Network Protocols	45	3
INFO-3128	Scripting for Security	45	3		INFO-3128	Scripting for Security	45	3
SRTY-3004	Web Security I	45	3		SRTY-3004	Web Security I	45	3
SRTY-3005	Security Mechanisms	45	3		SRTY-3005	Security Mechanisms	45	3
SRTY-3007	Auditing & Security Controls	45	3		SRTY-3007	Auditing & Security Controls	45	3
SRTY-3008	Security Management	45	3		SRTY-3008	Security Management	45	3
TOTAL		321	22		TOTAL		321	22
Level 4 (Semester 4)								
COMM-1127	Technical Writing & Presentations	45	3		COMM-1127	Technical Writing & Presentations	45	3
CRIM-3001	Criminology	45	3		CRIM-3001	Criminology	45	3
INFO-3126	Wireless & Mobile	45	3		INFO-3126	Wireless & Mobile	45	3
INFO-3129	Network Monitoring	60	4		INFO-3129	Network Monitoring	60	4
INFO-3131	Evolving Technologies & Threats	45	3		INFO-3131	Evolving Technologies & Threats	45	3
SRTY-3009	Computational Intelligence for Security	45	3		SRTY-3009	Computational Intelligence for Security	45	3
SRTY-5008	Web Security 2	60	4		SRTY-5008	Web Security 2	60	4
TOTAL		345	23		TOTAL		345	23
Level 5 (Semester 5)								
INFO-5117	Digital & Network Forensics	45	3		INFO-5117	Digital & Network Forensics	45	3
INFO-5118	Perimeter Defense & Design	60	4		INFO-5118	Perimeter Defense & Design	60	4
INFO-5119	Attack Vectors & Analyss	45	3		INFO-5119	Attack Vectors & Analyss	45	3
SRTY-3012	Incidence Handling & Response	45	3		SRTY-3012	Incidence Handling & Response	45	3
SRTY-5007	Penetration Testing	60	4		SRTY-5007	Penetration Testing	60	4
INFO-5127	Network Security	45	3		INFO-5127	Network Security	45	3
GEN-XXXX	Gen Ed - Elective	45	3		GEN-XXXX	Gen Ed - Elective	45	3
TOTAL		345	23		TOTAL		345	23
Level 6								
INFO-5116	Research Project & Entrepreneurship	75	5		INFO-5116	Research Project & Entrepreneurship	75	5

APPENDIX A: PROPOSED CURRICULUM MODIFICATION

INFO-5120	Secure Network Architecture	45	3		INFO-5120	Secure Network Architecture	45	3
SRTY-5004	Hacking Techniques & Exploits	60	4		SRTY-5004	Hacking Techniques & Exploits	60	4
SRTY-5005	Penetration Testing - Adv	60	4		SRTY-5005	Penetration Testing - Adv	60	4
SRTY-5006	Malware Analysis & Response	60	4		SRTY-5006	Malware Analysis & Response	60	4
GEN-XXXX	Gen Ed - Elective	35	3		GEN-XXXX	Gen Ed - Elective	35	3
TOTAL		335	23		TOTAL		335	23

