1. ORGANIZATION AND PROGRAM INFORMATION

1.1 Submission Title Page

Full Legal Name of Organization: University of Ontario Institute of Technology

Operating Name of Organization: University of Ontario Institute of Technology

Common Acronym of Organization: UOIT

URL for Organization Homepage: www.uoit.ca

Degree Level and Type to be awarded for program or part of program:

Honours Baccalaureate Degree in Information Technology

Proposed Degree Titles:

Bachelor of Information Technology (Networking)
Bachelor of Information Technology (Information Technology Security)
Bachelor of Information Technology (Game Development and Entrepreneurship)

Proposed Degree Nomenclature: B.I.T. (Hons.)

Date of Submission: July 2004

Location where program to be delivered:
University of Ontario Institute of Technology
2000 Simcoe St. N
Oshawa, ON
L1H 7K4

Contact Information:

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Bachelor of Information Technology

Nomination Table

Name	Telephone Fax Email	Academic Credentials	Professional Designation	Nominee Accepted Nomination	At Arm's Length
Dr. Carson Woo The University of British Columbia 2329 West Mall Vancouver, BC V6T 1Z4	Phone: (604) 822-8390 Fax: (604) 822-0045 carson.woo@ubc.ca	PhD, Computer Science (U of T)	Associate Professor, MIS, Sauder School of Business Director, Bureau for Research on Applications of Information Technology (BRITE) Associate Member, Department of Computer Science Member, Institute for Computing, Information and Cognitive Systems (ICICS)	No	Yes
Dr. Ali A. Ghorbani Faculty of Computer Science University of New Bunswick, Box 4400/Fredericton, N.B. Canada E3B 5A3	Phone: (506) 458-7270 Fax: (506) 453-3566 ghorbani at unb.ca	BSc(Tehran) MSc(CS) (GWU) Ph.D.(UNB)	Professor, Faculty of Computer Science Member- Canadian Information Processing Society (CIPS), Canadian Society for the Computational Study of Intelligence (CSCSI), the Institute of Electrical and Electronics Engineerings (IEEE) and International Neural Network Society (INNS).	Yes	Yes
Dr. I. J. Dawood Faculty of Business Administration, Lakehead University, 955 Oliver Road Thunder Bay, Ontario Canada P7B 5E1	Phone; 807-343-8386 (Secretary) 807-343-8635 (Office) Fax; 807-343-8443 (Fax) isaam.dawood@lakeheadu.ca	PhD (U of Glasgow)	Associate Professor, and Head of the Information Systems Discipline, Faculty of Business Administration	Yes	Yes
Dr. Arunita Jaekel School of Computer Science University of Windsor 401 Sunset Ave. Windsor, ON N9B 3P4	Phone: 519 253-3000 x2996 519 253-4232, x2996 Fax: 519 973-7093 arunita@uwindsor.ca	BETCE (Jadavpur University, Calcutta) M.A.Sc, PhD (University of Windsor)	Assistant Professor, School of Computer Science	No	Yes
Dr. Tom Calvert Simon Fraser University Surrey Campus8888 University Drive Burnaby, British Columbia V5A 1S6	E: tom@sfu.ca T: 604.268.7440 F: 604.268.7488	BSc(Eng) (Lond), MSEE (Wayne), PhD (Carnegie Tech) PEng	Professor and Acting Director, Interactive Arts and Technology	Yes	Yes

1.2 Table of Contents

University of Ontario
INSTITUTE OF TECHNOLOGY

University Vision, Mission and Values

VISION

The University of Ontario Institute of Technology is an innovative and market-oriented institution, pursuing inquiry, discovery and application through excellence in teaching and learning, value-added research and vibrant student life.

MISSION

- Provide career-oriented undergraduate and graduate university programs with a primary focus on those programs that are innovative and responsive to the needs of students and employers.
- Advance the highest quality of research.
- Advance the highest quality of learning, teaching, and professional practice in a technologically enabled environment.
- Contribute to the advancement of Ontario and Canada in the global context with particular focus on Durham Region and Northumberland County
- Foster a fulfilling student experience and a rewarding educational (work) environment.
- Offer programs with a view to creating opportunities for college graduates to complete a university degree.

VALUES

Integrity and Respect
We will treat each other with dignity, including those with challenges.

Honesty and Accountability
Our actions reflect our values, and we are accountable for both.

Intellectual Rigour
We strive for excellence and challenge convention.

2.1 EXECUTIVE SUMMARY

Proposed Program Title:

Bachelor of Information Technology

Proposed Credential Nomenclature:

B.I.T.(Honours)

Disciplines/Fields of Study:

Information Technology (Networking)
Information Technology (Information Technology Security)
Information Technology (Game Development and Entrepreneurship)

Is a work experience/work placement term required for degree completion?

Work experience is not required for degree completion, but optional internships will be available for interested and qualified students through the School of Business and Information Technology's Internship Office. Students who qualify will earn 6 credits toward the degree's requirements for successful completion of this component.

Anticipated Program Start Date: September 2005

Executive Summary

Information technology is one of the fastest-growing professions not only in Canada but also in the world today. The IT profession requires university graduates who have the necessary education and skills. According to the Information Technology Association of Canada (ITAC), "recent estimates suggest that more than 1,000,000 North Americans could be employed in rewarding, high-income jobs today if they had the appropriate information technology skills." It further states that the "IT skills gap in Canada is most severe in the core occupational disciplines of computer science, microelectronics design, photonics and wireless design, software design, and systems analysis. Many thoughtful analysts believe that Canada's future economic growth could be critically impaired unless we act decisively to reverse the continually worsening

situation."[1] The Information Technology field offers excellent, long-term career opportunities.

In 2002, ITAC released a study on the shortage of skilled labour in the field of IT. Their findings suggest that the demand for skilled IT workers will once again outpace supply. The study predicts that 38,000 IT jobs will be added in 2002, potentially creating a gap of approximately 9,900 unfilled positions. The study also shows that, in order to have truly committed employees, IT organizations in Ontario must do more to meet their needs. The study examined the hiring intentions of Ontario-based employers of IT workers across the whole economy, including finance, manufacturing and the resource sector as well as information technology. A majority of Ontario employers identified measurable negative impacts on their business as a result of a shortage of appropriate skills. The most notable issues included project delays, customer dissatisfaction, and lost sales opportunities. The IT jobs with the greatest forecasted employment shortages overall in 2002 in Ontario are:[2]

- IT Project Manager
- IT Business Analyst/Consultant
- Database Administrator
- Data Administration Analyst
- Software Engineer

The main objective of this proposed Bachelor of Information Technology program is to prepare graduates to meet the challenge of ever-changing IT fields and job market demand. This program is designed to prepare students with strong technological and entrepreneurial expertise as well as communication and critical thinking skills required for success in the IT workplace.

[1] http://www.itac.ca/client/ITAC/ITAC_UW_MainEngine.nsf/ALL/D84586ECA0FCD4A2852566EB001F481F?OpenDocument

[2] http://www.itac.ca/CLIENT/ITAC/ITAC_UW_MainEngine.nsf/6ED892A8E1C529F3852565E300266D63/C1D2F309CF413F8685256BAF0071A110?OpenDocument

The program consists of three areas of specialization:

1. Networking
2. Information Technology Security
3. Video Game Development and Entrepreneurship

The integration of information technology, business and engineering courses provides program graduates a wide choice of careers in business, industry and government. Career opportunities include management, supervisory and specialist positions as:

- Information security officer
- Network administrator
- Network infrastructure designer
- Computer game developer
- Technical support manager
- Information technology trainer
- Technology manager
- Database manager
- Custom PC application developer

This is a unique degree program to be offered in Canada. Section 6.3 provides an overview of the Canadian universities offering similar degree programs in areas of information technology. Only Carleton University, in cooperation with Algonquin College, has a degree designated as a Bachelor of Information Technology. UOIT's proposed BIT program is the only degree program in Canada which combines information technology, business, and engineering, as well as offering specialization in video game development. Most of the BIT programs in North America are offered by colleges, whereas programs overseas are offered by universities. This suggests that a BIT program would create an attractive niche for UOIT.

In addition, the UOIT BIT program is the only degree program that offers a specialization in game development and entrepreneurship. Although Canada has a few institutions offering game development degree programs (for example, NAD Centre's (http://www.nad.qc.ca/) in Quebec), there is none in Ontario. Furthermore, there are

only a few universities in the U.S. offering a full degree in game development (for example, the University of Advanced Technology (www.uat.edu) in Arizona.)

NETWORKING SPECIALIZATION

This stream is designed to prepare graduates with knowledge and skills in planning, designing, installing, operating, and managing information technology infrastructure. Computer networking has become an integrated part of today's businesses. The core curriculum in this area of specialization includes mandatory courses in business and management. This provides students with the necessary business background to make significant contributions in today's workplace.

The Networking stream will be offered in partnership with the Durham College School of Technology and Cisco Systems, Inc. In addition to taking core technology and networking courses in the BIT program, students will be able to take courses in preparation for the Cisco certification program through the Cisco Networking Academy® Program (www.cisco.com/edu/academy) offered by UOIT's Faculty of Business and Information Technology. The Academy program utilizes a blended learning model, integrating face-to-face teaching with a challenging Web-based curriculum, hands-on lab exercises, and Internet-based assessment. Academy graduates, along with a Bachelor of IT degree, will be well prepared for networking and IT-related careers in the IT industry. The program also includes essential "soft skills" identified by the US Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS).

The BIT program will offer all three levels of the Cisco certification program, namely, Cisco Certified Network Associate (CCNA®), Cisco Certified Network Professional (CCNP®), and Cisco Certified Internet Engineer (CCIE®). Currently, no educational institution in Canada is offering a certification preparation program for CCIE,

the third level of the Cisco certification. UOIT will be the only Canadian institution that provides this preparation. CCIE is considered the most rigorous of Cisco's certification program and it is highly respected by the industry.

The BIT networking specialization offers a total of four courses covering the contents of CCNA1-4 and CCNP1-4 to prepare students to write the CCNA and CCNP exams. In addition, three courses will address CCIE exam preparation. Graduates from this area of specialization will be highly employable.

Durham College's School of Technology is presently offering a three-year Computer Systems Technology diploma program which prepares its graduates for the Cisco CCNA and CCNP certification and has the required facilities, equipment, and space. Instead of seeking out new spaces, the Faculty of Business and Information Technology will utilize the college facilities to offer the program. It may also hire qualified Cisco certified instructors from the College's School of Technology to teach some of the Cisco certification courses.

INFORMATION TECHNOLOGY SECURITY SPECIALIZATION

There has never been a greater need for professionals trained in network security. This program is designed to prepare graduates to work in the IT security industry and to advance students on a career path toward further occupations in IT security. For students who wish to pursue graduate studies, this program offers preparation for the Master of Information Technology Security program which UOIT's Faculty of Business and Information Technology proposes to offer as early as 2005.[3]

The curriculum of this area of specialization provides students with a broad base of networking and security expertise and prepares them for the continuing changes and

[3] UOIT's Master of Information Technology Security program (MITS) received approval from the Executive of the Ontario Council of Graduate Studies on June 25/04. It is currently under review by PEQAB.

challenges of the IT security profession. Courses in this specialization address a wide spectrum of knowledge and skill sets in IT security.

UOIT provides the opportunity for advanced level students to explore and apply IT security technology in the Faculty of Business and Information Technology Hacker Research Lab. This resource enables students to develop anti-hacking strategies and skills. (The Hacker Research Lab is described in greater detail in Section 8.8.4 of this submission.)

GAME DEVELOPMENT AND ENTREPRENEURSHIP SPECIALIZATION

The Game Development and Entrepreneurship specialization is designed to provide students with a wide range of game design and programming expertise. The core curriculum not only covers game technology and theory, but also the artistic and creative side of game development. This program is unique in that it emphasizes entrepreneurship. Students acquire knowledge and skills in the areas of business and management, as well as entrepreneurial concepts and skills. The curriculum allows graduates to move beyond entry-level positions and to advance their careers. Graduates will have the knowledge and skills to be successful in the game industry, as employees or as entrepreneurs in charge of developing and managing their own gaming businesses.

Projected Enrolment and Faculty Growth

The programs are expected to start in 2005 with a projected intake of 140 full-time students and 20 part-time students.

Program Maps

Program Maps for each of the areas of specialization are provided on the pages that follow.

Bachelor of Information Technology (Networking)

Year-Sem.	Subject	Subject	Subject	Subject	Subject
1-1	Technical Communications	Discrete Mathematics	Information Technology	General Elective	CCNA1 Networking Basics CCNA2 Routers and Routing Basics
1-2	Introduction to Entrepreneurship	Statistics	Collaborative Leadership	Introduction to Programming	CCNA3 Switching Basics and Intermediate Routing CCNA4 WAN Technologies
2-1	Object Oriented Programming	Operating Systems I: Windows	Marketing in the IT Sector	General Elective	CCNP1 Advanced Routing CCNP2 Remote Access
2-2	Web Programming	Operating Systems II: Unix	Information Technology Project Management	General Elective	CCNP3 Mutlilayer Switching
3-1	Database Systems	Computer Architecture	Algorithms and Data Structures	General Elective	CCNP4 Network Troubleshooting
3-2	Multimedia Systems	Enterprise Network Management	Basics of Digital Transmission	General Elective	CCIE1 – Routing and Switching and Service Provider
4-1	UOIT Edge I - Capstone Study Project	Network Simulation	Emerging Networks Technologies	General Elective	CCIE2 - Security
4-2	UOIT Edge II - Capstone Study Project	eBusiness Technologies	IT Security	Law & Ethics of IT	CCIE3 - Voice

Common BUSI courses	Common BIT courses	General Elective courses

Bachelor of Information Technology
(Information Technology Security)

Year-Sem.	Subject	Subject	Subject	Subject	Subject
1-1	Technical Communications	Discrete Mathematics	Information Technology	General Elective	CCNA1 Networking Basics CCNA2 Routers and Routing Basics
1-2	Introduction to Entrepreneurship	Statistics	Collaborative Leadership	Introduction to Programming	CCNA3 Switching Basics and Intermediate Routing CCNA4 WAN Technologies
2-1	Object Oriented Programming	Operating Systems I: Windows	Cybercrime	General Elective	CISCO Security I: Fundamentals of Network Security
2-2	Information Technology Project Management	Operating Systems II: Unix	OS Security I: Windows	General Elective	CISCO Security II: Network Security
3-1	Database Systems	Computer Architecture	Web Programming	General Elective	OS Security II: Unix
3-2	eBusiness Technologies	Enterprise Network Management	Basics of Digital Transmission	General Elective	Law & Ethics of IT
4-1	UOIT Edge I - Capstone Study Project	Advanced Communications Networks	Emerging IT Security Technologies	General Elective	Malware Worms and Viruses
4-2	UOIT Edge II - Capstone Study Project	eBusiness Security	VPN and Data Privacy	IT Security Policies and Procedures	Web Services Security

Common BUSI courses	Common BIT courses	General Elective courses

Bachelor of Information Technology
(Game Development and Entrepreneurship)

Year-Sem.	Subject	Subject	Subject	Subject	Subject
1-1	Creative Writing and Narrative Concepts	Discrete Mathematics	Information Technology	General Elective	Drawing I
1-2	Introduction to Entrepreneurship	Statistics	Collaborative Leadership	BIntroduction to Programming	Graphic Design
2-1	Object Oriented Programming	Drawing II (Animation)	Marketing in the IT Sector	General Elective	Imaging I
2-2	Game World I	Sound & Audio	Information Technology Project Management	General Elective	Imaging II (Graphical Data Processing)
3-1	Animation Arts	Entrepreneurial Finance	Accounting for IT	Computer Architecture	Game Programming
3-2	Computer Networking & Distributing Computing	Filmmaking	Modeling and Rigging	General Elective	Game World II
4-1	UOIT Edge I - Capstone Study Project	Internet Gaming Development	Artificial Intelligence for Simulations & Gaming	General Elective	Advanced Entrepreneurship
4-2	UOIT Edge II - Capstone Study Project	Game Production & Documentation	Immersive Environments, Virtual Reality	Design Studio	General Elective

Common BUSI courses	Common BIT courses	General Elective courses

3.0 PROGRAM ABSTRACT

3.1 Program Abstract

The Bachelor of Information Technology program, consisting of three distinct areas of specialization, is designed to prepare students with technological, communication, entrepreneurial and critical thinking skills required in the IT workplace. The Networking specialization provides graduates with the knowledge and skills to design, install, operate, and manage information technology infrastructure. The IT Security specialization provides graduates with a broad base of networking and security expertise and prepares them for an ever-changing and challenging IT security profession. The Game Development and Entrepreneurship specialization focuses on a wide range of game technology and theory as well as the artistic and creative side of game development. This specialization also offers a unique emphasis on entrepreneurship, preparing graduates to set up their own gaming businesses.

4.0 PROGRAM DEGREE LEVEL STANDARD

4.1 Program Degree Level Standard Summary

UOIT is committed to providing high quality, challenging programs of study, which clearly meet the standards required of undergraduate honours baccalaureate degrees. The design of the BIT program has been guided by benchmarks described in the *Postsecondary Education Quality Assessment Board Handbook for Applicants.* Research has been conducted to compare the breadth and rigour of UOIT's proposed BIT program with related programs and program components at other Canadian and international universities.

Well qualified and experienced faculty been involved in the development of the BIT Program. Highly qualified faculty have been and will continue to be hired to deliver the curriculum in interesting and challenging ways and to ensure that students are exposed to knowledge at the forefront of the discipline.

As with all UOIT degree programs, the BIT program offers a logical progression of concepts from general to complex, making increasing demands on students to use higher level thinking skills and to take greater responsibility for their own learning as they move through the program.

Relevant Knowledge and Understanding and Skill Development

The BIT Program has been designed in consultation with academics and business professionals to provide the fundamentals of business and information technology as well as knowledge and skills pertinent to each area of specialization. Each course has been designed to help students develop an understanding of current theory, research and practice.

Graduates of all areas of specialization in the BIT program will acquire a common set of business and IT concepts and skills, including such areas as technical communications, mathematics foundations and statistics, information technology and programming, and entrepreneurship. *Collaborative Leadership*, a first year course shared by all streams, emphasizes critical employability skills such as teamwork, leadership, project management, communication skills and cross-cultural understanding, and addresses topics related to interactions with others in personal, educational and professional contexts.

Graduates of the Networking specialization will acquire additional and specialized expertise in areas related to networking technologies and protocols and their associated applications. They will understand and use tools and techniques to install and manage networks and to troubleshoot potential problems.

Graduates of the Information Technology Security specialization will exhibit a solid understanding of core principles of information security. They will develop skills which enable them to identify security risks and vulnerabilities within an organization and to develop and implement IT security policies and strategies to protect information and systems from attack.

Graduates of the Game Development and Entrepreneurship Specialization will demonstrate a coherent knowledge of game technologies and theory and be able to apply both creative and technical skills to the process of game development. In addition, they will understand business aspects of the gaming industry and acquire the entrepreneurial skills to develop and manage their own operations.

Naturally, BIT students will engage in mandatory professional core courses that support the acquisition of specialized knowledge and skills and contribute to the realization of their career goals. In addition, they will be required to enroll in a number of general, non-business elective courses, to be selected from a variety of different

disciplines outside their field of study. Such courses will provide students with a greater understanding of the social, political, economic and cultural dimensions of the global community, strengthening their abilities to function as responsible and informed citizens and lending multiple perspectives to decision-making in personal and professional roles. Exposure to areas outside their specialized field of study will also provide a foundation and motivation for the lifelong pursuit of learning.

Communication Skills

Throughout the program, students will be called upon to demonstrate thoughtful, purposeful communication, using a range of media common to professional environments. They will participate in learning activities and assignments to practice and refine their basic oral and written communication skills, including essay and report writing, structured debates, cooperative learning activities and oral presentations. They will acquire the skills necessary to adapt the content and format of their communication to meet the needs of both specialist and non-specialist audiences.

Technical and Analytical Skills

The emphasis on the integration of technology into delivery methods, learning activities, assignments, and presentations ensures that students in the BIT Program will use technological tools competently to acquire, manage and use information to support their learning and to integrate into professional practice.

Each area of specialization emphasizes a unique set of skills which will enable graduates to design and implement policies, tools and strategies and to anticipate risks and solve problems within the context of the particular area of information technology being studied.

Program graduates will have a systematic knowledge of inquiry and research methods, including qualitative and quantitative approaches. Independent and group assignments will require students to engage in the analysis of primary and secondary sources of data, to comment upon current aspects of research in the broader discipline and the area of specialization and to explore their application to professional practice.

As they progress through the Program, they will also further develop the cognitive, interpersonal and transferable, lifelong learning skills which will support their growth as individuals and professionals.

Application

The nature of the program is such that students will acquire both a strong theoretical foundation of knowledge and a set of skills related to current and emerging areas of information technology. Equally important is the opportunity for graduates to apply their knowledge and skills to the design, administration and maintenance of effective network, security and gaming systems. Assignments are designed to provide hands-on experience in these areas and, where applicable, to prepare graduates for certification by relevant professional bodies.

The *"UOIT Edge" Capstone Strategy Study* provides a valuable opportunity for students to consolidate and apply what they have learned during the first three years of the program. They will be required to collaborate with business professionals and members of their team to identify a realistic problem or set of problems and, over a period of 6-8 months, to engage in a comprehensive analysis of the organization and the problem area(s) to arrive at appropriate solutions. They will be required to present their findings to a panel of faculty assessors and representatives from the organization's management team. Their understanding of relevant theory related to information technology, their ability to use appropriate qualitative and quantitative methods of

analysis and to create and evaluate a range of options, their skills in the organization and management of a project and their abilities to function effectively within a team will all be challenged in an assignment of this nature.

Students in the Game Development and Entrepreneurship specialization will also take a *Design Studio* course in their final year. This project-based course will provide them with the opportunity to combine their technological skills with their creative talents to design a game.

Cognitive Skills

Problem solving, critical analysis, and synthesis are cognitive skills essential to success in any discipline. Students are called upon to utilize these skills beginning in the first semester and continuing throughout the remainder of the Program. A variety of learning opportunities will contribute to this growth, including case studies, problem based learning activities, collaborative and independent work, simulation exercises, written critiques of theory and research, structured debates, and oral and written presentations that require justification of decisions. Students will be actively engaged in these intellectual processes as they work with technical and design challenges faced by individuals in the IT profession. Realistic and practical assignments will develop and strengthen students' abilities to critically analyze the information they see, hear and read, to identify assumptions and implicit values, to gather appropriate data to inform and guide decision-making, to create and assess a range of solutions, to predict risks and to evaluate outcomes. In teams, they will be exposed to a variety of perspectives and called upon to listen, assess and incorporate the ideas of others into the design or problem solving process. Collaborative activities will enable them to pose questions, devise and sustain arguments, and, most importantly, to be active participants in the

learning process. While engaged in such interactive processes, they will learn from and contribute to the learning of others.

Lifelong Learning

Realistic case studies, presentations by representatives from real-world business organizations and IT fields, and field-based projects will expose students to the complexities and challenges of a dynamic discipline. Graduates will work in highly complex and often unpredictable situations, across different types of business organizations, with a wide variety of colleagues and clients. Rapid change and ambiguity are normal features of the IT field and students will develop positive attitudes and pro-active strategies to manage them. Students will come to recognize that a strong base of knowledge, an ability to locate and utilize resources efficiently, and a willingness to take informed risks will serve them well in demanding situations and environments. Students will be knowledgeable about and make use of the main sources of scholarly information in the discipline, including professional publications, conferences, well-designed web-sites and professional organizations. They will also be sensitive to the limits of their knowledge and skills and recognize that their professional competence will continue to grow with ongoing mentoring, continuing education and practical experience. Students will graduate from the BIT Program with the required knowledge base and set of skills to undertake further education to support and advance their careers.

Transferable Skills

All courses have been designed to emphasize the development of transferable skills which contribute to the students' effectiveness as independent learners, team members, and, ultimately, managers and leaders. Throughout the entire program, BIT students are involved in a variety of tasks that involve the demonstration of effective

communication skills using oral, written, graphic and electronic formats. The BIT Program places a strong emphasis on technological competence, providing students with the tools to gather and manage information and to use it effectively and ethically in research, assignment preparation and presentations to peers and business professionals. The coursework in the program involves group activities and assignments. Students will be required to plan as part of a team, to fulfill the responsibilities assigned to them and to assume the role of team player or leader as appropriate. They will encounter individuals whose backgrounds, goals and opinions differ from their own, and they will be required to manage those differences in respectful, diplomatic ways. Those differences will enhance their abilities to critically analyze new information for accuracy, to present their own ideas in clear and non-threatening ways and to learn to be open to new perspectives and opportunities for learning. Students cannot help but benefit from these opportunities to practice and refine their skills in active listening, critical analysis, negotiating and problem solving. Their ability to collaborate and cooperate within this context will be of great value as they join new teams in subsequent courses and projects and during their field-based experiences. The demanding workload will require them to organize their time and manage their projects efficiently in order to meet clearly defined standards of performance and expected deadlines.

UOIT is confident that the proposed BIT program is sufficiently comprehensive and rigorous to meet the standards of undergraduate baccalaureate programs and to provide students with the necessary knowledge base, technical, cognitive, and interpersonal skills which will enable them to experience personal, academic and professional success during their years at UOIT and beyond.

5.0 ADMISSIONS, PROMOTION, GRADUATION STANDARD

5.1 Program Admission Requirements

It is the policy of UOIT to encourage applications from individuals who possess appropriate qualifications for admission, including Aboriginal candidates, members of visible minorities, and individuals with special needs and abilities.

	Program Admission Requirements
Academic	Current Ontario secondary school students must complete the Ontario Secondary School Diploma (OSSD) with a minimum overall average of 70% and six 12U or M credits including English (ENG4U) and one math (MGA4U or MCB4U or MDM4U).
Language Proficiency Test	All applicants are required to give evidence of their oral and written proficiency in English. This requirement can be satisfied with one of the following criteria: - Their mother tongue or first language is English. OR - They have studied full time for at least three years (or equivalent in part-time studies) in a university where the language of instruction and examination was English. OR - They have achieved the required proficiency on one of the tests in English language acceptable to UOIT.

