

Major Program Modification Addition of Simple Pathway

Faculty: Business and IT	Date: Feb 28, 2017
Program: Durham College GC-ISCN Pathway to Master of IT Security	

Proposal Brief

Summary of the proposed change

In 2015 Durham College started a Graduate Certificate program in Information System Security – Computers and Networks (GC-ISCN), a one-year program focusing on postgraduate education in IT security and networking. This proposal provides evaluations and recommendations with regard to accepting the GC-ISCN certificate holders into the UOIT Master of IT Security (MITS) program. In particular, this proposal recommends creation of a pathway that would include waiving the entrance requirement of a bachelor degree for these applicants if certain conditions are met.

Background on GC-ISCN

<http://www.durhamcollege.ca/programs/information-systems-security-computers-and-networking>

Durham College's Graduate Certificate programs are designed for students with previous education and/or relevant experience. The GC-ISCN program is a one-year program that aims to provide students with various aspects of information system security as it applies to businesses and networks. The curriculum offers a hands-on approach and incorporates a hybrid delivery model.

Description of the ways in which the proposed change will enhance the academic opportunities

The creation of the proposed pathway program is in line with the UOIT mandate, as stated in the university act, "to facilitate student transition between college-level and university-level programs", and with the provincial government's priorities in developing bridge and pathway programs. This pilot collaboration with Durham College would not only enhance the profile of Durham College's GC-ISCN program and attract higher quality applicants to it, but also benefits UOIT by increasing the number of quality applicants to the MITS program. In recent years the program has struggled to attract sufficiently qualified students, and while the number of applicants to the program remains high (60-90), the admission number remain between 10-20 due to low quality of applicants. The program currently has a high degree of interest from international applicants but significantly lower number of submissions from domestic applicants. Establishing a pathway structure to bring in more quality domestic applicants with sufficient technical background and work experience could help bridging this gap and bringing the MITS numbers up to a sustainable level. Additionally, the creation of this pathway will support graduates with advanced diplomas in IT Security fields to prepare for the challenges of the knowledge environment. Finally, there is significant growth in the demand for IT Security professionals, with this pathway, UOIT will be well positioned to fill this demand.

Process of consultation with other institutions and internal units if the change(s) involve students, staff and faculty from other programs or courses

Consultation occurred between the Associate Dean of FBIT at UOIT and the Dean and Associate Dean of DC School of Business, IT & Management. All were enthusiastic about the initiative. Discussions were also held with DC about their curriculum to ensure that their programs satisfies the prerequisites required at UOIT.

Admission Requirements

Admission requirements for the program include a three-year advanced college diploma or university degree in a computer-science, information technology (IT) or business-related field (equivalent

industry experience will be considered) as well as working knowledge of transmission control and Internet (TCP/IP) protocols; basic networking concepts; Microsoft and Linux server platforms; and basic understanding of computer hardware.

Courses completed from Durham college are as follows: The course list for the program is as following. Course descriptions are available from Durham College web site by clicking on the course link below.

Semester 1

- [Business Contingency Management \(MGMT 1212\)](#)
- [Network Systems & Components \(NETW 1200\)](#)
- [Security Wireless Networks \(NETW 1203\)](#)
- [Information Security \(SECR 1200\)](#)
- [Operating System Security \(SECR 1201\)](#)
- [Business Processes & Security Policies \(SECR 1202\)](#)

Semester 2

- [Computer Forensics \(CFOR 2201\)](#)
- [Hacking & Exploits \(HACK 2200\)](#)
- [Law & Ethics In Forensic Investigations \(LAW 2211\)](#)
- [Network Monitoring & Penetration Testing \(NETW 2200\)](#)
- [Access Controls \(PROG 2203\)](#)
- [Security Auditing & Governance \(SECR 2200\)](#)

The current academic requirements for admission to MITS program include the following:

- While applicants may hold any four-year honours undergraduate degree (or its equivalent from a recognized institution), preference is given to applicants whose undergraduate degree is in the field of information technology, engineering, science, or related fields;
- Minimum overall academic standing of a B (GPA: 3.0 on a 4.3 scale or 73 to 76 per cent), with a minimum B average in the last two full-time years (four semesters) of undergraduate work or equivalent; and
- Successful completion of at least one course in advanced programming (e.g. Java/C/C++/C#) and advanced mathematics (e.g. linear algebra, calculus, number theory, etc.), and at least one course or proven work experience in operating systems (Windows and/or Unix or Linux).