PROGRAM TOTAL 2021 136

PROGRAM TOTAL 2021 136

Cyber Security

APPENDIX E – Program Outcomes – Curriculum Map

PROGRAM MAPPING Cyber Security		LEVEL ONE							LEVEL TWO						
PROGRAM ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES		INFO-1220 Networking Fundamentals	INFO-1221 Programming Fundamentals	INFO-1222 Database fundamentals	INFO-1218 Operating Systems Fundamentals	SRTY-1021 Cyber Security	PHIL-1019 Ethics (GM)	WRIT-1043 Reasoning & Writing for IT/ WRIT-1034 Reasoning & Writing - EAP	INFO-1207 Network Components	INFO-1208 PHP Fundamentals	INFO-1209 Cryptography and Authentication Systems	INFO-1210 Securing Linux	CRIM-1036 - Cybercrime	INFO-1212 Securing Windows Systems	# OF COURSES SUPPORTING THE OUTCOME
4 = R	5 = RE	6 = TE	7 = TRE												
1. communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.	4	6	5	4	5	6	6	5	6	5	5	5	4	13	
2. respond to written, spoken, or visual messages in a manner that ensures effective communication.	5			5	5	6	6	4		4	5	4	5	10	
3. execute mathematical operations accurately.	4	6	5	7				7	6	7	4	4	7	10	
4. apply a systematic approach to solve problems.	7	6	7	7			6	7	6	7	7	7	7	11	
5. use a variety of thinking skills to anticipate and solve problems.	7	4	7	7			6	7	4	7	5	7	7	11	
6. locate, select, organize, and document information using appropriate technology and information systems.	6	6	7	6		6	6	7	6	6	5	7	6	12	
7. analyze, evaluate, and apply relevant information from a variety of sources.	6	4	5	5		6	6	4	4	6	5	6	5	12	
8. show respect for the diverse opinions, values, belief systems, and contributions of others.	5	4	5	4		7	4	4	4	4	4	4	4	12	
9. interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.	4	4	5		4		4	4	4	4	4	4		10	
10. manage the use of time and other resources to complete projects.	7	4	5	5	5		4	7	4	6	5	6	5	12	
11. take responsibility for one's own actions, decisions, and consequences.	6	4	5	5		7	4	4	4	4	5	4	5	12	
TOTAL # OF OUTCOMES SUPPORTED BY EACH COURSE	11	10	10	10	4	6	10	11	10	11	11	11	10		

PROGRAM COORDINATOR: Karen MacIntyre
 ACADEMIC CHAIR: Jim Edwards
 Date Completed: October 2017

Analysis of Mapping Results:

Cyber Security

PROGRAM MAPPING (Name of Program)	LEVEL THREE								LEVEL FOUR								
PROGRAM ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES	COMM-3047 Communication for IT Professionals	COOP-1020 Co-operative Education Employment Prep	SRTY-3008 Security Management	SRTY-3004 Web Security	SRTY-3007 Auditing and Security Controls	INFO-3005 Security Mechanisms	INFO-3128 Scripting for Security	INFO-3127 Network	INFO-3126 Wireless and Mobile Devices	SRTY-5008 Web Security II	INFO-3129 Network Monitoring	COMM-1127 Technical Writing and Presentations	CRIM-3001 Criminology (GM)	INFO-3131 Evolving Technologies and Threats	SRTY-3009 Computational Intelligence	# OF COURSES SUPPORTING THE OUTCOME	
4 = R 5 = RE 6 = TE 7 = TRE																	
T = Taught R = Reinforced E = Evaluated																	
The graduate has reliably demonstrated the ability to: (Source: MTCU Code)																	
1. communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.	7	4	4	4	4	4	6	4		4	4	5	6	5	4	4	15
2. respond to written, spoken, or visual messages in a manner that ensures effective communication.	7	4	5	5	5	4		4		4	5	4	6	5	5	5	14
3. execute mathematical operations accurately.			4	4	4		6	6		4	7			4	5	9	
4. apply a systematic approach to solve problems.	7		7	7	7	5	6	5		7	7	4	4	5	6	13	
5. use a variety of thinking skills to anticipate and solve problems.	4		7	7	7	4	4	4		7	7	7	4	7	5	6	14
6. locate, select, organize, and document information using appropriate technology and information systems.	7	5	6	6	6		6	4		7	6	7	6	7	5	6	14
7. analyze, evaluate, and apply relevant information from a variety of sources.	7	5	6	6	6		4	4		7	6	4	6	7	5	6	14
8. show respect for the diverse opinions, values, belief systems, and contributions of others.	4	4	5	5	5		4	4		4	5	4	6	5		4	13
9. interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.	7	4	4	4	4	4	4	4		4	4	4	4	7		4	14
10. manage the use of time and other resources to complete projects.	7	4	7	7	7	5	4	5		4	7	7	4	4		6	14
11. take responsibility for one's own actions, decisions, and consequences.	4	4	6	6	6	4	4	4		4	6	4	5	4		6	14
TOTAL # OF OUTCOMES SUPPORTED BY EACH COURSE	10	8	11	11	11	7	10	#		9	11	11	10	10	7	11	

PROGRAM COORDINATOR: Karen MacIntyre
 ACADEMIC CHAIR: Jim Edwards
 Date Completed: October 2017

Analysis of Mapping Results:

Cyber Security

PROGRAM MAPPING (Name of Program)	LEVEL FIVE							LEVEL SIX							# OF COURSES SUPPORTING THE OUTCOME	TOTAL FOR PROGRAM
PROGRAM ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES	INFO-5118 Perimeter Defense and Design	INFO-5119 Attack Vectors and Analysis	RTY-5007 Penetration Testing	SRTY-3012 Incidence Handling and Response	INFO-5117 Digital Forensics	INFO-5127 Network Security	GEED-XXXX General	GEED-XXXX General Education Elective (G)	INFO-5116 Research Project & Entrepreneurship	SRTY-5004 Hacking Techniques and Exploits	SRTY-5005 Advanced Penetration Testing	SRTY-5006 Malware Analysis and Response	INFO-5120 Secure Network Architecture			
4 = R 5 = RE 6 = TE 7 = TRE																
T = Taught R = Reinforced E = Evaluated																
The graduate has reliably demonstrated the ability to: (Source: MTCU Code)																
1. communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.	4	4	4	4	4	4			6	4	4	4	4	11	39	
2. respond to written, spoken, or visual messages in a manner that ensures effective communication.	5	5	5	5	4	5			6	5	5	5	5	11	35	
3. execute mathematical operations accurately.	4	4	4	4		4			4	4	4	4	4	10	29	
4. apply a systematic approach to solve problems.	7	7	7	7	6	7			7	7	7	7	7	11	35	
5. use a variety of thinking skills to anticipate and solve problems.	7	7	7	7	6	7			7	7	7	7	7	11	36	
6. locate, select, organize, and document information using appropriate technology and information systems.	6	6	6	6	7	6			7	6	6	6	6	11	37	
7. analyze, evaluate, and apply relevant information from a variety of sources.	6	6	6	6	7	5			7	6	6	6	6	11	37	
8. show respect for the diverse opinions, values, belief systems, and contributions of others.	5	5	5	5	4	4			4	5	5	5	5	11	36	
9. interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.	4	4	4	4	4				4	4	4	4	4	10	34	
10. manage the use of time and other resources to complete projects.	7	7	7	7	4	5			6	7	7	7	7	11	37	
11. take responsibility for one's own actions, decisions, and consequences.	6	6	6	6	4	5			4	6	6	6	6	11	37	
TOTAL # OF OUTCOMES SUPPORTED BY EACH COURSE	11	11	11	11	10	10	0	0	11	11	11	11	11			

PROGRAM COORDINATOR: Karen MacIntyre
 ACADEMIC CHAIR: Jim Edwards
 Date Completed: October 2017

Analysis of Mapping Results:

Cyber Security

APPENDIX E – Program Outcomes – Curriculum Map

PROGRAM MAPPING Cyber Security	LEVEL ONE							LEVEL TWO						# OF COURSES EVALUATING THE OUTCOME
PROGRAM VOCATIONAL LEARNING OUTCOMES	INFO-1220 Networking Fundamentals	INFO-1221 Programming Fundamentals	INFO-1222 Database fundamentals	INFO-1218 Operating Systems Fundamentals	PHIL-1019 Ethics (GM)	SRTY-1021 Cyber Security	WRIT-1043 Reasoning & Writing for IT/WRIT-1034 Reasoning & Writing - EAP	INFO-1207 Network Components	INFO-1208 PHP Fundamentals	INFO-1209 Cryptography and Authentication Systems	INFO-1210 Securing Linux	CRIM-1036 - Cybercrime	INFO-1212 Securing Windows Systems	
1 - Introductory														
2 - Building														
3 - Culminating														
The graduate has reliably demonstrated the ability to: (Source: MTCU Code)														
1. Configure, implement, manage and secure devices and equipment considering the unique features of the computer operating systems, networks, applications and software.	1	1	1	1		1		2	1	2	1		1	10
2. Design, 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.	1	1	1	1		1		2	1	2	1		1	10
3. Use project management principles to implement security strategies and processes that address the organization's information security requirements.						1								1
4. Develop, implement and evaluate organizational security policies, standards and regulations to promote internal security.	1	1	1	1		1		2	1	1	1		1	10
5. Perform vulnerability assessments and penetration testing for infrastructures, web and applications, using both manual and automated techniques.		1				1							1	3
6. Evaluate and apply tools and techniques to formulate countermeasures to secure information systems against security threats.	1	1	1	1		1		2	1	2			1	9
7. Perform security audits and forensic analysis to evaluate the effectiveness of a security system, and identify and correct security vulnerabilities.												1		1
8. Monitor and analyze logs and alerts from network devices to determine the extent of a security breach and what data has been compromised.	1							2	1					3
9. Identify, collect, and log relevant data as evidence for a sample case within a business or in the Canadian Justice System.					1	1						1		3
TOTAL # OF OUTCOMES EVALUATED BY EACH COURSE	5	5	4	4	1	7	0	5	5	4	3	2	5	
GM = General Education (mandatory) G = General Education (elective)														