Graduates from college diploma programs with a substantial academic affinity to UOIT's BIT program, such as Computer Systems Technology, Website Developer, Multimedia, Graphic Arts, or Animation, may be eligible for transfer credits for some or all of these courses, provided they have earned an overall A average in their college diploma program. This would be assessed on a case-by-case basis.

5.1.2 Admission Policies and Procedures for Mature Students

The following is an excerpt from the Office of the Registrar, Policies and Procedures Section 2.4.

Mature students

Applicants who do not hold the published admission requirements may be considered for admission if:

i) they are at least 21 years of age in the calendar year of registration
ii) they are Canadian Citizens or Permanent Residents of Canada or Convention Refugee claimants
iii) they have been away from post-secondary studies for a minimum of 2 years.

As the University of Ontario Institute of Technology offers specialized programs requiring proficiency in prerequisite subjects, mature students must be able to demonstrate the capacity to succeed in such programs. Evidence of such ability may include, for example, academic upgrading, work experience and/or scores on standardized tests such as the SAT.

5.1.3 Credit Transfer/Recognition Policies

The following excerpts from the Office of the Registrar, Policies and Procedures (Sections 2.2, 2.3 and 2.5) apply to this requirement.

Non-Ontario applicants

Applicants from outside of Ontario apply through the Ontario Universities' Applications Centre (OUAC). See www.ouac.on.ca for information. Applicants seeking information on the applicability of their educational backgrounds may seek informal guidance from the Admissions Office if their circumstances are straightforward. Applicants wanting a formal assessment of their credentials prior to application should contact a credential evaluation service. Official determination of admissibility and transfer of credit cannot be made until the point of application.

Applicants from other Canadian provinces

Specific information on admissions requirements for students completing high school in other provinces is available from the Admissions Office. The normal minimum requirement is completion of Grade 12 with a minimum overall average of 70%. Quebec applicants must have one year beyond the Secondary V diploma. Equivalent subject prerequisites will apply to out-of-province applicants.

Applicants from the United States

The requirement is high school graduation with a minimum C average. All applicants must present an SAT or an ACT score; a minimum combined SAT score of 1200 or an ACT score of 27 is recommended.

Applicants from British-patterned education (GCE)

The minimum requirement is the General Certificate of Education, including a minimum of two Advanced Level courses. No grade can be below a 'C'.

Applicants from other countries

Applicants from other countries should be in contact with the Admissions Office for information.

International Baccalaureate students

Full diploma candidates who achieve passes in six subjects with at least three at the Higher Level, and who accumulate a grade total of 24 with no score lower than 4 are eligible for admission to first year. Students must hold the appropriate prerequisite subjects at the Higher Level. English may be held at either Higher or Standard Level. Applicants offering prerequisites at Standard Level will be given individual consideration. See Section 2.6 for information on Advanced Standing.

Students transferring from other Universities

Credits from other Ontario universities will be recognized in a student's program as appropriate, subject to the residency requirement (see Section 6.x). The same practice will apply to other Canadian degree-granting universities and accredited American institutions. Credits from universities in other countries will be evaluated individually.

Applicants from Colleges of Applied Arts and Technology or equivalent

Applicants from Colleges of Applied Arts and Technology or equivalent will be considered for admission and advanced standing. Admission prerequisites and program requirements will be the major factors in determining such decisions. Faculties may have specific policies in this area.

The following are general guidelines concerning admission and maximum advanced standing. These guidelines may be superseded by Academic Council-approved college-university articulation and/or bridging programs which specify block transfer credit or advanced standing.

Graduates of a 3 year college program with a minimum average grade of B (70%) will be considered for admission and normally may be granted up to a maximum of 45 credit hours (1.5 years). Graduates of a 2 year program, or students having completed 2 years of a 3 year program with a minimum average grade of B (70%) will be considered for admission and normally may be granted up to a maximum of 30 credit hours (1 year). Graduates of a 1 year program with a minimum average grade of B (70%) will be considered for admission but are not normally eligible for advanced standing.

Advanced standing will be determined by the admitting faculty based on equivalence of the courses in question to core or elective requirements and any professional accreditation requirements. A student must achieve a minimum grade of B in any course being submitted for advanced standing consideration. Students should request advanced standing at the time of application by submitting an official transcript and course outlines.

5.1.4 Advanced Placement Policies

Advanced standing based on courses taken in high school

Applicants who have completed Advanced Placement (AP) or International Baccalaureate (IB) examinations may be granted up to a maximum of 18 credit hours toward their University of Ontario Institute of Technology degree. Other university-level courses taken while in high school/secondary school will be considered on case-by-case basis. Official documents must be supplied directly from the issuing institution to the Admissions Office to ensure granting of credit. Minimum subject scores of 4 in the Advanced Placement Examinations and 5 in the International Baccalaureate examinations are required for advanced standing.

Credit and exemption will not be given for completion of high school International Baccalaureate or Advanced Placement courses unless an acceptable score is attained on the examination administered by the appropriate board.

5.2 Promotion and Graduation Requirements

	Level of Achievement	
Program Requirement	**Promotion**	**Graduation**
Courses in disciplines outside the main field of study	A passing grade in any one course is 50%. To progress from one semester to the next with a clear standing, students must maintain a cumulative GPA of 2.0	Students must pass all program courses and achieve a minimum overall GPA 2.0.
Courses in disciplines within the main field of study	A passing grade in any one course is 50%. To progress from one semester to the next with a clear standing, students must maintain a cumulative GPA of 2.0	Students must pass all program courses and achieve a minimum overall GPA 2.0.
Other	N/A	
Overall achievement	To progress from one semester to the next, with a clear standing students must maintain a cumulative GPA of 2.0	Students must pass all program courses and achieve a minimum overall GPA 2.0.

Note:

The following information about calculation of the grade point average is taken from Office of The Registrar, Policies and Procedures, Section 4: Records.

Assigning Letter Grades

Final grades for all courses will be submitted to the Registrar on a letter grade scale. The following descriptions outline the quality of work for which each letter grade should be awarded. Percentage to grade equivalencies are included as a guideline for conversion.

Grade	Percentage	Description
A+	90-100	Excellent. Strong evidence of originality and independence of thought; good organization; capacity to analyze and synthesize; superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base; an outstanding ability to communicate.
A	85-89	
A-	80-84	
B+	77-79	Good. Substantial knowledge of subject matter; some evidence of organization and analytic ability; a moderate degree of originality and independence of thought; reasonable understanding of relevant issues; evidence of familiarity with literature; an ability to communicate clearly and fluently.
B	73-76	
B-	70-72	
C+	67-69	Adequate. Student is profiting from his/her university experience; an acceptable understanding of the subject matter; ability to develop solutions to simple problems in the material; some ability to organize and analyze ideas; an ability to communicate adequately.
C	60-66	
D	50-59	Marginal. Some evidence that critical and analytic skills have been developed; rudimentary knowledge of the subject matter; significant weakness in the ability to communicate.
F	0-49	Inadequate. Little evidence of even superficial understanding of subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature; failure to complete required work; an inability to communicate.

Calculating Grade Point Average

Each grade has an associated number of grade points as follows:

Grade	Points
A+	4.3
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
D	1.0
F	0.0

A student's grade point average is calculated using the following formula:

$$\frac{\text{Total grade points}}{\text{Total credit hours}} = \frac{\text{Sum of (credit hours } \times \text{ grade points) for all courses}}{\text{Total credit hours}}$$

For example, a student taking 2 courses, each worth three-credit-hours, and receiving a C (2.0 points) and B+ (3.3 points) would have a GPA of:

$$\frac{\text{Total grade points}}{\text{Total credit hours}} = \frac{(3 \text{ credit hours} \times 2.0) + (3 \text{ credit hours} \times 3.3)}{6 \text{ credit hours}}$$

$$= \frac{6.0 + 9.9}{6} = \frac{15.9}{6} = 2.65$$

The grade point average of courses taken by a student within a single semester is referred to as a semester GPA. The grade point average of all courses taken by a student at the University is referred to as his/her cumulative GPA.

6.0 PROGRAM CONTENT STANDARD

6.2.1 Current Professional/Accreditation or Other Requirements

Cisco Systems Certifications

Cisco Systems offers specialized training and career certifications. Its network security career track carries three levels of certification

1. The first step in general Cisco Career Certifications begins with **associate-level** certifications, including **Cisco Certified Network Associate (CCNA).** The CCNA certification indicates a foundation in and apprentice knowledge of networking. CCNA certified professionals can install, configure, and operate LAN, WAN, and dial access services for small networks (100 nodes or fewer), including but not limited to use of these protocols: IP, IGRP, Serial, Frame Relay, IP RIP, VLANs, RIP, Ethernet, Access Lists.

2. The second level in general Cisco Career Certifications is **professional-level** certifications, including **Cisco Certified Network Professional (CCNP).** The CCNP certification indicates advanced or journeyman knowledge of networks. With a CCNP, a network professional can install, configure, and troubleshoot local and wide area networks for enterprise organizations with networks from 100 to more than 500 nodes. The content emphasizes topics such as security, converged networks, quality of service (QoS), virtual private networks (VPN) and broadband technologies.

3. The third and highest level of achievement for network professionals is **Cisco Certified Internetwork Expert (CCIE)**. This certification is earned by those capable of tackling the most challenging assignments in their field. CCIE is the most respected high-level certification, recognized worldwide as the “doctorate” of networking. Certified CCIEs are a highly-select group.

From: www.cisco.com

In UOIT's BIT program, the **Networking specialization** offers the Cisco curriculum to prepare students to write exams for the CCNA, CCNP and CCIE levels of certification.

CompTIA (Computing Technology Industry Association) Security+™ Certification

The CompTIA Security+ certification tests for security knowledge mastery of an individual with two years on-the-job networking experience, with emphasis on security. The exam covers industry-wide topics, including communication security, infrastructure security, cryptography, access control, authentication, external attack and operational and organization security. Security+ is taught at colleges, universities and commercial training centers around the globe. Security+ is an elective or prerequisite to advanced

security certifications. Many corporations recommend or require the Security+ certification for their IT employees. Companies like Sun, IBM/Tivoli Software Group, Symantec, Motorola and Olympus Security Group know the value of a Security+ certification and recommend or require it of their IT employees.

From: www.comptia.org/certification/security/default.asp

The curriculum of the **Information Technology Security specialization** has been designed to prepare students for the Cisco CCNA and the CompTIA Security+ exams.

The chart below identifies the course requirements for various certification exam preparations.

Course Titles	CCNA	CCNP	CCIE	Security +
Networking Basics (CCNA1), and Routers and Routing Basics (CCNA2)	*			
Switching Basics and Intermediate Routing (CCNA3) and WAN Technologies (CCNA4)	*			
Advanced Routing (CCNP1) and Remote Access (CCNP2)		*		
Multilayer Switching (CCNP3)		*		
Network Troubleshooting (CCNP4)		*		
Routing and Switching, and Service Providers (CCIE1)			*	
Security (CCIE2)			*	
Voice (CCIE3)			*	
OS Security I: Windows				*
OS Security II: Unix				*
IT Security				*

6.2.2 Letters of Support: Professional/Accreditation or Other Requirements

Letters of support will be made available to quality assessors at the time of the site visit.

6.3 Program Comparison Statement

The applicant has on file and available upon request the research undertaken to complete Appendix 6.3. The applicant found that there **are not** more than five similar or related existing programs offered at Ontario universities and that there **are not** more than three similar or related existing programs offered at universities in other jurisdictions that could have been included in appendix 6.3.

6.3.1 Program Comparisons

Institution: Carleton University
Program Name and Credential: Bachelor of Information Technology Specialization in Interactive Multimedia and Design or Network Technology
Program Description: Carleton University offers a BIT degree, in cooperation with Algonquin College. This program offers two streams: a specialization in Network Technology and a specialization in Interactive Multimedia and Design. Both streams are unique in Canada and provide an innovative mix of courses drawing on a variety of disciplines. Together they represent a new approach to the teaching of technology in the 21st century. http://www.bitdegree.ca/program.htm
Similarities and Differences: The proposed BIT program curriculum has similarities to Carleton's program in the area of networking, but UOIT's proposed networking specialization offers more courses in business and management. This makes the proposed program quite unique as it combines networking, information technology and business. Only UOIT Offers specializations in information technology security and game development and entrepreneurship.

Institution: Mount Saint Vincent University (Halifax, Nova Scotia)
Program Name and Credential: Bachelor of Applied Arts (Information Technology)
Program Description: The objective of the Bachelor of Applied Arts (Information Technology) program is to provide specialized undergraduate education in information technology and integrated office systems. In addition to systems and information technology courses that provide essential knowledge and expertise, students will take traditional arts and business courses intended to develop management skills. Graduates will be able to perform effectively in the fields of office systems and information technology. http://www.msvu.ca/it/index.asp
Similarities and Differences: This Bachelor of Applied Arts degree offers a broad, general program covering various information technology topics and offering an emphasis on office systems. UOIT addresses information technology topics in relation to more specialized areas of the IT industry.

Institution: University of Toronto at Mississauga
Program Name and Credential: Bachelor of Arts in Communication, Culture and Information Technology
Program Description: Communication, Culture and Information Technology (CCIT) is a focused area of study offered by the University of Toronto at Mississauga and Sheridan College. CCIT is an interdisciplinary program for the study of the art and science of human communication, how communication builds knowledge and creates culture, and how information technology affects the way humans communicate. CCIT will produce communication professionals energized by the challenges of the wired world, graduates of an interdisciplinary liberal arts and science program who are comfortable with digital media. Students will use critical thinking, a breadth of knowledge and expression, and the full range of information technology tools to solve problems and create reflective content. http://ccit.erin.utoronto.ca/
Similarities and Differences: Although the subject "information technology" is in both degrees, this BA program offered at the U of T at Mississauga focuses on the impact of information technology on communication, knowledge creation and culture. UOIT's program is more technical in nature, with distinct areas of specialization in networking, information technology security, and game development and entrepreneurship.

Institution: University of Western Ontario
Program Name and Credential: Bachelor of Science in Applied Quantitative Information Technology
Program Description: The Applied Quantitative Information Technology Program (AQIT) is designed to give students a comprehensive business and industry-oriented grounding in the mathematical sciences. Run by the Applied Mathematics, Computer Science, Mathematics and Statistical and Actuarial Sciences Departments, the program is organized so that its graduates will be well prepared both for employment and for graduate work in many fields. AQIT provides students with a broad mathematical background during the first two years of the program and allows for informed and counselled course selection in the final two years. Program graduates will, in addition to strong skills in computing and statistics, have excellent quantitative and modelling skills. http://www.apmaths.uwo.ca/aqit/undergrad.html
Similarities and Differences: This BSc program at the University of Western Ontario emphasizes on the quantitative aspects of information technology in building computational modeling and statistics. UOIT's proposed program places a greater emphasis on technology and its applications to areas of the IT industry which are not normally covered in undergraduate programs.

Institution: York University
Program Name and Credential: Bachelor of Administrative Studies with Honours Specialization in Information Technology Bachelor of Arts in Information Technology
Program Description: **Bachelor of Administrative Studies with Honours Specialization in Information Technology** By blending studies in administrative studies with cutting-edge courses in information technology, students are provided with a solid foundation in the fundamentals of information management from a business/management perspective. Courses include applied computer networks, systems design and computer organization complemented by courses in general management principles. http://www.atkinson.yorku.ca/frschadms.htm **Bachelor of Arts in Information Technology** The departments of Mathematics and Statistics, Computer Science, Philosophy, Political Science and the Divisions of Social Science and Humanities offer a pattern of study that combines departmental specialization within the field of Information Technology. The Information Technology program is housed in the Department of Mathematics and Statistics. http://calendars.registrar.yorku.ca/calendars/2001-2002/ugfiles/as/10prog s/itec.htm
Similarities and Differences: This program at York has a more general approach to information technology and its applications to business and management. UOIT's proposed program also includes courses in business and management to provide its graduates will knowledge and skills which can be applied to their areas of specialization (networking, information technology security, and game development and entrepreneurship) and prepare them for success in a variety of business and IT environments.

Diplomas/Degrees in Game Development

UOIT's BIT program is the only degree program that offers a specialization in game development and entrepreneurship. Although Canada has a few institutions offering game development degree programs, for example, National Animation and Design Centre, located in Quebec, there is none in Ontario. Furthermore, there are only a few universities in the U.S. which offer a full degree in game development, for example, the University of Advanced Technology.

Institution: National Animation and Design Centre, Quebec
Program Name and Credential: Diploma - Design and 3D Animation for Video Games
Program Description: The National Animation and Design Centre offers a professional training program leading to a NAD Centre diploma. The Design and 3D Animation for Video Games program consists of 40 weeks of cutting-edge training for candidates with prior studies, work experience or distinctive skills in visual arts (art, film, photography, computer graphic design, illustration) or any other related field (architecture, industrial design, etc.), who possess a keen interest in video games. By the end of the program, students have acquired the knowledge and expertise they need to work in the game development industry. This program features extensive individual lab work, during which students create their own entire cut-scene, one 2D game and one 3D game level, as well as the elements of a gaming portfolio. Training is provided only in French although most of the teaching materials and software are in English. Good verbal comprehension of the French language is mandatory. The programs are 40 weeks, full-time by day. (Total - 700 hours - lab not included). The student should expect a minimum attendance of 40 hours/week. NAD Centre also offers a 48 week program in 3D Animation and Visual Effects for Film and Television to prepare for work in the film and television post-production industry. www.nad.qc.ca
Similarities and Differences: NAD's courses are short and intense training programs leading to a specialized diploma. UOIT's BIT (Game Development and Entrepreneurship) is a four-year honours degree program which includes a broader range of subjects, including an additional focus on business and entrepreneurship.

Institution: University of Advancing Technology, Arizona, USA
Program Name and Credential: Associate of Bachelor's Degree in Multimedia Design - with majors in Digital Animation, Digital Video, Game Design, Digital Art and Design and Web Design
Program Description: UAT is one of the few American programs from which students can obtain an associate or bachelor's degree in Multimedia with a major in Game Design. Students learn state-of-the-art hardware and software and gain an understanding of the processes used in the development of console and computer games. They gain an insight into all levels from the initial game proposal to a completed project. Classes cover essential issues as game documentation, game balance, interactive story telling and interface design. Students work in a team-based environment, focusing on content creation and design or programming with an emphasis on game technologies. The program provides a well-rounded approach which provides students with a deep understanding of all aspects of game creation and the tools to create the next generation of game design. UAT also offers a Bachelor of Science degree in Software Engineering with a variety of majors, including Network Architecture and Administration, Network Security Architecture and Administration and Game Programming. www.uat.edu
Similarities and Differences: UAT provides students with the technical and creative elements to design games. In addition to these components, UOIT also offers a focus on business and entrepreneurship to provide students with skills to set up and operate their own businesses.

6.4 Program Learning Outcomes

General Program Learning Outcomes Common to All Specializations

Program Level Learning Outcomes	Course(s) or Course Segments that Contribute to this Outcome
The graduate has reliably demonstrated the ability to:	
1. Understand the applications of information technology and basic business knowledge	Information Technology, Introduction to Programming, Introduction to Entrepreneurship, Mathematics Foundations for Business, Marketing in the IT Sector, Statistics
2. Demonstrate conceptual understanding of information technologies and their industry standards	Information Technology, Information Technology Project Management, Emerging Networks Technologies, Emerging IT Security Technologies, UOIT Edge I and II - Capstone Study Projects
3. Apply business and entrepreneurship skills in using information technology	Technical Communications, Introduction to Entrepreneurship, Marketing in the IT Sector, Information Technology Project Management
4. Use relevant communication and information technologies to acquire, analyze and communicate data and to support the applications of information technology	Statistics, UOIT Edge I and II - Capstone Study Projects **The use of technology will be integrated into all courses as part of research, assignment preparation, presentations, and the use of specific software for the application of theory and practice of skills**
5. Define appropriate practices within a professional, legal and ethical framework	Law and Ethics of IT
6. Utilize project management and business planning skills to initiate and carry out projects in a timely and proficient manner	Information Technology Project Management, UOIT Edge I and II - Capstone Study Projects
7. Conduct systematic research into issues related to the discipline, deploying accurately established techniques of analysis and enquiry	Network Simulation, Emerging Networks Technologies, Emerging IT Security Technologies, UOIT Edge I and II - Capstone Study Projects **Applicable, in varying degrees to most courses, including general electives**
8. Communicate information, ideas, problems and solutions persuasively and accurately, using oral, written and visual form, to specialist and non-specialist audiences	Technical Communications, UOIT Edge I and II - Capstone Study Projects, Collaborative Leadership **Applicable to all required courses and general electives**

9. Display well-developed leadership and interpersonal skills in team environments	Collaborative Leadership, UOIT Edge I and II - Capstone Study Projects **Applicable to all required courses and general electives in which students are engaged in group activities and assignments**
10. Exhibit an awareness of the society and culture in which they live and work and recognize and value the alternative outlooks that people from diverse backgrounds my bring to business and management issues	Collaborative Leadership, Law and Ethics of IT, UOIT Edge I and II - Capstone Study Projects **Applicable to many general elective courses**
11. Apply the cognitive skills of critical thinking, analysis and synthesis to evaluate evidence and arguments, analyze data, identify assumptions and formulate informed and innovative solutions to problems	**Instructional methods and assessment strategies will be designed to ensure that this learning outcome is a requirement in all courses – required courses and general electives**
12. Appreciate the uncertainty, ambiguity, and limits of knowledge and develop strategies for continuing professional development and lifelong learning	UOIT Edge I and II - Capstone Study Projects **This is especially applicable to the rapidly changing field of IT, so most courses will address this outcome in some way.**

Learning Outcomes Specific to the Networking Specialization

Program Level Learning Outcomes	Course(s) or Course Segments that Contribute to this Outcome
The graduate has reliably demonstrated the ability to:	
1. Understand the concepts of networking technology and its applications	Information Technology, Networking Basics (CCNA1) & Routers and Routing Basics (CCNA2), Enterprise Network Management, Emerging Networks Technologies
2. Use essential networking terminology	Information Technology, CCNA1 & CCNA2
3. Understand the OSI reference model and explain how each layer works together to compartmentalize networking functionality of a computer and networking applications	Switching Basics and Intermediate Routing (CCNA3) & WAN Technologies (CCNA4), Computer Architecture
4. Identify hardware used to construct a network and recommend optimal network configurations	Enterprise Network Management, Network Simulation, Emerging Networks Technologies
5. Understand network topologies and their applications in a network environment as well as industry standards such as IEEE	Advanced Routing (CCNP1) & Remote Access (CCNP2), Multilayer Switching (CCNP3), Routing and Switching, and Service Provider (CCIE1)
6. Demonstrate proven knowledge of network protocols such as TCP/IP, IPX, and NetBeui	Advanced Routing (CCNP1) & Remote Access (CCNP2), Multilayer Switching (CCNP3)
7. Understand the Ethernet protocol and its mechanisms and functionality	Networking Basics (CCNA1) & Routers and Routing Basics (CCNA2), Switching Basics and Intermediate Routing (CCNA3) & WAN Technologies (CCNA4)
8. Demonstrate the skills in installing, administrating, and managing network operating systems and in developing a functional and well-designed infrastructure	Operating Systems I: Windows, Operating Systems II: Unix, Information Technology Project Management
9. Know how to improve a network by adding services available, such as World Wide Web, FTP, and messaging serves, and to apply security mechanisms to protect a network and all of its services	Introduction to Programming, Object Oriented Programming, Web Programming, Database Systems, Multimedia Systems, Basics of Digital Transmission, IT Security, Law and Ethics of IT, Security (CCIE2), Voice (CCIE3)

10. Understand the tools and techniques to administer a network and the knowledge to discuss network troubleshooting and management	Network Troubleshooting (CCNP4), Enterprise Network Management, Information Technology Project Management, Network Simulation
11. Prepare for the CCNA/CCNP certification examination	Operating Systems I: Windows, Networking Basis (CCNA1) & Routers and Routing Basics (CCNA2), Switching Basics and Intermediate Routing (CCNA3) & WAN Technologies (CCNA4), Advanced Routing (CCNP1) & Remote Access (CCNP2), Multilayer Switching (CCNP3), Network Troubleshooting (CCNP4)

Learning Outcomes Specific to the IT Security Specialization

Program Level Learning Outcomes	Course(s) or Course Segments that Contribute to this Outcome
The graduate has reliably demonstrated the ability to:	
1. Understand the concept of information security and types of attacks	OS Security I: Windows, OS Security II: Unix, CISCO Security I, eBusiness Technologies, Emerging IT Security Technologies
2. Discuss the basic security services that can be used to protect information and systems from attack	CISCO Security I & II, OS Security I: Windows, OS Security II: Unix
3. Understand the legal issues surrounding information security	Law & Ethics of IT
4. Develop and analyze IT security policy and guidelines, incident response procedures and disaster recovery	IT Security Policies and Procedures, Enterprise Network Management
5. Apply security in networking technologies and operating systems	Operating Systems I: Windows, Operating Systems II: Unix, OS Security I: Windows, OS Security II: Unix, VPN and Data Privacy, eBusiness Technologies, eBusiness Security
6. Understand the best practices in computer administrative security measures and technical security measures	Emerging IT Security Technologies, IT Security Policies and Procedures
7. Identify and understand ways to prevent security risks, threats and vulnerabilities within an organization	Cybercrime, Malware Worms and Viruses, Web Services Security, eBusiness Security
8. Discuss key Internet architecture issues, terminology, and ways to secure the Internet connection to an organization	Networking Basics (CCNA1) & Routers and Routing Basics (CCNA2), Switching Basics and Intermediate Routing (CCNA3) & WAN Technologies (CCNA4)
9. Understand the uses of Virtual Private Networks (VPNs) and describe ways in which they can be set up and managed	VPN and Data Privacy
10. Discuss issues involved in setting up an e-commerce site and strategies to implement security within the site	eBusiness Technologies, eBusiness Security, Enterprise Network Management, Web Services Security

11. Understand encryption, private and public key systems, digital signatures and trust, and explain how each of these types of technologies can, and should, be used to enhance security	OS Security I: Windows, OS Security II: Unix, Object Oriented Programming, Basics of Digital Transmission, Advanced Communications Networks, Emerging IT Security Technologies
12. Understand hacker motivation and the hacker threat – in casual and professional contexts	Cybercrime, eBusiness Security
13. Possess knowledge on the proper use and usefulness of intrusion detection systems	Enterprise Network Management, OS Security I: Windows, OS Security II: Unix, CISCO Security I & II
14. Demonstrate proven knowledge of applying security measures on operating systems	Operating Systems I: Windows, Operating Systems II: Unix, OS Security I: Windows, OS Security II: Unix, IT Security Policies and Procedures

Learning Outcomes Specific to the Game Development and Entrepreneurship Specialization

Program Level Learning Outcomes	Course(s) or Course Segments that Contribute to this Outcome
The graduate has reliably demonstrated the ability to:	
1. Convey a firm understanding of game development and programming concepts	Game Programming, Animation Arts, Modeling and Rigging, Internet Gaming Development, Game Production and Documentation, Object Oriented Programming
2. Describe gaming technologies and business aspects in the gaming industry	Introduction to Entrepreneurship, Game Programming, Game World I & II, Marketing and Advertising in the IT Sector, Entrepreneur Finance, Accounting for IT, Advanced Entrepreneurship
3. Possess knowledge of game technology and theory	Creative Writing and Narrative Concepts, Game Programming, Game World I & II, Artificial Intelligence for Simulation & Gaming, Immersive Environments & Virtual Reality
4. Integrate multimedia content into the programming pipeline	Drawing I & II, Imaging I & II, Animation Arts, Filmmaking, Design Studio
5. Adopt and use different languages and APIs	Object Oriented Programming, Game Programming
6. Appreciate and use team skills in the game development process, including the knowledge to read and use other programmers' code	Information Technology Project Management, Object Oriented Programming, Design Studio
7. Learn and apply new game technologies and new languages, toolsets, and APIs	Computer Networking & Distributing Computing, Game Programming, Game World I & II, Internet Gaming Development

6.5 Academic Course Schedule Information

6.5.1 Program Hour/Credit Conversion Justification

1. Does the program include a laboratory component? *Yes*

2. If “yes” will the calculation of program breadth be based on a conversion of program hours into program credits *No*

3. If “yes”, complete Table 6.5.1. If “no” proceed to Appendix 6.5.2

6.5.2 Academic Course Schedule - Baccalaureate Full-Time Studies

The charts for each of the specializations in the BIT program are provided on the pages that follow.