Pathway Conditions

This proposal includes establishing a pilot pathway program for graduates of Durham College's GC-ISCN to allow them to continue their education in UOIT MITS program, subject to the following admission conditions:

1. Prior to their GC-ISCN program, the applicants must have completed a three-year college advanced diploma program in a relevant field such as computer technology or information science with a GPA of B+ or higher. This program should include courses in programming, operating systems and college-level mathematics.
2. They must complete the GC-ISCN program with a minimum GPA of B+ prior to admissions in the MITS program.
3. They must provide two letters of reference from their employer and two letters of reference from their instructors in the GC-ISCN program.
4. They must have accumulated at least three years of technical work experience in the field of information technology, computer systems or programming.

Justification

1. The combination of a 3-year technical college program followed by 1-year Graduate Certificate program and work experience can be considered equivalent to a 4-year Applied Bachelor of Science degree which is typically offered by large colleges and polytechnic universities in Canada.
2. Some professional Masters programs at universities in Canada and abroad do accept applicants who

have not completed a bachelor degree but have sufficient work experience.

3. The curriculum for the GC-ISCN program, while tends to be more focused on applied contents rather than the theory, still prepares the students better than a general bachelor of science degree for the MITS program. Many of the current applicants who are accepted into the MITS program would not have as much IT networking and security background as a GC-ISCN graduate with sufficient work experience.
4. The course content of the GC-ISCN program plus the 3-year computer system technology program, combined with work experience, satisfies the Ontario Qualifications Framework for Degree Level expectations and demonstrated in the attached chart.

The GPA requirement in the GC-ISCN guarantees that only high-achieving graduates with sufficient academic skills are accepted into the MITS program

Brief analysis of any financial, resource, and/or enrolment implications NA

Proposed Implementation Date (when will students first be admitted)

Fall 2018

Calendar Copy and Program Maps (highlight revisions to existing curriculum; please include the Schedules of the Articulation Agreement(s), if applicable)

APPROVAL DATES

Date of submission	Feb 28, 2017
Faculty Council approval	March 31, 2017
GSC approval	April 25, 2017
Academic Council approval	

Descriptor	Qualification Standards: Honours Bachelor's Degree	Applicable Learning Outcomes*	
		Advanced Diploma	Graduate Certificate
Depth and Breadth of Knowledge	a) A developed knowledge and critical understanding of the key concepts, methodologies, current advances, theoretical approaches and assumptions in a discipline overall, as well as in a specialized area of a discipline; b) A developed understanding of many of the major fields in a discipline, including, where appropriate, from an interdisciplinary perspective, and how the fields may intersect with fields in related disciplines; c) A developed ability to: i. gather, review, evaluate and interpret information; ii. compare the merits of alternate hypotheses or creative options, relevant to one or more of the major fields in a discipline; d) A developed, detailed knowledge of and experience in research in an area of the discipline; e) Developed critical thinking and analytical skills inside and outside the discipline; f) The ability to apply learning from one or more areas outside the discipline	Learning Outcomes: 1 to 9	Learning Outcomes: 1, 2, 5, 6
Conceptual and Methodological Awareness/Research and Scholarship	An understanding of methods of enquiry or creative activity, or both, in their primary area of study that enables the student to: a) Evaluate the appropriateness of different approaches to solving problems using well established ideas and techniques; b) Devise and sustain arguments or solve problems using these methods; c) Describe and comment upon particular aspects of current research or equivalent advanced scholarship.	Learning Outcomes: 1, 2, 7, 8, 9, 13	Learning Outcomes: 1, 2, 3, 4, 5, 6, 8, 10
Communication Skills	The ability to communicate information, arguments and analysis accurately and reliably, orally and in writing, to specialist and non-specialist audiences using structured and coherent arguments, and, where appropriate, informed by key concepts and techniques of the discipline.	Learning Outcomes: 10, 11, 12, 13	Learning Outcomes: 4, 7, 8, 9, 10
Application of Knowledge	a) The ability to review, present and critically evaluate quantitative and qualitative information to: i. develop lines of argument; ii. make sound judgements in accordance with the major theories, concepts and methods of the subject(s) of study; iii. apply underlying concepts, principles, and techniques of analysis, both within and outside the discipline; iv. where appropriate, use this knowledge in the creative process; b) The ability to use a basic range of established techniques to: i. initiate and undertake critical evaluation of arguments, assumptions, abstract concepts and information; ii. propose solutions; iii. frame appropriate questions for the purpose of solving a problem; iv. solve a problem or create a new work; c) The ability to make use of scholarly reviews and primary sources.	Learning Outcomes: 1, 4, 5, 7, 8, 9, 10, 11, 13	Learning Outcomes: all
Professional Capacity/Autonomy	a) The qualities and transferable skills necessary for further study, employment, community involvement and other activities requiring: i. the exercise of initiative, personal responsibility and accountability in both personal and group contexts; ii. working reflectively with others; iii. decision-making in complex contexts; b) The ability to manage their own learning in changing circumstances, both within and outside the discipline and to select an appropriate program of further study; c) Behaviour consistent with academic integrity and social responsibility.	Learning Outcomes: 8, 10, 11, 12, 13	Learning Outcomes: 3, 4, 7, 8, 9, 10
Awareness of Limits of Knowledge	An understanding of the limits to their own knowledge and ability, and an appreciation of the uncertainty, ambiguity and limits to knowledge and how this might influence analysis and interpretations.	Learning Outcomes: 10, 11, 12	Learning Outcomes: 1, 3, 4, 7, 8, 9

