

NOTICE OF MEETING
There will be a meeting of the
PROGRAM DEVELOPMENT COMMITTEE (PDC)
November 21, 2019 at 10:00-11:00am
In Room 209 Assumption Hall (2nd Floor)
AGENDA

Formal Business

- 1 Approval of Agenda
- 2 Minutes of Meeting of October 21, 2019
- 3 Business Arising from the Minutes
- 4 Outstanding Business

Item for Approval

- 5 Reports/New Business
 - 5.1 Computer Science Master of Science in Artificial Intelligence –
Major Program Change (Form B) Luis Rueda
PDC191121-5.1
 - *5.2 Kinesiology – New Course Proposal (Form D)
(KINE-4660) Dr. Cheri McGowan
PDC191121-5.2
 - *5.3 Chemistry and Biochemistry (Master of Science MSc)– Minor Program
Changes (Form C) Dr.Sirinart Ananvoranich
PDC191121-5.3
 - *5.4 Psychology (Graduate) – New Course Proposal (Form D)
(PSYC-9050) Dr. Cheryl Thomas
PDC191121-5.4
 - *5.5 Master and Doctoral Committees (Program Requirements) –
Minor Program Changes (Form C) Dr. Patti Weir
PDC191121-5.5
 - 5.6 Anthropology - Waiver for Program Deletion Form Dr. Amy Fitzgerald/Dr. Marcello Guarini
PDC191121-5.6

Items for Information

- *5.7 Computer Science – Summary of Minor Course and Calendar
Changes (Form E) Luis Rueda
PDC191121-5.7
 - *5.8 PhD in Social Work – Learning Outcomes Dr.Robin Wright
PDC191121-5.8
 - *5.9 Political Science (Graduate) – Course Learning Outcomes Dr. John Sutcliffe
PDC191121-5.9
- 6 Question Period/Other Business
 - 7 Adjournment

Please carefully review the 'starred' (*) agenda items. As per the June 3, 2004 Senate meeting, 'starred' item will not be discussed during a scheduled meeting unless a member specifically requests that a 'starred' agenda item be 'unstarred', and therefore open for discussion/debate. This can be done any time before (by forwarding the request to the secretary) or during the meeting. By the end of the meeting, agenda items which remain 'starred' (*) will be deemed approved or received.

**University of Windsor
Program Development Committee**

5.1 Master of Science in Computer Science – Artificial Intelligence - Major Program Change (Form B)

Item for: **Approval**

MOTION: That the Master of Science in Computer Science – Artificial Intelligence (with and without Co-operative Education) programs be approved. ^

^Subject to approval of the expenditures required.

Rationale/Approvals:

- The School of Computer Science is proposing a new concentration in its graduate program: Master of Science in Computer Science -- Artificial Intelligence Stream.
- The concentration in AI will be part of the thesis-based program of the Master of Science in Computer Science.
- The proposal has been approved by the Department of Computer Science, the Faculty of Science Coordinating Council, the Faculty of Graduate Studies Council, and the Provost.
- *See attached.*

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A. Basic Program Information

Faculty(ies)	Faculty of Science
Department(s)/School(s)	School of Computer Science
Name of Program as it Will Appear on the Diploma (e.g., Bachelor of Arts Honours Psychology with thesis)	Master of Science in Computer Science – Artificial Intelligence Master of Science in Computer Science – Artificial Intelligence with Co-operative Education
Proposed Year of Offering* [Fall, Winter, Spring]: <i>*(subject to timely and clear submission)</i>	Spring 2020
Mode of Delivery:	In-class Lectures plus Thesis
Planned steady-state Student Enrolment (per section B.4.2)	50 per year
Normal Duration for Completion:	2 years
Will the program run on a cost-recovery basis?	No

B. Major Program Changes - Overall Plan

B.1 Objectives of the Program/Summary of Proposal (QAF section 2.1.1; Ministry section 4)

Please provide a rationale for the proposed change, including a brief statement about the direction, relevance and importance of the revised program.

Some of the fastest growing jobs in today's global economy are in Artificial Intelligence (AI) and related fields. In order to meet the needs of the constantly changing and growing information technology industry, the School of Computer Science is proposing a new concentration in its graduate program: Master of Science in Computer Science -- Artificial Intelligence Stream. The concentration in AI will be part of the thesis-based program of the Master of Science in Computer Science at the University of Windsor, and has a curriculum that includes a variety of AI and AI-related courses in specialized areas of computing technology, applications and theory. This program will be based on the foundation of core undergraduate computer science honours courses; students entering the program must have already completed these courses. The program will introduce students to advanced topics in AI and AI-related subjects and applications, as well as to new AI technologies that are in high demand for computer professionals in the IT industry.

Describe the overall aim and intended impact of the revised program.

With the proposed changes, students graduating from the AI stream will not only be able to make contributions in the AI software industry as other non-streamed students, but also be ready for the new challenges to help Ontario's growing AI ecosystem or to help advance AI and its related fields in their PhD studies (should they choose to continue through that path). Thus, this concentration in AI is aimed at producing highly qualified personnel with necessary knowledge and skills in AI for them to either pursue doctoral studies in AI or AI-related professional careers in the rapidly changing computing and information technology fields. Students will not only acquire a solid understanding of the underlying concepts, but will also gain experience in utilizing and applying state-of-the-art AI technologies. Graduates from this AI concentration will possess technical knowledge and resources required to participate as successful and contributing members in today's fast-paced global software industry.

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Describe the consistency of the revised program with the institution's mission, goals and objectives as defined in its strategic plan. (to view the strategic plan go to: www.uwindsor.ca/president)

Some important aspects of the University's strategic plan include:

- i) promoting international engagement through various means, e.g., increased and sustained international student recruitment
- ii) engaging in partnerships to strengthen the economy, and well-being of Canada, Ontario and the Windsor-Essex region
- iii) providing positive learning experiences and opportunities for students

The proposed AI stream will address these objectives as outlined below.

- i) The School of Computer Science has a very diverse and international membership, in terms of faculty, staff and students. This program will further enhance its diversity, since it will attract many international students. In this regard, market research has shown that there is significant interest in this type of studies in emerging IT producers and exports, such as Brazil, India and China, among other countries.
- ii) It is envisioned that the CO-OP option of the AI stream will be conducted in collaboration with industry partners, particularly with regional and national software industry, and local where possible. This will give students exposure to industrially relevant AI projects and allow local and regional companies to interact with highly skilled and motivated students, who may become future employees.
- iii) Students in the AI stream will be introduced to the latest AI algorithms, approaches, technologies, and developments in academia as well as in the AI software industry. The strong focus on theory, practice, and hands-on training will enhance their learning experience and prepare them to meet the challenges of the rapidly growing AI sector, in the national and global economy.

B.2 Changes to Program Content (QAF Section 2.1.4)

Evidence that the revised curriculum is consistent with the current state of the discipline or area of study.

The proposed AI stream of the Master of Science in Computer Science has already been approved by the Vector Institute. Such recognition is pending confirmation that the proposed AI stream be approved by the University of Windsor.

The Vector Institute, based in Toronto, is one of the world's top destinations for cutting-edge research at the intersection of machine learning, deep learning and reinforcement learning. The **AI master's initiative** of the Vector Institute (Vector) was established to support Ontario's growing AI ecosystem. Increasing the number of artificial AI-related master's graduates will help create a high-flow pipeline for Ontario's AI companies to source talent. The province has committed to this initiative in partnership with Vector. The daily life and concentration of expertise at Vector fosters a network of over 320 researchers and potential collaboration partners. The Vector Faculty Affiliates Program has been designed to engage the broader AI ecosystem in Ontario and to expand our research community's expertise in the areas of AI, computer science, engineering, and other disciplines related to machine learning, as well as strategic domains of application.

The Vector Institute has been tasked with supporting Ontario's growing AI eco-system including the goal of accelerating the number of AI-related master's graduates. To achieve this goal, universities with expertise in AI-related

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areas are invited to expand or enhance relevant existing master's program or create new AI-related programs to: 1) meet the essential requirements articulated by Vector for core technical AI and complementary AI-related fields; and 2) prepare highly qualified graduates who demonstrate area-specific advanced knowledge, skills and competencies sought by the AI-sector to build a highly skilled workforce and support economic growth and productivity. Programs must prepare graduates to meet all essential requirements as well as advanced AI field-specific learning outcomes. Programs recognized by Vector are identified as academic partners and listed on Vector's website as part of the AI Master's initiative. Students enrolled in recognized programs will be eligible for scholarships, have access to paid internships through Vector's network of industry partners and be provided with networking opportunities.

According to Page 5 of the document ***Vector Institute Guidance for AI-Related Master's Programs*** (<https://vectorinstitute.ai/wp-content/uploads/2018/10/guidance-for-ai-related-masters-programs.1.pdf>):

<"

Vector will recognize new and enhanced core technical AI-related Master's programs that are science, technology, mathematics and engineering (STEM) programs. These core technical AI-related master's programs will often be in computer science, engineering, mathematics or statistics, but can also be in other fields such as physics or informatics. Core technical AI-related programs must fulfill the following essential requirements in order to be recognized by Vector:

- 1. The program includes at least three (3) curriculum components with learning outcomes focused on AI-related methodologies and applications*
 - 1. At least one (1) curriculum component with intended learning outcomes focused on the application of AI-related methodologies to ensure that graduates have knowledge and skills related to algorithms and representations regardless of their application area. The focus of the AI-related methodology component(s) will vary depending on the master's program but it is strongly recommended that a machine learning curriculum component be offered. Other options could include: neural networks, deep learning, graphical models, reasoning under uncertainty, pattern recognition, planning, logic, and other topics.*
 - 2. At least one (1) curriculum component that involves studying an AI-related application area in-depth to ensure that graduates are able to apply AI-related methodologies and have knowledge of their limits in solving problems. The focus of the AI-related application component(s) will vary depending on the master's program, but could include: computer vision, computational linguistics (NLP), intelligent robotics, intelligent agents, intelligent medicine, and other topics.*
- 2. The program has learning outcomes related to communication, teamwork and interdisciplinary practice related to AI. This requirement could be satisfied through different forms of learning including, but not limited to, an internship with academic supervision and an industrial supervisor, or a capstone or culminating project.*

The program has learning outcomes related to the ethics and societal implications of AI. This requirement could be satisfied through different forms of learning including a dedicated curriculum component or a module within an AI-related methodology or AI-related application course, or a thread that is integrated through and across courses. ">

Structure and Objectives of the AI stream program

The concentration in AI is part of the thesis-based program of the Master of Science in Computer Science at the University of Windsor. This concentration has a curriculum that includes a variety of AI and AI-related courses in specialized areas of computing technology, applications, and theory. It is aimed at producing highly qualified personnel with necessary knowledge and skills in AI for them to either pursue doctoral studies in AI or a AI-related professional career in the rapidly changing computing and technology fields.

The topics included in our proposed AI stream cover the fundamental concepts of AI, concepts related to AI, as well as important applications of AI. In accordance to Vector's essential requirements for core technical AI-related Master's program above, and to better prepare students pursuing a career or study in AI or AI-related areas, MSc students enrolled in the AI stream are required to:

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- 1) Complete **five graduate courses** in AI or related topics. Students are required to complete:
 - a. **at least three core courses in AI** (categorized as **C** [for “core”] in the table below), **one of these courses** being a **machine learning course** (categorized as **R** [for “required”] in the table below); and
 - b. **two elective courses in AI-related topics** (taken from the set consisting of all AI courses and AI-related courses offered in the School of Computer Science; note: any course categorized as **C** or **E** [for “elective”] is considered as elective).
- 2) Complete a module of Societal, Legal and Ethical Issues of AI, which includes potential biases in using machine learning or AI related technologies; dangers, risks and benefits associated with AI; issues of bias, privacy, transparency, and accountability; ethics and societal implications of automation. To satisfy this requirement, the Ethics of AI module will be part of the necessary requirements needed to successfully pass an **R** course. Each **R** course will include the Ethics of AI in its course contents. The corresponding PDC forms “E” are submitted concurrently with this form.
- 3) Write an original research thesis dissertation in AI methods or applications at the end of their study.
- 4) Participate in research-oriented or application-oriented seminars. Seminars will include presentations by speakers from both the industry or the research communities.
- 5) In addition, students have the option to undertake a four-month or eight-month Co-Op work placement and gain practical knowledge of the state-of-the-art technologies of software development by working in software companies in Canada and abroad.