6.5.3 Academic Course Schedule - Graduate

In June 2004, UOIT received approval from the Executive of the Ontario Council for Graduate Studies to offer a Master of Information Technology Security (MITS) program. The program is currently being reviewed by PEQAB. Graduates of the BIT program who have earned appropriate grades will be eligible for admission to this graduate program.

6.5.2A Academic Course Schedule: Bachelor of Information Technology (Networking) - (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
1,1	Technical Communications		52		None	deBurger	PhD
1,1	Discrete Mathematics		58.5		None	Grami, Goodman	PhD
1,1	Information Technology	58.5			None	Fong, Grami, Martin	PhD
1,1	General Elective		52		None	Faculty to be hired	PhD
1,1	Networking Basics (CCNA1) and Routers and Routing Basics (CCNA2)	78			None	Faculty to be hired	PhD
1,2	Introduction to Entrepreneurship	39			None	Wu	PhD
1,2	Statistics		39		None	Goodman	PhD
1,2	Collaborative Leadership		39		None	Schell, Fong	PhD
1,2	Introduction to Programming	39			None	Martin	PhD
1,2	Switching Basics & Intermediate Routing(CCNA3) and WAN Technologies (CCNA4)	78			CCNA1/2	Faculty to be hired	PhD
2,1	Object Oriented Programming	78			Introduction to Programming	Martin, Hung, Vargas Martin	PhD
2,1	Operating Systems I: Windows	52			None	Fong	PhD
2,1	Marketing in the IT Sector			39	None	Gill, Karry, Wu	PhD
2,1	General Elective		52		As required for selected elective	Faculty to be hired	PhD

6.5.2A Academic Course Schedule: Bachelor of Information Technology (Networking) - (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
2,1	Advanced Routing (CCNP1) and Remote Access (CCNP2)	78			CCNA3/4	Faculty to be hired	PhD
2,2	Web Programming	58.5			Object Oriented Programming	Martin, Hung, Vargas Martin	PhD
2,2	Operating Systems II: Unix	52			Introduction to Programming	Martin	PhD
2,2	Information Technology Project Management			39	Introduction to Entrepreneurship and Information Technology	Grami, Vargas Martin	PhD
2,2	General Elective		52		As required for selected elective	Faculty to be hired	PhD
2,2	Multilayer Switching (CCNP3)	78			CCNP1/2	Faculty to be hired	PhD
3,1	Database Systems	58.5			Information Technology, Introduction to Programming	Hung and faculty to be hired	PhD
3,1	Computer Architecture	78			Discrete Mathematics, Information Technology	Grami, Martin, Vargas Martin	PhD
3,1	Algorithms and Data Structures	78			Discrete Mathematics, Object Oriented Programming	Martin, Hung, Vargas Martin	PhD
3,1	General Elective		52		As required for selected elective	Faculty to be hired,	PhD
3,1	Network Troubleshooting (CCNP4)	78			Taken at least one CCNP course	Faculty to be hired	PhD
3,2	Multimedia Systems	78			Discrete Mathematics, Object Oriented Programming	Grami	PhD
3,2	Enterprise Network Management	58.5			CCNA Courses, Operating Systems I and II	Faculty to be hired	
3,2	Basics of Transmission System	58.5			CCNA 3/4, Discrete Mathematics	Grami	PhD
3,2	General Elective		52		As required for selected elective	Faculty to be hired	PhD

6.5.2A Academic Course Schedule: Bachelor of Information Technology (Networking) - (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
3,2	CCIE1 - Routing and Switching, & Service Provider	58.5			Network Troubleshooting (CCNP4)	Faculty to be hired	PhD
4,1	UOIT Edge I - Capstone Study Project	39			Registration in Year 4 of Program	Fong, Grami, Martin, Hung, Vargas Martin	PhD
4,1	Network Simulation	78			Enterprise Network Management, CCNP Courses	Martin	PhD
4,1	Emerging Networks Technologies	39			CCNA and CCNP Courses	Martin, Hung	PhD
4,1	General Elective		52		As required for selected elective	Faculty to be hired	PhD
4,1	CCIE2 - Security	58.5			CCIE1 - Routing and Switching, & Service Provider	Faculty to be hired	PhD
4,2	UOIT Edge II -Capstone Study Project II	39			Capstone Study Project I	Fong, Grami, Martin, Hung, Vargas Martin	PhD
4,2	eBusiness technologies	39			Information Technology Project Management, Web Programming	Martin, Hung	PhD
4,2	IT Security	39			CCNP Courses	Hung, Vargas Martin	PhD
4,2	Law & Ethics of IT			39	None	Faculty to be hired	PhD
4,2	CCIE3 - Voice	78			CCNP Courses	Faculty to be hired	

6.5.2A Academic Course Schedule Summary

Bachelor of Information Technology (Networking) - (Baccalaureate Full-Time Studies)

Subtotal Course Hours	A = Sum of DW Hours 1644.5	B = Sum of DO Hours 500.5	C = Sum of DL Hours 117	
Total Program Hours	2262			
Calculate the percentage of the Program offered in DO and DL courses	27.3			Must be at least 20% of total program
Calculate the percentage of the breadth courses offered in DO courses	81			Must be at least 75% of total DO and DL courses
Calculate the percentage of the breadth courses offered in DL courses	19			Must not be greater than 25% of the total DO and DL courses

6.5.2A Academic Course Schedule: Bachelor of Information Technology (IT Security) - (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
1,1	Technical Communications		52		None	deBurger	PhD
1,1	Discrete Mathematics		58.5		None	Grami, Goodman	PhD
1,1	Information Technology	58.5			None	Fong, Grami, Martin	PhD
1,1	General Elective		52		None	Faculty to be hired	PhD
1,1	Networking Basics (CCNA1) and Routers and Routing Basics (CCNA1)	78			None	Faculty to be hired	PhD
1,2	Introduction to Entrepreneurship	78			None	Faculty to be hired	PhD
1,2	Statistics		39		None	Goodman	PhD
1,2	Collaborative Leadership		39		None	Schell, Fong	PhD
1,2	Introduction to Programming	39			None	Martin, Hung, Vargas Martin	PhD
1,2	Switching Basics & Intermediate Routing(CCNA3) and WAN Technologies (CCNA4)	78			CCNA 1/2	Faculty to be hired	PhD
2,1	Object Oriented Programming	78			Introduction to Programming	Martin, Hung, Vargas Martin	PhD
2,1	Operating Systems I: Windows	52			None	Fong	PhD
2,1	Cybercrime	39			None	Schell	PhD
2,1	General Elective		52		As required for selected elective	Faculty to be hired	PhD

6.5.2A Academic Course Schedule: Bachelor of Information Technology (IT Security) - (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
2,1	CISCO Security I	39			CCNA 3/4	Faculty to be hired	PhD
2,2	Information Technology Project Management			39	Introduction to Entrepreneurship	Grami, Vargas Martin	PhD
2,2	Operating Systems II: Unix	52			Introduction to Programming	Martin	PhD
2,2	OS Security I: Windows	78			Operating Systems I: Windows	Hung	PhD
2,2	General Elective		52		As required for selected elective	Faculty to be hired	PhD
2,2	CISCO Security II	78			CISCO Security I	Faculty to be hired	PhD
3,1	Database Systems	58.5			Information Technology, Introduction to Programming	Hung	PhD
3,1	Computer Architecture	78			Information Technology, Discrete Mathematics	Grami, Martin, Vargas Martin	PhD
3,1	Web Programming	58.5			Object Oriented Programming	Martin, Hung, Vargas Martin	PhD
3,1	General Elective		52		As required for selected elective	Faculty to be hired,	PhD
3,1	OS Security II: Unix	78			Operating Systems I: Unix, OS Security I: Windows	Martin	PhD
3,2	eBusiness Technologies	39			Information Technology Project Management, Web Programming	Martin, Hung	PhD
3,2	Enterprise Network Management	58.5			Operating Systems I and II, and CCNP Courses	Faculty to be hired	
3,2	Basics of Digital Transmission	58.5			CCNA 3/4, Discrete Mathematics	Grami	PhD
3,2	General Elective		52		As required for selected elective	Faculty to be hired	PhD

6.5.2A Academic Course Schedule: Bachelor of Information Technology (IT Security) - (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
3,2	Law & Ethics of IT			39	None	Faculty to be hired	PhD
4,1	UOIT Edge I - Capstone Study Project	39			Registration in Year 4 of Program	Fong, Grami, Martin, Hung, Vargas Martin	PhD
4,1	Advanced Communications Networks	78			Basics of Digital Transmission, CCNA 3/4	Grami, Martin	PhD
4,1	Emerging IT Security Technologies	39			CCNA Courses	Martin, Hung, Vargas Martin	PhD
4,1	General Elective		52		As required for selected elective	Faculty to be hired	PhD
4,1	Malware Worms and Viruses	52			Object Oriented Programming, OS Security I & II	Martin, Vargas Martin	PhD
4,2	UOIT Edge II - Capstone Study Project	39			UOIT Edge I - Capstone Study Project	Fong, Grami, Martin, Hung, Vargas Martin	PhD
4,2	eBusiness Security	39			Database Systems, CCNA 3/4, Advanced Communications Networks	Martin, Hung	PhD
4,2	VPN and Data Privacy	58.5			Advanced Communications Networks	Faculty to be hired	PhD
4,2	IT Security Policies and Procedures	39			Law & Ethics of IT, eBusiness Technologies,	Goodman	PhD
4,2	Web Services Security	65			eBusiness Technologies	Hung	PhD

6.5.2A Academic Course Schedule Summary

Bachelor of Information Technology (IT Security) - (Baccalaureate Full-Time Studies)

Subtotal Course Hours	A = Sum of DW Hours 1625	B = Sum of DO Hours 500.5	C = Sum of DL Hours 117	
Total Program Hours	2242.5			
Calculate the percentage of the Program offered in DO and DL courses	27.5			Must be at least 20% of total program
Calculate the percentage of the breadth courses offered in DO courses	81			Must be at least 75% of total DO and DL courses
Calculate the percentage of the breadth courses offered in DL courses	19			Must not be greater than 25% of the total DO and DL courses

6.5.2A Academic Course Schedule: Bachelor of Information Technology (Game Development and Entrepreneurship) (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
1,1	Creative Writing and Narrative Concepts		39		None	Faculty to be hired	PhD
1,1	Discrete Mathematics		58.5		None	Grami, Goodman	PhD
1,1	Information Technology	58.5			None	Fong, Grami, Martin	PhD
1,1	General Elective		52		None	Faculty to be hired	PhD
1,1	Drawing I	58.5			None	Faculty to be hired	PhD
1,2	Introduction to Entrepreneurship	39			None	Faculty to be hired	PhD
1,2	Statistics		39		None	Goodman	PhD
1,2	Collaborative Leadership		39		None	Schell, Fong	PhD
1,2	Introduction to Programming	39			None	Martin, Hung, Vargas Martin	PhD
1,2	Graphic Design	58.5			Drawing I	Faculty to be hired	PhD
2,1	Object Oriented Programming	78			Introduction to Programming	Martin, Hung, Vargas Martin	PhD
2,1	Drawing II (Animation)	58.5			Drawing I	Faculty to be hired	PhD
2,1	Marketing in the IT Sector			39	None	Gill, Karray, Wu	PhD
2,1	General Elective		52		As required for selected elective	Faculty to be hired	PhD

6.5.2A Academic Course Schedule: Bachelor of Information Technology (Game Development and Entrepreneurship) (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
2,1	Imaging I	58.5			None	Faculty to be hired	PhD
2,2	Game World 1	58.5			None	Faculty to be hired	PhD
2,2	Sound & Audio	58.5			Object Oriented Programming	Faculty to be hired	PhD
2,2	Information Technology Project Management			39	Introduction to Entrepreneurship	Grami, Vargas Martin	PhD
2,2	General Elective		52		As required for selected elective	Faculty to be hired	PhD
2,2	Imaging II (Graphical Data Processing)	58.5			Imaging I, Object Oriented Programming	Faculty to be hired	PhD
3,1	Computer Architecture	78			Information Technology, Discrete Mathematics	Grami, Martin, Vargas Martin	PhD
3,1	Animation Arts	58.5			Graphic Design, Sound & Audio	Faculty to be hired	PhD
3,1	Accounting for IT			39	None	Friedlan, Wayne	PhD
3,1	Entrepreneurial Finance			39	Introduction to Entrepreneurship	Faculty to be hired,	PhD
3,1	Game Programming	58.5			Object Oriented Programming, Game World I	Faculty to be hired	PhD

6.5.2A Academic Course Schedule: Bachelor of Information Technology (Game Development and Entrepreneurship) (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
3,2	Computer Networking & Distributed Computing	39			Object Oriented Programming, Computer Architecture	Hung, Martin	PhD
3,2	Filmmaking	58.5			Imaging II	Faculty to be hired	
3,2	Modeling and Rigging	58.5			Animation Arts	Faculty to be hired,	PhD
3,2	General Elective		52		As required for selected elective	Faculty to be hired	PhD
3,2	Game World II	58.5			Game World I, Game Programming	Faculty to be hired	PhD
4,1	UOIT Edge I - Capstone Study Project	39			Registration in Year 4 of Program	Fong, Grami, Martin, Hung, Vargas Martin	PhD
4,1	Internet Gaming Development	58.5			Game World II, Computer Networking and Distributed Computing	Faculty to be hired,	PhD
4,1	Artificial Intelligence for Simulations and Gaming	58.5			Game World II	Faculty to be hired	PhD
4,1	General Elective		52		As required for selected elective	Faculty to be hired	PhD
4,1	Advanced Entrepreneurship			58.5	Introduction to Entrepreneurship	Faculty to be hired	PhD
4,2	UOIT Edge II - Capstone Study Project	39			UOIT Edge I - Capstone Study Project	Fong, Grami, Martin, Hung, Vargas Martin	PhD
4,2	Game Production and Documentation	58.5			Game World II	Faculty to be hired	PhD

6.5.2A Academic Course Schedule: Bachelor of Information Technology (Game Development and Entrepreneurship) (Baccalaureate Full-Time Studies)

Year and Semester	Course Title	Total DW Course Semester Hours	Total DO Course Semester Hours	Total DL Course Semester Hours	Course Prerequisites and Co-requisites	Proposed Instructor (or indicate if faculty to be recruited)	Highest Qualification earned (or required of faculty to be hired) and, only where applicable, highest qualifications in progress
4,2	Immersive Environments, Virtual Reality	58.5			Artificial Intelligence for Simulations and Gaming, Modeling and Rigging, Game World II, Imaging II, Sound and Audio	Faculty to be hired	PhD
4,2	Design Studio	58.5			Registration in Year 4 Game Development and Entrepreneurship stream only	Faculty to be hired	PhD
4,2	General Elective		52		As required for selected elective	Faculty to be hired	PhD

6.5.2A Academic Course Schedule Summary

Bachelor of Information Technology (Game Development and Entrepreneurship) - (Baccalaureate Full-Time Studies)

Subtotal Course Hours	A = Sum of DW Hours 1404	B = Sum of DO Hours 487.5	C = Sum of DL Hours 214.5	
Total Program Hours	2106			
Calculate the percentage of the Program offered in DO and DL courses	33.3			Must be at least 20% of total program
Calculate the percentage of the breadth courses offered in DO courses	69.4			Must be at least 75% of total DO and DL courses
Calculate the percentage of the breadth courses offered in DL courses	30.6			Must not be greater than 25% of the total DO and DL courses

6.6 Course Outlines and Other Graduation Requirements

6.6.1 Course Descriptions for the BIT (Networking Specialization)

Courses specific to this Specialization are shaded. Learning outcomes for each course are provided in Section 6.6.2.

Year and Semester	Course Title	Calendar Course Description
1,1	**Technical Communications**	Introduces technical writing and communication, with topics on planning the document, revising, and writing applications such as manuals and proposals, covering emerging issues such as research on the Internet, usability testing, collaborative writing, and graphics. Lect: 3 hrs. Tutorial: 1hr.
1,1	**Discrete Mathematics**	This course addresses the following topics: sets and set operations, propositional logic, predicate logic, rules of inference; methods of proof and reasoning, modular arithmetic, counting, pigeon-hole principle, induction, deduction, relations, functions, graphs, graph algorithms, shortest path, trees, combinatorics; applications to cryptosystems, hashing functions, coding. Lect: 3hrs. Tutorials: 3 hrs bi-weekly
1,1	**Information Technology**	IT: principles, state-of-the-art, opportunities, and trends; IT applications: science, engineering, and daily life; computer hardware: I/O devices, semiconductor memory, secondary storage devices, CPU, peripheral equipment; computer software: application and system software, including operating systems, utilities; web browsers; Internet, wired and wireless media, networks, and architectures; IT design criteria (complexity, performance) and constraints (costs, regulations, schedules). Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: None
1,1	**General Elective**	Students may liberal studies electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
1,1	**CCNA1 & CCNA2 Networking Basics and Routers and Routing Basics**	This course is a combination of the Cisco Academy Program CNNA1 and CCNA2 covering the following topics: Computer hardware and software, electricity, networking terminology, and protocols; LANs and WANs, Open System Interconnection (OSI) model, Ethernet, and Internet Protocol (IP) addressing, Design and documentation of a basic network and structured cabling, and network-to-network communications; Router user interfaces, components and configuration, basics of IOS versions, naming and software backup, TCP/IP Protocol Suite and IP addressing and subnetting, and Internet routing protocols – RIP, IGRP. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: None

1,2	**Introduction to Entrepreneurship**	Introduces entrepreneurship as a discipline and covers all facets of entrepreneurship, including economics, society, intraprapreneuring, and issues, including starting and managing a successful new business venture; new venture capital, creation, and management. Lect: 3 hrs.
1,2	**Statistics**	This course introduces the fundamental concepts and applications of descriptive and inferential statistics and probability theory. It also introduces statistical model building. Emphasis is balanced among theoretical concepts, calculations (including computer-based calculations), and data interpretation. Lect: 3hrs. Credit Restriction: STAT 2010U, STAT 2020U, STAT 2800U, STAT 3800U, JSTS 2820U.
1,2	**Collaborative Leadership**	This course intends to develop critical employability skills such as teamwork, leadership, project management, communication skills and intercultural understanding, and will focus students' learning on topics related to interactions with others in personal, educational and professional contexts. Students will engage in collaborative and dynamic learning activities involving direct and practical application of the content/skills critical to professional success. They will explore the practice and impact of leadership, negotiations and teamwork in organizations and communities. These practices will be examined in a variety of settings as described in both popular and academic writings. Learning activities will be directed toward: developing leadership for exceptional performance, obtaining commitment to goals and standards, negotiating and resolving conflict, inter-cultural communications, ethical practice, and relating with others in team environments. Lect: 3hrs.
1,2	**Introduction to Programming**	This course introduces students to general computer programming principles. Topics include basic computer hardware and software concepts, problem analysis, design of algorithms and programs, the selection of data types, basic I/O, repetition and flow control, decision-making, and optionally, principles of object-oriented languages. The course uses a programming language such as Java or C. Applications to business, science and engineering are illustrated. Lect: 3hrs. Cross Listed: ENGR 1200U.
1,2	**CCNA3 & CCNA4 Switching Basics and Intermediate Routing and WAN Technologies**	This course is a combination of the Cisco Academy Program CNNA3 and CCNA4 covering the following topics: Switching and VLANs, Spanning-Tree Protocol, Routing and Routing Protocols, Access Control Lists (ACLs), and Network documentations, security and troubleshooting; WAN devices, encapsulation formats, and communication, PPP components, session establishment, and authentication, ISDN uses, services, and configuration, frame relay technology and configuration. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: CCNA 1/2

2,1	**Object Oriented Programming**	This course presents the basic concepts of object-oriented programming and introduces the principles underlying its practice. It also discusses the analysis, design and implementation of an object-oriented system. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: None
2,1	**Operating Systems I: Windows**	This course is to present an understanding of the Windows and its functionality and advanced features as a server and desktop operating systems. It also provides the skills needed to install, configure, manage, monitor, and troubleshoot Windows 2000 operating system. Lect: 2 hrs, Lab: 2 hrs. Pre-requisites: None
2,1	**Marketing in the IT Sector**	This course is concerned with the development of marketing techniques and strategies for the IT sector. Special emphasis is placed on the evolving business and technological environments facing IT firms. Topics include positioning, distribution, branding, and pricing strategies for IT companies. Lect: 3 hrs. Pre-requisites: None
2,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
2,1	**CCNP1 & CCNP2 Advanced Routing and Remote Access**	This course is a combination of the Cisco Academy Program CCNP1 and CCNP2 covering the following topics: selecting and configuring scalable IP addresses, implementing technologies to redistribute and support multiple, advanced, IP routing protocols such as OSPF, EIFRP, and BGP, configuring access lists, designing and testing edge router connectivity into a BGP network; configuring asynchronous connections, point-to-point Protocol (PPP) architecture, protocol, callback, and compression, ISDN architecture, protocol layers, BRI and DDR, configuring X.25, Frame Relay, and AAA. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: CCNA3/4
2,2	**Web Programming**	This course covers the design and application of Hypertext Markup Language (HTML), which is used to create documents on the World Wide Web. The topics include structure, presentation format, lists, links, images, tables, frames, and forms. Building upon Web Programming I, this course covers JavaScript, VBScript, ActiveX, Active Server Pages, and Perl. An emphasis is placed upon the appropriate use of the programming tools introduced. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Object Oriented Programming
2,2	**Operating Systems II: Unix**	This course presents an overview of the Unix operating system from both administrator and user perspectives and covers the basis of the file system and the commands and scripts available with the operating system. Lect: 2 hrs, Lab: 2 hrs. Pre-requisites: Introduction to Programming

2,2	**Information Technology Project Management**	This course focuses on information technology projects and applies basic project management theory on handling and managing those projects. It introduces the concepts and tools that are appropriate for phases of project life cycle, and incorporates areas outlined in the Project Management Institute's Project Management Body of Knowledge (PMBOK) into the basic concepts associated with information systems management and software engineering. Lect: 3 hrs. Pre-requisite: Introduction to Entrepreneurship
2,2	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
2,2	**CCNP3 Multilayer Switching**	This course is a combination of the Cisco Academy Program CNNP3 and CCNP4 covering the following topics: Fast Ethernet, Gigabit Ethernet, VLAN basics, types, identification, and trunking protocol, spanning tree protocol, MLS processes, and configuration, multicasting protocols, routing, and tasks; Troubleshooting in OSI Layers 1, 2, and 3, TCP/IP, LAN switching, VLANs, Frame Relay, ISDN, Appletalk, Novell, EIGRP, OSP, BGP. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: CCNP1/2
3,1	**Database Systems**	This course introduces the field of database systems for students with a basic of knowledge of storage and file management capabilities of a modern computer system and features of one or more high-level programming language. Coverage includes general concepts, the relational model, theory and practice of database design, transaction management, how relational concepts are relevant to other aspects of database technology, and the impact of object technology on database systems. It also covers security issues of database systems, including disaster recovery and network intrusion. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Information Technology, Introduction to Oriented Programming
3,1	**Computer Architecture**	Computer systems generation: main-frame, mid-range, micro-computers; peripherals and interfaces; bus design; input/output systems and technologies; central processing units: arithmetic logic and control units; semiconductor memory (RAM & ROM), magnetic disks and tapes, optical disks; assembly and high-level programming language; integer and floating point arithmetic, pipelining and parallelism; CISC vs. RISC. Lect: 3 hrs, Lab: 3 hrs bi-weekly, Other: 3 hrs bi-weekly. Pre-requisites: Discrete Mathematics, Information Technology
3,1	**Algorithms and Data Structures**	Analysis of algorithms and complexity notation; recursion and recurrence relations; techniques for algorithm design; top-down analysis and modular design; abstract data structures: list, stacks, queues, trees, graphs, implementation alternatives; hierarchical data structures and associated algorithms; abstract data types, classes, interfaces and specifications. Lect: 3 hrs, Lab: 3 hrs bi-weekly, Other: 3 hrs bi-weekly. Pre-requisites: Discrete Mathematics, Object Oriented Programming