*Learning outcomes for the Advanced Diploma and Graduate Certificate can be found in their relevant tab.

Advanced Diploma - Computer Systems Technology***The graduate has reliably demonstrated the ability to:***

1. analyze and resolve information technology problems through the application of systematic approaches and diagnostic tools.
2. analyze, plan, design, and implement computer systems.
3. analyze, plan, design, and implement networking solutions.
4. install, configure, troubleshoot, monitor, maintain, upgrade, and optimize computer systems.
5. install, configure, troubleshoot, monitor, maintain, upgrade, and optimize networks.
6. use a variety of scripting tools and languages to automate routine tasks.
7. participate in the deployment and administration of databases within a networked environment.
8. plan, develop, and be responsible for data storage to ensure the integrity of information.
9. apply knowledge of security issues to the implementation of information technology solutions.
10. appraise existing security solutions with a view to on-going maintenance, development, and improvement of organizational security.
11. provide efficient and effective technical support to clients in a manner that promotes safe computing practices and reduces the risk of the issue recurring.
12. articulate, defend, and conform to workplace expectations found in information technology (IT) environments.
13. contribute to the successful completion of the project applying the project management principles in use.

Graduate Certificate - Information System Security – Computers and Networking
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<i>The graduate has reliably demonstrated the ability to:</i>
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| 1. apply knowledge of computer operating systems, networking, and various application software to the simulation of business processes |
| 2. develop best practices to protect business resources through the application of knowledge of vulnerabilities and exploits |
| 3. develop security strategies for the deployment of security procedures and protective devices |
| 4. Integrate information technology strategies that support business functions by employing knowledge of best practices of business processes and systems |
| 5. develop security plans and strategies to include acceptable use of business information and systems by internal employees, contractors, consultants, business partners and customers |
| 6. develop security plans and strategies to ensure the integrity of information in compliance with best practices, relevant policies, standards, and regulations |
| 7. apply project management principles in the deployment of security policies and strategies |
| 8. perform security audits to ensure compliance with security plans, policies, standards, regulations and best practices |
| 9. develop and deliver a corporate training program to communicate both orally and in writing the security requirements for compliance with security policies |
| 10. prepare security documentation for approval by senior management and present results of security audits |

CALENDAR COPY:

Special admission requirements for holders of Durham College Graduate Certificate in Information System Security (GC-ISCN):

Those who have completed GC-ISCN program at Durham College may be admitted to MITS program if they satisfy the following requirements:

1. Prior to their GC-ISCN program, the applicants must have completed a three-year college advanced diploma program in a relevant field such as computer technology or information science with a GPA of B+ or higher. This program should include courses in programming, operating systems and college-level mathematics.
2. They must complete the GC-ISCN program with a minimum GPA of B+ prior to admissions in the MITS program.
3. They must provide two letters of reference from their employer and two letters of reference from their instructors in the GC-ISCN program.
4. They must have accumulated at least three years of technical work experience in the field of information technology, computer systems or programming.