Table-1: List of AI and AI-related courses associated with the proposed AI-stream program (and the faculty members with primary responsibility for delivering each component).				
Course	Core (C), Elective (E) or Required (R)	Faculty instructor(s)	Rank	Home Department
COMP-8590 Statistical Learning (60-559)	C, R	Dr Robin Gras Dr Alioune Ngom Dr Luis Rueda Dr Dan Wu	Professor Professor Professor Associate Professor	Computer Science
COMP-8610 Neural Networks and Deep Learning (60-561)	C, R	Dr Robin Gras Dr Alioune Ngom Dr Luis Rueda Dr Dan Wu	Professor Professor Professor Associate Professor	Computer Science
COMP-8740 Machine Learning and Pattern Recognition (60-574)	C, R	Dr Robin Gras Dr Alioune Ngom Dr Luis Rueda Dr Dan Wu	Professor Professor Professor Associate Professor	Computer Science
COMP-8700 Introduction to Artificial Intelligence (60-570)	C	Dr Scott Goodwin Dr Robin Gras Dr Ziad Kobti Dr Luis Rueda Dr Dan Wu	Professor Professor Professor Professor Associate Professor	Computer Science
COMP-8720 Topics in Artificial Intelligence (60-572)	C	Dr Robin Gras Dr Ziad Kobti Dr Alioune Ngom Dr Luis Rueda Dr Dan Wu	Professor Professor Professor Professor Associate Professor	Computer Science
COMP-8730 Natural Language Processing and Understanding (60-573)	C	Dr Dima Alhadidi	Assistant Professor	Computer Science

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COMP-8750 Knowledge Representation and Reasoning (60-575)	C	Dr Ahmad Biniiaz Dr Dima Alhadidi	Assistant Professor Assistant Professor	Computer Science
COMP-8760 Advanced Search Methods (60-567)	C	Dr. Scott Goodwin	Professor	Computer Science
COMP-8380 Information Retrieval and Semantic Web (60-538)	E	Dr Jianguo Lu	Professor	Computer Science
COMP-8390 Non-Traditional Database Systems: Data Warehousing and Data Mining (60-539)	E	Dr Christie Ezeife	Professor	Computer Science
COMP-8490 Virtual Reality (60-549)	E	Dr. Xiaobu Yuan	Professor	Computer Science
COMP-8500 3D Animation and Data Visualization (60-550)	E	Dr. Imran Ahmad	Associate Professor	Computer Science
COMP-8510 Visual Processing (60-551)	E	Dr. Boubakeur Boufama	Professor	Computer Science
COMP-8580 Topics in Bioinformatics (60-558)	E	Drs Robin Gras Dr A. Mukhopadhyay Dr Alioune Ngom Dr Luis Rueda	Professor Professor Professor Professor	Computer Science
COMP-8690 Semantic Web (60-569)	E	Dr. Jianguo Lu	Professor	Computer Science
COMP-8790 Topics in Applied Artificial Intelligence (60-579)	E	Dr Scott Goodwin Dr Robin Gras Dr Alioune Ngom Dr Luis Rueda Dr Pooya M. Zadeh	Professor Professor Professor Professor Assistant Professor	Computer Science
COMP-8920 Selected Topics in Computer Science (60-592)	E	Dr Christie Ezeife Dr Robin Gras Dr Robert Kent Dr Alioune Ngom Dr Sherif Saad Ahmed Dr Saeed Samet	Professor Professor Professor Professor Assistant Professor Assistant Professor	Computer Science

Summary of requirements of the M.Sc-CS-AI stream: MSc students in Computer Science may specialize in AI, if they successfully complete all the requirements for the MSc program, where (a) three of the courses are from the following list: COMP-8590, COMP-8610, COMP-8700, COMP-8720, COMP-8730, COMP-8740, COMP-8750 and COMP-8760, one of which being either COMP-8590, COMP-8610 or COMP-8740; (b) the research thesis is on an AI topic approved by the MSc committee. For these students, a annotation will be made on their transcripts, stating their Artificial Intelligence specialization.

B.2.1 Unique or Innovative Curriculum, Program Delivery, or Assessment Practices (QAF Section 2.1.4)

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State the unique or innovative curriculum, program delivery, or assessment practices distinguishing the revised program from existing programs elsewhere.

Many Ontarian universities offer some AI-related Master’s program in addition to their regular thesis-based Master’s program.

Features of the AI stream: An important feature of our AI stream is that it allows students who desire to pursue doctoral studies in AI or AI-related fields to take all their five courses from among the set of **C** courses only, whereas those students interested to join the AI-industry can choose to complete three **C** courses and two **E** courses that can be useful to them in their future workplace (e.g., Big Data course and/or Health-Informatics course); hence, the AI stream is tailored to satisfy the skills and knowledge needed by our students as well as their future employers or future PhD supervisors.

Outcomes of the AI stream: Also, with these enhancements, students graduating from the AI stream will not only be able to make contributions in the software industry as other non-streamed students but also be ready for the new challenges to help Ontario’s growing AI ecosystem or to help advance AI and its related fields in their PhD studies (should they choose to).

Table-2: List of Recognized AI-Related Master’s Programs by the Vector Institute [Ontario only]			
University	Program	Master’s Type --- # of Courses	Department or Faculty
University of Guelph	M.Sc/M.A.Sc (Collaborative Specialization in AI)	Thesis-Based --- 5 courses	CS, Eng, Math & Stat, Bioinformatics
Lakehead University	Master of Science (Computer Science – AI)	N/A	Computer Science
Ontario Tech University	Master of IT Security (Artificial Intelligence Security)	N/A	Business and Information Technology
University of Ottawa	Master of Computer Science (Applied AI)	Thesis-Based --- 5 courses	Computer Science
University of Ottawa	Master of Computer Science (Applied AI)	Project-Based --- 8 courses	Computer Science
Queen’s University	Master of Management in Artificial Intelligence	Project-Based --- 14 courses	School of Business
Queen’s University	Master of Science (Computer Science, AI)	Thesis-Based --- 5 courses	School of Computing
Ryerson University	Master of Engineering with AI Concentration	Project-Based --- 9 courses	Electrical, Computer and Biomedical Eng
Ryerson University	Master of Science in Data Science and Analytics	Project-Based --- 8 courses	Economics, Eng, CS, Math, Management
University of Toronto	Master of Management Analytics	Project-Based --- 12 courses	School of Management
University of Toronto	Master of Health Informatics	Project-Based --- 10 courses	School of Public Health
University of Waterloo	M.Math Computer Science – Data Science Specialization	Project-Based --- 8 courses	Mathematics, Statistics, Computer Science
University of Waterloo	M.Math Statistics – Data Science Specialization	Project-Based --- 8 courses	Mathematics, Statistics, Computer Science

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University of Waterloo	Master of Data Science and Artificial Intelligence	Project-Based courses	---	9	Mathematics, Statistics, Computer Science
University of Waterloo	Master of Mathematics in Data Science	Thesis-Based courses	---	4	Mathematics, Statistics, Computer Science
Western University	Master of Data Analytics (Artificial Intelligence)	Project-Based courses	---	7	Computer Science, Statistics, Actuarial
Western University	M.CS & ESc (Collaborative Specialization in AI)	Thesis-Based courses	---	5	Computer Science, Elec and Comp Eng
Western University	M.CS & Eng (Collaborative Specialization in AI)	Project-Based courses	---	9	Computer Science, Elec and Comp Eng
University of Windsor	Master of Science (Computer Science – AI)	Thesis-Based courses	---	5	School of Computer Science
York University	Master of Science (Computer Science, AI)	Thesis-Based courses	---	6	Computer Science
York University	Master of Business Analytics	Project-Based courses	---	15	School of Business
York University	Master of Management in Artificial Intelligence	Project-Based courses	---	15	School of Business

As of June 18th 2019, the Vector Institute has recognized 22 AI-related Master’s programs; they are listed in Table 2. The description of the different types of the recognized AI-related programs can be summarized as follows:

- (i) Artificial Intelligence concentrations within the existing Master of Computer Science (MCS) programs or Master of Science in Computer Science (M.Sc CS) programs. These AI streams (i.e., M.CS-AI or M.Sc-CS-AI) encompass both the foundations and the applications of machine learning, and emphasize either the applications of AI or the foundations of AI or both. In the table, only few institutions in Ontario offer a **Master’s program in Computer Science (M.Sc-CS or M.CS) with Specialization in Artificial Intelligence**; they are: Lakehead University, University of Ottawa (offers both thesis-based and project-based AI concentrations), Queen’s University, University of Windsor, and York University. Students enrolled in these concentrations are required to complete 3 core AI courses (one of which must be a machine learning course) and 2 elective courses in either AI (or AI-related topics) or in applications of AI or in any CS topics (depending on the program). See Table 3.
- (ii) Collaborative Specializations in AI or in DS (Data Science) in existing Master’s programs within collaborating departments, which provide students pursuing Master’s studies in these collaborating departments with a diverse and comprehensive knowledge base in AI. Students learn from a multidisciplinary team of faculty with expertise relevant to AI or ML or their applications. These interdisciplinary AI-programs are a collaboration between Computer Science departments and a few other departments, such as: Engineering, Mathematics, Statistics, Bioinformatics, Economics, Geography, or Management departments. Universities offering AI programs in this category are: University of Guelph, Ryerson University, University of Waterloo, and Western University. With a few exceptions, most of these programs are course-based Master’s program in which students are required to complete at least 7 courses as well as complete a supervised project (or major paper) in lieu of a research thesis dissertation. Students enrolled into such AI programs take many core or elective courses offered by the collaborating non-CS departments.
- (iii) AI-related Master’s programs that do not involve Computer Science department. These are programs in Business, IT Security, Management, Engineering, or Public Health departments, with course components in AI or DS. They are focused on teaching applications of AI/ML/DS in order to provide insights on complex business, managerial, engineering problems, or for the better management of health problem and care. These programs may or may not be collaborative with their home faculties. They are all course-based programs designed to provide students with the breadth and depth of knowledge to be successful in careers areas such as banking, healthcare, insurance, marketing, consulting, technology or healthcare.

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Institutions that offer such programs are: University of Ontario Institute of Technology, Queen’s University, Ryerson University, University of Toronto, and York University.

Table 3 compares the structures of the non-collaborative M.CS-AI or M.Sc-CS-AI programs recognized by Vector (shown in the blue highlight in the table above). Given that the program offered at the University of Windsor falls within this category, we can thus state the uniqueness of its program, which distinguishes it from the other listed programs.

Table-3: List of Recognized AI-Related Master’s Programs in Computer Science (non-collaborative)							
University	#Courses	Required	Core	Elective	Seminar	Co-op	Type
Lakehead University	N/A	N/A	N/A	N/A	N/A	N/A	N/A
University of Ottawa	5	1 (ML)	2 (AI/ML)	2 (any CS courses)	Yes (EA)	Yes	Thesis-Based
University of Ottawa	8	1 (ML)	4 (AI/ML)	3 (any CS courses)	Yes (EA)	Yes	Project-Based
Queen’s University	6	2 (ML+EA)	2 (AI/ML)	2 (any CS course)	N/A	No	Thesis-Based
University of Windsor	5	1 (ML+EA)	2 (AI/ML)	2 (AI/AI-related)	Yes (AI)	Yes	Thesis-Based
York University	6	2 (ML+EA)	2 (AI/ML)	2 (AI/AI-related)	N/A	No	Thesis-Based

In the table above: ML = Machine Learning course; AI = Artificial Intelligence; AI-related = topic related to AI (such as Computational Vision, Robotics, or Optimization, Natural Language Processing, etc), or applications of AI; and EA = Ethics and Societal Implications of AI, which discusses the Societal, Legal and Ethical Issues of Artificial Intelligence (Vector Institute requires any recognized program to include EA in their curriculum and program learning outcomes).

For an AI program to be recognized by the Vector Institute (see Section B.2 above), each student in the program is required to complete:

- (i) complete one ML course. (See the column “Required”)
- (ii) at least two core courses chosen from a set of AI and ML courses. (See the column “Core”)
- (iii) at least 2 elective courses. (See the column “Elective”)
- (iv) a curriculum in EA, which can either be a course or a seminar or a course module, with assessment.

All the AI-related programs in Table-2 and Table-3 satisfy this structure recommended by the Vector Institute. The differences between the M.Sc-CS-AI program at the University of Windsor with the other AI programs in Table-3 are as follows:

- a. EA is included as a seminar presentation by each AI student at the University of Ottawa, whereas EA is included as a separate but **required** course at both Queen’s University and York University. In the M.Sc-CS-AI program at UWindsor, EA is included in the **required ‘R’** course (see Table-1 for the list of ‘R’ courses) and covered in two modules of 90 minutes each. Each of the three ‘R’ courses has and covers the same EA modules. Each student is required to submit an assignment (or a component of the course project) on EA, and will receive a mark which is counted toward the final grade of the course. The advantage in the delivery of EA at UWindsor

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is that (i) we have less number of required courses (5, versus 6 at Queen's or York), and hence, students focus more time on their research, and (ii) it is much simpler and easier to include EA component in a required 'R' course than create a required but separate EA course (as at UQueen's and YorkU) or organize students' seminar presentation on EA (as at UOttawa).