3,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
3,1	**CCNP4 Network Troubleshooting**	This course is a combination of the Cisco Academy Program CNNP3 and CCNP4 covering the following topics: Fast Ethernet, Gigabit Ethernet, VLAN basics, types, identification, and trunking protocol, spanning tree protocol, MLS processes, and configuration, multicasting protocols, routing, and tasks; Troubleshooting in OSI Layers 1, 2, and 3, TCP/IP, LAN switching, VLANs, Frame Relay, ISDN, Appletalk, Novell, EIGRP, OSP, BGP. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: CCNP3
3,2	**Multimedia Systems**	Theory, features, design, performance, complexity analysis and application of multimedia engineering technologies; digital signal compression: audio, image, video, characterization, compression requirements; source entropy and hybrid coding, transform and wavelet-based coding; motion estimation; object-based processing, and multimedia indexing and retrieval. Lect: 3 hrs, Lab: 3 hrs bi-weekly, Other: 3 hrs bi-weekly. Pre-requisites: Discrete Mathematics, Object Oriented Programming
3,2	**Enterprise Network Management**	This course is to provide the knowledge and skills needed to install, administer, and manage an enterprise network using operating systems such as Windows and Unix. It also covers building a secure firewall, VPN, and related topics. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: BUSI XXXX Operating Systems I: Windows, Operating Systems II: Unix. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Operating Systems I: Windows, Operating Systems II: Unix
3,2	**Basics of Digital Transmission**	Digitization: sampling, quantization, A-to-D & D-to-A conversion; source and channel coding; multiplexing: TDM, FDM; modulation: pulse modulation & digital modulation; binary & M-ary transmission; packet & circuit switching; power, bandwidth, performance, and complexity trade-offs; transmission media: wired (twisted-pair, coaxial-cable, fiber-optics) and wireless (cellular, wireless LAN, personal LAN); topologies: star, mesh, ring, bus; high-speed internet access: DSL, cable-modem, fixed wireless, satellite. Lect: 3 hrs, Other: 3 hrs bi-weekly. Prerequisites: CCNA & CCNP courses
3,2	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject

3,2	**CCIE1: Routing and Switching and Service Provider**	This is the first CCIE series courses to prepare students for the CCIE examination. This covers expert level knowledge of networking across various LAN and WAN interfaces and a variety of routers and switches. The course presents ways to solve complex connectivity problems and apply technology solutions to increase bandwidth, improve response times, maximize performance, improve security, and support global applications. Covers expert level knowledge and skill in the fundamentals of IP and core IP technologies such as unicast IP routing, QoS, multicast, MPLS, MPLS VPNs, traffic engineering, multi-protocol BGP, etc., as well as specialized knowledge in at least one of the networking areas specific to service providers. Lect: 3 hrs, Labs: 3 hrs bi-weekly. Pre-requisites: Network Troubleshooting (CCNP4).
4,1	**UOIT Edge 1 - Capstone Study Project**	Directed by three faculty advisors (of whom one is the chair for a group's project), and with input from the employer, this is a six-month study of an actual organization by groups of six to eight BComm/BIT students. The two courses require the comprehensive description and evaluation of an organization or system, and appropriate recommendations for improved performance with the solution of a particular problem or group of problems. The main purpose of this capstone study is to provide students with opportunities to develop a thorough understanding of the technology, environment, markets, and operations of a real organization by applying the theory and knowledge that they have learned. Lect: 3hrs. Pre-requisite: Registration in Year 4 of Program
4,1	**Network Simulation**	The course strengthens the student's understanding of fundamental concepts, requirements, and design tradeoffs, particularly as related to scheduling, congestion control, advanced routing protocols, traffic management, wireless access and mobility, and applications. Using simulation models, the course examines ways to conduct network monitoring and traffic controls. Lect: 3 hrs, Lab: 3 hrs bi-weekly. Other: 3 hrs bi-weekly. Pre-requisites: Enterprise Network Management, CCNP Courses
4,1	**Emerging Networks Technologies**	This course presents the current trends on research and development in networks technologies and discusses issues and standards from a technological and management perspective as they relate to the management of large networking systems and computer environments. The course also provides an in-depth examination of software choices deals with the need to tailor networking operating systems to fit a corporation's existing software. Lect: 3 hrs. Pre-requisites: CCNA or CCNP courses
4,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject

4,1	**CCIE2: Security**	This course is the second in the CCIE series to prepare students for the CCIE examination. This course covers expert level knowledge and skill in configuring and maintaining secure networks. CCIE Security certified individuals are experts in the fundamentals of IP and IP routing, as well as the specific area of security protocols and applications. Lect: 3 hrs, Lab: 3 hrs bi-weekly. Pre-requisites: Routing and Switching, and Service Provider (CCIE1).
4,2	**UOIT Edge 2 - Capstone Study Project**	This is a continuation of the UOIT Edge I, begun in the previous semester. Student teams continue to study actual organization or system. Students will complete a comprehensive analysis and evaluation of an organization and develop appropriate recommendations for improved performance with the solution of a particular problem or group of problems. They will make a formal presentation of their findings and recommendations to faculty advisors and to the management team of the organization. Lect: 3hrs. Prerequisites: UOIT Edge 1 - Capstone Study Project
4,2	**eBusiness Technologies**	This course provides an understanding and employing available information technologies in e-business, including portals, mobile data access, etc., and integration of technologies into corporate infrastructure. In addition to the technical aspect, the course also explores the business model of buying and selling products over the Internet. It also introduces students to technologies such as security, payment and trust, supply chain integration and customer to supplier trade. Lect: 3 hrs. Pre-requisites: Information Technology Project Management, Web Programming
4,2	**IT Security**	This course introduces the concepts and applications of IT security and provides students with the knowledge in exploring new nature of IT-related threats. The course will provide both technological and social aspects of IT security. Lect: 3 hrs. Pre-requisites: CCNP Courses
4,2	**Law & Ethics of IT**	This course provides an overview of topics related to legal, ethical, and social issues arising from the use of information technology. It also covers areas such as cybercrime, privacy, intellectual property, and equitable access. Lect: 3 hrs. Pre-requisites: None
4,2	**CCIE3: Voice**	This is the third course in the CCIE series to prepare students for the CCIE examination. The course covers expert level knowledge and skill in configuring and maintaining VoIP solutions in the enterprise environment. CCIE Voice certified individuals are experts in key technologies and products involved in a Voice over IP solution. Lect: 3 hrs, Lab: 3 hrs per week. Pre-requisites: CCNP Courses

Course Descriptions for the BIT (Information Technology Security)

Courses specific to this specialization are shaded. Learning outcomes for each course are provided in Section 6.6.2.

Year and Semester	Course Title	Calendar Course Description
1,1	**Technical Communications**	Introduces technical writing and communication, with topics on planning the document, revising, and writing applications such as manuals and proposals, covering emerging issues such as research on the Internet, usability testing, collaborative writing, and graphics. Lect: 3hrs. Tutorial: 1hr
1,1	**Discrete Mathematics**	This course addresses the following topics: sets and set operations, propositional logic, predicate logic, rules of inference; methods of proof and reasoning, modular arithmetic, counting, pigeon-hole principle, induction, deduction, relations, functions, graphs, graph algorithms, shortest path, trees, combinatorics; applications to cryptosystems, hashing functions, coding. Lect: 3hrs. Tutorials: 3 hrs bi-weekly
1,1	**Information Technology**	IT: principles, state-of-the-art, opportunities, and trends; IT applications: science, engineering, and daily life; computer hardware: I/O devices, semiconductor memory, secondary storage devices, CPU, peripheral equipment; computer software: application and system software, including operating systems, utilities; web browsers; Internet, wired and wireless media, networks, and architectures; IT design criteria (complexity, performance) and constraints (costs, regulations, schedules). Lect: 3hrs. Tutorials: 3 hrs bi-weekly
1,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
1,1	**Networking Basics; Routers and Routing Basics**	This course is a combination of the Cisco Academy Program CNNA1 and CCNA2 covering the following topics: Computer hardware and software, electricity, networking terminology, and protocols; LANs and WANs, Open System Interconnection (OSI) model, Ethernet, and Internet Protocol (IP) addressing, Design and documentation of a basic network and structured cabling, and network-to-network communications; Router user interfaces, components and configuration, basics of IOS versions, naming and software backup, TCP/IP Protocol Suite and IP addressing and subnetting, and Internet routing protocols – RIP, IGRP. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: None
1,2	**Introduction to Entrepreneurship**	Introduces entrepreneurship as a discipline and covers all facets of entrepreneurship, including economics, society, intraprapreneuring, and issues, including starting and managing a successful new business venture; new venture capital, creation, and management. Lect: 3 hrs.

1,2	**Statistics**	This course introduces the fundamental concepts and applications of descriptive and inferential statistics and probability theory. It also introduces statistical model building. Emphasis is balanced among theoretical concepts, calculations (including computer-based calculations), and data interpretation. Lect: 3hrs. Credit Restriction: STAT 2010U, STAT 2020U, STAT 2800U, STAT 3800U, JSTS 2820U.
1,2	**Collaborative Leadership**	This course intends to develop critical employability skills such as teamwork, leadership, project management, communication skills and intercultural understanding, and will focus students' learning on topics related to interactions with others in personal, educational and professional contexts. Students will engage in collaborative and dynamic learning activities involving direct and practical application of the content/skills critical to professional success. They will explore the practice and impact of leadership, negotiations and teamwork in organizations and communities. These practices will be examined in a variety of settings as described in both popular and academic writings. Learning activities will be directed toward: developing leadership for exceptional performance, obtaining commitment to goals and standards, negotiating and resolving conflict, inter- cultural communications, ethical practice, and relating with others in team environments. Lect: 3hrs.
1,2	**Introduction to Programming**	BUSI 1830U Introduction to Programming. This course introduces students to general computer programming principles. Topics include basic computer hardware and software concepts, problem analysis, design of algorithms and programs, the selection of data types, basic I/O, repetition and flow control, decision-making, and optionally, principles of object-oriented languages. The course uses a programming language such as Java or C. Applications to business, science and engineering are illustrated. Lect: 3hrs. Cross Listed: ENGR 1200U.
1,2	**CCNA3 Switching Basics and Intermediate Routing; CCNA4 WAN Technologies**	This course is a combination of the Cisco Academy Program CNNA3 and CCNA4 covering the following topics: Switching and VLANs, Spanning-Tree Protocol, Routing and Routing Protocols, Access Control Lists (ACLs), and Network documentations, security and troubleshooting; WAN devices, encapsulation formats, and communication, PPP components, session establishment, and authentication, ISDN uses, services, and configuration, frame relay technology and configuration. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: CCNA1/2
2,1	**Object Oriented Programming**	**BUSI 3540U Object-Oriented Programming.** This course presents the basic concepts of object-oriented programming and introduces the principles underlying its practice. It also discusses the analysis, design and implementation of an object-oriented system. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: None

2,1	**Operating Systems I: Windows**	This course is to present an understanding of the Windows and its functionality and advanced features as a server and desktop operating systems. It also provides the skills needed to install, configure, manage, monitor, and troubleshoot Windows 2000 operating system. Lect: 2 hrs. Lab: 2 hrs.
2,1	**Cybercrime**	This course covers different manifestations of cybercrime, including hacking, viruses and other forms of malicious software. It presents technical and social issues of cybercrime, and to study the origins and extent of the cybercrime problem as well as the commercial and political evolution of the computer hacker. Lect: 3 hrs. Pre-requisites: None
2,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
2,1	**CISCO Security I: Fundamentals of Network Security**	This is part of the Cisco Fundamentals of Network Security that introduces students to design and implement security solutions that will reduce the risk of revenue loss and vulnerability. Topics include: security policy design and management; Security technologies, products and solutions; Firewall and secure router design, installation, configuration and maintenance; AAA implementation using routers and firewalls; and VPN implementation using routers and firewalls. Lect. 3 hrs. Pre-requisites: CCNA 3/4
2,2	**Information Technology Project Management**	This course focuses on information technology projects and applies basic project management theory on handling and managing those projects. It introduces the concepts and tools that are appropriate for phases of project life cycle, and incorporates areas outlined in the Project Management Institute's Project Management Body of Knowledge (PMBOK) into the basic concepts associated with information systems management and software engineering. Lect: 3hrs. Pre-requisite: Introduction to Entrepreneurship
2,2	**Operating Systems II: Unix**	This course presents an overview of the Unix operating system from both administrator and user perspectives and covers the basis of the file system and the commands and scripts available with the operating system. Lect: 3 hrs. Lab: 3 hrs. Pre-requisites: Introduction to Programming
2,2	**OS Security I: Windows**	This courses is a definitive security study on Microsoft operating systems, servers, clients, networks, and Internet services. It covers comprehensive security operations and deployment information, along with security tools available on the Web. Lect: 3hrs. Tutorial: 3 hrs. Pre-requisites: Operating Systems I: Windows
2,2	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject

2,2	**CISCO Security II: Network Security**	This is a continuation of the Cisco Security I course, covering security technologies on voice and data communications, wireless LANs, and other related networking technologies. Lect: 3hrs. Tutorial: 3 hrs. Pre-requisites: CISCO Security I
3,1	**Database Systems**	This course introduces the field of database systems for students with a basic of knowledge of storage and file management capabilities of a modern computer system and features of one or more high-level programming language. Coverage includes general concepts, the relational model, theory and practice of database design, transaction management, how relational concepts are relevant to other aspects of database technology, and the impact of object technology on database systems. It also covers security issues of database systems, including disaster recovery and network intrusion. Lect: 3hrs. Tutorial: 3hrs bi-weekly. Pre-requisites: Information Technology, Introduction to Programming
3,1	**Computer Architecture**	Computer systems generation: main-frame, mid-range, micro-computers; peripherals and interfaces; bus design; input/output systems and technologies; central processing units: arithmetic logic and control units; semiconductor memory (RAM & ROM), magnetic disks and tapes, optical disks; assembly and high-level programming language; integer and floating point arithmetic, pipelining and parallelism; CISC vs RISC. Lect: 3 hrs. Lab: 3hrs bi-weekly. Tutorial: 3 hrs. bi-weekly. Pre-requisites: Information Technology, Discrete Mathematics
3,1	**Web Programming**	This course covers the design and application of Hypertext Markup Language (HTML), which is used to create documents on the World Wide Web. The topics include structure, presentation format, lists, links, images, tables, frames, and forms. Building upon Web Programming I, this course covers JavaScript, VBScript, ActiveX, Active Server Pages, and Perl. An emphasis is placed upon the appropriate use of the programming tools introduced. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Object Oriented Programming
3,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
3,1	**OS Security II: Unix**	This course is a definitive security study on Unix operating systems, servers, clients, networks, and Internet services. It covers comprehensive security operations and deployment information, along with security tools available on the Web. Lect: 3hrs. Tutorial: 3 hrs. Pre-requisites: Operating Systems II: Unix, OS Security I: Windows

3,2	**eBusiness Technologies**	This course provides an understanding and employing available information technologies in e-business, including portals, mobile data access, etc., and integration of technologies into corporate infrastructure. In addition to the technical aspect, the course also explores the business model of buying and selling products over the Internet. It also introduces students to technologies such as security, payment and trust, supply chain integration and customer to supplier trade. Lect: 3 hrs. Pre-requisites: Information Technology Project Management
3,2	**Enterprise Network Management**	This course is to provide the knowledge and skills needed to install, administer, and manage an enterprise network using operating systems such as Windows and Unix. It also covers building a secure firewall, VPN, and related topics. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Operating Systems I: Windows, Operating Systems II: Unix, CCNP Courses
3,2	**Basics of Digital Transmission**	Digitization: sampling, quantization, A-to-D & D-to-A conversion; source and channel coding; multiplexing: TDM, FDM; modulation: pulse modulation & digital modulation; binary & M-ary transmission; packet & circuit switching; power, bandwidth, performance, and complexity trade-offs; transmission media: wired (twisted-pair, coaxial-cable, fiber-optics) and wireless (cellular, wireless LAN, personal LAN); topologies: star, mesh, ring, bus; high-speed internet access: DSL, cable-modem, fixed wireless, satellite. Lect: 3 hrs, Other: 3 hrs bi-weekly. Prerequisites: CCNA 3/4, Discrete Mathematics
3,2	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
3,2	**Law & Ethics of IT**	This course provides an overview of topics related to legal, ethical, and social issues arising from the use of information technology. It also covers areas such as cybercrime, privacy, intellectual property, and equitable access. Lect: 3 hrs. Pre-requisites: None
4,1	**UOIT Edge 1 - Capstone Study Project**	Directed by three faculty advisors (of whom one is the chair for a group's project), and with input from the employer, this is a six-month study of an actual organization by groups of six to eight BComm/BIT students. The two courses require the comprehensive description and evaluation of an organization or system, and appropriate recommendations for improved performance with the solution of a particular problem or group of problems. The main purpose of this capstone study is to provide students with opportunities to develop a thorough understanding of the technology, environment, markets, and operations of a real organization by applying the theory and knowledge that they have learned. Lect: 3hrs. Pre-requisite: Registration in Year 4 of Program

4,1	**Advanced Communication Networks**	OSI & Internet model; baseband transmission pulse shaping, intersymbol interference, and equalization; optimum modulation techniques and bit error rates; transmission media and impairments; data link control and protocols: cogestion and flow control; multiple access: random, controlled, and channelized; LANs, WANs, WLANs, PLAN; network layer: interworking, addressing, routing; IP network layer protocols; transport layer: UDP & TCP; application layer. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Basics of Digital Transmission, CCNA3/4
4,1	**Emerging IT Security Technologies**	This course presents the current trends on research and development in IT security technologies and discusses issues and standards from a technological and management perspective as they relate to the management of large networking systems and computer environments. The course also provides an in-depth examination of IT security hardware and software choices deals with the need to tailor networking operating systems to fit a corporation's enterprise networks. Lect: 3 hrs. Pre-requisites: CCNA courses
4,1	**General Elective**	Students may liberal studies electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
4,1	**Malware Worms and Viruses**	This course presents different types of malware, such as viruses, worms, malicious code delivered through Web browsers and e-mail clients, backdoors, Trojan horses, user-level RootKits, and kernel-level manipulation. The course covers characteristics and methods of attack, evolutionary trends, and how to defend against each type of attack. Lect: 2 hrs, Lab: 2 hrs. Pre-requisites: Object Oriented Programming, OS Security I and II
4,2	**UOIT Edge 2 - Capstone Study Project**	This is a continuation of the UOIT Edge I, begun in the previous semester. Student teams continue to study actual organization or system. Students will complete a comprehensive analysis and evaluation of an organization and develop appropriate recommendations for improved performance with the solution of a particular problem or group of problems. They will make a formal presentation of their findings and recommendations to faculty advisors and to the management team of the organization. Lect: 3hrs. Prerequisites: UOIT Edge I

4,2	**eBusiness Security**	This course presents an overview of the state-of-the-art in eBusiness security. It examines the most recent attack strategies and offers specific technologies and techniques for combating attempts at data infiltration, destruction, and denial of service attacks. Taking the view that security must be incorporated within multiple levels of eBusiness technology and practice, the course presents measures for securing system platform, applications, operating environment, processes, and communication links. It shows how the traditional security technologies of firewalls and Virtual Private Networks (VPNs) can be integrated with risk management, vulnerability assessment, intrusion detection, and content management for a comprehensive approach to security. Lect: 3 hrs. Pre-requisites: Database Systems, CCNA 3/4, Advanced Communications Networks
4,2	**VPN and Data Privacy**	This course introduces to the development, implementation, and maintenance of Virtual Private Networking (VPNs). Covers topics such as User Authentication and QOS, deployment levels, tunneling protocols, service level guarantees, and traffic management. Discusses issues on weaving VPN technology into overall information technology infrastructure, and study how VPNs facilities e-commerce as well as intra-organizational networking. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Advanced Communications Networks
4,2	**IT Security Policies and Procedures**	The objective of this course is to provide an understanding of the need for the multi-disciplinary involvement, an understanding of where this involvement fits into the policy development lifecycle and a methodology that provides a means of implementing this development lifecycle into an organization. The course discusses how the policy development process should be something that requires the involvement of key business decision makers of which Information Security is only one. Lect: 3 hrs. Pre-requisite: Law and Ethics of IT, eBusiness Technologies
4,2	**Web Services Security**	This course presents an overview of Web Services architecture and issues related to its security. It also introduces ways to build a secure Web services system and covers security technologies used for providing secure Web services, emphasizing how security works with XML and SOAP. Lect: 3 hrs, Lab: 2 hrs. Pre-requisites: eBusiness Technologies

Course Descriptions for the BIT (Game Development and Entrepreneurship)

Courses specific to this Specialization are shaded. Learning outcomes for each course are provided in Section 6.6.2.

Year and Semester	Course Title	Calendar Course Description
1,1	**Creative Writing and Narrative Concepts**	This course introduces the concepts of creative writing and narration in relation to game creation. Lect: 3 hrs. Pre-requisite: None
1,1	**Discrete Mathematics**	This course addresses the following topics: sets and set operations, propositional logic, predicate logic, rules of inference; methods of proof and reasoning, modular arithmetic, counting, pigeon-hole principle, induction, deduction, relations, functions, graphs, graph algorithms, shortest path, trees, combinatorics; applications to cryptosystems, hashing functions, coding. Lect: 3hrs. Tutorials: 3 hrs bi-weekly
1,1	**Information Technology**	IT: principles, state-of-the-art, opportunities, and trends; IT applications: science, engineering, and daily life; computer hardware: I/O devices, semiconductor memory, secondary storage devices, CPU, peripheral equipment; computer software: application and system software, including operating systems, utilities; web browsers; Internet, wired and wireless media, networks, and architectures; IT design criteria (complexity, performance) and constraints (costs, regulations, schedules). Lect: 3hrs. Tutorial: 3hrs bi-weekly.
1,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
1,1	**Drawing I**	This is an introduction to the fundamental concepts of drawing, visual image creation, coloring and lighting perspective. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: None
1,2	**Introduction to Entrepreneurship**	Introduces entrepreneurship as a discipline and covers all facets of entrepreneurship, including economics, society, intraprapreneuring, and issues, including starting and managing a successful new business venture; new venture capital, creation, and management. Lect: 3 hrs.

1,2	**Statistics**	This course introduces the fundamental concepts and applications of descriptive and inferential statistics and probability theory. It also introduces statistical model building. Emphasis is balanced among theoretical concepts, calculations (including computer-based calculations), and data interpretation. Lect: 3hrs. Credit Restriction: STAT 2010U, STAT 2020U, STAT 2800U, STAT 3800U, JSTS 2820U.
1,2	**Collaborative Leadership**	This course intends to develop critical employability skills such as teamwork, leadership, project management, communication skills and intercultural understanding, and will focus students' learning on topics related to interactions with others in personal, educational and professional contexts. Students will engage in collaborative and dynamic learning activities involving direct and practical application of the content/skills critical to professional success. They will explore the practice and impact of leadership, negotiations and teamwork in organizations and communities. These practices will be examined in a variety of settings as described in both popular and academic writings. Learning activities will be directed toward: developing leadership for exceptional performance, obtaining commitment to goals and standards, negotiating and resolving conflict, inter- cultural communications, ethical practice, and relating with others in team environments. Lect: 3hrs.
1,2	**Introduction to Programming**	This course introduces students to general computer programming principles. Topics include basic computer hardware and software concepts, problem analysis, design of algorithms and programs, the selection of data types, basic I/O, repetition and flow control, decision-making, and optionally, principles of object-oriented languages. The course uses a programming language such as Java or C. Applications to business, science and engineering are illustrated. Lect: 3hrs. Cross Listed: ENGR 1200U.
1,2	**Graphic Design**	This course introduces the history, current technology, and design principles of graphic design and presents an overview of the basic formal elements and principles of two-dimensional design, and visual and creative thinking strategies. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: Drawing I - Animation

2,1	**Object Oriented Programming**	This course presents the basic concepts of object-oriented programming and introduces the principles underlying its practice. It also discusses the analysis, design and implementation of an object-oriented system. Lect: 3 hrs, Lab: 3 hrs. Pre-requisites: Introduction to Programming
2,1	**Drawing II - Animation**	This course introduces students to the concept of character animation and to provide students with a solid understanding of the compositing, modeling, animation, texturing, lighting and rendering. Students will also learn to develop traditional animation skills in the areas of storyboarding, character design, animation theory, and camera layout. – Animation with advanced level contents focusing on theoretical aspects of animation development. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: Drawing I
2,1	**Marketing in the IT Sector**	This course is concerned with the development of marketing techniques and strategies for the IT sector. Special emphasis is placed on the evolving business and technological environments facing IT firms. Topics include positioning, distribution, branding, and pricing strategies for IT companies. Lect: 3 hrs. Pre-requisite: None.
2,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
2,1	**Imaging I**	This course introduces the fundamental knowledge of color and light covering the various processes on how color images are captured and recorded in chemical and digital imaging system. Students will learn ways to manipulate various project components in the production and postproduction process using an imaging system. This course helps students develop an understanding of the methods appropriate to research in color imaging. Students will study methods for image acquisition and reproduction in the context of production systems. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: None
2,2	**Sound & Audio**	This course is an introduction to digital sound and audio concepts and their applications in multimedia production. It introduces students to the concepts of programming with sound and audio data. Throughout the course students will apply the theoretical concepts in gaming related programming projects. It presents an overview of gitter, dither and wordlengths, high sample rates, distortion, headroom, monitor calibration, metering, depth perception, compression and expansion, equipment interconnection and other digital audio related topics. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Object Oriented Programming