NB - Only indicate the outcomes that are Taught & Evaluated (TE or TRE) in a course

PROGRAM COORDINATOR: Karen MacIntyre
 ACADEMIC CHAIR: Jim Edwards
 Date Completed: October 2017

Analysis of Mapping Results:

Cyber Security

PROGRAM MAPPING (Name of Program)	LEVEL THREE																
PROGRAM VOCATIONAL LEARNING OUTCOMES	Communication for IT Professionals	COOP-1020 Co-operative Education Employment Prep	SRTY-3008 Security Management	SRTY-3004 Web Security	SRTY-3007 Auditing and Security Controls	INFO-3005 Security Mechanisms	INFO-3127 Network Protocols	INFO-3128 Scripting for Security		SRTY-5008 Web Security II	INFO-3129 Network Monitoring	INFO-3162 Wireless and Mobile	COMM- 1127 Technical Writing and Presentations	CRIM-3001 Criminology (GM)	INFO-3131 Evolving Technologies and Threats	SRTY-3009 Computational Intelligence	# OF COURSES EVALUATING THE OUTCOME
1 - Introductory																	
2 - Intermediate																	
3 - Advanced																	
The graduate has reliably demonstrated the ability to: (Source: MTCU Code)																	
1. Configure, implement, manage and secure devices and equipment considering the unique features of the computer operating systems, networks, applications and software.				2		2	3	2		3	2	2	3		2	2	10
2. Design, 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.			2	2	2	2	3	2		3	2	2	3		2		11
3. Use project management principles to implement security strategies and processes that address the organization's information security requirements.			2		2						2		3				4
4. Develop, implement and evaluate organizational security policies, standards and regulations to promote internal security.			2	2	2	2	2	2		3	2	2	3		2	2	12
5. Perform vulnerability assessments and penetration testing for infrastructures, web and applications, using both manual and automated techniques.			2		2						2		3				4
6. Evaluate and apply tools and techniques to formulate countermeasures to secure information systems against security threats.			2	2	2	2	3	2		3	2	2	3		2	2	12
7. Perform security audits and forensic analysis to evaluate the effectiveness of a security system, and identify and correct security vulnerabilities.			2		2	1					2		3				5
8. Monitor and analyze logs and alerts from network devices to determine the extent of a security breach and what data has been compromised.			2		2	2	3	2		3	2	2	3				9
9. Identify, collect, and log relevant data as evidence for a sample case within a business or in the Canadian Justice System.					2	1					1		1	3		3	6
TOTAL # OF OUTCOMES EVALUATED BY EACH COURSE	0	0	7	4	8	7	5	5		5	9	5	9	1	4	4	
V = Vocational Courses E = Essential Employability Skills Courses																	
GM = General Education (mandatory) G = General Education (elective)																	

NB - Only indicate the outcomes that are Taught & Evaluated (TE or TRE) in a course

PROGRAM COORDINATOR: Karen MacIntyre
 ACADEMIC CHAIR: Jim Edwards
 Date Completed: October 2017

Analysis of Mapping Results:

Cyber Security

PROGRAM MAPPING (Name of Program)	LEVEL FIVE							LEVEL SIX							# OF COURSES EVALUATING THE OUTCOME	TOTAL FOR PROGRAM
PROGRAM VOCATIONAL LEARNING OUTCOMES	INFO-5118 Perimeter Defense and Design	INFO-5119 Attack Vectors and Analysis	RTY-5007 Penetration Testing	SRTY-3012 Incidence Handling and Response	INFO-5117 Digital Forensics	INFO-5127 Network Security	GEED-XXXX General	GEED-XXXX General Education Elective (G)	INFO-5116 Research Project & Entrepreneurship	SRTY-5004 Hacking Techniques and Exploits	SRTY-5005 Advanced Penetration Testing	SRTY-5006 Malware Analysis and Response	INFO-5120 Secure Network Architecture			
1 - Introductory																
2 - Intermediate																
3 - Advanced																
The graduate has reliably demonstrated the ability to: (Source: MTCU Code)																
1. Configure, implement, manage and secure devices and equipment considering the unique features of the computer operating systems, networks, applications and software.	3	3	3	3	3	3			2	3	3		3	10	30	
2. Design, 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	3	3	3		3			3			3	3	8	29	
3. Use project management principles to implement security strategies and processes that address the organization's information security requirements.									3				3	2	7	
4. Develop, implement and evaluate organizational security policies, standards and regulations to promote internal security.	3	3	3	3	3	3			2				3	8	30	
5. Perform vulnerability assessments and penetration testing for infrastructures, web and applications, using both manual and automated techniques.	3	3	3	3		3			2	3	3			8	15	
6. Evaluate and apply tools and techniques to formulate countermeasures to secure information systems against security threats.	3	3	3	3	3	3			3	3	3			9	30	
7. Perform security audits and forensic analysis to evaluate the effectiveness of a security system, and identify and correct security vulnerabilities.	3	3	3	3	3				3					6	12	
8. Monitor and analyze logs and alerts from network devices to determine the extent of a security breach and what data has been compromised.	3	3	3	3	2				2				3	7	19	
9. Identify, collect, and log relevant data as evidence for a sample case within a business or in the Canadian Justice System.		2			2				2	2				4	13	
TOTAL # OF OUTCOMES EVALUATED BY EACH COURSE	7	8	7	7	6	5	0	0	9	4	3	1	5			
V = Vocational Courses E = Essential Employability Skills Courses GM = General Education (mandatory) G = General Education (elective)																

NB - Only indicate the outcomes that are Taught & Evaluated (TE or TRE) in a course

PROGRAM COORDINATOR: Karen MacIntyre
 ACADEMIC CHAIR: Jim Edwards
 Date Completed: October 2017

Analysis of Mapping Results:

Degree Audit Report

Catalog: 2018/2019

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: CYB1.18 Cyber Security

Major: CYB1

Grade Scheme: LG2

Minimum GPA: 2.00

Minimum Grade:

Subrequirement: 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-1221	Programming Fundamentals for Security	75.00	5.00	
INFO-1222	Database Fundamentals for Security	45.00	3.00	
PHIL-1019	Ethics	45.00	3.00	
ADD SETX-1021	CYBERSECURITY	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-1208	PHP Fundamentals	45.00	3.00	
INFO-1209	Cryptography & Authentication Systems	45.00	3.00	
INFO-1210	Securing Linux	60.00	4.00	

Degree Audit Report

Delete

INFO-1212	Securing Windows Systems	45.00	3.00
SRTY-1021	Cyber Security	45.00	3.00

Subrequirement: Level 3

Take all of the following Mandatory Courses:

		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-3005	Security Mechanisms	45.00	3.00	
SRTY-3007	Auditing & Security Controls	45.00	3.00	
SRTY-3008	Security Management	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 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-5007	Penetration Testing	60.00	4.00	
INFO-5127	Network Security	45.00	3.00	

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 & Entrepreneurship	75.00	5.00	
INFO-5120	Secure Network Architecture	45.00	5.00	
SRTY-5004	Hacking Techniques & Exploits	60.00	4.00	
SRTY-5005	Penetration Testing-Adv	60.00	4.00	
SRTY-5006	Malware Analysis & Response	60.00	4.00	

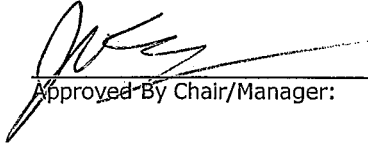
Subrequirement: Gen Ed - Electives

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

Degree Audit Report

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:

ITK Dec 14/17

Department and Date:

Approved by Dean:

Date:

General Education Approved By(as appropriate):

Date:

DG
Jan 2/18