- b. Students in the M.Sc.CS-AI at both UWindsor and YorkU take all their **elective** courses in AI or AI-related topics or applications of AI, and hence, they are fully immersed in AI learning.
- c. M.Sc-CS students at UWindsor will graduate with the M.Sc-CS-AI stream if they successfully complete (i) three AI courses (chosen from **COMP-8590, COMP-8610, COMP-8700, COMP-8720, COMP-8730, COMP-8740, COMP-8750 and COMP-8760**), one of which being a ML course (chosen from **COMP-8590, COMP-8610 or COMP-8740**), and (ii) a research thesis on a topic in AI; **For these students, a special annotation will be made on their transcripts, stating their Artificial Intelligence specialization.** This is unlike the other institutions in Table-2 or Table-3, in which students must be admitted into the AI program first, and then complete the requirements for graduation. At the University of Windsor, students do not necessarily have to register in the AI stream at the beginning; they can choose to graduate into such a stream once they have started and have a better panorama of their career goals. Note, however, that students can choose to join the AI stream as soon as they join the program.

B.2.2 Indigenous (First Nations, Métis, or Inuit) Content, Perspectives, or Material

The University of Windsor is committed to building stronger, more meaningful partnerships with Indigenous students, scholars and communities. In developing or revising this program, how has consideration been given to incorporating Indigenous (First Nations, Métis, or Inuit) content, perspectives, or material into the curriculum?

Indigenous students are encouraged to apply for this program to strengthen its diversity.

B.3 Changes to Program Name and Degree Designation/Nomenclature (QAF Section 2.1.1; Ministry section 1)

Explanation of the appropriateness of the proposed new name and degree designation for the program content and current usage in the discipline

The degree is to be called **Master of Science in Computer Science – Artificial Intelligence** (M.Sc CS - AI). This emphasizes the AI oriented focus of the program and distinguishes it from the M.Sc in Computer Science degree offered by the School of Computer Science. Students who are enrolled into this program take only AI courses, one of which being an ML course and three of which being core technical AI courses.

The proposed M.Sc-CS-AI degree is intended for students wishing to learn Machine Learning, core technical AI topics, AI-related topics, and applications of AI, and in order to apply AI approaches or use AI technologies in their future workplace employment.

B.4 DEMAND FOR THE MODIFIED PROGRAM

B.4.1 Expected Impact of the Proposed Changes to Student and Market Demand

Describe the tools and methodology used to conduct the market assessment in support of the proposed program revisions. Provide Quantitative evidence of student and market demand for the revisions to the program, both within and outside the local region (e.g., responses/statistics from surveys, etc.).

Computer scientists create and improve computer software and hardware. Creating and improving software involves working with algorithms, which are sets of instructions that tell a computer what to do. Some computing tasks are very difficult and require complex algorithms. Computer scientists try to simplify these algorithms to make computer systems as efficient as possible. The algorithms allow advancements in many types of technology, such as ML or AI systems and cloud computing. Fueled by the advent of **social media technologies, genomics and big data**, this has led to a new kind of computer scientists, called Machine Learning Scientists or Data Scientists (or ML/D scientists,

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hereafter), with advanced skills and expertise in Artificial Intelligence, Machine Learning, and Statistics; skills required for processing and analyzing very large datasets as well as for solving very complex tasks. Data scientists currently design new approaches and software that improves the performance, effectiveness and efficiency in cybersecurity methods, self-driving cars and drones, robotics, business management techniques, climate analysis, genomics, surveillance technologies, and health care strategies, to name just a few.

[ML/D Scientists](#) write algorithms (i) that are used to detect and analyze patterns in very large datasets such detecting drug-disease associations given large drug-gene and disease-gene expression datasets or (ii) for solving very complex problems such as driving a car. They improve ways to sort, manage, and display data, or to perform difficult tasks. ML/D scientists build AI/ML algorithms into software packages that make the data easier for analysts to use. For example, they may create an AI/ML algorithm to analyze a very large set of medical data in order to find new ways to treat diseases. They may also look for patterns in traffic data to help clear accidents faster. Some data scientists study how to improve robots, self-driving cars, or man-less drones; they explore how these machines can interact with the physical world and create AI programs that control these machines.

Fueled by the advent of big data and AI (in particular **Deep Learning** - DL), the demand for ML/D scientists has been growing exponentially (according to many job sites) but the supply of skilled applicant data scientists is growing at a slower pace. In 2017, [Indeed Hiring Lab](#) (one of the top job search sites) published a report that highlighted the top 15 IT skills that job seekers were betting will land them high-paying tech positions -- and that employers wanted new hires to come equipped with (see the figure, below). [These top 15 IT skills were all data science skills](#). The skills were culled from terms typed into the site's search browser by job hunters and then matched against what terms employers looked for when combing through Indeed's resume database. This report from Indeed, showed a 29% increase in demand for ML/D scientists year over year and a 344% increase since 2013 -- a dramatic upswing. But while demand -- in the form of job postings -- continues to rise sharply, [searches by job seekers](#) skilled in ML/D science grew at a slower pace (14%), suggesting a gap between supply and demand. Similarly, data from technology job site [Dice](#) showed the number of ML/D science job postings on its platform -- as a proportion of total posted jobs -- has increased about 32% year over year, and the site considers data science a "high-demand skill." Dice noted that the job postings are from companies in a wide variety of industries, not just tech.

In August 2018, [LinkedIn reported](#) that there's a shortage of 151,717 people with ML/D science skills in the U.S., based on data from its platform. Combine that with a 15% discrepancy between job postings and job searches on Indeed, it's evident that demand for data scientists outstrips supply.

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React and cloud computing among fastest growing skills for job seekers

Tech skills ranked by year-over-year growth in job seeker search activity

Skills	Job search activity growth	Employer search activity growth	Skills	Job search activity growth	Employer search activity growth
React	313%	229%	Spark	39%	14%
Amazon Web Services	98%	40%	Offensive Security Certified Professional	37%	34%
Azure	51%	62%	Unity	36%	-33%
Angular	50%	6%	Django	35%	-18%
Mandarin	49%	-39%	Linux	31%	-27%
Tableau	48%	-40%	Python	29%	-18%
Laravel	43%	-28%	R	28%	3%
Golang	39%	-4%			

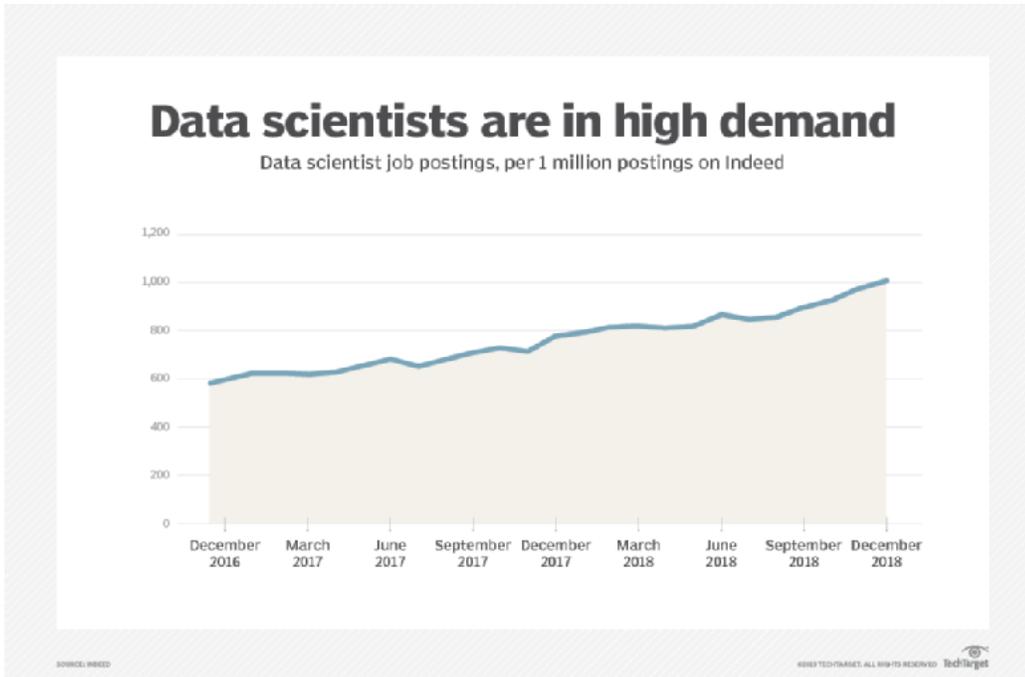
Source: Indeed



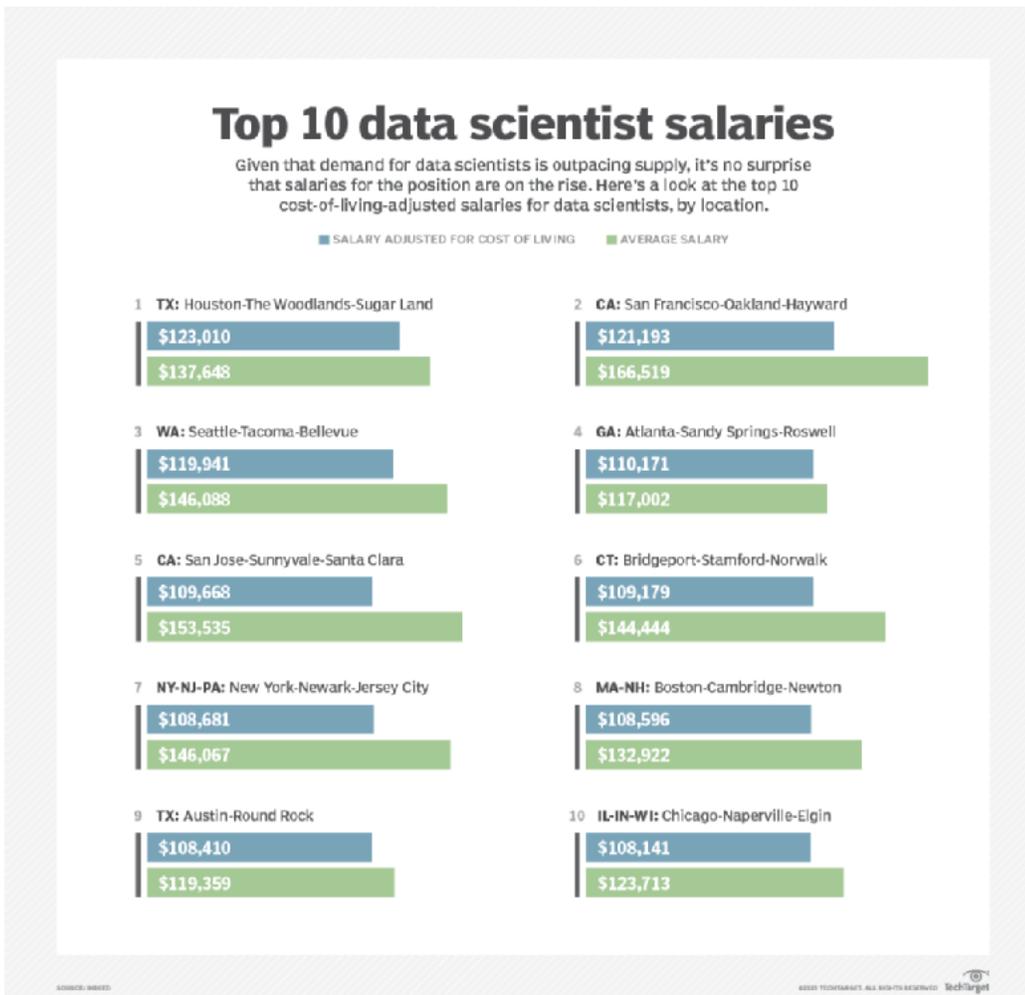
Demand for ML/D scientists is growing as organization increasingly rely on [data-driven insights](#). There is a growing demand for people who have the ML/D science skills and knowledge needed in a real environment such as in pharmaceutical industry, health sector, research organization, business sector, auto industry, and banking organization. The recent [rise of AI and machine learning](#) has also played a factor in the dramatic increase in demand for ML/D scientists and [data engineers](#). As such, we will be promoting this M.Sc-CS-AI program domestically and internationally (in key markets that have a demonstrated need for data scientists within their economies, such as China, India and Brazil).

Indeed, data showed the top cities for ML/D scientists in US are Houston and San Francisco, with average cost-of-living-adjusted salaries of just over \$120,000. By comparison, the nationwide US average in 2017 for computer programmers was \$88,000 and \$107,000 for software developers, according to the [Bureau of Labor Statistics](#). Now, virtually every industry, from retail to manufacturing, is collecting **data** on **their** customers. That's causing a surge of **demand for data scientists** who can best interpret all that **data**. Today, **data scientists** earn an average of \$107,000 a year, according to [Indeed Canada](#) and [LinkedIn salary data](#). The average [ML/Data scientist salary in Canada](#) is **\$102,725** per year or \$52.68 per hour. Entry level positions start at \$30,176 per year while most experienced workers make up to \$174,632 per year.

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The growth in ML/D scientist job postings on Indeed, from December 2016 to December 2018.