2,2	**Information Technology Project Management**	This course focuses on information technology projects and applies basic project management theory on handling and managing those projects. It introduces the concepts and tools that are appropriate for phases of project life cycle, and incorporates areas outlined in the Project Management Institute's Project Management Body of Knowledge (PMBOK) into the basic concepts associated with information systems management and software engineering. Lect: 3hrs. Pre-requisite: Introduction to Entrepreneurship
2,2	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
2,2	**Game World I**	This course introduces the design and development of storyboarding, characters, background settings, animation, and related topics for game production. It will continue with the design and development of game production by incorporating highly developed modeling techniques. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: None
2,2	**Imaging II (Graphical Data Processing)**	Working with graphical data: The basic concepts, tools and techniques of computer graphics are described, and the fundamental transformations of scaling, translation, rotation, windowing, hidden line removal, image processing and clipping are presented. Mathematical tools needed for the geometrical aspects of computer graphics are discussed. Particular emphasis will be placed on new developments in microcomputer graphics. Students will be expected to develop a graphics application in C++ and/or JAVA in conjunction with available graphics libraries. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Imaging I, Object Oriented Programming
3,1	**Animation Arts**	This course is to provide students with solid conceptual and critical basics through a combination of technical explanations and creative techniques; this course addresses the newest techniques available in the latest software programs and hardware to create and output fully rendered three-dimensional computer still images, animations, and effects. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Graphic Design, Sound & Audio
3,1	**Game Programming**	This course presents the techniques, ideas, and solutions for game programmers and introduces various programming languages used in game development. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: Object Oriented Programming, Game World I

3,1	**Computer Architecture**	Computer systems generation: main-frame, mid-range, micro-computers; peripherals and interfaces; bus design; input/output systems and technologies; central processing units: arithmetic logic and control units; semiconductor memory (RAM & ROM), magnetic disks and tapes, optical disks; assembly and high-level programming language; integer and floating point arithmetic, pipelining and parallelism; CISC vs RISC. Lect: 3 hrs. Lab: 3hrs bi-weekly. Tutorial: 3 hrs bi-weekly. Pre-requisites: Information Technology, Discrete Mathematics
3,1	**Entrepreneurial Finance**	This course examines how individual entrepreneurs, companies and capital providers manage the entrepreneurial process and its financial aspects. The course analyzes a wide range of business models and suggests a wide range of solutions to overcome financing and valuation challenges. The course does not only focus on valuation and the analysis of financial challenges that arise over the life cycle of the entrepreneurial venture, but also focuses on the analysis of the people and business models of entrepreneurial ventures. Lect: 3 hr. Pre-requisite: Introduction to Entrepreneurship.
3,1	**Accounting for IT**	Accounting for IT will develop an understanding of how to use, interpret, and understand financial statements and other accounting information. The course will emphasize the role of judgment in accounting and how the managers responsible for preparing accounting information have considerable latitude in deciding how and what information to report. The course use financial statements and other examples from IT firms to develop an understanding of financial accounting from an IT perspective. Lect: 3 hrs. Pre-requisite: None
3,2	**Computer Networking & Distributed Computing**	Network history and architectures; reference Model for Open systems Interconnection (OSI): descriptions, examples, and applications; routing, multicast deliver; TCP/IP protocol suite; network topologies (ring, bus, tree, star, mesh); local area networks, WAN, wireless networks, the Internet: P2P networking, distributed computing models. Lect: 3hrs. Pre-requisites: Object Oriented Programming, Computer Architecture
3,2	**Filmmaking**	This course presents an overview of the history and art of film with respect to lighting, layout, cinematography, screen direction and character studies. It introduces the preproduction processes of storyboarding the production of leica reels in the critical development of project concepts, and produces in combination of both traditional and digital process. Production processes, studio roles, editing and postproduction will be addressed. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: Imaging II

3,2	**Modeling and Rigging**	This course introduces the fundamental knowledge of developing 3D models using computer software. Topics include character modeling and bones, designing joints and creating chains with constraints for easy animation, facial modeling and lip sync, designing faces with economical splinage to simplify facial animation, breaking down voice tracks into phonemes and animating facial and body language to match the track. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: Animation Arts
3,2	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
3,2	**Game World II**	Advanced Game Programming. This course combines the earlier introduced topics of Animation, Audio and Graphical Data Processing, Human Computer Interaction, User Interfaces and Controllers will be covered in this course. Programming Concepts for Gaming Engines and Consoles are introduced. A key component in this course will be a course long team project. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Game World I, Game Programming
4,1	**UOIT Edge I - Capstone Study Project**	Directed by three faculty advisors (of whom one is the chair for a group's project), and with input from the employer, this is a six-month study of an actual organization by groups of six to eight BComm/BIT students. The two courses require the comprehensive description and evaluation of an organization or system, and appropriate recommendations for improved performance with the solution of a particular problem or group of problems. The main purpose of this capstone study is to provide students with opportunities to develop a thorough understanding of the technology, environment, markets, and operations of a real organization by applying the theory and knowledge that they have learned. Lect: 3hrs. Pre-requisite: Registration in Year 4 of Program
4,1	**Internet Gaming Development**	This course introduces the design, development, and management of online, multi-user and massive multi-user games. It covers the technological and business aspects of Internet game development, and presents an overview of the current Internet game industry. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Game World II, Computer Networks and Distributed Computing
4,1	**Artificial Intelligence for Simulations & Gaming**	This course introduces key AI game programming issues and provides ideas and techniques to be integrated into games development. It also presents an overview of AI architecture, rule based systems, level of detail AI and script language issues, expert systems, fuzzy logic, neural networks, and genetic algorithms. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisite: Game World II

4,1	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject
4,1	**Advanced Entrepreneurship**	This course covers the process of starting and scaling an enterprise from an idea and business plan into a company. The focus of the course will be on execution: turning a business plan into a high-growth company. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Introduction to Entrepreneurship.
4,2	**UOIT Edge II - Capstone Study Project**	This is a continuation of the UOIT Edge I, begun in the previous semester. Student teams continue to study actual organization or system. Students will complete a comprehensive analysis and evaluation of an organization and develop appropriate recommendations for improved performance with the solution of a particular problem or group of problems. They will make a formal presentation of their findings and recommendations to faculty advisors and to the management team of the organization. Lect: 3hrs. Prerequisites: UOIT Edge I
4,2	**Game Production & Documentation**	This course provides an overview of game production cycles, preparation of user documentation, writing of strategic game playing, business models, development resource and models, legal issues, and other related topics. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Pre-requisite: Game World II
4,2	**Immersive Environments, Virtual Reality**	Virtual reality is a very powerful and compelling computer application by which humans interact with computer-generated environments in a way that mimics real life and engages various senses. This course provides an overview of current virtual reality technology and its applications and presents an analysis of the engineering, scientific, and functional aspects of virtual reality systems and the fundamentals of VR modeling and programming. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Artificial Intelligence for Simulations and Gaming, Modeling and Rigging, Game World II, Imaging II, Sound and Audio
4,2	**Design Studio**	This course is project-based. Students are required to develop a game as approved by the faculty. Lect: 3 hrs, Other: 3 hrs bi-weekly. Pre-requisites: Open to students in Year 4 Game Development and Entrepreneurship specialization only.
4,2	**General Elective**	Students may select electives from a variety of courses offered by other schools in UOIT or through Trent University at Durham. Pre-requisite(s): As required for selected subject

The chart below identifies which courses are common to each specialization of the B.I.T. program

Course Title	Networking	IT Security	Game Dev & Ent
Accounting for IT			*
Advanced Communication Networks		*	
Advanced Entrepreneurship			*
Advanced Routing; Remote Access (CCNP 1/2)	*		
Algorithms and Data Structures	*		
Animation Arts			*
Artificial Intelligence for Simulations and Gaming			*
Basics of Digital Transmission	*	*	
CCIE1 - Routing and Switching and Service Provider	*		
CCIE2 - Security	*		
CCIE3 - Voice	*		
CCNA 1/2 - Networking Basics; Routers and Routing	*	*	
CCNA 3/4 - Switching Basics and Int. Routing; WAN Technologies	*	*	
CCNP 1/2 - Advanced Routing; Remote Access	*		
CCNP 3 - Multilayer Switching	*		
CCNP4 - Network Troubleshooting	*		
CISCO Security I : Fundamentals of Network Security		*	
CISCO Security II: Network Security		*	
Collaborative Leadership	*	*	*
Computer Architecture	*	*	*
Computer Networking & Distributing Computing			*
Creative Writing and Narrative Concepts			*
Cybercrime		*	
Database Systems	*	*	
Design Studio			*
Discrete Mathematics	*	*	*
Drawing I - Animation			*
Drawing II - Animation			*
eBusiness Security		*	
eBusiness Technologies	*	*	
Emerging IT Security Technologies		*	

Course Title	Networking	IT Security	Game Dev & Ent
Emerging Networks Technologies	*		
Enterprise Network Management	*	*	
Entrepreneur Finance			*
Filmmaking			*
Game Production and Documentation			*
Game Programming			*
Game World I			*
Game World II			*
Graphic Design			*
Imaging I			*
Imaging II (Graphical Data Processing)			*
Immersive Environments, Virtual Reality			*
Information Technology	*	*	*
Information Technology Project Management	*	*	*
Internet Gaming Development			*
Introduction to Entrepreneurship	*	*	*
Introduction to Programming	*	*	*
IT Security	*		
IT Security Policies and Procedures		*	
Law and Ethics of IT	*	*	
Malware Worms and Viruses		*	
Marketing in the IT Sector	*		*
Modeling and Rigging			*
Multilayer Switching (CCNP3)	*		
Multimedia Systems	*		
Network Simulation	*		
Object Oriented Programming	*	*	*
Operating Systems I: Windows	*	*	
Operating Systems II: Unix	*	*	
OS Security I: Windows		*	
OS Security II: Unix		*	
Sound and Audio			*
Statistics	*	*	*
Technical Communications	*	*	
UOIT Edge I & II	*	*	*
VPN and Data Privacy		*	
Web Programming	*		
Web Services Security		*	

General Electives

Students may select general electives from a variety of science and liberal studies courses offered by other faculties in UOIT or through Trent University at Durham. Possible courses and descriptions are provided below.

A Sampling of Electives Available From Other Faculties at UOIT

PHIL 1040U Philosophy: Social and Political Issues. This course provides a comprehensive assessment of classical and contemporary conceptions of justice. The focus will be on the Libertarian, the Socialist, the Liberal, Democratic, the Communitarian, the Feminist, the Post-modern, and the Environmental views of justice. Lect: 3hrs.

POSC 1010U Political Science. This introductory course provides an introduction to the democratic system of government in Canada. It describes the organization of the three levels of government; federal, provincial and municipal. It introduces the political institutions and practices with emphasis on the constitution, parliament and cabinet. The interaction of each level and the democratic and legislative process is discussed. The course includes the services of each level of government and the impact on the justice system. Lect: 3hrs.

PSYC 1000U Introductory Psychology. This course introduces students to the vocabulary and principles of psychology. It also surveys the major theories and research related to the scientific study of human behaviour. Students will be encouraged to develop an understanding of the principles that underlie human behaviour. In addition, students will gain some insight into how and why people think, learn and behave. An attempt will be made to illustrate theory with practical examples, which are meaningful to students. The course examines the scientific process of research, physiology and perception, learning, memory and motivation, consciousness, stress, health, adjustment, and social psychology.

PSYC 2010U Developmental Psychology. This course is a comprehensive study of human development across the life-span from a developmental psychology perspective. The course examines developmental processes and milestones of the individual from conception through late adulthood, with particular emphasis on behavioural and cognitive development. Students will be introduced to the major psychological theories, theorists, and controversies in the field of human development.

SOCI 1000U Introductory Sociology. Sociology is the study of people and how they interact with each other and various social groups. This course deals with the study of people's lives, their relationship to society as a whole, and how people are affected by the society in which they live. The concepts, theories and methods of the discipline will be introduced and discussed with particular emphasis on the dynamics of Canadian society and Canadian social problems. Lect: 3hrs.

JSTS 1000U Introduction to Criminal Justice. This course provides an analysis of historical and contemporary theory and practices of the criminal justice system. Beginning with the analysis of crime data, the course will also examine the role and function of the each component of the criminal justice system: the police, the court system, corrections, prisons and alternatives to prisons. The course will also include a section on victimology, as well as sections on the criminal law, and theories of crime causation. Lect: 3hrs.

JSTS 1260U Introduction to Canadian Legal System. This course investigates the nature, purpose, scope, sources and basic principles of law within its historical and contemporary contexts. The historical and constitutional foundations of legal concepts and due process of law are studied. Current policy and legislation such as the legislative policy inherent in The Charter of Rights and Freedoms, federal and provincial human rights codes, family law, criminal law and civil law will be examined. Students will be guided to understand the complex interrelationship between the law and the various components of Canadian society. The roles of lawyers, judges and others involved in the integrated legal system will be presented. Lect: 3 hrs.

JSTS 1420U Ethical Reasoning and Critical Thinking. This course focuses on ethical dilemmas faced by individuals as citizens and professionals. It helps students to clarify their values and establish a framework for ethical decision-making. It includes the concept of critical thinking or the ability to interpret complex ideas and appraise the evidence offered in support of an argument to better resolve problems or issues. Ethical issues, which relate to a wide variety of concerns, are examined. Students will examine a variety of professional ethical codes and apply ethical decision-making models to dilemmas in their personal and professional lives. Lect: 3hrs.

JSTS 1600U Criminal Law. This course investigates the nature, purpose, scope, sources and basic principles of law within its historical and contemporary contexts. The historical and constitutional foundations of legal concepts and due process of law are studied. Current policy and legislation such as the legislative policy inherent in the Criminal Code, the specific offences and categories in the Criminal Code, the Young Offenders Act, Narcotic Control Act will be examined. The roles of lawyers, judges and others involved in the integrated legal system will be presented. Lect: 3hrs.

JSTS 1610U Customs and Immigration Law. This course covers the role of Customs and Excise as a part of the Revenue Canada mandate. Relevant legislation such as the Customs Act and the Narcotic Control Act are examined. Current issues surrounding Customs policies as well as internal regulatory procedures (e.g., search and seizure, appeal procedures and citizens rights). Other issues covered are those that relate to the Customs and Immigration authority, such as primary duties and relevant sections of the Criminal Code. Lect: 3hrs.

JSTS 2190U Issues in Diversity. Students will identify and critically analyse issues of diversity. The course will incorporate an inclusive approach to diversity. Learners will focus on topics pertaining to the achievement of equity in various social settings, including but not limited to race, gender, ethnicity, class and social orientation. This course will deal with social and legal definitions of diversity and students will identify possible strategies for community empowerment. Lect: 3hrs.

JSTS 2490U Issues in Family. The purpose of this course is to introduce the student to problems in the family and their relation to the justice system. In addition to gaining knowledge of the theoretical perspectives used to study the family, the student will also lean about such issues as the relation between family and work, parenting, family interactions, and legal issues within the family. The legal issues to be discussed include family violence, divorce and remarriage, and the creation of social policies as they impact on the family. Lect: 3hrs.

JSTS 2550U Psychological Explanations of Criminal Behaviour. This course examines the causes of criminal and deviant behaviour in terms of psychological theories and suppositions, including psychophysiological, psychoanalytic, behavioural, cognitive, and biological theories. The focus of the course is on similarities and differences across theories and research findings, and on the relationship between theories discussed and criminal justice policy. Lect: 2hrs./Lab: 1hr. Prerequisites: PSYC 1000U.

ECON 2010U Microeconomics. As a first course in economics, microeconomics introduces the student to principles such as scarcity, opportunity cost, diminishing returns, elasticity, industrial organization, economies to scale, and concentration. The course begins with an introduction to the market and price determination. The course reviews the cost structure of the firm in both the long and short run. Price and quantity decisions for firms in various competitive situations are discussed. Canada's Competition Act is examined. The course also analyses the markets for factors of production. 3 cr, 3 lec.

ECON 2020U Macroeconomics. As an introductory course in economics, macroeconomics introduces the student to principles such as unemployment, inflation, economic growth, the multiplier, equilibrium, fiscal policy, and monetary policy. The student builds on the knowledge of the market from microeconomics and proceeds to an understanding of aggregate demand and supply. The principle of money and banking are introduced along with the role of the Bank of Canada. The course also introduces the student to the principles of international trade theory. 3 cr, 3 lec. Prerequisite: BUSI 2010U.

EDUC 1200U History of Science and Technology. This course will focus on the history and philosophy of science and engineering with special emphasis on scientific technology and the cultural significance of technology to civilization. The course will include critical analyses and will pay significant attention on the nature and problems of industrial technology, benefits and risks of technological progress, and issues around intellectual property. Throughout, students will examine the history and philosophy within the context of science and engineering as learned professions. 3 cr, 3 lec.

EDUC 1470U Impact of Science and Technology on Society. In this course, students will engage in analyses of scientific and technological developments from the perspective of broad social impacts. Special attention will be paid to controversial issues currently receiving media attention, but the major emphasis will be on ways of thinking critically about both the remediation of already existing problems (e.g., toxic substance cleanup) and the prevention of future problems (e.g., environmental impact analyses and or economic impact analyses). Canadian examples will be of primary concern, but students will also learn to think about impact globally since large-scale problems do not respect political boundaries. 3 cr, 3 lec.

ENVS 1000U Environmental Science. This course will introduce the conceptual, interdisciplinary framework of environmental science by examining its physical, biological, economic and social components. Topics will include environmental problems and scientific principles; ecological principles (ecosystems, nutrient cycles, geographic ecology, climate and biodiversity); resources and sustainability (food, water, energy and minerals); climate change; pollution (indoor and outdoor air, water, effects on health and ecosystems); energy (renewable, non-renewable, management); agriculture and food production (pesticides and pest control, energy and chemical inputs, land, soil water resources, population and economic issues); waste management and remediation and prevention of environmental degradation. Canadian examples will be used wherever possible but the underlying theme will include a more global approach. 3 cr, 3 lec, 2 oth.

Sample Liberal Studies Elective Offerings Available Through Trent University at Durham

Students at UOIT may also select electives from available courses offered by Trent University at Durham. The course descriptions that follow have been taken directly from the Trent University Calendar.

Information about the agreement between Durham College/UOIT and Trent University is included at the end of this section.

ANTHROPOLOGY

Anthropology 100 - Introductory anthropology (Sc) Understanding and explaining humanity in all its variety. An interdisciplinary, comparative study of people and their cultures throughout the world (cultural anthropology), of human evolution, adaptation and genetics (physical anthropology), the recovery and development of prehistoric societies (archaeology) and language as an aspect of culture (linguistics). Two-hour lecture weekly and periodic one-hour workshops as scheduled

Anthropology 200 - Sociocultural anthropology An introduction to the history, theory and ethnographic methods of cultural anthropology and their role in understanding religion, exchange systems, political and social organization, kinship, gender and issues of social and cultural change. Prerequisite: Anthropology 100 or Sociology 100 or permission of the instructor. Two-hour lecture weekly, seminar fortnightly.

Anthropology 231 - Language, culture and society The course provides an introduction to the study of language in its social and cultural context. Students will be introduced to seminal research in the ethnography of communication and variationist sociolinguistics. The course will cover topics relating language to gender, politics, ethnicity and social institutions, and will cover such topics as cross-cultural miscommunication, multilingualism and language socialization. Prerequisite: Anthropology 100. Two-hour seminar weekly.

Anthropology 240 - Biological anthropology (Sc) The study of the genetics, evolution, growth and development, and biology of the human species. Prerequisite: Anthropology 100 or permission of instructor. Two-hour lecture weekly, two-hour seminar in the laboratory fortnightly.

Anthropology 310 - **Key ideas in archaeology and bioanthropology** The lecture component of this course will outline the history of archaeological thought. The seminar component will provide a "hands-on" exploration of how method and theory are applied within archaeological interpretation. Key ideas in bioanthropology, such as evolution, race and ethnicity, and health and disease will also be addressed. Prerequisite: Anthropology 212 or permission of the instructor. Two-hour lecture weekly, one-hour lab/seminar weekly.

Anthropology - Biology 344H - Human genetics (Sc) A survey of genetic principles as applied to the human being with special emphasis on clinical, populational and evolutionary genetics. Prerequisite: Anthropology 240 or permission of instructor. Excludes Anthropology - Biology 343. Two-hour lecture and one-hour seminar in the lab weekly.

Anthropology - Biology 346H - Human growth and adaptation (Sc) A comprehensive survey of the human life cycle from conception to old age, with special emphasis on theories of growth and adaptation; comparative and evolutionary aspects of growth; anatomy and physiology of pregnancy, prenatal and postnatal devel-opment; human adaptation to the environment; biocultural determinants of health; and the aging process. Prerequisite: Anthropology 240 or permission of instructor. Excludes Anthropology - Biology 343. Two-hour lecture and two-hour seminar weekly.

Anthropology 348 - Medical anthropology (Sc) An intensive and comparative exploration of the anthropology of health and illness, including history and theory; research methodology; biological, ecological and sociocul-tural determinants of health; and cross-cultural differences in healing systems. Prerequisite: Anthropology 240 or permission of instructor. Two-hour lecture and one-hour seminar weekly.

Anthropology - Women's Studies 422 - Gender: an anthropological perspective A methodological and theoretical re-evaluation of anthropology's approach to gender. Cross-cultural approaches to biology, sex roles, ideology, politics, economics, kinship, etc. Prerequisite: Anthropology 200. Two-hour lecture/seminar weekly.
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Anthropology 424H - Nonverbal communication (Sc) An overview of approaches to the study of human communication by all means other than words. Included are: proxemics (the relation of persons and objects in space); kinesics (gesture, posture, body movement); paralanguage (vocal cues that accompany speech); the special role of of the face and eyes; and the effects of personal appearance, clothing and bodily adornment. Prerequisite: Anthropology 200 or 231. Excludes Anthropology 423. Two-hour lecture/ seminar weekly. Fall session.

CULTURAL STUDIES

Cultural Studies 100 - Introduction to the study of modern culture Introduction to the interpretation and foundations of modern culture. Looks at the problem of how to make sense of art works and other forms of cultural expression, both as texts and as practices in a context. What distinguishes twentieth-century culture from, and what connects it to, the tradition of modern culture as a whole? Excludes *Cultural Studies 20*0. Lecture and seminar, weekly. Field trip and reading package fee: $40.

Cultural Studies 225 - Oral narrative The world of story, improvisation and memory. Concepts, materials and exercises for the study of oral tradition, mythic thought, the wondertale and the art of the story in their ancestral and postmodern uses. With an emphasis on the First Literatures of North America and with a concern for voice in told and written story, the course involves creative experience in the telling, writing and critical framing of narrative. This course is especially useful to individuals with a background in creative writing or from a First Peoples' or other oral literary tradition. (Offered as a full course in Fall session.)

Cultural Studies 235 - **Mass media and society** Introduction to the history, sociology and critical interpretation of contemporary mass-communicated culture, both as an overall formation and with reference to such specific elements as the newspaper press, advertising, network TV and recorded popular music. Excludes *Cultural Studies - Sociology 24*0. Two-hour lecture and seminar weekly.

Cultural Studies 250 - **Civilization and human nature** An introduction to the thought of several of the founders of modern social and cultural theory including Marx, Nietzsche and Freud. Such topics explored as ideology and illusion, reason and eros, individualism and alienation, and the idea of progress. One hour lecture, seminar weekly.

POLITICAL STUDIES

Politics 100 **- Governance and globalization. Politics in the 21st century** Introduction to the study of politics in the age of globalization, using films, literature and political writings. Focused on current public controversies, social change, Canadian and global politics, and how our own personal lives fit into the larger picture. Two one-hour lectures weekly, tutorial fortnightly. (Support course for Environmental and Resource Studies.)

Politics - Canadian Studies 201 **- Canadian politics** An introduction to political institutions and practices, with emphasis on the constitution, parliament and cabinet, political parties and elections, the Charter and the courts and Canadian political economy.

Politics 220 **- Global politics** The global system and its evolution with a survey of different approaches to analysis. Issues include economic globalization, democratization, international organization, security, civil society, human rights, social movements, and nationalism. (Support course for Comparative Development Studies.)

Politics - Canadian Studies 309 **- Law and constitutional issues** An introduction to the basic principles of legal reasoning and the study of case law through an analysis of key constitutional decisions in Canada. We will pay particular attention to developments in the last twenty years when court decisions based on the entrenched Charter of Rights and guarantees of aboriginal rights as well as constitutional accords and referenda have had a major impact on Canadian politics. Prerequisite: either *Canadian Studies 200* or *Politics 201* or permission of the Instructor. *Politics 201* strongly recommended.

Politics 322H **- Global political economy** An examination of the central debates and issues in the field of global political economy within the context of the historical evolution of the world system and the globalization of economic life in the contemporary era. Recommended: Politics 220 or permission of the instructor. Excludes: Politics 322. (Support course for Comparative Development Studies.)

Politics 323H **- Nationalism and political order in global perspective** Why nationalism has survived and revived under globalization; how ethnicity is politicized and national identities constructed; nationalism's positive and negative forms and its relationship with democratic values. The course incorporates philosophical, historical, sociological, anthropological and economic approaches to explain and assess varieties of nationalism. Recommended: Politics 220. Excludes Politics 323.

Politics 326H **- Politics of North American economic integration** The North American Free Trade Agreement has created an increasingly integrated economic region involving Canada, the United States and Mexico. This course examines the politics and public policy debates associated with North American regional integration in the context of the changing global political economy and the historical evolution of the region. (By special arrangement may be taken for 400-series credit without 480 enrolment.) Recommended: Politics 220. (Support course for Comparative Development Studies.)

PSYCHOLOGY

Psychology 101 - **Introduction to psychology** A survey of the major areas of psychology, including its historical development, the methods of the science, biological and perceptual processes, altered states of consciousness, learning, memory, language development, intelligence, personality, abnormal behaviour and social determinants of behaviour. A Grade 12 Mathematics course is strongly recommended. Two-hour lecture weekly; two-hour lab fortnightly.

Psychology 225H - **Introduction to cognitive psychology** This course focuses on humans as processors of information. Topics surveyed include perception, attention, memory, reasoning and problem solving. Prerequisite: C- or higher in *Psychology 10*1. Excludes *Psychology 306, 3*51. Two-hour lecture weekly; lab weekly.

Psychology 227H - **Introduction to learning** An examination of the fundamental concepts of learning in humans and animals. Emphasis is placed on empirical methods of investigation. Applications to parenting, education, self-control and education are included. Prerequisite: C- or higher in *Psychology 10*1. Excludes *Psychology 351, 320, 323*H. Two-hour lecture weekly; seminar fortnightly.

Psychology 236H - **Introduction to personality theory** A cross-section of personality theories and theorists will be examined: psychoanalytic, neopsychoanalytic, trait, phenomenological, behavioral and social-learning. Prerequisite: C- or higher in *Psychology 10*1. Excludes *Psychology 23*5. Two-hour lecture weekly; seminar fortnightly.

Psychology 240H - **Introductory abnormal psychology** This course is designed to introduce students to the study of abnormal behaviour including its history, classification, evaluation and issues, as well as theoretical approaches to abnormality and its treatment. A heavy emphasis will be placed on experimental approaches to abnormal behaviour, but always with a view to the practical and applied aspects of working with abnormal behaviour. Prerequisite: C- or higher in *Psychology 10*1. Excludes *Psychology 34*0. Two-hour lecture weekly; seminar fortnightly.

Psychology 281H - **Child development** A survey course dealing with the theoretical and empirical research bases of child development and child psychology as a scientific discipline. Topics covered include theories of development, research methods, biological foundations, basic psychological processes in children, cognitive and intellectual development, social and emotional development, and family and peer influences on children's behaviour. Prerequisite: C-or higher in *Psychology 10*1. Excludes *Psychology 28*0. Two-hour lecture weekly; seminar fortnightly.

Psychology 300H - **Psychology of human relationships** An examination of the development, maintenance and breakdown of friendship and intimate relationships with emphasis upon individual differences in both quality and quantity of these relationships. Prerequisite: *Psychology 271* or *272*H. Two-hour lecture weekly; seminar fortnightly.

Psychology 381H - **Development of adolescents and young adults** This course is designed to examine developmental theory and research in the area of development of adolescents and young adults. Topics include different theoretical views of physical, cognitive, moral and identity development and developmental issues in the contexts of family, peers, school and work. Prerequisites: *Psychology 280 or 281H.* Two-hour lecture weekly; seminar fortnightly.

Psychology 383H - **Development of individuals with exceptionalities** This course is designed to examine developmental theory and research in the area of exceptional development. Topics include developmental difficulties for individuals with intellectual, vision or hearing impairments, individuals with physical disabilities and individuals with autism. Practical and theoretical implications of research will be emphasized. Prerequisites: *Psychology 280 or 281H.* Excludes *Psychology 382.* Two-hour lecture weekly; seminar fortnightly.

SOCIOLOGY

Sociology 100 - **Introduction to sociology** An introduction to sociology's major thinkers, theories, methods and fields of research and how they are used to understand social life; from everyday interactions to the struc-tures of global societies. Course materials focus on contemporary social issues by drawing on Canadian and comparative contexts.

Sociology 220 - **Social inequality: class, gender, ethnicity** The sociological study of social inequality, concentrating on class, gender and ethnicity as relations of domination will be explored through a variety of theories and methods. The course will focus on the structural analysis of these social relationships, their links with each other and their effects on societies and individuals. Prerequisite: C- or higher in *Sociology 10*0.

Sociology 230 - **Self and social interaction** This course examines the social dimension of the self and social interaction from the perspectives of symbolic interactionism, sociological psychology and ethnographic research. Topics include body language, conversation, behaviour in public spaces, social relationships and the shaping of identity and emotional life in cross-cultural, historical and contemporary contexts. *S. Katz, F. Nutch*

Sociology 241 - **Families and households** Sociological frameworks are applied to the analysis of different family forms, internal family processes and the societal contexts which shape families. Topics include mate selection and couple formation, sexuality, marriage and divorce, childbirth and child development, the division of household labour, family stress and family violence. Prerequisite: C- or higher in *Sociology 10*0. *D. Clarke*

Sociology - Administration 333H - **Social organizations** The course examines the nature and role of formal organizations or bureaucracies in the contemporary world. The classical and managerial traditions, as well as recent sociological perspectives, will be the tools to understanding bureaucracies. Case studies, focusing on formal organizations in the public and private sectors, are a key component of the course. Prerequisite: A full credit 200-level Sociology course or a cross-listed equivalent or *Administration 25*0. *C. Huxley*

Sociology 334H - **Sociology of work** The nature and meaning of paid work in North America in the last half of the 20th century. The effects of technological changes, the shift to a service economy and the changing gender composition of the labour force on managerial and employee strategies to control the workplace. Prerequisite: A full credit second year sociology course or a cross-listed equivalent or *Administration 25*0. *C. Huxley*

Sociology - Women's Studies 343H - **Sociology of gender** This course will focus on gender as both an analytical construct in sociological theory and research, and as a key aspect of social organization. Issues to be examined include the social construction of masculinity and femininity, theories of gender acquisition and the social reproduction of gender inequalities. Prerequisite: A full credit second year sociology course or a cross-listed equivalent. (Not open to students with credit in the former *Sociology - Women's Studies 342*.)

Sociology 345 - **Culture and society** As a critical examination of culture in contemporary society, this course focuses on the connections between cultural practices and the social formation, with emphasis on the contexts of both cultural production and consumption as they are mediated by relations of capital and technology. Topics include ideology, consumerism, advertising, cultural nationalism and policy, science, technological determinism and the commodification of nature. Prerequisite: A full-credit 200-level sociology course. *D. Parnis*

Sociology 347 - **Religion and society** This course investigates sociological reflections upon the functions of religions in various societies, the social organization of rituals and religious practices and the phenomenology of religious experiences. Studies will be drawn from a few of the major world religions. Prerequisite: A full-credit 200-level sociology course. *P. Bandyopadhyay*

Sociology 363 - **Sociology of health and illness** An analysis of health care systems. Topics include definitions of health and illness, medical technology and health professions, health care politics and policy and class and gender relations in health care delivery systems. Prerequisite: A full-credit 200-level sociology course.

Sociology 364H - **Deviance and social control** This course examines major sociological theories and debates about deviant behaviour, including the social construction of normality and deviance and their institutionalization and informal modes of social control. Prerequisite: A full-credit 200-level sociology course. (Not open to students with credit in the former *Sociology 36*1.)

Sociology 365H - **Crime and regulation** This course examines those forms of deviant behaviour which are defined as criminal in terms of meaning, variety and distribution, as well as formal modes of their regulation, including policing and the criminal justice system. Prerequisite: A full-credit 200-level sociology course. (Not open to students with credit in the former *Sociology 36*1)

CANADIAN STUDIES

Canadian Studies - History 101 - **Nation and citizenship: Interpreting Canada** This course will provide both historical and interdisciplinary approaches to modern Canada interpreting diverse and competing ideas of nation and citizenship. Topics include political citizenship, regional protest, women's culture, native/white relations, Canadian culture, language and identity, immigration and multiculturalism, and the emergence and retreat of the welfare state. Weekly lectures, workshops and tutorials.

Canadian Studies - Geography - Environmental & Resource Studies 200H - Reconsidering Canada: Culturing the land. This course examines evolving constructions of nature associated, in Canada, with rural space and place. It invites students to reconsider "the laws of the land" through an ecological language of relationships. Themes to be explored include colonialism, settlement, resource development, sustainability, bush, agrarian and frontier landscapes, aboriginal rights, free trade, literary and visual representations of land. Lecture and seminar weekly.

Canadian Studies - History - Politics 221H - **Ontario since 1945: From the "common good" to "common sense."** This course explores rapid changes in the culture, economy and politics of Ontario from the end of the Second World War to the present. Themes to be explored include the cultural transformation of Toronto, Ontario's deepening integration within a North American economy, oscillation between social democracy and neo-conservatism, health, education and social policy, and the marginalization of rural and northern Ontario. The course also looks at selected literary and cultural reflections on provincial life since 1945. Lecture and tutorial weekly.

Canadian Studies - Women's Studies 275H - **Women in Canada** Case studies in Canadian women's culture (espe cially sexuality, relation to family and community, and artistic expression) both past and present, focused primarily on women's experience of place and region. Weekly lecture and tutorial.

HISTORY

History - Canadian Studies 101 **- Nation and citizenship: interpreting Canada** This course will provide both historical and interdisciplinary approaches to modern Canada, interpreting diverse and competing ideas of nation and citizenship. Topics include political citizenship, regional protest, women's culture, native/white relations, Canadian culture, language and identity, immigration and multiculturalism, and the emergence and retreat of the welfare state. Weekly lectures, workshops and tutorials.

History 170 **- World history Themes in world history since 1500**. The course focuses on how the major continents - Africa, Asia, Europe and the Americas - have shaped our global community and emphasizes the richness and diversity of the human experience. Weekly lectures and tutorials.

History - Canadian Studies 254 **- Canada and the modern experience** The course explores some characteristics of modernity since 1890, with Canada as an example. Among the topics examined will be photography, travel, crime, new styles of business, government and educational organization, and changing attitudes toward sex, death and religion. Lecture and tutorial weekly. *K. Walden and staff*

History - Canadian Studies 3071H **- Public history I** Confronting history in real life. Issues in the practice of history outside the academy: museums, historic sites, theme parks, documentaries, popular history. The Canadian experience in wider context. Lecture and tutorial weekly. Field trip fee of $50.

Trent University

DURHAM COLLEGE

UNIVERSITY OF ONTARIO
INSTITUTE OF TECHNOLOGY

JOINT NEWS RELEASE
DURHAM COLLEGE/UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY AND TRENT UNIVERSITY

PARTNERSHIP AGREEMENT ENDORSED BY BOARDS OF GOVERNORS

10-year framework to serve students in Durham Region

FOR IMMEDIATE RELEASE
MARCH 27, 2002

A partnership agreement has been approved by the Boards of Governors for Trent University and Durham College, the latter also operating on behalf of Canada's newest university, University of Ontario Institute of Technology (UOIT) until their final Act has been passed in the Legislature this spring. This agreement establishes a framework for the delivery of programs to maximize university-level opportunities for students.

The 10-year renewable agreement is effective August 1, 2002. A central principle is to build on the best niches of the three postsecondary partners to support a broad range of programs for students.

Both Boards acknowledge the strong support received from the Ministry of Training, Colleges and Universities in recognizing the partnership among the institutions. The Ministry has reaffirmed the objective of providing Ontario students with access to postsecondary educational institutions of high quality both by maintaining the strength of existing institutions in the system and through the establishment of University of Ontario Institute of Technology (UOIT). Funding arrangements have been confirmed which will support the arts and science programs that Trent will continue to deliver in the Durham Region.

The agreement provides for distinctive and complementary roles for each institution. The University of Ontario Institute of Technology (UOIT) will proceed to develop programs leading to university degrees, in keeping with its mission to provide market-driven programs as announced May 9th, 2001. Nine degree programs are planned to start September 2003 in time for the double cohort including Bachelor of Science in Nursing (B.Sc.N.), Bachelor of Engineering (B.Eng.) Specialty in Nuclear Engineering, Bachelor of Science Radiation Physics (B.Sc.), Bachelor of Business Administration (B.B.A.), Bachelor of Arts in Integrated Justice Studies (B.A.), Bachelor of Engineering (B.Eng.) Manufacturing Engineering, and Bachelor of Education/Bachelor of Science (B.Ed./B.Sc.). Trent University will continue to offer degree programs in general arts and science, reflective of its primary mission, with majors in Anthropology, Biology, Computer Studies/Science, Cultural Studies, English Literature, Environmental Studies/Sciences,

History, Psychology, and Sociology. Enrolment in these Trent programs at Durham/UOIT has grown 32% over the past two years demonstrating an overwhelming market demand in the area. Trent will significantly expand its student population over the next few years.

Bonnie Patterson, President of Trent University emphasized that Trent is proud of its 30-year presence in the Durham Region. "The new framework agreement we are announcing is a natural outcome of the Ministry's four-year pilot program which provided stable funding for Trent's involvement in the University Centre at Durham. With the conclusion of that pilot program, the new agreement will build on the unique strengths that UOIT will offer to students as a new institution and the outstanding liberal arts and science programming provided by Trent University for three decades. Students will be the prime beneficiaries of the quality program offered by both institutions," says Patterson.

Gary Polonsky, President of Durham College and University of Ontario Institute of Technology (UOIT), is confident that the agreement will enhance educational opportunities for students. "Durham College and Trent University have been long-standing partners and I'm very pleased that Trent wants to continue that relationship with the University of Ontario Institute of Technology," says Polonsky. "I know that all three institutions hold students in the highest esteem and, to that end, we will work together to maximize a postsecondary experience that will be renowned throughout the country."

Background

- In May 2001 the province announced a $60-million infrastructure investment in a new postsecondary institution in the Durham Region with a mission to offer career-oriented and market-driven degree programs. Plans are well underway to start serving students in Fall 2003 and it is anticipated that within five years, enrolment at the University of Ontario Institute of Technology will top well over 5,000 full-time students.
- Durham College, Ontario's fastest growing college, will continue to offer high quality diploma programs and services to students and in partnership with University of Ontario Institution of Technology will work on seamless transition strategies for academically prepared students interested in moving between college and university.
- Trent University continues in its mission to deliver outstanding liberal arts and science education with award-winning faculty in small class settings. Trent consistently places number one in Central Canada among primarily undergraduate universities in Ontario in the annual Maclean's ranking and is known for its award-winning faculty and emphasis on interdisciplinary studies.

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For more information contact:

Gary Polonsky, President, Durham College and
University of Ontario Institute of Technology, (905) 721-3145.

Bonnie Patterson, President and Vice Chancellor,
Trent University, (705) 748-1011, 1347.

6.6.3 Online Course Information

There are currently plans to deliver some components of some courses online. The Director of Learning Resources, Dr. William Muirhead, will be instrumental in leading the development of online delivery.

Details about proposed delivery options are provided in Section 6.6.2. Additional information pertaining to online learning policies and practices is included in Section 7.3.

6.7.1 Work /Internship Experience Required for Degree Completion

UOIT plans to offer an **optional** internship program to students who have completed all courses in the program up to and including year three and maintained an overall grade point average of B+.

The Internship Program offers students the opportunity to engage in a contracted learning partnership with businesses in the Durham region and around the globe. The Program not only gives students an opportunity to apply classroom concepts to the challenges of organizational life but helps them to gain valuable, relevant work experience to promote networking and life-long career success.

The Internship Program is intended to be offered over twelve months. However, half of the 560 required hours should be full-time which implies about 40 hours per week. The internship will be offered not only on a full-time basis during the summer months but also on a part-time basis, thereby extending the program into the fall and winter months. A minimum of half of the total number of hours are to be of a full-time nature; that is, the student is employed for 35 hours per week on a continuous basis for 8 weeks, and the balance of the hours can then be on part-time basis. This provides greater flexibility to both the student and the employers.

The time requirements to administer this program are such that a full-time 'executive-in-residence' will be retained to 'over-see' the program and another individual, retained on a contract appointment basis, will be utilized to administer the academic aspects of the program. Therefore, the full-time faculty will not have any involvement in the internship program.

Upon completion of the Internship Program including a satisfactory verbal and written report, the student will receive six credits or the equivalent of two semester courses. The two course credits earned by the students are in lieu of the UOIT Edge - Capstone Study Project I and II.

Students will be exposed to a real working environment where they are expected to apply the theory and lessons derived from the classroom where the students will be employees subject to the performance demands and scrutiny of an employer.

Students will be expected to play an active role within the company assuming progressively more responsibility as time and circumstance permit. The student will be expected to engage in his or her area of specialization with a view to using information technology as an integral part of their daily activities.

The employer will play an active role in mentoring the student as well as informing the final grade assessment. The employer will be our 'partner' in this effort.

As interns, students will: secure a company willing to sponsor them, negotiate employment terms within stipulate guidelines, negotiate salary and, earn six credits toward the BIT degree. The intern's wages (stipulated in a contract) are to be paid by the sponsoring business over a contracted period. Successful work placement completion and final report submission will result in the intern's receiving a mark and six credits toward the BIT degree requirements.

The Faculty of Business and Information Technology proposes to allow 15-20 students in UOIT's current BCom program to participate in the program at the end of year two (the spring-summer of 2005) in order to develop and refine policy and procedures.

Internship Outcomes

The following table outlines generic outcomes for the internship experiences and gives examples of how these outcomes may be achieved. Specific plans for the internship are currently being developed by the Dean and faculty and will be finalized by the professors prior to implementation.

Internship Outcomes After participation in the internship experience, students will reliably demonstrate:	**How internship puts into practice the program outcomes**
the ability to act with honesty and integrity, which reflect respect for themselves and others	Students will conduct themselves in a professional and ethical manner at all times, demonstrating respect for themselves and their co-workers and acting with honesty, integrity and dignity.
use of critical thinking strategies to solve problems and make decisions in a systematic and proactive manner	Students will demonstrate critical and creative thinking skills as they encounter situations which require that a situation be assessed, data gathered and analyzed, and effective problem solving and decision making strategies be utilized. Employers seek graduates who can think for themselves, who do not wait to be told what they are to do.
the ability to gather appropriate resources and information to acquire relevant knowledge about the organization and to adapt to the context within which they will work	Students will conduct research into the organization in order to understand its mission and aims, to become familiar with its policies and procedures and to determine the nature of their positions within the context of the larger department and organization.
the ability to utilize appropriate interpersonal skills, to participate in teams, take the roles of member or leader, as appropriate, and to fulfill responsibilities assigned to them	Students will develop their ability to function effectively within the framework of a team, respecting what other members bring to the process and recognizing that opinions and ideas will vary. They will learn that human diversity (encompassing age, gender, culture, race, ability, etc.) will have a significant impact on the functioning of the team and that each member has a unique perspective and potential for contribution.
use of relevant knowledge and understanding of the organization, the external environment in which it operates and the way in which it is managed and the ability to apply their knowledge of business and IT concepts and practices to this particular organization	Depending on the nature of the work experience, students will gain a greater understanding of at least some of the functional business components of the organization and the ways in which they are inter-related. They will be in a position to observe ways in which the theory they have studied in class is being put into application within the context of this particular work environment. This allows them to explore concepts and issues beyond the context of those situations in which they were first studied.

Internship Outcomes After participation in the internship experience, students will reliably demonstrate:	**How internship puts into practice the program outcomes**
use of information technology with efficiency and confidence to carry out tasks related to the position	Students will use information technology in a variety of ways that are appropriate to the needs of their position and the organization. This may include a wide range of applications including, but not restricted to electronic communication, research, quantitative analysis, preparation of documents, spreadsheets, and visual presentations.
The ability to communicate information and ideas in oral, written and visual formats that are clear, well-organized and easily understood	Students will use communication skills effectively to share information, negotiate and resolve conflicts, and build positive working relationships with co-workers. Both oral and written skills will be enhanced with ongoing practice.
appreciation for the uncertainty and limits of knowledge and utilize strategies to support professional development and lifelong learning	Students will engage in activities that are new or different from those in which they had previously engaged. As they move beyond what is known and comfortable, they will develop strategies to acquire the information and skills they need to deal with these challenges. This may involve seeking out supports and resources to help them carry out their responsibilities with greater confidence and expertise. Using human resources within the organization or back at the University, written information from books, manuals or the Internet will help them realize that learning extends well beyond the classroom and is an ongoing part of their personal and professional development. The strategies they develop for lifelong learning enhance their performance not only in the classroom and work environment, but in other aspects of their lives as well.
the ability to invite and accept feedback graciously and take prompt action on recommendations made by co-workers and supervisors	The work experience is meant to support students' understanding of the theory they are learning in their academic courses and to allow them to observe firsthand how it can be applied in the real world. They learn best by being provided with formative feedback that helps to refine their understandings, question their assumptions and hone their beginning skills. Every new challenge is an opportunity. Students will benefit greatly from being able to take risks, make mistakes and learn from them in a supportive, and encouraging environment.

6.7.2 Work Experience/Internship Commitments

Durham College has always enjoyed cooperation from relevant organizations and agencies for student experience in current programs. We anticipate continued and enhanced arrangements for students in the University programs, as evidenced by past experience, and by support and interest from employers represented on advisory committees. The specific commitments for student internship experience will be completed by the Dean and the professors, in a timely manner, prior to implementation of the internship program.

The following are companies that have expressed an interest in the Faculty's Internship Program.

Carriage House
Oshawa

Laidlaw
Burlington

Hubbell
Pickering

Totten Sims Hubicki Associates
Whitby

BCE
Montreal

BRIC Engineered Systems
Bowmanville

Canada Trust
Toronto

Celistica
Toronto

Professional Personal
Oshawa

Pearson Education Canada
Don Mills

McGraw-Hill Ryerson
Whitby

Getronics
Toronto

Minister of Finance
Oshawa

Group4Flack
North York

Rouge Valley Health System
Ajax and Pickering Health Centre

Independent Electricity Market Operator
Toronto

Saint Elizabeth Health Care
Whitby

IBM
Markham

7.0 PROGRAM DELIVERY STANDARD

7.1 Quality Assurance Policies

Quality Assurance of Program Delivery Methods

UOIT is committed to quality standards in program development and delivery.

Policies and procedures are in place to ensure that the individual courses and programs are evaluated on a regular basis and that feedback is utilized to support continuous improvement. Current students are asked to provide feedback and make recommendations for improvement of courses, instruction and other University services. Student feedback policies and instruments are provided in Section 7.2

All students will participate in an orientation program, which will be designed to ensure that they are integrated into university life and prepared for the expectations of their respective programs. This will take place before the normal start date of classes, incorporating social activities organized by the Student Life Coordinator and Student Council. Faculty participation and leadership will be required.

This week will also be used to assess students' written and oral communication skills, to help students learn to use the laptop computers comfortably and efficiently, and to provide remedial supports to students in need of assistance in the areas of communication and/or computer skills. For example, students with highly developed skills in these areas may be paired with students who have low levels of computer knowledge and comfort in a peer-support arrangement that will continue throughout the first year of the program.

7.2.1 Policy on Student Feedback

UOIT values the feedback of its students through informal contact and more formalized evaluation methods. Current students and, in the future graduates will serve as representatives on Program Advisory Committees in order to provide feedback during the development phase of new programs or as part of the ongoing process to monitor the relevance and effectiveness of existing programs.

Current students are asked to provide feedback and make recommendations for improvement of courses, instruction and other university services. A team of UOIT staff is currently working to finalize the process and mechanisms for obtaining and processing student feedback. The draft of procedures for obtaining student feedback on courses and instruction and the draft of the instrument can be found on the following pages. Plans are underway to develop student satisfaction indicators and the related questionnaires. The student satisfaction surveys will be conducted annually in semester 2. UOIT is working with Compustat Consultants, a Canadian data management service, to finalize instruments, process the information and provide aggregate results for all student feedback surveys.

Procedures for Administration of Feedback Instruments

During the latter weeks of each semester the university will be conducting surveys of all students in order to obtain feedback on the quality of learning experiences. Students will be asked to provide opinions on such things as course organization and content and the delivery of the learning activities by the professor, lab instructor or tutorial leader.

- The survey will be completed on-line using the laptop during a scheduled class period. About 20 minutes of class time will be set aside for this activity.
- Student feedback will be completely anonymous and confidential.
- The results will be sent directly to an outside data management service where the information will be processed and returned to the university without identifying any individual student.

7.2.2 Student Feedback Instrument

Introduction:
This questionnaire is used to obtain student feedback in order to monitor and improve the quality of teaching and learning at UOIT. You will be asked to give feedback about the course, the professor, and laboratories or tutorials, if applicable. This survey is completely anonymous and confidential. An external company will process the information and provide results to UOIT
The questionnaire is in three sections. **SECTION A** asks you for feedback about courses and where applicable, tutorials and laboratories, and **SECTION B** asks for feedback on the professor. In **SECTION C** you may provide additional written comments.
Thank you. Your participation in this process is very important.

For each statement please select the response that most accurately reflects your opinion.

Strongly agree: a.
Agree: b.
Neither Agree nor Disagree c.
Disagree: d.
Strongly disagree: e.

SECTION A 1: The following questions ask for feedback on this course. Course title	**a.**	**b.**	**c.**	**d.**	**e.**
1. The course outline on Web CT is clear and helpful.					
2. The course activities are appropriate to the learning outcomes.					
3. The topics and units are well sequenced within the course.					
4. Learning materials such as textbooks and handouts are directly related to course content.					
5. The course takes full advantage of the laptop hardware and software.					
6. The course effectively uses web-based resources.					
7. The workload in this course is heavy when compared to my other courses.					
8. Methods of evaluation (e.g. tests, exams, assignments) are fair.					
9. This course makes an important contribution to my program of study.					

10. Overall, the quality of this course is:

Outstanding
Above Average
Average
Below Average
Poor

SECTION A- 2 The following questions ask for feedback on this laboratory. Name of Instructor	**a.**	**b.**	**c.**	**d.**	**e.**
1. The laboratory activities correspond to the learning outcomes.					
2. The laboratory activities are well sequenced within the course.					
3. Laboratory materials such as manuals and handouts are helpful.					
4. The workload for the laboratory component is appropriate.					
5. The instructor conducts the laboratory sessions in an organized and well-planned manner.					
6. The instructor is effective as a laboratory teacher.					
7. The laboratory makes an important contribution to my program of study.					

8.Overall, the quality of this laboratory is:

Outstanding
Above Average
Average
Below Average
Poor

SECTION A- 3: The following questions ask for feedback on this tutorial. Name of Instructor:	**a.**	**b.**	**c.**	**d.**	**e.**
1. The tutorial learning activities correspond to the learning outcomes.					
2. The tutorial activities are well sequenced within the course.					
3. Tutorial materials such as handouts and problems are helpful.					
4. The workload for the tutorial component is appropriate.					
5. The tutorial instructor conducts the tutorial sessions in an organized and well-planned manner.					
6. The tutorial instructor is an effective teacher.					
7. The tutorial makes an important contribution to my program of study.					

8. Overall, the quality of this tutorial is:

Outstanding
Above Average
Average
Below Average
Poor

SECTION B: The following questions ask for feedback for the professor in this course. **Name of Professor:**	**a.**	**b.**	**c.**	**d.**	**e.**
1. The professor clearly explained the course outcomes and grading scheme at the beginning of the course.					
2. The professor conducts class sessions in an organized and well-planned manner.					
3. The professor presents material in a clear and easy-to-understand manner.					
4. This professor demonstrates thorough knowledge of the subject.					
5. The professor presents the course material with enthusiasm.					
6. The professor encourages student discussion and participation.					
7. The professor responds effectively to students' questions.					
8. The professor effectively uses learning materials such as textbooks and handouts.					
9. The professor returns tests and assignments within a reasonable time.					
10. The professor provides useful feedback on assignments.					
11. The professor uses a variety of teaching methods and materials to accommodate various learning styles.					
12. The professor is available for outside-class consultation.					
13. The professor treats students with courtesy and respect.					
14. The professor maintains control of class.					