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Sample careers/positions of past M.Sc.CS Students from UWindsor who currently have AI/ML/DS related employment

1. Machine Learning Research Scientist/Engineers at:
 - CBC Toronto,
 - RBC Toronto,
 - IBM Toronto,
 - CIBC Toronto,
 - National Research Council,
 - Qindom in Toronto,
 - AIM Inspirata Toronto
 - Howard Hughes Medical Institute UCLA,
 - Perimeter Institute, Waterloo
2. Data Scientist/Big Data Engineer at:
 - Bell Mobility,
 - Deloitte,
 - Ontario Teachers Pension Plan,
 - Canadian Tire,
 - Toronto Star,
 - GIMC Insurance China,
 - Amazon Seattle,
 - Microsoft Toronto,
 - Manulife,
3. Artificial Intelligence Specialist at:
 - RL Solution Toronto,
 - EVNTL Toronto
4. AI/ML/DS Professor at:
 - CAMH University of Toronto,
 - Brock University,
 - King's College London,
 - Wayne State University, Detroit, USA
5. PhD Students/Postdoc Researchers in AI/ML/DS at:
 - Monash University, Melbourne, Australia,
 - OICR Toronto,
 - University of British Columbia,
 - University of Ottawa,
 - University of Windsor,
 - King's College London

B.4.1.1 Percentage of Domestic and International Students (Ministry section 5)

Expected proportion (percentage) of domestic and international students. For graduate programs, identification of undergraduate or master's programs from which students would likely be drawn.

The majority of students (>75%) are expected to be visa students with the remaining 25% comprised of domestic students.

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B.4.2 Estimated Enrolments (QAF section 2.1.9; Ministry section 5; Senate Co-op Policy)

Provide details on projected enrolments for the revised program in the following tables.

For Co-op programs: normally an annual intake of a minimum of 20 students is required for new co-op programs or programs with other experiential learning component.

<i>Projected enrolment levels for the first five years of operation of the revised program. (If the program is in operation, use actual and projected data.)</i>	First Year of Operation	Second Year of Operation	Third Year of Operation	Fourth Year of Operation	Fifth Year of Operation (Steady-state enrolment overall)
<i>In the regular program (non-co-op)</i>	25-30	30-35	35-40	40-45	45-50
<i>In the co-op/experiential learning stream (if applicable)</i>					
<i>For co-op options: projected number of international students enrolled in the co-op stream</i>					

<i>Annual projected student intake into the first year of the revised program: (this may differ from the “first year of operation” projected enrolments which could include anticipated enrolments from students transferring into the second, third, or fourth year of the program)</i>	25-30 45-50 Steady State
<i>Annual projected student intake into the first year of the co-op/experiential learning version of the revised program: (this may differ from the “first year of operation” projected enrolments which could include anticipated enrolments from students transferring into the second, third, or fourth year of the program)</i>	

B.4.3 New Involvement in a Collaborative Program/Changes to Collaborative Program (QAF section 1.6)

If this is a new collaborative program with another college/university, or revision to a collaborative program, identify partners and institutional arrangements for reporting eligible enrolments for funding purposes.

This program is not offered in collaboration with any other college and/or university and/or faculty/department.

B.4.4 Evidence of Societal Need for the Revised Program (Ministry section 6)

Describe the tools and methodology used to assess societal need.

Elaborate on the

- 1) dimensions of (e.g., socio-cultural, economic, scientific, or technological),*
- 2) geographic scope of (e.g., local, regional, provincial, or national), and*
- 3) anticipated duration of, and trends in,*

societal need for graduates of the modified program

Provide evidence that the proposed program revisions respond to societal need for graduates of the revised program and/or changes in the field, including sources of data and expert input or feedback collected to support this change in direction.

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See **Section B.4.1**. Societal needs were assessed using independent data from a number of sources, such as Indeed, LinkedIn, US Bureau of Labor and Statistics. The data and projections from these various sources indicate there is a strong need for skilled ML/D science workers in many sectors and industries, both in the region and internationally.

B.4.5 Duplication (Ministry section 7)

List similar programs offered by other institutions in the Ontario university system. Resources to identify similar programs offered in Ontario include www.electronicinfo.ca, www.electronicinfo.ca/einfo.php, and www.oraweb.aucc.ca/showdcu.html. Also, list similar programs in the geographically contiguous area, e.g., Michigan/Detroit.

See Table-2 and Table-3 in **Section B.2.1**.

B.4.5.1 Demonstrate that Societal Need and Student Demand Justify Duplication (Ministry section 7)

If the revised program is similar to others in the system, demonstrate that societal need and student demand justify the duplication. Identify innovative and distinguishing features of the revised program in comparison to similar programs.

Twenty-two universities in Ontario (including UWindsor) offer an AI-related Master’s degree program recognized by the Vector Institute. Of these 22, only five institutions (including UWindsor) offer a non-collaborative thesis-based Master’s program in Computer Science (M.Sc-CS or M.CS) with concentration in Artificial Intelligence. Of these five, UWindsor is the only institutions which offers a full thesis-based AI program in the sense that students take only AI courses (i.e., one ML course, two core AI courses, and two AI-related course) and directly incorporates Ethics of AI curriculum into its ML courses.

B.5 RESOURCES

*[The resource impact of a proposal is almost never neutral. Note: Proposers must also complete and submit the attached **Budget Summary** (Appendix A) with the revised program proposal.]*

B.5.1 Resources Available

B.5.1.1 Available Faculty and Staff Resources (QAF sections 2.1.7, 2.1.8, 2.1.9 and 2.1.10)

Describe, in general terms, all faculty and staff resources (e.g., administrative, teaching, supervision) from all affected areas/departments currently available and actively committed to support the program change(s). Please do not name specific individuals in this section.

See **Section B.5.1.1b**. These existing courses (listed in Table-1) are already being offered by qualified faculty members with graduate-faculty status from the School of Computer Science, as part of our graduate courses for the existing M.Sc-CS. and PhD-CS programs.

B.5.1.1a Faculty Members Involved in the Delivery of the Program

Complete the following table listing faculty members in the AAU offering the program as well as faculty members from other AAUs who are core to the delivery of the revised program. Indicate in the table the involvement of each faculty member in the revised and existing program(s) offered by the AAU.

Faculty Name & Rank (alphabetical)	Graduate Faculty member (for graduate programs only)	Program Affiliation list all programs offered by the AAU and indicate faculty

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		affiliation to the new and existing program(s)	
Category 1: Tenured Professors teaching exclusively in the AAU offering the program		M.Sc-CS, PhD.Sc-CS	M.Sc-CS-AI
Ahmad, I. - Associate Professor	Y	Y	Y
Boufama, B. - Full Professor	Y	Y	Y
Chen, X.J. - Associate Professor	Y	Y	
Ezeife, C. - Full Professor	Y	Y	Y
Goodwin, S. - Full Professor	Y	Y	Y
Gras, R. - Full Professor	Y	Y	Y
Jaekel, A. - Full Professor	Y	Y	
Kent, R. - Full Professor	Y	Y	Y
Kobti, Z. - Full Professor	Y	Y	Y
Lu, J. - Full Professor	Y	Y	Y
Mukhopadhyay, A. - Full Professor	Y	Y	Y
Ngom, A. - Full Professor	Y	Y	Y
Rueda, L. - Full Professor	Y	Y	Y
Tsin, Y. - Full Professor	Y	Y	
Wu, D. - Associate Professor	Y	Y	Y
Yuan, X. - Full Professor	Y	Y	Y
Category 2: Tenure-track Professors teaching exclusively in this AAU			
Ahmed, S.S. - Assistant Professor		Y	
Alhadidi, D. - Assistant Professor		Y	
Biniiaz, A. - Assistant Professor		Y	
Samet, S. - Assistant Professor		Y	
Zadeh, P.M. - Assistant Professor		Y	Y
Category 3: Ancillary Academic Staff such as Learning Specialists Positions			
Mavromoustakos, S. - Assistant Professor		Y	
Category 4: Limited-term Appointments teaching exclusively in this AAU			
...			
Category 5: Tenure or tenure-track or LTA professors involved in teaching and/or supervision in other AAUs, in addition to being a member of this AAU			
...			
Category 6: Sessionals and other non-tenure track faculty			
...			
Category 7: Others			
Aneja, Y. – Professor - Cross-appointment	Y		
Kargar, M. – Assistant Adjunct Professor			
Cheung, Chi-keung, Assistant Professor, Tenured (Odette School of Business)	Y		

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Fenn, Garnet, Sessional Instructor (Odette School of Business)			
Georgie, Vincent, Lecturer, Limited Term (Odette School of Business)			
Wellington, William, Associate Professor, Tenured (Odette School of Business)	Y		
Ma, Zhenzhong, Associate Professor, Tenured (Odette School of Business)	Y		
Mahajan, Ashish, Assistant Professor, Tenure-Track (Odette School of Business)			
Vokes, Edward (Ted), Sessional Instructor (Odette School of Business)			

NOTE: Faculty who are not directly involved in the program will not have their CVs appended to the application.

The faculty members associated with the M.Sc.CS-AI program will be involved in teaching the core or elective CS courses, and may also be involved in supervision of thesis research.

B.5.1.1b Faculty Expertise Available and Committed to Supporting the Revised Program

Assess faculty expertise available and actively committed to supporting the revised program. Provide evidence of a sufficient number and quality of faculty who are qualified to teach and/or supervise in the revised program, and of the appropriateness of this collective faculty expertise to contribute substantially to the revised program.

Include evidence (e.g., qualifications, research/innovation/scholarly record) that faculty have the recent research or professional/clinical expertise needed to:

- *sustain the program*
- *promote innovation, and*
- *foster an appropriate intellectual climate.*

The average teaching load for faculty members in the School of Computer Science includes 4 courses plus supervision of 4-5 graduate students. There is available capacity in the department to offer the M.Sc-CS-AI courses, and many faculty members have indicated their willingness to support the program by being available to teach these courses. A brief summary of each faculty instructor involved in the M.Sc-CS-AI program is given below.

- There are at least 6 faculty members in the School of Computer Science, whose research area falls within the AI area. The required three core courses and others already exist and they are offered all year round.
- These 6 and other faculty members doing research in applications of AI will be also supervising AI-related theses.

See Table-1 for the list of available courses in the M.Sc-CS-AI program

Dr. Imran Ahmad [course: COMP-8500] primarily works in Multimedia Systems. His research interests are in image retrieval systems, especially involving content-based image retrieval. On the application side, he works in the areas of 3D modeling and both 2D and 3D animation. He has been involved in teaching both graduate and undergraduate levels.

Dr. Boubakeur Boufama [course: COMP-8510] has been a faculty member for 2 decades at several universities and has carried out research in the areas of computer vision, image processing and computer graphics. He has established a strong research track record through his numerous ongoing publications in top conferences and journals, with his graduate students and collaborators.

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Dr. Christie Ezeife [course: COMP-8390 and COMP-8920] has research interests in data mining and data warehousing, recommendation systems, and social network analysis.

Dr Scott Goodwin [courses: COMP-8760 and COMP-8790] works in search algorithms, and pathfinding algorithms for computer games.

Dr. Robin Gras [courses: COMP-8580, COMP-8590, COMP-8610, COMP-8700, COMP-8720, COMP-8740, COMP-8790, and COMP-8920] is a former Canada Research Chair and Chief Science Officer at Movyl Technologies and MVYL Associates. He is cross-appointed by the Biology Department and the Great Lakes Institute for Environmental Research at the University of Windsor. He also was senior scientist at the Swiss Institute of Bioinformatics, Geneva Switzerland. Dr. Gras research interests involve artificial intelligence, machine learning, deep learning, theoretical biology, bioinformatics and combinatorial optimization. He has published over 100 articles in top tier journals/conferences. Dr. Gras teaches an undergraduate course on Artificial intelligence (AI Concepts, COMP-3710), an undergraduate/graduate course on Machine Learning (Topics in Artificial Intelligence, COMP-4740), a theoretical graduate course on Deep Learning (Artificial Neural Networks, COMP8610) and a practical graduate course on application of Deep Learning to vision and NLP (Deep Learning for Vision and NLP, COMP-8920).

Dr. Bob Kent [course: COMP-8920] has an established record of research, course design and teaching in the areas of Computational Grids, including complex distributed network architectures, network and systems security, resource management, fault detection, tolerance and recovery, virtual machines and virtual overlay networks and intelligent systems design and implementation. His research interests include computational grids and clouds, intelligent distributed systems, load balancing and optimization of task distribution over available dynamic resources and security, both authentication and distributed authorization and recently extending to process auditing. He has been involved in teaching both graduate and undergraduate level courses in high performance and grid computing, computer networks, computer security.

Dr. Ziad Kobti [courses: COMP-8700 and COMP-8720] is the current Director of the School of Computer Science. Dr. Kobti has taught a large number and variety of undergraduate and graduate courses since 2001. Dr. Kobti was the recipient of the Faculty of Science performance award for excellence in service, teaching and research in 2011. Dr. Kobti leads his own NSERC funded research program in theoretical and evolutionary computation as well a principal investigator on a number of present and past collaborative industry projects funded by various government agencies.

Dr. Jianguo Lu [course: COMP-8380] has been conducting research on web data mining in the areas such as deep web, semantic web, web services, and online social networks. He has been involved in the teaching of junior and senior programming courses, and a graduate course on semantic web.

Dr. Asish Mukhopadhyay [course: COMP-8580] has primary interests in computational geometry and bioinformatics.