15. Overall, the professor in this course is:

Outstanding
Above Average
Average
Below Average
Poor

SECTION C: Additional Comments

1. **Please use the space below to provide any additional comments you may wish to make about the quality of instruction or about any aspect of this course. *Unlimited space is available for students to comment.***

7.3 Academic Community

UOIT is committed to providing innovative and market-driven programs through excellence in teaching and learning, value-added research and "vibrant student life." The physical design of the university environment will provide many spaces for groups to meet and interact, for academic and social purposes. The technological links available to students will ensure that a network of communication and support among students and between students and university resources is established and strengthened during their years at UOIT. Support services, student government and clubs, residence activities and varsity and intra-mural athletics will provide students with opportunities to interact with individuals outside their program area and to support their learning and development in all areas – academic, physical, social, emotional and spiritual.

7.3.1 Online Learning Policies and Practices

As part of its mission, UOIT seeks to advance the highest quality of learning, teaching, and professional practice in a technologically enabled environment. All full-time students enrolled at UOIT are required to lease a standardized IBM Thinkpad. This laptop is preloaded with a standard set of software tools for general computing needs and specialized software for use by particular programs and schools. The hardware configuration and campus infrastructure ensure that students have both wired and wireless access to the university network and central information technology (IT) resources. Moreover, the development of web services ensures that students also have access to academic resources such as library resources, our course management system (WebCT), bookstore services, etc.

All UOIT courses include online resources and activities to supplement the traditional face-to-face delivery format. This component can take many forms: class preparation and readings, research and access to resources, communication with peers and the instructor and in-class exercises, quizzes or simulations. Individual course websites are an integral resource component in every course.

Over time, it is the University's intent to develop quality learning opportunities which provide both on-campus and remote access for students engaged in full- and part-time studies. The primary purpose of the laptops in the University's first year of operation was to enrich the face-to-face residential academic experience. Distance learning options were to be added as programs matured.

For the academic year 2004/05, a number of UOIT's Faculties are proposing to offer courses to full-time residential students using a hybrid model of delivery that combines online and face-to-face components. Naturally, the extent to which online activities are integrated into individual courses is dependent on a number of factors, including: the specific discipline, the architecture of the course, the types of factual and experiential

activities, and the technical proficiency of the professors hired to teach the courses. UOIT is confident that it has an adequate infrastructure and system of support to accommodate this model and that appropriate policies are in place to facilitate a successful transition to hybrid course delivery.

Guiding Principles

- UOIT will provide online learning components of high academic quality, comparable to those offered in a traditional face-to-face delivery format.

- UOIT will provide the necessary services to support and enhance its ability to design and deliver effective hybrid courses.

- UOIT will support faculty members who choose to offer their courses through the hybrid course delivery mode.

The Faculty of Business and Information Technology plans to move toward this hybrid mode in the delivery of its courses in the proposed BIT Program. These plans have been discussed in Section 6.6.2.

ACADEMIC QUALITY ASSURANCE

UOIT aims to provide online learning components of high quality, comparable to those offered in the traditional face-to-face format. This goal is to be achieved in the following ways:

Quality of Courses
A common format is used to provide students with information about course outcomes and requirements for all courses, including online components. Common elements include: Course descriptions, syllabi, textbook requirements, student evaluation, learning outcomes, grading scale and timelines.

Communication
Faculty are expected to incorporate requirements for students to communicate with the course professor and peers via email, chat and/or discussion boards. This requirement will be clearly explained in the course syllabus.

Course Development Process
New courses with online components and changes to existing campus-based courses to include varying amounts of online learning activities must be approved by the Faculty Council of the respective Faculty. This body will report its plans to the Curriculum Planning and Review Committee of the University's Academic Council. Assistance in the development process is provided to faculty by the Centre for Academic Excellence and Innovation (CAEI).

Course Evaluations
All courses are included in a regular course evaluation process at the end of each semester. Students complete surveys which address the quality and effectiveness of course content and instruction, as well as resources and support services related to online learning components. Results are shared with faculty to enable them to incorporate feedback into course planning and implementation.

Faculty Expertise
Faculty hired by UOIT are expected to have skills and experience in the integration of technology into teaching. In addition to appointment, review, renewal, and tenure policies, *UOIT Employment Policies for Academic Staff* include expectations for faculty members to adopt modern information technology to facilitate learning.

SUPPORT SERVICES

The special mission of the University of Ontario Institute of Technology (UOIT) is to support Web-centric and distance education and, more specifically, to utilize information and communication technologies (ICT) to enhance student outcomes. A variety of services have been implemented to support students in their use of ICT for learning and to assist faculty to adopt new technologies for teaching.

Facilities/Equipment/Funding

The University provides financial support for a diversity of learning delivery components and courses - i.e. computer upgrades, Internet connectivity, technical support personnel, laboratory space and furniture, etc. through a variety of services across the University.

Other investments include:

- Expansion of the UOIT data network to support ubiquitous computing
- Investments to build smart classrooms equipped to support ubiquitous access to network and academic resources
- Continuing and expanding resources for faculty development and course development through Centre for Academic Excellence and Innovation

To ensure students receive the appropriate technologies and that they continue to receive the services and support they require, UOIT has entered into a business agreement with three industry leaders. A long term agreement has been established with IBM to provide computer technology, Nortel Networks to provide networking and wireless services and Bell Canada to provide network installation and broadband services. In addition to these agreements, an agreement with Microsoft has been implemented to deliver the software most commonly needed by students.

Student Services to Support Online Learning Activities

Registration
All UOIT students register on-line for courses. This service ensures that students enroll in appropriate courses, avoid long lines, and are able to register for courses from any location with Internet access. Upon registration, most students pay tuition through on-line banking services. Students can also request transcripts and tax receipts and engage in other financial transactions across the Internet. Other registrarial services such as checking grades and academic status, reviewing final marks or applying for UOIT scholarships are available online.

Student Orientation and Success
UOIT is committed to ensuring that students understand their roles and responsibilities in a hybrid learning environment and have the skills and tools they need to be successful. All students are provided with an email account. They are required to participate in a training session which outlines the care and use of laptops, as well as providing an orientation to e-learning and to online library resources. In addition, an extensive set of technical self-help resources is available on the laptop through a single desktop icon.

Textbooks and Materials
Students have access to a learning environment that supports interaction with faculty and other students while also ensuring that all course materials can be found in a single location. Where textbooks, print materials or other resources are required for a course, students may order these supplies online and have them delivered, or they may pick them up from the campus bookstore. The course Website will clearly identify the materials for which students will be responsible and the ways in which they can be accessed.

Mobile Computing Centre
The Mobile Computing Centre (MCC) is the on-site service centre from which students obtain their laptops and the suite of software appropriate to their respective programs. Personal assistance in configuring, installing and testing software is provided to every student. When students are experiencing technical problems and/or repairs are required, the MCC offers technical support; this service complements the existing drop-in or call-in helpdesk services provided by UOIT. The MCC provides telephone support to students on an extended day basis, including evenings and weekends. A single toll-free number is available for students to access information and support pertaining to their online studies.

Submission of Assignments
Often students find submitting assignments a difficult process requiring the attachment of files to e-mail messages or sending printed assignments by traditional mail services, often with reduced assurance that the faculty member has received the assignment. Consequently, students are able to submit assignments both in person as well as through the assignment submission tool in WebCT. This facility allows students to submit assignments from anywhere in the world with Internet access.

Academic Resources
Academic resources such as registration information, schedules, booklists, course outlines, lecture notes, assignment criteria, grades, exam schedules, transcripts, etc. are readily available to students through the University website or individual course websites. The online format allows students to interact with peers to share ideas, ask questions, participate in study groups, complete group assignments and offer general support to one another as they engage in the learning process through newsgroups, email, discussion groups, web sites and chat facilities. Students benefit by having the resources to be able to learn by doing. Skill drills and self-testing provide valuable learning opportunities for students. Of particular value to students is the posting of test results, problem solutions and marking notes soon after tests and exercises have been written. Students also access slides, notes, tips, and sample spreadsheets before or after classes, allowing them more time to focus on learning and less time on writing notes in class. Every student is able to collaborate directly with fellow classmates, fellow students, outside

contacts, faculty members and content experts directly. This can be done through newgroups, email, discussion groups, web sites and chat facilities.

Library/Learning Resources
The library serves as a focal point of academic studies. In accordance with the University's mandate to serve as a laptop university with “round the clock” accessibility to resources, the Library will purchase significant holdings and make its services available in electronic format wherever possible. The mobile program can deliver these electronic resources from anywhere on the network directly to each student’s laptop. The investment and acquisition of faculty specific databases provide students with access to rich academic and research resources across the Internet. Further details are provided in Section 8.8.1 of this submission.

Access to Other University Services
The Web-centric environment also enables students to access information about a wide variety of student services and non-academic resources available to them. They can link directly to such University services as the Health and Wellness Centre, Career and Employment Services, Financial Aid, Services for Students with Disabilities, Learner Support Centre, student government, etc. Regular updates regarding social and athletic events, student clubs, guest presentations and special events ensure that all students are able to take advantage of the 'vibrant student life' which is a key element in the vision of UOIT.

FACULTY SUPPORT THROUGH THE CENTRE FOR ACADEMIC EXCELLENCE AND INNOVATION (CAEI)

To support faculty to teach online and students to learn online, UOIT has adopted and centrally supports WebCT as its learning management system. Integration of WebCT with the University student information system supports a single username and password login for students, staff and faculty.

To support faculty adoption of web-centric learning on campus and development of hybrid delivery models, the Centre for Academic Excellence and Innovation (CAEI) provides services such as instructional design support, multimedia development, assistance in building WebCT course sites, Webpage authoring, and capturing, segmenting and streaming of video across the Internet for instructional purposes. CAEI also provides training for faculty for a variety of content development tools and in the use of a variety of application software products.

To ensure the highest quality of teaching learning resources and pedagogical practices, CAEI organizes “quality circles”. These quality circles will allow faculty to share instructional practices and program and course materials with colleagues and staff of the CAEI to support reflective practice and continuous improvement to instructional practices and to learning materials.

UOIT, through CAEI, is committed to monitoring the implementation of hybrid delivery models, Web-centric learning and the mobile computing program on- and off-campus. Weekly meetings of key players from Information and Technology Services and the Mobile Computer Centre (MCC) will be held to monitor progress and incorporate student feedback into ongoing operations.

Partnership between UOIT, IBM and Bell Canada

A shared services business model has been established between UOIT and Bell Canada for the provision of data network equipment as well as network management services, including security, cabling and wireless applications. In addition, Bell Canada has made a commitment to providing opportunities and services to support student and faculty development.

IBM has also agreed to provide IBM products, software and solutions for the laptop program at discounted prices.

The organization has on file and available upon request copies of current software, hardware, and systems agreements that pertain to the delivery of electronic/online learning.

7.3.2 Academic Community Policies

UOIT is strongly committed to the development of a collaborative web-centric environment to enhance student learning and involvement in university life. Such an environment will enable the creation of a community of inquiry which promotes closer relationships between and among students and faculty, students and their peers, and UOIT and its communities. It also includes access to a rich set of digital learning resources.

Each student will have the benefit of wireless internet access on campus. This will provide opportunities for collaborative learning, electronic communities, instant communication and a more productive relationship between faculty and students. All students will have an equal opportunity to communicate with faculty, access course materials, do research and prepare quality presentations without having to wait for on-campus computers.

Students will be able to access a wide variety of information related to academic, social, athletic and spiritual aspects of their university experience. Academic resources such as registration information, schedules, booklists, course outlines, lecture notes, assignment criteria, grades, exam schedules, transcripts, etc. will be readily available to them through the University website or websites of individual courses and professors. The online format allows students to interact with peers to share ideas, ask questions, participate in study groups, complete group assignments and offer general support to one another as they engage in the learning process. Students will benefit by having the resources to be able to learn by doing. Skill drills and self-testing will provide valuable learning opportunities for students who learn best from these modes. Of particular value to students is the posting of test results, problem solutions and marking notes soon after tests and exercises have been written. Students also obtain postings of slides, notes, tips, and sample spreadsheets before or after classes, allowing them more time to focus on learning and less time on writing notes in class. Every student will be able to collaborate directly with fellow classmates, fellow students, outside contacts, faculty members and content experts directly. This can be done through newgroups, email, discussion groups, web sites and chat facilities.

The library will be a focal point of academic studies. It will provide traditional and electronic resources accessible by students in the library. The mobile program can also deliver these electronic resources from anywhere on the network directly to each student's laptop.

The web-centric environment also enables students to access information about a wide variety of student services and non-academic resources available to them. They can link directly to such University services as the Health and Wellness Centre, Career and Employment Services, Financial Aid, Services for Students with Disabilities, Peer Tutoring, Learner Support Centre, student government, etc. Regular updates regarding residence activities, social and athletic events, student clubs, guest presentations and special events ensure that students are able to take advantage of the 'vibrant student life' which is a key element in the vision of UOIT.

8.0 CAPACITY TO DELIVER STANDARD

8.7 Enrolment Projections and Staffing Implications

			Staffing Requirements -- Projected			
	Cumulative Enrolment*		**Cumulative Full-time Faculty Equivalents (F.T.E.)**	**Cumulative Part-time Faculty Equivalents (F.T.E.)**	**Add columns to account for technical support, teaching assistants, and so on**	**Ratio of Full-time Students/ Full-time Faculty**
	Full-Time	**Part-Time**				
Year 1	140	20	13		5	9
Year 2	277	39	18		10	11
Year 3	414	58	23		15	12
Year 4	559	77	28		20	13

Note: Estimated enrolment increase is 25% and attrition rate is projected at 10% for each year.

8.8 Resources

8.8.1 Library Resources

LIBRARY LEARNING RESOURCES PLAN FOR BACHELOR OF INFORMATION TECHNOLOGY (B.I.T.) HONOURS

FACULTY OF BUSINESS AND INFORMATION TECHNOLOGY

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Introduction:

The goal of the University of Ontario Institute of Technology's Campus Library is to provide quality library and information services to support the education and research programs of its Faculties. This definitely extends to include the Bachelor of Information Technology (B.I.T.) program.

The following document discusses the Campus Library in relation to the collection; the accessibility of resources and services; and research support, staffing, and partnerships. The collection is defined as including both the traditional paper book or periodical, and the more nontraditional—but increasingly common—electronic index, book or journal database. Librarian recommended web sites are also a unique part of the collection in that they direct students and staff to valid academic sources. Accessibility addresses the physical presence of the Library, onsite reference assistance, the Library web page www.uoit.ca/library as a 24/7 portal, and interlibrary loan and document delivery. Research support, staffing, and partnerships emphasize the Library's role in teaching students, liaising with faculty, and connecting with government and corporate agencies.

Collections:

It is understood that the Library's acquisition plan must be based on evolving pedagogical needs as determined by the academic schools. In close liaison with the Deans and Professors, subject specialist Librarians will define collection development strategies for the ongoing curriculum-based purchase of resources as well as for the evaluation and review of existing material.

Books and Government Documents:

The Campus Library offers a small but comprehensive collection. At present, there are approximately 62,000 volumes on the shelves, but when the new Library (described below) is available for occupancy in later 2004, this number will quickly rise to over 160,000. The Library acknowledges the three specialty streams of Networking, Information Technology Security, and Game Development and Entrepreneurship (offered in partnership with the Durham College School of Design and Communication Arts) within the BIT Program, and has therefore reviewed the collection under the two broad categories of computer books and business texts. There are approximately 4,000 computer references currently on the shelves, and the objective is to increase this "sub" collection by 30% to 5,200 by late 2004. Included in this category are not only traditional hardware and software books, but also applicable titles from the College's Animation,

Graphic Design, Multimedia Design, and Web Developer programs. The purchase of university-level networking and information security texts is well underway in response to the introduction of UOIT's new Computing Science, Software Engineering, and Masters of Information Technology Security (MITS) programs. Amongst the titles already on the shelves are: *Experimental Algorithmics: From Algorithm Design to Robust and Efficient Software* (Springer-Verlag), *PC Graphics Handbook* (CRC Press), *Computer Systems Architecture: A Networking Approach* (Addison-Wesley), *Cryptography Demystified* (McGraw-Hill), *Virtual Reality Technology* (Wiley-IEEE), *Physics for Game Developers* (O'Reilly), and *Object-oriented Software Engineering* (Pearson/Prentice Hall). As well as acquiring materials from quality publishers such as John Wiley, Springer-Verlag, CRC Press, Prentice Hall, McGraw-Hill and Elsevier (including Newnes, Academic Press, Butterworth-Heinemann, Digital Press), the importance of association and professional releases is also recognized. The Library will access and/or purchase as necessary standards, proceedings, and technical reports from key scientific and computer-oriented organizations such as ACM (Association for Computing Machinery), IEEE (Institute of Electrical and Electronics Engineers), Cisco Systems Inc., SANS (SysAdmin, Audit, Network, Security) Institute, CISTI (Canada Institute for Scientific and Technical Information), CERT (Computer Emergency Response Team-Software Engineering Institute, Carnegie Mellon University), and CanCERT (Canadian Computer Emergency Response Team).

Likewise, the Library currently has approximately 6,400 business books including titles that address topics such as project management, marketing, leadership, entrepreneurial skills, and finance that are of particular interest to the B.I.T. student. The intent is to increase this number by 20% or approximately to 7,700 volumes by September 2004 and to continue acquiring business volumes at the same rate for several successive years (e.g. September 2005 = 9,200 books). Amongst the Library's recent circulating acquisitions that may be of interest to those enrolled in the B.I.T. program are: *Project Management: A Systems Approach to Planning, Scheduling, and Controlling* (Wiley), *Roadmap to Entrepreneurial Success* (AMACOM), *Effective Teamwork: Ten Steps for Technical Professions* (Pearson/Prentice Hall), *Corporate Finance* (McGraw-Hill), *Services Marketing: People, Technology, Strategy* (Pearson/Prentice Hall) and *Consumer Behavior and Culture: Consequences for Global Marketing and Advertising* (Sage).

Arrangements were finalized in November 2002 with Blackwell's Book Services allowing for the simultaneous purchase of books from a wide array of publishers. Meetings with Coutts and Midwest, two other companies that also represent a number of book dealers, have also been held with the possibility of extending and accelerating the Library's collection building activities.

With over 12,500 (not included in the total above), e-books are an integral part of the UOIT library collection. Currently, NetLibrary, Books 24 x 7 IT Pro, Business Pro and Finance Pro, and Access Science are the databases most likely to interest to Business Information Technology students.

Periodicals:

At present, the Library provides access to nearly 1,100 technology periodicals and over 800 of these have a computer focus. Journals are available as traditional paper subscriptions, single electronic titles (e.g. Science) or as one of several titles within an

electronic database. Amongst the relevant databases are: ACM (American Computing Machinery) Digital Library, Ebsco Academic Search Premier, Ebsco Business Source Premier, Ebsco Inspec (IEE- Institution of Electrical Engineers), IEEE Xplore (Institute of Electrical and Electronics Engineers), Proquest Science Journals, and Proquest Wilson Applied Science and Technology Abstracts. Please note that the numbers stated above do not include the 2,228 conference proceedings and standards that are also provided within the IEEE Xplore database along with the journals published by the Institute of Electrical and Electronics Engineers.

As well, it should be noted that as a recent member of the OCUL (Ontario Council of University Libraries) and CRKN (Canadian Research Knowledge Network-formerly, CNSLP (Canadian National Site Licensing Project)) consortia, the number of journals available for access is increasing constantly and will continue to do so over the next academic year. The Campus Library is already an active participant in the Ontario Scholars Portal (OSP or sometimes referred to as scholarsportal.info), an OCUL initiative that consolidates the electronic periodical holdings of several well-respected publishers (e.g. Kluwer, John Wiley, Cambridge University Press, American Psychological Association) to provide a single-access search gateway. For example, the following titles are included in the Kluwer holdings from 1996 to the present and are pertinent to the discipline of Business Information Technology: *Real-Time Systems; Formal Methods in System Design; Designs, Codes & Cryptography; International Journal of Computer Vision;* and *Wireless Personal Communications*.

Following the mandate of the University of Ontario Institute of Technology as a laptop university with "round the clock" accessibility to resources, whenever possible, the Library will purchase significant holdings in electronic format. For example, through the ACM Digital Library, the *Transactions on Programming Languages and Systems (TOPLAS)* are available from 1979 to the present; the *Transactions on Graphics (TOG)* are available from 1982 to the present; the *Transactions on Modeling and Computer Simulation (TOMACS)* are available from 1991 to the present; and the *Transactions on Networking* are available form 1993 to the present.

Periodical coverage for the entrepreneurial, marketing and administrative focus of the Program is similarly provided through business journals in both print and electronic format. Examples of significant holdings provided through Ebscohost Business Source Premier include *Academy of Management Journal* (1958 to the present), *Journal of Marketing Research* (1964 to the present), and *Harvard Business Review* (1922 to the present). Articles offering an excellent industry and company analysis for our Nation can be found through Proquest CBCA (Canadian Business and Current Affairs) Fulltext Business, while LexisNexis is an example of a quality database emphasizing the American business and legal situation. Products such as Ebscohost Academic Search Premier that have a broader subject coverage, not only contain academic journals for both the scientific and business community (e.g. human resources, marketing, project management, accounting), they also provide full text trade and professional magazine articles (e.g. *Dr. Dobb's Journal: Software Tools for the Professional Programmer, Information Week, Computing Canada)* with a definite emphasis on market developments and predictions. Likewise, many databases such as Proquest Science Journals and ACM (American Computing Machinery) with a primarily technical focus usually contain industry-related articles too. An annotated list of periodical databases targeted for use by BIT students and faculty appears at the end of this report.

Internet:

While the prevalence and importance of the Internet is recognized, it is also realized that not all information on the Internet is of equal value and/or prominence, and that not all people have equal search skills. The Library, therefore, strives to make staff and students aware of quality web sites appropriate to their program. This will be no different for the Business Information Technology offering. Listings of recommended web sites are part of the Library Faculty Guides that are prepared with each UOIT program in mind. Posted on the Campus Library web site www.uoit.ca/library, these Faculty Guides are discussed in detail under "Accessibility". For example, amongst the relevant sites for the BIT program are: IGDA (International Game Developers Association), CRA (Computing Research Association), NIST (National Institute of Standards and Technology) Computer Security Resource Center, Brint (The BizTech Network), and Business Gateway (Government of Canada).

Accessibility:

The Building:

A new state-of-the art, 55,000 square foot Library building is scheduled to be ready for occupancy by late 2004. The intent of the design is to create a print/electronic library which will accommodate new and emerging technologies without sacrificing the personal warmth of a traditional library. The building offers various types of study and activity spaces to accommodate different learning styles and user needs.
These spaces include:

- Quiet public study spaces as well as a formal Reading Room, all within a "wireless" environment
- Collaborative learning spaces for groups of various sizes
- Common spaces and public service research workstations that facilitate intellectual interaction and engagement
- Electronic classrooms for regular ongoing educational sessions on library resources and research strategies
- Attractive and appealing display areas for art and library exhibitions
- Special needs adaptive technology equipment

On Campus Reference Assistance:

Reference services are provided by professional librarians for 68 hours of the 89 hours per week that the Library is physically open or 76.5% of the time. Librarians liaise with professors so classes that are specific to student research topics can be offered. The concepts of teaching and collaboration are further explained under the section entitled "Research Support, Staffing, and Partnerships". Both staff and students are also welcome to make individual or small group appointments with Librarians.

Campus Library Web Page:

The Campus Library web page is available at www.uoit.ca/library and is accessible 24 hours a day, seven days a week. A Library e-mail address is provided as well as telephone information so individuals can leave messages at any time. In collaboration with other Ontario University Libraries, the Campus Library is also currently investigating a web-based service such as the Virtual Reference Desk (www.lssi.com) which uses chat software to deliver reference service to users regardless of time and location. The Librarian can "push" pages to patrons so they can literally see both the steps involved and the results achieved with a given search. Consequently, this technology promises to be more effective than e-mail and telephone. Beginning with limited hours and an after-hours e-mail default, the ultimate goal is to make virtual reference a "round the clock" service.

General reference assistance is provided through Campus Library web page sections that explain topics such as computer search techniques, article searching, Internet evaluation, and bibliographic citation. Amongst the services outlined are circulation procedures, reserves, and interlibrary loan. What makes the UOIT Library web page truly unique is its Faculty Guides. Prepared with each program in mind for a particular Faculty, every Guide outlines and links to pertinent Electronic Databases and Indexes; provides sample listings with links to relevant journals along with subject headings for further investigation; highlights the Catalogue with suggestions from the Reference collection; describes and links to the most appropriate E-book databases; and offers Recommended Web Sites. As discussed above, collection material for the BIT program is already being consolidated and the construction of this specialized UOIT Library web page section within the Faculty of Business and Information Technology section is well underway. These Guides are indeed resource portals.

Interlibrary Loan and Document Delivery:

Interlibrary Loan is available free of charge to students and faculty. Individuals have the option of making their requests online or in person. RACER (rapid access to collections by electronic requesting) is a VDX (Virtual Document Exchange) interlibrary loan system currently being implemented in OCUL member libraries. Students and faculty can search the catalogues of all Ontario university libraries and place immediate online requests for any available item. The system populates the request automatically with the bibliographic information from the record chosen, and a patron name, i.d. number, and e-mail address are all that need to be added to the online form. As part of OCUL and the IUTS (Inter University Transit System), the Campus Library now receives loans in a very reasonable amount of time, but RACER will significantly lessen the wait.

Faculty and students from UOIT may also visit any of Ontario's university libraries and usually, may borrow books directly from them upon presentation of their UOIT photo identification card; the University of Toronto is an exception in that undergraduates from other institutions do not have borrowing privileges. Materials may be returned directly to the lending library or may be left at the Campus Library where they will be returned to the appropriate lending library. Interlibrary Loans and document delivery are also available from other lending institutions (e.g. CISTI or libraries outside the province of Ontario) as required.