Dr Alioune Ngom [courses: [courses: COMP-8580, COMP-8590, COMP-8610, COMP-8720, COMP-8740, COMP-8790, and COMP-8920] main research interests include but are not limited to computational intelligence and statistical learning methods, and their applications in the fields of computational biology and bioinformatics. His current research includes gene regulatory network reconstruction, sparse representation learning, community detection and network clustering, network-based machine leaning, omics data integration approaches, matrix factorization methods, disease biomarker selection, and network-based drug repurposing and repositioning.

Dr. Luis Rueda [courses: COMP-8580, COMP-8590, COMP-8610, COMP-8720, COMP-8740, COMP-8790, and COMP-8920] is an established researcher in the fields of machine learning and bioinformatics. He has an extensive record of publications in machine learning algorithms designed for different problems in pattern recognition, bioinformatics

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and cybersecurity. He has taught courses at the undergraduate and graduate levels, including algorithms, data structures, languages, theory of computing, programming, machine learning and bioinformatics.

Dr Dan Wu [course: COMP-8700 and COMP-8720] works in uncertain reasoning, machine learning, mobile robotics, multi-agent systems, knowledge representation and probabilistic reasoning.

Dr. Xiaobu Yuan [course: COMP-8490] has twenty years of experience conducting research on Virtual Reality. Since the publication of his first paper in this field at IEEE ICRA 1999, he has been actively investigating issues regarding to both theories and practices for the creation of a synthesized intelligence by joining human and machine intelligence via Virtual Reality. One of his on-going projects in this direction is interactive software customization, which utilizes his extensive experience teaching undergraduate and graduate courses in the area of Software Engineering and develops techniques to allow software clients “ordering” customized software systems from different lines of software products by means of human-computer interaction in natural language. His research interests include Virtual Reality, Software Engineering, and Autonomous Vehicles.

Dr. Pooya M. Zadeh [course: COMP-8790] works in cultural/evolutionary algorithms.

B.5.1.1c Extent of Reliance on Adjunct, Limited-term, and Sessional Faculty in Delivering the Revised Program

Describe the area’s expected reliance on, and the role of adjunct, limited-term, and sessional faculty in delivering the revised program.

N/A. Our tenured/tenure-track faculty, within the School of Computer Science, will deliver all of the M.Sc-CS-AI courses.

The appointment of any adjunct and/or sessional faculty is in keeping with all graduate faculty regulations related to the appointment of faculty to teach within the **regular** M.Sc-CS program. Instructors are sought in accordance with procedures agreed on by the School of Computer Science and may include advertising, both externally and internally in the appropriate AAU(s), and by direct solicitation. Those appointed will have relevant experience and qualifications. The appointments are, made by the Dean of Science following recommendation by the AAU appointments committee in the Faculty that is responsible for the academic aspects of the program.

B.5.1.1d Graduate Faculty Qualifications and Supervisory Loads (FOR GRADUATE PROGRAMS ONLY)

Explain how supervisory loads will be distributed, and describe the qualifications and appointment status of faculty who will provide instruction and supervision in the revised program.

These courses exist already and are lecture-based, no supervisory loads will be involved or added.

The average teaching load for faculty members in the School of Computer Science includes 4 courses plus supervision of 4-6 graduate students. There is available capacity in the department to offer the M.Sc-CS-AI courses, and many faculty members have indicated their willingness to support the program by being available to teach these courses.

The supervisory load in the M.Sc-CS-AI program is thus the same as in the regular M.Sc-CS program. Each faculty member who is an Associate/Full Professor involved in the M.Sc-CS-AI program from the School of Computer Science is tenured and also currently holds 'Graduate Faculty Status'. All recently hired faculty members are currently tenure-track faculty at the level of Assistant Professor, and hence, do not hold a 'Graduate Faculty Status'; though, it is expected that they will hold the 'Graduate Faculty Status' within the next two years or less.

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B.5.1.1e Financial Assistance for Graduate Students (where appropriate) (FOR GRADUATE PROGRAMS ONLY)

Where appropriate to the revised program, provide evidence that financial assistance for graduate students will be sufficient to ensure adequate quality and numbers of students.

Many faculty members hold a NSERC DG grant or other research grants (internal and/or external). Also, students who are enrolled in the M.Sc-CS-AI program are eligible to apply for the Vector Scholarships in Artificial Intelligence, valued at \$17,500 each. [More information can be found at the Vector Institute website](#). M.Sc. students also get, typically, three graduate teaching assistantships (GAs) during their studies.

B.5.1.1f Other Available Resources (Ministry sections 3 and 4)

Provide evidence that there are adequate resources available and committed to the revised program to sustain the quality of scholarship produced by undergraduate students as well as graduate students' scholarship and research activities, including for example:

- *staff support,*
- *library,*
- *teaching and learning support,*
- *student support services,*
- *space,*
- *equipment,*
- *facilities*
- *GA/TA*

These courses are already offered on a regular basis. This revision will provide interested students the possibility of having a special annotation for the new stream in AI. Students in the M.Sc-CS-AI program will use the existing CS research labs of the regular M.Sc-CS program; that is, CS labs in Lambton Tower and Erie Hall.

Students in the M.Sc-CS-AI program will use the same general resources available to students in the regular M.Sc-CS program

B.5.1.2 Resource Implications for Other Campus Units (Ministry sections 3 and 4)

Describe the reliance of the proposed program revisions on existing resources from other campus units, including for example:

- *existing courses,*
- *equipment or facilities outside the proposer's control,*
- *external resources requiring maintenance or upgrading using external resources*

Provide relevant details.

N/A. There is no other equipment or facilities that are required outside the control of the School of Computer Science. There are no external resources that have been identified that require maintenance or upgrading using external resources.

B.5.1.3 Anticipated New Resources (QAF sections 2.1.7, 2.1.8 and 2.1.9; Ministry section 4)

*List all **anticipated new resources** originating from within the area, department or faculty (external grants, donations, government grants, etc.) and committed to supporting the revised program.*

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N/A. No additional resources are required, at this time, to come from the area, department or faculty to allow the School of Computer Science to be able to operate this program.

B.5.1.4 Planned Reallocation of Resources and Cost-Savings (QAF section 2.1.7 and 2.1.9; Ministry section 4)

Describe all opportunities for internal reallocation of resources and cost savings identified and pursued by the area/department in support of the revised program. (e.g., streamlining existing programs and courses, deleting courses, etc.)

N/A. This program will be able to use these existing courses that are scheduled to run; thereby, reducing the overall costs associated with the delivery of the program

B.5.1.5 Additional Resources Required – Resources Requested (QAF section 2.1.7 and 2.1.9)

*Describe all **additional faculty, staff and GA/TA resources** (in all affected areas and departments) required to run the revised program.*

Faculty:	None
Staff:	None
GA/TAs:	None

B.5.1.5b Additional Institutional Resources and Services Required by all Affected Areas or Departments

*Describe all **additional institutional resources and services** required by all affected areas or departments to run the revised program, including library, teaching and learning support services, student support services, space and facilities, and equipment and its maintenance.*

Library Resources and Services:	None
Teaching and Learning Support:	None
Student Support Services:	None
Space and Facilities:	None
Equipment (and Maintenance):	None

C. Program Details

C.1 Admission Requirements (QAF section 2.1.2)

Describe new or changes to

- *program-specific admission requirements,*
- *selection criteria,*
- *credit transfer,*
- *arrangements for exemptions or special entry, and*
- *alternative admission requirements, if any, for admission into the program, such as minimum average, additional language requirements or portfolios, recognition of prior work or learning experience (and how this will be assessed), etc.*

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The admission requirements in the M.Sc-CS-AI program are the same as those in the M.Sc-CS program.

Graduates of the University of Windsor or of other recognized colleges or universities may be admitted to programs leading to the Master's degree. A student with an honours Bachelor's degree or equivalent with adequate specialization in Computer Science and with at least a 70% average in the major subject may be admitted to a minimum one-year Master's program (II Master's Candidate). A student with an honours Bachelor's degree in a related subject and with at least a 70% average in the major subject may be admitted to a minimum two-year Master's program (I Master's Qualifying followed by II Master's Candidate) or to a minimum two-year II Master's Candidate program depending upon prior qualifications.

Students with deficiencies in some areas of Computer Science may be required to make up those deficiencies by registering in undergraduate courses prior to or as part of their graduate program or by following a program of supervised reading.

Students eligible to participate in the proposed co-op education will have successfully completed at least one semester of full-time study at the Master's level in the School of Computer Science at the University of Windsor, which includes fulfilling the requirement of attending regular departmental seminars.

International applicants to graduate programs in Computer Science must demonstrate English proficiency by meeting or exceeding an IELTS overall score of 6.5 (or equivalent), with no more than one band scores of 6.0, and no band score below 6.0 (or TOEFL of 92).

C.1.1 Admission Requirements and Attainment of Learning Outcomes (QAF section 2.1.2)

Demonstrate that admission requirements for the revised program are sufficient to prepare students for successful attainment of the intended learning outcomes (degree level expectations) established for completion of the program.

The above requirements are consistent with the requirements for our regular M.Sc-CS program and will ensure that students entering the M.Sc-CS-AI program will have the necessary academic background.

C.2 Program Curriculum Structure/Program of Study (QAF sections 2.1.4 and 2.1.10)

Provide evidence of a program structure and faculty research that will ensure the intellectual quality of the student experience.

NB: For graduate programs, provide evidence that each graduate student in the revised program is required to take a minimum of two-thirds of the course requirements from among graduate-level courses. Include course requirements with course numbers and course names.

Identify in BOLD and STRIKETHROUGH the changes to program requirements.

Degree Requirements

1) The requirements for the degree of Master of Science will be satisfied by pursuing a program of studies consisting of five approved courses and a thesis. (A thesis is a major research project which must involve substantial innovative work generally culminating in original results.)

2) In addition to the above course work, students must attend regular departmental seminars throughout their M.Sc. studies, as a fulfilment of this requirement.

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- 3) With prior approval of the graduate coordinator, candidates may be permitted to include graduate courses offered by other departments in their program.
- 4) No student will be allowed to include in his or her program a course which substantially overlaps a course previously taken.
- 5) All candidates' programs are subject to approval by the Computer Science program graduate committee.
- 6) Students must maintain a minimum overall average of 70%, and obtain a passing grade in all courses to remain in good standing in the program. A grade of less than 70% in a graduate course will be considered as a failure for that course.
- 7) A student who fails to maintain the minimum overall average of 70% will be automatically placed on probation in the following term.
- 8) A student who obtains a grade below 60% in any course will be automatically placed on probation in the following term.
- 9) A student who fails to achieve satisfactory performance in any aspect of the program (course work, thesis or major paper) may be required to withdraw.

The Master's thesis committee is chosen in the manner described under the section titled, The Program Requirements for the Master's Degree. The final examination will take the form of an open seminar in the presence of the Master's committee. The examination will be open to the public.

Each student must obtain approval of his or her program, in writing, from the graduate coordinator within three weeks of registration. Subsequent changes require written approval from the graduate coordinator.

Co-op Program Requirements

Recruitment and selection into the co-op element of this program will take place in each of the fall, winter and summer semesters. Admission and pre-employment readiness training will be held in one semester, students will compete for positions in the next semester and complete one eight-month placement (equivalent of two work terms) in the following two semesters.

In addition to the Program Requirements for the Master of Science Degree, students participating in the co-op option must satisfy the following conditions:

- 1) Have been a full-time student in the Master's program in Computer Science;
- 2) Have successfully completed a minimum of one study term prior to applying for admission to the co-op stream;
- 3) Can not be on a leave of absence in the two terms immediately prior to the work terms;
- 4) Have at least one semester of study remaining upon completion of their work terms in a maximum of three years in the Master's program;
- 5) Have obtained written permission from the academic supervisor/co-supervisors;

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6) Have their placement(s) confirmed by the Centre for Career Education

7) Are not planning to take courses during the work terms.

All Co-op positions must be full-time, paid, related to the degree program and approved by the University. The process of securing a co-op position is competitive. Co-op students will apply for work opportunities as advertised by the Centre for Career Education using an Internet-based software program and employers will make interview and hiring decisions. Students are also encouraged to seek co-op employment outside of the advertised postings by completing a guided job search process facilitated by the Centre for Career Education.

Withdrawal from the co-op program will be granted on an exception basis only as it must be determined that the student has no outstanding commitments to employers. Students who wish to withdraw must meet with a Co-op Coordinator and complete a withdrawal form. However, the only time a student may withdraw from an undergraduate co-op program without further co-op fee payment implications is by the 1st Friday of classes after their first co-op work term. Students who withdraw from Co-operative Education at any other time will be liable for paying the co-op fee for the term in which they are dropping and one additional term. This will help offset the costs of developing another student for placement.

In the interest of building solid partnerships with employers, students who have accepted a co-op employment offer (either by ranking a position in round 1 of the job competition or by accepting a position either verbally or in writing in later rounds) must honour that commitment. Therefore, once students have accepted an offer of employment for a work term, they will be considered registered in the appropriate work term course and must remain in the co-op program until they have completed their work term requirements. Failure to honour these commitments and/or to complete all work term requirements will lead to being required to withdraw from the co-op program and will result in a failing grade on his/her transcript for that work term.

AI Stream Requirements

In addition to the Program Requirements for the Master of Science Degree programs above (ie, both the M.Sc-CS-AI and the MSc-CS-AI-Coop), students participating in the AI Stream must satisfy the following conditions:

- 1) Total Courses: Five (5) courses**
 - a. Major Requirements: Students have to complete three (3) courses from the list below, and at least one of which being COMP-8590, COMP-8610 or COMP-8740:**
 - COMP-8590 Statistical Learning**
 - COMP-8610 Neural Network and Deep Learning**
 - COMP-8700 Introduction to Artificial Intelligence**
 - COMP-8720 Topics in Artificial Intelligence**
 - COMP-8730 Natural Language Processing and Understanding**
 - COMP-8740 Machine Learning and Pattern Recognition**
 - COMP-8750 Knowledge Representation and Reasoning**
 - COMP-8760 Advanced Search Methods**
 - b. Additional Requirements: Students have to complete two other courses from the list above or from the following list:**
 - COMP-8380 Information Retrieval and Semantic Web**
 - COMP-8390 Non-Traditional Database Systems: Data Warehousing and Data Mining**
 - COMP-8490 Virtual Reality**
 - COMP-8500 3D Animation and Data Visualization**

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COMP-8510 Visual Processing
COMP-8580 Topics in Bioinformatics
COMP-8690 Semantic Web
COMP-8790 Topics in Applied Artificial Intelligence
COMP-8920 Selected Topics in Computer Science

- 2) The requirements for the degree of Master of Science will be satisfied by pursuing a program of studies consisting of the five approved AI courses (described above) and a thesis in an approved AI topic. A thesis is a major research project which must involve substantial innovative work in AI generally culminating in original results.
- 3) In addition to the above course work, students must attend regular departmental seminars in AI-related topics throughout their M.Sc. studies, as a fulfilment of this requirement.
- 4) With prior approval of the graduate coordinator, candidates may be permitted to include graduate courses in AI or AI-related topics offered by other departments in their program.

Students who complete the AI Stream will have a special annotation on their transcript, stating their Artificial Intelligence specialization.

Courses used to calculate the major average are: All the five required courses.

Explain how credit will be awarded for the experiential learning component (length of component, credit weighting, etc.):

N/A.

Guidelines for experiential learning/co-op work term reports:

The School of Computer Science has detailed guidelines for the format, structure, preparation, and evaluation of co-op term reports. In particular, graduate students in the co-op program must contact their supervisors during co-op placement about the selection of a report topic, and, at the end of co-op placement, about report writing and evaluation. While the staff at the Centre for Career Education will communicate with employers regarding to students' performance at work, under the coordination of the Graduate Coordinator, the academic supervisors will communicate with students to ensure desired learning outcomes.

General length of experiential learning/co-op work term:

4-8 months.

Is the completion of the experiential learning/co-op component a requirement of the program?

No.

C.3.1 For Graduate Program ONLY (QAF sections 2.1.3 and 3; Senate Co-op Policy)

C.3.1.1 Normal Duration for Completion

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Provide a clear rationale for program length that ensures that the revised program requirements can be reasonably completed within the proposed time period.

The M.Sc-CS-AI is a 4-term to 6-term program where students will enroll in (i) 2 courses in each of the first two terms, (ii) 1 course plus a research proposal in the third term, and (iii) thesis research and defense within the last three terms.

C.3.1.2 Program Research Requirements

For research-focused graduate programs, provide a clear indication of the nature and suitability of the major research requirements for completion of the revised program.

The proposed program is a thesis-based program in which students will be involved in intensive and supervised research. The thesis research must be in an approved topic in AI which is either be a core technical topic in AI or an application of AI.

C.3.1.3 New or Changes to Fields in a Graduate Program (optional)

*Where fields are contemplated, provide the following information:
The master's program comprises the following fields: ...[list, as applicable]
The PhD program comprises the following fields: ...[list, as applicable]*

None.

C.3.2 For All Program Proposals

C.3.2.1 New or Changes to Standing Required for Continuation in Program

*Minimum average requirements for continuation in the program.
Must conform to the regulations for standing required for continuation in the program as set out in Senate policy.
Specify new or changes to standing required for continuation in the experiential learning option or co-op option of the revised program, where applicable.*

None.

C.3.2.2 New or Changes to Standing Required for Graduation

*Minimum average requirement to graduate in the program.
Must conform to the regulations for standing required for continuation in the program as set out in Senate policy.
Specify new or changes to standing required for graduation in the experiential learning option or co-op option of the revised program, where applicable.*

None.

C.3.2.3 New or Changes to Suggested Program Sequencing

Provide suggested program sequencing for each year of the revised program, ensuring that all pre-requisites are met in the sequencing.

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Where applicable, provide work/study/placement sequencing for each year of the experiential learning/co-op version of the revised program. Please ensure that all pre-requisites are met in the sequencing.

For Co-op programs: The proposed work/study sequence or alternative arrangement should allow for year-round availability of students for employers (if appropriate) and, wherever possible, should meet the guidelines for co-operative education as set out by the Canadian Association for Co-operative Education (see Policy on Co-op Programs).

None.

C.4 NEW OR CHANGES TO LEARNING OUTCOMES (Degree Level Expectations)(QAF section 2.1.1, 2.1.3, and 2.1.6)

COMPLETE THIS TABLE FOR UNDERGRADUATE PROGRAMS

In the following table, provide the specific learning outcomes (degree level expectations) that constitute the overall goals of the Combined program or Concurrent offering (i.e., the intended skills and qualities of graduates of this program). Link each learning outcome to the Characteristics of a University of Windsor Graduate” by listing them in the appropriate rows.

A learning outcome may link to more than one of the specified Characteristics of a University of Windsor Graduate. All University of Windsor programs should produce graduates able to demonstrate each of the nine characteristics. Program design must demonstrate how students acquire all these characteristics. All individual courses should contribute to the development of one or more of these traits: a program in its entirety must demonstrate how students meet all of these outcomes through the complete program of coursework.

Proposers are strongly encouraged to contact the Centre for Teaching and Learning for assistance with the articulation of learning outcomes (degree level expectations).

***For Combined Programs and Concurrent Offerings:** The program learning outcomes would include the outcomes for the two standalone programs with a few additional outcomes to reflect the benefits of pursuing the two disciplines in an integrated manner. [For learning outcome A, the integration of knowledge can be within a program and between the two programs.]*

***For programs with an Experiential Learning or Co-op Option:** Include learning outcomes for the program with a few additional outcomes highlighted to reflect the benefits of pursuing the experiential learning/co-op option.*

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<p>Program Learning Outcomes (Degree Level Expectations) <i>This is a sentence completion exercise. Please provide a minimum of 1 learning outcome for each of the boxes associated with a graduate attribute.</i></p> <p><u>At the end of this program, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A UWindsor graduate will have the ability to demonstrate:</u></p>	<p>COU-approved Undergraduate Degree Level Expectations</p>
A.	A. the acquisition, application and integration of knowledge	1.Depth and Breadth of Knowledge 2.Knowledge of Methodologies 3. Application of Knowledge 5.Awareness of Limits of Knowledge
B.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)	1. Depth and Breadth of Knowledge 2. Knowledge of Methodologies 3. Application of Knowledge 5. Awareness of Limits Knowledge
C.	C. critical thinking and problem-solving skills	1. Depth and Breadth of Knowledge 2. Knowledge of Methodologies 3. Application of Knowledge 5. Awareness of Limits of Knowledge
D.	D. literacy and numeracy skills	4. Communication Skills 5. Awareness of Limits of Knowledge
E.	E. responsible behaviour to self, others and society	5. Awareness of Limits of Knowledge 6. Autonomy and Professional Capacity
F.	F. interpersonal and communications skills	4. Communication Skills 6. Autonomy and Professional Capacity
G.	G. teamwork, and personal and group leadership skills	4. Communication Skills 6. Autonomy and Professional Capacity
H.	H. creativity and aesthetic appreciation	2. Knowledge of Methodologies 3. Application of Knowledge 6. Autonomy and Professional Capacity
I.	I. the ability and desire for continuous learning	6. Autonomy and Professional Capacity

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COMPLETE THIS TABLE FOR GRADUATE PROGRAMS

In the following table, provide the specific learning outcomes (degree level expectations) that constitute the overall goals of the Combined program or Concurrent offering (i.e., the intended skills and qualities of graduates of this program). Link each learning outcome to the Characteristics of a University of Windsor Graduate” by listing them in the appropriate rows.

A learning outcome may link to more than one of the specified Characteristics of a University of Windsor Graduate. All University of Windsor programs should produce graduates able to demonstrate each of the nine characteristics. Program design must demonstrate how students acquire all these characteristics. All individual courses should contribute to the development of one or more of these traits: a program in its entirety must demonstrate how students meet all of these outcomes through the complete program of coursework.

Proposers are strongly encouraged to contact the Centre for Teaching and Learning for assistance with the articulation of learning outcomes (degree level expectations).

***For Combined Programs and Concurrent Offerings:** The program learning outcomes would include the outcomes for the two standalone programs with a few additional outcomes to reflect the benefits of pursuing the two disciplines in an integrated manner. [For learning outcome A, the integration of knowledge can be within a program and between the two programs.]*

***For programs with an Experiential Learning or Co-op Option:** Include learning outcomes for the program with a few additional outcomes highlighted to reflect the benefits of pursuing the experiential learning/co-op option.*

Program Learning Outcomes (Degree Level Expectations) <i>This is a sentence completion exercise. Please provide a minimum of 1 learning outcome for each of the boxes associated with a graduate attribute.</i> <u>At the end of this program, the successful student will know and be able to:</u>	Characteristics of a University of Windsor Graduate <u>A UWindsor graduate will have the ability to demonstrate:</u>	OCGS-approved Graduate Degree Level Expectations
A. Explain artificial intelligence and machine learning concepts, and apply them to concrete practical or real-world problems.	A. the acquisition, application and integration of knowledge	1. Depth and Breadth of Knowledge 2. Research and Scholarship 3. Level of Application of Knowledge 6. Awareness of Limits of Knowledge
B. Define artificial intelligence, statistical learning, pattern recognition, and deep learning methods for solving classification, clustering, regression and other complex learning problems.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)	2. Research and Scholarship 3. Level of Application of Knowledge 6. Awareness of Limits of Knowledge

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<p>Program Learning Outcomes (Degree Level Expectations) <i>This is a sentence completion exercise. Please provide a minimum of 1 learning outcome for each of the boxes associated with a graduate attribute.</i></p> <p><u>At the end of this program, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A UWindsor graduate will have the ability to demonstrate:</u></p>	<p>OCGS-approved Graduate Degree Level Expectations</p>
<p>C. Solve practical and complex tasks such as classification, clustering, regression tasks, or other difficult tasks by using and combining several artificial intelligence and machine learning strategies.</p>	<p>C. critical thinking and problem-solving skills</p>	<p>1. Depth and Breadth of Knowledge 2. Research and Scholarship 3. Level of Application of Knowledge 4. Professional Capacity/autonomy 6. Awareness of Limits of Knowledge</p>
<p>D. Write coherently, concisely, and clearly in a range of formats and for a variety of audiences.</p>	<p>D. literacy and numeracy skills</p>	<p>2. Research and Scholarship 5. Level of Communication Skills</p>
<p>E. Explain the societal, legal and ethical implications of artificial intelligence and machine learning.</p>	<p>E. responsible behaviour to self, others and society</p>	<p>4. Professional Capacity/Autonomy 6. Awareness of Limits</p>
<p>F. Present research clearly and respond effectively to critical questions.</p>	<p>F. interpersonal and communications skills</p>	<p>5. Level of Communication Skills</p>
<p>G. Demonstrate ability to work collaboratively with others by working as a member of a project, assignment or presentation.</p>	<p>G. teamwork, and personal and group leadership skills</p>	<p>4. Professional Capacity/Autonomy 5. Level of Communication Skills</p>
<p>H. Design new algorithms in artificial intelligence and machine learning. Identify situations in artificial intelligence and machine learning, and propose solutions.</p>	<p>H. creativity and aesthetic appreciation</p>	<p>2. Research and Scholarship 4. Professional Capacity/autonomy 6. Awareness of Limits of Knowledge</p>
<p>I. Identify how good theoretical and practical knowledge of problems leads to efficient artificial intelligence and machine learning.</p>	<p>I. the ability and desire for continuous learning</p>	<p>4. Professional Capacity/autonomy</p>

C.4.1 Revised Program Structure and Regulations Ensure Learning Outcomes Can be Met

Describe how the revised program's structure and regulations ensure that the specified learning outcomes can be met by successful students.

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In order to meet the learning outcomes, students will not only need to acquire the core technical knowledge of AI and ML, but they will also need to apply that knowledge to process and analyze complex AI and ML problems, propose and evaluate different options and construct suitable solutions, including functional AI software.