Research Support, Staffing, and Partnerships:

UOIT librarians will play a critical role in facilitating knowledge acquisition and teaching Business Information Technology students how to access information in an efficient way as well as how to critically evaluate resources and utilize them in constructing experiments, formulating research papers, and writing technical reports. The following strategies are either in place or planned:

1. A professionally qualified librarian (M.L.S.) with subject expertise in both business and information technology will join the UOIT Library staff in September 2004. Staffing support for various academic areas within the Library will continue to expand as UOIT enrollment increases, and student and faculty needs are reassessed after the initial year of classes.

2. Customized curriculum for instruction in the use of library resources and technology pertinent to the Program is being designed and will continue to be reformulated as faculty and student needs are recognized. As professors arrive on the UOIT campus, librarians are meeting with them to identify their teaching and research objectives. This will progress to ensure that classes are targeted to the specific learning outcomes of a given paper.

3. An ongoing objective is to facilitate strong library and faculty collaboration to guarantee the relevance of collections to the curriculum.

4. The importance of liaising with the UOIT Centre for Academic Excellence and Innovation (CAEI), a facility where faculty are introduced to and mentored in the use of instructional technology such as computerized teaching packages, presentation software, web development, and distance learning delivery is recognized. This would ensure that the Library's resources, in digital format, are included amongst the links for courses developed within the Faculty of Business and Information Technology. A link to the Library Web Page Faculty Guides from each student's "My WebCT" template is planned.

5. The Library will connect to national and global resources that both enhance student employment opportunities (e.g. IBM, Bell Canada) and that support high levels of applied research by scholars in the Faculty.

The Campus Library welcomes the introduction of the Business Information Technology program. Support will be provided in terms of the collection, accessibility, staffing, and partnerships.

LIBRARY RESOURCES		
Business Information Technology	**# of Holdings (print) relevant to the field of study**	# of Holdings (electronic) (include program specific databases)
On-Site Library Resources Relevant to Degree Program Area (For Students/Faculty)	Computer related 4,000 – June 2004 5,200 – September 2004 Business 6,400 – June 2004 7,700 – September 2004 9.200 – September 2005	17 journal databases 3 e-book databases (see attached descriptions)
Other Library Access (e.g., web-based, inter-library arrangements)	OCUL Interlibrary Loan arrangements (Racer, VDX, IUTS)	

Provide a summary of the currency of the holdings at each location specified. Include a list of the program specific databases.

New material is added and older resources are removed from the shelves on an ongoing basis. Texts that are practical explaining current applications (e.g. in mathematics, physics, chemistry or biology) should be no more than 7 years old. Materials such as reports, commission findings and recommendations, and historical overviews have varying shelf lives. Dates for the periodical collection vary. This is true in both paper and electronic format. Some magazine and journal titles may be available in full text for the past 30 years plus the current time, while others may be held for three years or less. Longevity (e.g. research findings) rather than currency (e.g. product releases and updates) and perceived academic value are amongst the deciding factors. Interlibrary loan and document delivery is very important in that for many titles included within databases, only indexing and/or abstracting is provided regardless of date.

Business Information Technology Electronic Databases

Access Science – Electronic version of the McGraw-Hill Encyclopedia of Science and Technology.

ACM (American Computing Machinery) Digital Library– Citations, abstracts and full text for computer-related journals and proceedings

Books 24x7 IT Pro, Business Pro, and Finance Pro – 5,500+ computer/information technology and business books

Cambridge University Press – Fulltext noteworthy academic collection of journals addressing sociology, psychology, education, history, politics and the sciences

CISTI (Canada Institute for Scientific and Technical Information) Source – Electronic database of the table of contents of over 17,516 journals primarily in science, technology and engineering (65%) – Some business and economics (11%)

Computer and Information Systems Abstracts (Cambridge Scientific)* - Coverage of over 3,000 international journals addressing computer applications, programming, hardware, software, encryption, artificial intelligence, etc.

EBSCOhost Academic Search Premier – Excellent comprehensive journal collection covering the social sciences, humanities, general science and technology, nursing, multi-cultural studies and education

EBSCOhost Business Source Premier – Management, accounting, marketing, economics, and other business magazines and journals

EBSCOhost INSPEC – IEE (Institution of Electrical Engineers) indexing and abstracting database to scientific and technical literature worldwide

E-Stat – Statistics Canada's educational database including both Census material and CANSIM (Canadian Socio-economic Information Management System), a time series collection—Especially good for compiling graphics, tables and other visuals

IEEE Xplore – Fulltext of IEEE (Institute of Electrical and Electronics Engineers) journals, magazines, conference proceedings, and standards

Internet and Personal Computing Abstracts (Cambridge Scientific)* - Current awareness publications highlighting computer product and related business developments

ISI Web of Science – Comprised of three indexes – Humanities, Social Sciences and Science

Kluwer Online – Comprehensive collection of full text journals – Numerous biology, chemistry, information technology and health-related titles

Lexis Nexis - Primarily American database for news and for business, medical and legal articles and information – some Canadian and international law sources

NetLibrary – Collection of over 5,000 e-books

Proquest CBCA (Canadian Business and Current Affairs) Fulltext Business – Canadian industry and professional magazines, journals and newsletters

Proquest Science Journals - Journals emphasizing computers, chemistry, physics, telecommunications, engineering and transportation

Proquest Wilson Applied Science and Technology Abstracts – Indexing and abstracting with some full text for journals addressing technical issues

Wiley Interscience – Impressive database of full text journals – Excellent coverage of business, the sciences, and technology

*Currently under investigation and negotiation

8.8.2 Computer Access

Year	Number of Students (Cumulative)	Number of Computers Available to Students in Proposed Program	Number of Computers (with Internet Access) Available to Students in Proposed Program	Location of Computers	
				On Site	Other (specify)*
2004	140	120	120	120	
2005	277	205	205	205	
2006	414	258	258	258	
2007	559	325	325	325	

- 240 additional computers with internet access are available in the Learning Commons and Library.

Instrumental to the success of the students in UOIT's degree programs are personal laptops. As part of his/her program, each student will be required to lease a standard laptop computer. This will include resources that match the needs of the specific University programs. Each laptop will be leased on a two-year refresh cycle, with each student receiving a new or one-year-old laptop. This will ensure adequate capacity and technical currency in an ever-changing technological marketplace.

Each student will have the benefit of wireless internet access. This provides them with opportunities for collaborative learning, electronic communities, instant communication and a closer relationship between faculty and students. All students will have an equal opportunity to make quality presentations, do research, communicate with faculty and access course materials, while not having to wait for available on-campus computers.

8.8.3 Classroom Space

Naturally, classes for students will be scheduled in rooms which are an appropriate size to accommodate the learning activity. Smaller lecture rooms and break-out rooms for tutorials and small group activities will be available as needed.

Classes and tutorials in all subjects require the use of computers and so all classrooms used by students will have wireless connectivity or will be wired for computer use and internet access.

Additional physical requirements will include: data projectors in all classrooms, blinds on windows to reduce sun glare, comfortable and ergonomically sound chairs and tables for computing, white board with markers/eraser, and bulletin board display space in classrooms.

Year	Number of Students (Cumulative)	Number of Classrooms	Location of Classrooms	
			Campus	Other (specify)
2004	140	54	✓	
2005	277	84	✓	
2006	414	84	✓	
2007	559	102	✓	

8.8.4 Laboratories/Equipment

In most courses, dedicated computer labs are not needed for students since all classrooms at UOIT will have wireless connectivity or will be wired for computer use and internet access.

Professors will typically specify laboratory requirements and resources, including hardware and software, one year in advance of when they will be needed.

SPECIAL LAPTOP REQUIREMENT

The BIT students are required to use special software in the program, especially those who choose to specialize in game development and entrepreneurship. Specialized and high-end animation software such as Maya, Macromedia Studio MX, etc. will be required on BIT students' laptops. In addition, their laptops' RAM will be upgraded accordingly. BIT students in the game development and entrepreneurship specialization will be charged an additional fee for their laptop. All students in this specialization will also be required to purchase a docking station with a 21" monitor to provide for real time animation program development. The following is a summary of the expected additional laptop configuration and software requirements:

1. 1 GB RAM
2. Video Card with upgraded memory
3. Maya

This recommendation is based on current technology at the time of writing of this proposal.

SHARED RESOURCES – LABORATORIES

The Durham College School of Technology is presently offering a Computer Systems Technology diploma program which prepares their graduates for the Cisco CCNA and CCNP certification and has the required facilities, equipment, and space. Instead of seeking out new spaces, the Faculty of Business and Information Technology, under the partnership, will lease the Durham College Cisco Academy Lab facilities to offer the program and may hire qualified instructors from the Durham College School of Technology programs to teach in the Cisco certification courses. Both networking and information technology security specializations are expected to use the lab. The capacity of the lab is 40.

Some of the courses offered in the Information Technology specialization may make use of a Hacker Lab which will be housed in the University's Business and IT Building. (See details below).

HACKER LAB

One of the unique resources available to students in the BIT program is a "Hacker Lab" which will be housed in Academic Building 3, the home of the Faculty of Business and Information Technology. The "Hacker Lab" will enhance students' learning experiences

by providing them with the necessary security hand-on skills and knowledge. This lab is a dedicated space which literally mimics a network setting. Faculty members will incorporate various IT security lab assignments into the BIT courses. For example, teams of students will be assigned to work as either “defense” or “attack.” The “defense” team’s role will be to secure their system with available hardware and software tools, while the “attack” team’s role will be to attempt to breach the security system as designed by the “defense” team. This simulated network environment will train our graduate students to better understand IT security from two different perspectives; namely, from that of a technology security officer and from that of a criminally-motivated hacker. No other Canadian universities have such facilities available to students.

The Hacker Lab will consist of a variety of network connectivity, including CAT5, wireless (802.11x), Bluetooth, etc., and dedicated servers, workstations, laptops, as well as handheld devices. The “defense” and “attack” systems will also have a variety of hardware and software installed. An initial plan is to include Unix (Linux) and Windows operating systems. The Hacker Lab has a capacity for 24 students which will be divided into eight groups of three students. Four groups will be assigned as the “defense” team while the other four groups will be the “attack” team. Courses that require the use of the Hacker Lab include: OS Security I: Windows, OS Security II: Unix, Malware Worms and Viruses, and Web Services Security.

A tentative hardware configuration has been planned for the development of the Hacker Lab. There will be 8 sets of servers/workstations for each group of the students. However, both types of the “defense” and “attack” hardware equipment are expected to be similar. The following is the description of the hardware, software, and operating system configurations:

a. 8 Sun Sparc Servers installed with Unix/Linux operating systems. One or more may be used for Firewall configuration. Each server will have 2 network cards installed.
b. 8 Pentium-based Servers installed with Windows operating systems. One or more may be used for Firewall configuration. Each server will have multiple network cards installed.
c. 8 Pentium-based workstations installed with a mix of Unix/Linux and Windows operating systems.
d. 8 Pentium-based laptops installed with Unix/Linux or Windows operating systems.
e. 4 handheld PDAs with wireless/Bluetooth capabilities.
f. 8 Ethernet routers with a minimum of 4 connections
g. 4 switches with a minimum of 4 connections
h. 4 switches with VLAN capabilities and a minimum of 4 connections
i. 8 wireless access points
j. 4 smart card readers
k. 4 smart card programming devices
l. Checkpoint Firewall software
m. IDS software
n. Content scanning software

8.8.5 Resource Renewal and Upgrading

- **For library renewal and upgrading, refer back to section 8.8.1: Library Resources**

- **Computers and Computer Access:**

Each student will lease as part of his/her program, a standard laptop as required for individual university programs. Each laptop will be leased on a two-year refresh cycle. Each student will have a new or one-year-old laptop. This will ensure adequate capacity and technical currency in an ever-changing technological marketplace.

- **Classrooms and Physical Facilities:**

Capital Plans are underway to develop two phases of buildings. The government has invested $60 million in development of the University of Ontario Institute of Technology. Initially, construction will occur on the land bounded by Conlin Road, Simcoe Street, the existing subdivision on the southeast boundary and the valley lands of the Oshawa Creek to the west. This totals 115 acres. The Board of Governors of Durham College has also purchased and acquired 350 acres to the north of this area to accommodate future development.

The first University building, which was ready for occupancy in September 2003, contains classrooms, laboratories, and academic and staff offices. A 300-bed residence was also ready for the first class of UOIT students in September 2003.

The second phase of construction, now underway, includes one additional (200 bed) residence building, two additional academic buildings comprised of classrooms, laboratories, academic and staff offices and a new library to be shared by UOIT and Durham College. This phase is to be completed by September 2004.

The initial core facilities for teaching and research at the UOIT are housed in the three academic buildings. Together with the new University library, these buildings overlook the landscaped campus commons. This precinct is the heart of the University and will be its central crossroads.

A key characteristic of each academic building is the provision of generous student study and lounge space. These are complemented by a faculty lounge, Council room and student club offices. The lounge and study spaces are concentrated around a central skylit atrium which provides a point of orientation, gathering and connection for students and faculty. The buildings are designed to be highly flexible, adaptable to programs and teaching configurations as yet unknown. Wired and wireless connection is provided through all dedicated and informal teaching spaces.

The new University library is designed as the intellectual and social commons for this 21st century university. In particular, the library has two points of focus; the provision of access to electronic collections and resources and work and study space for 750 students. While the library will house a print collection of about 125,000 volume equivalents, with an emphasis on reference materials, it is in the provision of access

through wired and wireless connection to electronic collections that the library will be distinguished.

The building is designed on three floors with the connectivity and staff resources to fulfill this mission. Much attention has been devoted to the quality and variety of student space. Large study halls overlook the landscape commons and provide a variety of table, carrel and soft lounge seating. Many enclosed rooms are also provided for group study, seminar discussion and quiet work activities.

- **Laboratories/Equipment:**

A Teaching Equipment Fund will be established to provide funds for laboratory and equipment purchase and renewal. In addition, funds will be sought from donations to upgrade laboratories and equipment.

8.9 Support Services

UOIT is committed to ensuring all students experience a "rich" atmosphere of academic and latent education by building upon the high quality of student life, including advising, counseling and support services for personal, academic and career goals. Qualified, highly skilled and student-focused staff will work directly with individual students and in partnership with faculty and other staff as appropriate, contributing to student success.

The following outlines the types of Student Services available at UOIT.

Support Service	Brief Description of Service
Academic Advising	Academic advisors will be available to assist students in learning study skills, including listening and note-taking, personal and time management and exam and test preparation.
Career & Employment Services	A comprehensive career and employment counselling service will be available to both students and graduates. Counsellors will deliver workshops and individual assistance in the following areas: job search techniques, resume and cover letter writing, and interviewing skills. Special outreach programs that include resume clinics and mock interviews will be offered throughout the school term. Expert labour market information will be presented by employer panels that will share information about their specific businesses and industries. Sixteen-month internship opportunities will provide practical work experience outside of the program of studies to increase the graduates marketability. Successful graduate employment will be supported by an annual Job Fair in addition to an online job posting service.
Personal Counselling	The Financial Aid Office will help students prepare budgets for the school year and to deal with financial crisis during the year. This process will encourage students to consider their income and expenses and enable a counsellor to identify potential problems, review them and offer some solutions. Through budget counselling, students can learn the skills to keep their finances in good order.

Support Service	Brief Description of Service
Student Awards	Scholarships will be awarded automatically for outstanding academic achievement to eligible students upon completion of at least one year of full-time study. UOIT will offer athletic scholarships. Bursaries: A comprehensive bursary program will be available to students in financial need. Entrance bursaries will be offered to applicants that are unable to finance a university education. Three times a year a formal bursary program will be available to current students. Throughout the year, individual bursaries are offered to students who are challenged by high cost programs, supplies or equipment. Emergency bursaries will be available to students facing unanticipated financial problems. On campus employment will allow students to support themselves while they are attending UOIT.
Financial Aid	The Ontario Student Assistance Program (OSAP) provides financial assistance to help students finance their education. By completing an OSAP application, students will be assessed for loan assistance from both the federal and provincial governments.
Services for Students with Disabilities	The Centre for Students with Disabilities (REACH) will assist students with disabilities who require accommodations to be made in order to be successful at UOIT. Students will be encouraged to contact the REACH office if they plan to attend UOIT, so that supports can be put in place. Supports may include adaptive testing arrangements, FM hearing systems, peer tutors, access to computers and adaptive software, visual aids, counselling and much more.
Intramural Athletic Academic Success Program	The Intercollegiate Athletic Academic Success Program will encourage academic success for all intramural athletes through the establishment of academic standards and a comprehensive program of success strategies and advising.
Alumni Services	UOIT will establish an Alumni Services Department which will allow former students to continue to contribute to academic and student life at UOIT through participation in events and fundraising initiatives.

Support Service	Brief Description of Service
Athletics – Varsity/Intramural	UOIT has five squash courts, double gymnasium, fitness area with indoor track, two outdoor tennis courts, basketball court, softball diamonds, football and soccer field and three beach volleyball courts.
Chaplain Services	The chaplain's general role will be to promote the general well being of the University: by means of her/his presence and concern; through worship and other liturgical activities and in pastoral and non-credit educational programs. The chaplain's specific role is to provide pastoral care for individuals in need. This care is extended in complete confidence, without prejudice, and apart from the reporting systems of the University administration.
Health Services	A Registered Nurse is available 5 days/week to provide First Aid, nursing care, advise and referrals. Lab services and Birth Control are available on site. A Flu Immunization program is free to all students and staff. Health and Lifestyle promotional services are available through group presentations, guest speakers and one-to-one appointments. A Mental Health nurse offers personal counselling on family, relationship or anger issues. Referrals are given through our Student Assistance program to medical specialists outside of the University. Six free one-hour sessions are available. Each week a Drug and Alcohol counselling service is on campus. The cost can be covered through OHIP or on a fee for service basis. A Physician will be on campus each week.
Peer Services/Peer Tutoring	Peer tutoring will be available to students experiencing difficulties with individual subjects. Students who have successfully completed the subject will take on peer-tutoring roles.
Residences	Students at UOIT will have access to a 650 bed residence suite with private bedrooms a kitchen and a bathroom.
Student Government	A student government office will be established to enhance the educational experience and quality of life for all undergraduates at UOIT.
Career Shop	Through the **Career Shop**, UOIT students will have fast and easy access to a full range of career and educational programs, training, services and resources. The Career Shop is also an excellent source of information about programs and training available in the local community and throughout the province.

8.9.1 Other Support Services

Learner Support Centre

The Learner Support Centre provides academic support on campus and via the Internet to students who experience difficulty in adjusting to the academic demands of university learning. Many students who experience academic difficulty in a specific program are later successful by utilizing the flexible scheduling and the support services of the Centre. Academic support is delivered in various ways: individual tutoring by referral and appointment; individual tutoring for drop-in students; assignment review (excluding proof reading); workshops; study groups; seminars and short courses. Students have access to tutorial assistants either on campus or online. Tutorial support for identified "at risk" or probation students may be arranged on an individual basis.

Services are available in the following subject areas:

- Writing – all phases of report writing (business, essay, research, scientific, technical), bibliography (MLA, APA, etc), basic skills (grammar, word usage, punctuation)
- Writing Assessment and Diagnosis
- Interviewing Techniques
- Oral Presentations
- Mathematics
- Study Strategies
- Accounting
- Biology
- Chemistry
- Physics
- Computer Applications and Internet Skills
- Pedagogy of Online Learning

Support for Communications Skills for UOIT Students

All graduates of UOIT will develop communication skills necessary to function effectively as a student and employee. Each program is planned in order to develop and utilize written, oral, and information technology communication competencies for all students. It is expected that all students registered at the University arrive with the fundamental skills in this area. Some students however, may need additional instruction, support, and practice in order to develop an appropriate skill set as required in their program. The following is a set of competencies required for university study. Practice and evaluation of these competencies is built into the learning and assessment plans for each program.

The student must be able to:

- Communicate clearly, concisely, and correctly in the written, spoken and visual form
- Adapt a communication strategy to suit the audience
- Collect, analyze and organize relevant and necessary information from a variety of sources
- Use a variety of currently available electronic information systems as required for research, communication, and learning

Students are encouraged to critically evaluate their own skills against this list and to contact the Learner Support Centre for an individual assessment and assistance plan if required. Students identified by faculty as needing remediation will be required to use the Learner Support Centre services in order to improve their skills and enhance their potential for success.

Students with Disabilities

UOIT will be creating a policy on students with disabilities much like that of the policy of Queen's University. UOIT is committed to facilitating the integration of students with disabilities into the University community. While all students must satisfy the essential requirements for courses and programs, the administration, faculty, staff and students at UOIT will be expected to provide reasonable accommodation to students with disabilities.

Reasonable accommodation may require members of the University community to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic standards.

This policy acknowledges that fundamental to the academic and personal success of students is their responsibility both to demonstrate self- reliance and to identify needs requiring accommodation.

9.0 CREDENTIAL RECOGNITION STANDARD

9.1 Program Design and Credential Recognition

Research was conducted and documentation is on file to compare the breadth and rigour of the elements of this proposed Bachelor of Information Technology Program to similar programs in Canada and elsewhere. Details of program comparisons can be found in Section 6.3.

Upon graduation, UOIT students will have achieved the Degree Level Standard for the Honours Baccalaureate Degree. None of the UOIT degrees is terminal and all provide a basis from which students may apply to graduate school. It is understood that applications for graduate school are considered on a case-by-case basis by the admitting university. Graduates of the Information Technology Security specialization with appropriate grades will be eligible to apply to UOIT's Master of Information Technology Security Program.

9.2 Consultation

Academic details for the proposed program were submitted to UOIT's Curriculum and Program Review Committee for examination on April 28, 2004. The Terms of Reference and members of this committee are included in Section 6.1. The proposal was then submitted to and approved by the University's Academic Council on May 18, 2004. These advisory and decision-making bodies supported the design of the BIT Program and authorized its submission to PEQAB.

10.0 REGULATION AND ACCREDITATION STANDARD

The organizations which provide professional certification for networking and IT security professionals are discussed in Section 6.2.1.

In UOIT's BIT program, the Networking specialization offers the Cisco curriculum to prepare students to write exams for the CCNA, CCNP, and CCIE levels of certification.

The curriculum of the Information Technology Security specialization has been designed to prepare students for the Cisco CCNA and the CompTIA Security+ exams.

There are currently no regulatory bodies which require formal accreditation of programs such as those included in this proposal.

14.0 MINISTERIAL POLICY DIRECTIONS

14.4 Applicant Acknowledgement and Agreement Form

The Applicant Acknowledgement and Agreement Form is provided on the pages that follow.

Ontario

Ministry of Training, Colleges and Universities

Applicant Acknowledgement and Agreement

(To accompany every application for ministerial consent under the Post-secondary Education Choice and Excellence Act, 2000)

This form must be completed by a representative of the applicant who is authorized to bind the applicant, and must be included with the materials accompanying an application to the Minister for a consent under the Post-secondary Education Choice and Excellence Act, 2000.

Name of applicant: University of Ontario Institute of Technology

Insert name of applicant organization

Purpose of application: Bachelor of Information Technology (Honours)

Insert name of degree and title of program (e.g., Bachelor of Science in physics)

☐ Please indicate if this application relates to use of the term *university*.

1. The applicant hereby **acknowledges** that, in making this application, it understands that:

1.1 The granting of a consent by the Minister of Training, Colleges and Universities under the act is a privilege, not a right.

1.2 A consent by the Minister of Training, Colleges and Universities under the act is normally granted for a specified period of time and remains in force only during that specified period.

1.3 A Minister's consent does not include any express or implied entitlement to:
- a renewal of such consent; or
- a consent for additional or different activities regulated by the act.

1.4 A Minister's consent does not entitle the consent holder to any funding from the Government of Ontario, including but not limited to operating, capital, or research funding.

1.5 A private organization from outside Ontario will be treated no less favourably, in like circumstances, than a private organization from Ontario.

1.6 A private organization, whether from Ontario or from outside the province, is not entitled to treatment that is no less favourable, in like circumstances, than the treatment accorded by the Minister to a public institution.

1.7 A Minister's consent is not transferable, directly or indirectly, to a third party.

1.8 If the applicant fails to comply with any legislative requirements or with the terms and conditions of the consent, the Minister may amend or change the terms and conditions of the consent or suspend or revoke the consent.

1.9 A Minister's consent does not make the consent holder's students eligible to apply for government financial assistance, grants, or awards that are provided directly to students (e.g., assistance under the Ontario Student Assistance Program). Approval of organizations and programs for the purposes of Ontario student loans is established pursuant to the Ministry of Training, Colleges and Universities Act and regulations thereunder, as amended from time to time.

1.10 The Minister's criteria and policy statements related to the review of applications for a ministerial consent may change from time to time.

1.11 All information provided to the Minister or the Postsecondary Education Quality Assessment Board in applications and related documentation may be subject to disclosure under the Freedom of Information and Protection of Privacy Act.

(continued)

1.12 No consent shall take effect until the applicant provides confirmation, in a written form approved by the Minister, that the applicant understands and agrees to comply with all of the terms and conditions attached to the consent.

1.13 Should the Minister grant a consent, the consent holder will be required to ensure that the following statement appears on promotional and other materials, in any media, that relate to the program offered under the consent:

This program is offered under the written consent of the Minister of Training, Colleges and Universities for the period from (day/month/year) *to* (day/month/year). *Prospective students are responsible for satisfying themselves that the program and the degree will be appropriate to their needs (e.g., acceptable to potential employers, professional licensing bodies, or other educational institutions).*

1.14 The consent holder has a positive obligation under the Post-secondary Education Choice and Excellence Act, 2000, to notify the Minister of Training, Colleges and Universities promptly if the consent holder has reason to believe that not all of the terms and conditions of a consent may be met.

2. The applicant hereby **agrees** to provide the Minister or the Postsecondary Education Quality Assessment Board with any additional material required by the Minister or the board to assess the application.

3. The applicant hereby **confirms and warrants** that:

3.1 All information and representations provided by the applicant as part of this application, including information given in the Organization Review Submission and the Program Quality Assessment Submission, are true.

3.2 This application was duly approved by the applicant's governing body or by another representative duly authorized to bind the applicant on

May 17, 2004
(date of approval)

at

Oshawa, ON
(place of approval).

Dr. Gary Polonsky
Name of authorized representative

President and Vice Chancellor
Position in applicant organization

Gary Polonsky
Signature

June 15/04
Date

17-1521 E