The set of courses in the program will require students to learn new AI and ML concepts, do online searches to find relevant information on specified topics, and develop their own critical thinking and problem solving skills by creating appropriate solutions. Seminars and in-class presentations, software demonstrations and written reports will enhance their communication skills. Exposure to the latest approaches, technologies and developments will highlight the need for continuous learning for an artificial intelligence, machine learning, data science professional. Students will also learn important applications of AI and ML such as in applications in cybersecurity, bioinformatics, computer vision, natural language processing, etc.

C.4.2 Impact of Experiential Learning Component on Attainment of Learning Outcomes

For programs with a proposed experiential learning or co-op component: describe how the experiential learning/co-op component changes the emphasis or the means of achieving the intended learning outcomes for the program.

The co-op component will allow students to apply and further develop the technical knowledge, problem-solving, research and interpersonal and communication skills that they have acquired in their courses, while also gaining workplace experience and new skills.

C.4.3 Mode of Delivery (QAF section 2.1.5)

Demonstrate that the proposed modes of delivery are appropriate to meet the new or revised program learning outcomes. Discuss online vs. face-to-face (e.g., lecture, seminar, tutorial, lab) modes of delivery, as well as specialized approaches intended to facilitate the acquisition of specific skills, knowledge, and attitudes.

The program consists of three core technical AI courses (one of which being a ML course) and two additional courses in AI or AI-related topics, all of which providing students with the required skills and knowledge, and associated problem solving, communication and interpersonal skills. These courses will consist of lectures, and will be augmented by seminar presentations. Students will be given assignments and projects where they have to apply their knowledge to analyze a problem and develop appropriate solutions, and communicate the results.

C.5 Student Workload

Provide information on the expected workload per course credit (3.0) of a student enrolled in this revised program. (For assistance with this exercise, proposers are encouraged to contact the Centre for Teaching and Learning.)

Expected Workload per 3.0 Course Credit/Week	Average Time <i>per week</i> the Student is Expected to Devote to Each Component Over the Course of the Program
Lectures	2.0
Tutorials	
Practical experience	1.5
Service or experiential learning	20-30 hours (NOTE: This is the average for the period when the co-op internship is undertaken, not over the whole program)
Independent study	2.0

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Reading and work for assessment, including meeting classmates for group work/project assignments (essays, papers, projects, laboratory work, etc.)	4.0
Studying for tests/examinations	2.5
Other: <i>[specify]</i>	
Compare the student workload for this program with other similar programs in the AAU:	
Similar.	

D. MONITORING AND EVALUATION (QAF section 2.1.6)

Describe and explain the appropriateness of the proposed methods of assessing student achievement given the new or revised intended learning outcomes and degree level expectations.

Students will be evaluated using a variety of methods, including examinations, assignments, projects, written reports and presentations. These are consistent with existing assessment methods for Master level students in the School of Computer Science, which have been effective in determining if students have attained the intended learning outcomes.

D.1 Plan for Documenting And Demonstrating Student Performance Consistent with Learning Outcomes

Describe the plan for documenting and demonstrating student performance level and demonstrate its consistency with the new or revised stated learning outcomes and degree level expectations.

Each course instructor will be responsible for determining and assigning grades in the courses assessment-activities and for a student’s overall course performance. Student performance will be documented by comparison with similar-level students in the same course or within other graduate programs within our department.

E. NEW OR REVISIONS TO EXPERIENTIAL LEARNING/CO-OP COMPONENT ONLY (Senate Co-op Policy)

[Complete this section ONLY if the program change includes new or revisions to the experiential learning/co-op component involving paid or unpaid placements.]

E.1 Experiential Learning Component and Nature of Experience

Describe the new or revised experiential learning component and the nature of the experience (field placement, required professional practice, service-learning, internship, etc.)

N/A

E.2 Knowledge and Skills Brought to the Workplace

Provide a description of the knowledge and skills that students will be bringing to the workplace/placement based on the revised curriculum.

N/A

E.3 Evidence of Availability of Placements

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Provide evidence of the availability of an adequate number of positions of good quality both inside and outside the Windsor area for the new or revised co-op/experiential learning option (including names and contact information of potential employers, written statements or surveys from potential employers; and employer feedback concerning the hiring of graduates).

Provide a summary of the types of positions that would be suitable at each level of work-term.

How will these placements/opportunities be developed?

[NB: For co-op programs, the majority of Ontario placements should qualify for the Co-op Education tax credit. See Policy on Co-op Programs for more details.]

N/A

E.4 Mechanism for Supervision of Placements (QAF section 2.1.9)

Describe the mechanism that will be established for the supervision of the new or revised experiential learning placements.

N/A

E.5 Fees Associated with Experiential Learning Component

Provide information on the fees associated with the new or revised experiential learning component, if applicable.

NB: all proposed fees must be approved as part of the University's operating budget, via the Ancillary Fee Committee.

N/A

E.6 AAU Council Approval of New or Revised Co-op Component

Please obtain signatures for the following statement for new/revised co-op programs.

Before a determination can be made regarding the feasibility of a co-op program, there must be a clear indication of support for the program from the AAU. Support implies that the area will provide ongoing departmental funding to establish a co-op faculty representative who will liaise with the Centre for Career Education in the operation of the program and that the area will ensure that an adequate number of faculty members in the AAU or program contribute to the co-operative education program by grading work-term reports, attending and evaluating work-term presentations, assisting in the job development process, establishing a departmental co-op committee as appropriate, etc. (see Policy on Co-op Programs, Summary of AAU/Faculty Member Involvement in a Co-operative Education Program, for more on the role of the AAU and faculty members). This commitment must be agreed to by the AAU Council at a meeting at which the development or modification of a co-op program was considered and approved.

*Signed agreement by the AAU Head, acting as chair of the AAU Council, that AAU members support the development of the co-op program.**

Name of AAU Head (typed or e-signature): _____

[Approval of the program by the AAU Council shall constitute agreement and support by AAU members of the development of the co-op program.]

Name of Director of the Co-op Services (typed or e-signature): _____

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[Approval of the program by the Director of Co-op Services shall constitute agreement and support of the development of the co-op program.]

E.7 Guidelines for the Establishment of New/Revised Co-op Programs: CHECKLIST

Final Overview:

Please complete this checklist to ensure that the Senate-approved guidelines for the establishment of a new co-op program have been addressed.

Does the proposal:

- include the endorsement of/involvement by the Centre for Career Education?
- adequately describe the academic program?
- include a strong rationale for co-operative education?
- list the types of positions suitable to students at the junior, intermediate and senior work-term?
- articulate the possibility for international placements at a later point?
- provide for a reasonable proportion of international students to obtain appropriate placement opportunities?
- include a plan to monitor the availability of work placements on an ongoing basis?
- articulate specific learning outcomes (degree level expectations) and co-op requirements?
- include a commitment by the department to adequately support the program by funding a co-op faculty representative?:
- include a commitment by the department to adequately support the program by ensuring that an adequate number of faculty members are willing to grade work term assignments, assist in the job development process, etc.?

Will the program:

- attract a sufficient number of students including students from outside of the Windsor-Essex region (a minimum annual intake of 20 students enrolled in the co-op component)?
- be able to attract and sustain an adequate number of positions of good quality both inside and outside of the Windsor-Essex region?
- provide year-round availability of students to the workplace in some manner?
- meet the requirements for accreditation by the Canadian Association of Co-operative Education (see guidelines)?

**PROGRAM DEVELOPMENT COMMITTEE
MAJOR PROGRAM CHANGES
FORM B**

APPENDIX A – BUDGET SUMMARY SHEET

Contact the Office of Quality Assurance for assistance in completing this form.

The M.Sc.CS-AI stream is not a new program. It is a part of (ie, a concentration within) the regular M.Sc.CS program, and hence, this page is not applicable.

Projections of Enrolment, Expenditures and Revenues (enrolments over 5 years)						
Year	1	2	3	4	5	Total
Revenue						
Tuition income*						Nil
Potential Provincial funding**						Nil
Other sources of funding (please list)						
Total Revenue						Nil
Expenses						
Additional Faculty member						Nil
Additional Staff/Technician						Nil
GA/TA***						Nil
External Examiners (for graduate programs)						Nil
Library Resources						Nil
New Facilities/Equipment						Nil
Facilities/Equipment Maintenance						Nil
Technology/CTL resources						Nil
Other expenses (please list)						
Total Expenses						Nil
Net Income						Nil

*Estimate \$xxx per full-time equivalent domestic undergraduate student; \$xxx per full-time equivalent international undergraduate student; \$xxxx per full-time equivalent domestic Masters student; \$xxxx per full-time equivalent international Masters student; \$xxxx per full-time equivalent domestic doctoral student; \$xxxx per full-time equivalent international doctoral student.

**Estimate \$xxx per full-time equivalent domestic undergraduate student; \$xxx per full-time equivalent international undergraduate student; \$xxxx per full-time equivalent domestic Masters student; \$xxxx per full-time equivalent international Masters student; \$xxxx per full-time equivalent domestic doctoral student; \$xxxx per full-time equivalent international doctoral student.

***Estimate \$xxx per GA/TA allocation

University of Windsor
Program Development Committee

*5.2: **Kinesiology – New Course Proposal**

Item for: **Approval**

MOTION: **That the following course addition be approved:^**
 KINE-4660. Cardiac Rehabilitation

^Subject to approval of expenditures required.

Rationale/Approvals

- The change has been approved by the Faculty of Human Kinetics.
- *See attached.*

**PROGRAM DEVELOPMENT COMMITTEE
NEW COURSE PROPOSALS
FORM D**

TITLE OF PROGRAM(S)/CERTIFICATE(S):	Cardiac Rehabilitation
DEPARTMENT(S)/SCHOOL(S):	Department of Kinesiology
FACULTY(IES):	Human Kinetics

Proposed change(s) effective as of* [Fall, Winter, Spring]: <i>*(subject to timely and clear submission)</i>	Winter 2020
--	-------------

A. NEW COURSE PROFILE

Course # and Title: KINE-4660 – Cardiac Rehabilitation

A.1 Calendar Description

Calendar descriptions should be written in the third person and should provide a general outline of the course material. Where appropriate, examples of topics or themes, which might be covered in the course, should also be provided.

This course introduces the pathophysiological mechanisms associated with the development and progression of cardiovascular disease, namely atherosclerotic heart disease, and emphasizes its global burden. It also highlights the positive effects of Cardiac Rehabilitation on quality of life, morbidity and mortality outcomes, delivering insight into the paradigm shift toward personal responsibility for chronic disease management/secondary prevention to maximize cardiovascular health across the lifespan, and offers students an opportunity to hone leadership and communications skills via group discussions and presentations. Cardiac Rehabilitation-related career opportunities will be explored. (3 lecture hours/week.)

A.2 Other Course Information

Please complete the following tables.

Credit weight	Total contact hours	Delivery format				Breakdown of contact hours/week			
		In-class	e-learning	Distance	Other flexible learning delivery <i>[please specify]</i>	Lecture	Lab/Tutorial	Online	Co-op/practicum/experiential learning
3	36	X	X	N/A	Video interviews	3 hrs	N/A	N/A	N/A

** Note: The Video Interview will be with Cardiac Rehabilitation experts (e.g., Cardiac Rehabilitation Directors from Preventive Cardiology, Michigan Medicine, University of Michigan)*

Pre-requisites	Co-requisites	Anti-requisites	Cross-listed with:	Required course?	Replacing old course*** <i>[provide old course number]</i>
Registered Kinesiology student; Movement Science major	N/A	N/A	N/A	N/A	Special topics section - Fall 2018: 95-490-02

*****Replacing Old Course: this does not mean that the former course will be deleted from the calendar. If it is to be deleted, a Form E must be completed.**

Will students be able to obtain credit for the new course and the course(s) that it is replacing?	No
--	----

PROGRAM DEVELOPMENT COMMITTEE

NEW COURSE PROPOSALS

FORM D

This course replaces a special topics section offered under the “Special Topics in Movement Science” course (KINE-4900; formerly 95-490) that was taught in the Fall of 2018. Students should not be able to receive credit for this course and the special topics course under the same name (i.e. “Cardiac Rehabilitation”) it replaces.

B. RATIONALE

B.1 Course Goal(s)

Please provide a statement about the purpose of the course within the program of study or as an option.

Cardiovascular disease, namely atherosclerotic heart disease, is the leading cause of death worldwide, and in Windsor-Essex, it is responsible for nearly 1,000 deaths and 4,000 hospitalizations each year. Cardiac Rehabilitation offers huge physical and mental health benefits to people who participate, reduces hospitalizations, lowers rates of death and improves quality of life in people living with cardiovascular (atherosclerotic) heart disease.

This comprehensive and one-of-a-kind course has been designed in collaboration with Cardiac Rehabilitation experts (cardiovascular technologists, cardiologists, exercise specialists, Cardiac Rehabilitation program directors, PhD scientists) in Ontario (University of Windsor, Hotel Dieu Grace Hospital, Windsor-Essex Community Health Centre, Western University, St. Clair College, Brock University, McMaster University) and Michigan (Henry Ford Healthcare, Michigan Medicine, University of Michigan, Beaumont Hospital). As such, students become well versed in gold standard Cardiac Rehabilitation best practices and guidelines from both a Canadian and American perspective, within a global context.

The demand for Cardiac Rehabilitation experts is increasing concomitant to the growing burden of disease. According to the United States Bureau of Labor Statistics, the growth rate for job opportunities in this field is higher than for any other field, and a 30% increase in growth is anticipated from 2012 to 2022. The strategic design of this course lay a foundation for students to become professionally competent in both Canada and the United States. This, together with Windsor being a border town, expands the opportunity for national and international exposure and employment.

For those students aspiring to continue in traditional academia or enter other health-related professional schools (e.g., cardiovascular technology, medical school, MD, PhD programs), involvement with this course will hone communication skills within a clinical context (e.g., student presentations requiring communicating complicated pathophysiology in a simple and understandable manner as one would with a future client; interacting with individuals afflicted with cardiovascular disease during open question and answer sessions), while enhancing key career skills such as problem-based learning, and explaining the benefits of Cardiac Rehabilitation.

B.2 Indigenous (First Nations, Métis, or Inuit) Content, Perspectives, or Material

The University of Windsor is committed to building stronger, more meaningful partnerships with Indigenous students, scholars and communities. In developing this course, how has consideration been given to incorporating Indigenous (First Nations, Métis, or Inuit) content, perspectives, or material into the curriculum?

The racial and cultural diversity surrounding cardiovascular disease prevalence is discussed, with an important focus on First Nations people having the highest prevalence of cardiovascular disease/atherosclerotic heart disease in Canada. Health inequalities are explored within the disease pathophysiology context itself, but also with respect to access, uptake and participation in Cardiac Rehabilitation programming, the associated and inherent barriers, and potential strategies to overcome those barriers.

**PROGRAM DEVELOPMENT COMMITTEE
NEW COURSE PROPOSALS
FORM D**

B.3 LEARNING OUTCOMES (QAF section 2.1.1, 2.1.3, and 2.1.6)

Please complete the following table. State the specific learning outcomes that make up the goal of the course (what will students know and be able to do at the end of this course?) and link the learning outcomes to the Characteristics of a University of Windsor Graduate outlined in "To Greater Heights" by listing them in the appropriate rows. Please note that a learning outcome may link to more than one of the specified Characteristics of a University of Windsor Graduate, and that a single course might not touch on each of the Characteristics. **If a specific learning outcome is not applicable for the course, please enter N/A or not applicable.** Information on learning outcomes is appended to this form (Appendix A). Proposers are also strongly encouraged to contact the Centre for Teaching and Learning for assistance with the articulation of learning outcomes.

Course Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of this course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
A. <ul style="list-style-type: none"> • Explain the pathophysiology of cardiovascular disease and the risk factors associated with its development and progression. • Identify the appropriate diagnostic procedures and treatment options available, including lifestyle modifications such as increased exercise. • Explain the genetic predisposition or suspected environmental links to disease development. • Describe acute responses to exercise in afflicted individuals and explain the beneficial adaptive responses to chronic exercise. • Identify the risks associated with exercise and discuss the necessary safety precautions and special considerations. • Describe how the chronic physiological adaptations associated with chronic exercise are beneficial to the health of the human body (also relevant to E). • Apply nationally endorsed methods to develop a safe, comprehensive and individualized cardiac rehabilitation program (also relevant to E and H). 	A. The acquisition, application and integration of knowledge
B. <ul style="list-style-type: none"> • Critically analyze original scientific research and promote cardiac rehabilitation as an effective secondary prevention strategy across heterogeneous populations (also relevant to C, D, and E). • Explain the meaning of numbers and variables associated with cardiovascular disease pathophysiology and exercise interventions (e.g., criteria for diagnosis of hypertension, contraindications for exercise such as an exaggerated blood pressure response to a bout) (also relevant to C and D). 	B. Research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
C.	C. Critical thinking and problem-solving skills
D.	D. Literacy and numeracy skills

**PROGRAM DEVELOPMENT COMMITTEE
NEW COURSE PROPOSALS
FORM D**

Course Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of this course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
E. • Adhere to accepted principles of academic integrity.	E. Responsible behaviour to self, others and society
F. • Discuss issues related to cardiovascular disease, respectfully formulating associated question regarding personal experiences, disability, and Cardiac Rehabilitation.	F. Interpersonal and communications skills
G. • Describe the role of a health care professional in the transfer of knowledge to the general public (also relevant to I). • Plan and implement education programs about novel risk factors, interventions and Cardiac Rehabilitation programming (also relevant to H).	G. Teamwork, and personal and group leadership skills
H. • Create visual aids on novel risk factors, interventions and Cardiac Rehabilitation programming.	H. Creativity and aesthetic appreciation
I. • Recognize the prevalence of numerous modifiable and non-modifiable risk factors in our society and explain how comprehensive Cardiac Rehabilitation can improve quality of life and improve longevity.	I. The ability and desire for continuous learning

B.4 Demand for Course

Please provide as much information on projected enrolment as possible.

Projected enrolment levels for the first 5 years of the new course.	Year 1	Year 2	Year 3	Year 4	Year 5
	50	50	50	50	50

B.4.1 Impact of New Course on Enrolment in Existing Courses

What will be the impact of offering the new course on enrolments in existing courses in the program or Department?

The impact of this course on enrolments in existing courses is expected to be minimal. If anything, it may decrease the number of students on the waiting list for KINE-4610: Chronic Disease and Exercise Rehabilitation.

B.5 Student Workload

*Provide information on the expected workload per week of a student enrolled in this course.
NOTE: Student workload should be consistent with the credit weight assigned to the course.*

Average number of hours per week that the student will be expected to devote to:	
3	Lectures
0	Tutorials
0	Labs

**PROGRAM DEVELOPMENT COMMITTEE
NEW COURSE PROPOSALS
FORM D**

0	Practical experience
0	Independent Study
1	Reading for the course
1	Work for assessment (essays, papers, projects, laboratory work)
2	Meeting with others for group work/project assignments
2	Studying for tests/examinations
	Other: <i>[specify]</i>
How does the student workload for this course compare with other similar courses in the department/program area?	
It is similar to the workload for other courses.	

C. RESOURCES

C.1 Available Faculty and Staff Resources (QAF sections 2.1.7, 2.1.8, 2.1.9 and 2.1.10)

Describe, in general terms, all faculty and staff resources (e.g., administrative, teaching, supervision) from all affected areas/departments currently available and actively committed to support the new course). Please do not name specific individuals.

It is anticipated that this course will be included in the regular offerings within the Department of Kinesiology and will be taught by a tenured or tenure-track faculty member.

(Note that this course has been taught as a special topics class in the past by a tenured faculty member who is expected to continue as the lead instructor).

C.1.1 Faculty Expertise in Support of the Revised Program

Provide an assessment of faculty expertise available and committed to actively support the new course. Please do not name specific individuals.

The proposed course instructor, a tenured Faculty member, holds Adjunct positions in the School of Kinesiology at Western University (London, ON), Division of Cardiology, Department of Internal Medicine at University of Michigan (Ann Arbor, MI, USA), and the School of Medicine and Department of Emergency Medicine at Wayne State University (Detroit, MI, USA), and is an Adjunct Scientist at the Lawson Health Research Institute (London, ON). The instructor has a research mission of improving the well-being of the local, provincial, national and global population by providing simple solutions to reduce cardiovascular disease-related morbidity and mortality.

This course was designed with input from a network of research partners, which include scientists, clinicians, program directors and exercise rehabilitation specialists at the University of Windsor (Kinesiology, Science, Psychology), within Windsor-Essex (Chronic Disease Management Program/Windsor Essex Community Health Centre, Cardiac Wellness Program/Hotel Dieu Grace Hospital, Windsor Regional Cancer Centre, St. Clair College), and within the national (Western University, Brock University, McMaster University) and international (USA: University of Michigan, Wayne State University, Henry Ford Health System; UK: Greenwich University, University of Northampton; Australia: University of New England; Uganda: Soft Power Health, Makerere University, Ugandan Ministry of Health) medical and physiology communities. These ongoing partnerships have played an integral role in developing the course content and evaluation format.

C.1.2 Extent of Reliance on Adjunct, Limited-term, and Sessional Faculty in Delivering the Revised Program

Describe the area's expected reliance on, and the role of adjunct, limited-term, and sessional faculty in delivering the new course.

None.

PROGRAM DEVELOPMENT COMMITTEE

NEW COURSE PROPOSALS

FORM D

C.2 Resource Implications for Other Campus Units (Ministry sections 3 and 4)

Describe the reliance of the proposed new course on existing resources from other campus units, including for example: faculty teaching, equipment or facilities outside the proposer’s control, external resources requiring maintenance or upgrading using external resources
Provide relevant details.

All of the resources needed for the successful completion of this course are located within the Department of Kinesiology.

C.3 Anticipated New Resources (QAF sections 2.1.7, 2.1.8 and 2.1.9; Ministry section 4)

*List all **anticipated new resources** originating from within the area, department or faculty (external grants, donations, government grants, etc.) and committed to supporting the new course.*

None.

C.4 Planned Reallocation of Resources and Cost-Savings (QAF section 2.1.7 and 2.1.9; Ministry section 4)

Describe all opportunities for internal reallocation of resources and cost savings identified and pursued by the area/department in support of the new course. (e.g., streamlining existing programs and courses, deleting courses, etc.).

None.

C.5 Additional Resources Required – Resources Requested (QAF section 2.1.7 and 2.1.9)

*Describe all **additional faculty, staff and GA/TA resources** (in all affected areas and departments) required to offer the new course.*

Faculty:	None
Staff:	None
GA/TAs:	1 GA is required. This GA would come from our existing graduate cohort.

C.6.1 Additional Institutional Resources and Services Required by all Affected Areas or Departments

*Describe all **additional institutional resources and services** required by all affected areas or departments to offer the new course, including library, teaching and learning support services, student support services, space and facilities, and equipment and its maintenance.*

Library Resources and Services:	None
Teaching and Learning Support:	None
Student Support Services:	None
Space and Facilities:	None
Equipment (and Maintenance):	None

University of Windsor
Program Development Committee

***5.3: Chemistry and Biochemistry (Graduate) - Minor Program Change (Form C)**

Item for: **Approval**

MOTION: That the program requirements for the Master of Science (MSc) be changed in accordance with the program/course change forms.^

^Subject to approval of the expenditures required.

Rationale/Approvals:

- The proposal has been approved by the Department of Chemistry and Biochemistry, the Faculty of Science Coordinating Council and the Faculty of Graduate Studies Council.
- *See attached.*

PROGRAM DEVELOPMENT COMMITTEE

MINOR PROGRAM CHANGES

FORM C

University policy states that students may follow the academic rules and program regulations set out in the calendar of the term in which they were first admitted to a program or any subsequent calendar. In light of this, students already in the program must be permitted to complete the degree requirements according to the calendar of the term in which they enrolled (or any subsequent calendar). If courses are no longer available, appropriate substitutes must be made.

TITLE OF PROGRAM(S)/CERTIFICATE(S):	Master of Science (MSc)
DEPARTMENT(S)/SCHOOL(S):	Chemistry and Biochemistry
FACULTY(IES):	Science

Proposed change(s) effective as of* [Fall, Winter, Spring]: <i>*(subject to timely and clear submission)</i>	Winter 2020
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A.1 PROGRAM REQUIREMENT CHANGES

Please provide the current program requirements and the proposed new program requirements by cutting and pasting from the current undergraduate or graduate web calendar (www.uwindsor.ca/secretariat/calendars) and clearly marking deletions with strikethrough (~~strikethrough~~) and additions/new information with **bolding and underlining**. Example: Degree requirements: 00-100, ~~00-101~~, 00-110, 00-210, 00-310, 00-410, plus three additional courses at the **300-level or** 400-level.

Chemistry and Biochemistry

In addition to the University's general requirements and stipulations for the Master's degree, the following requirements must be met by students proceeding to the M.Sc. degree.

1) *Course Work:* ~~Candidates~~ **Students** must **successfully** complete ~~successfully~~ at least three courses. **Two courses must be taken from Chemistry and/or Biochemistry, and the third from a cognate area. Cognate courses must be approved by the Graduate Program Committee of the Department of Chemistry and Biochemistry.** ~~chosen from the available graduate offerings in the student's field or from related and cognate courses, with the approval of the Program Committee.~~ The student may be required to take additional courses, as stipulated by the student's Master's committee.

2) *Seminars:* In addition to the above course work, students must attend the regular departmental Seminar (CHEM-8900) throughout their M.Sc. studies as a fulfilment of this requirement.

3) *Thesis:* A student must undertake original research and embody the results in a thesis (CHEM-8970). The student will then be examined by a committee.

A student who fails to achieve satisfactory performance in all aspects of the program (e.g., course work, seminars, thesis work or major critique) may be required to withdraw.

4) *Master's Committee and Final Examinations:* The Master's committee is chosen in the manner described under Master's Program Requirements. The final examination will take the form of an open seminar in the presence of the Master's committee. The examination will be open to the public.

PROGRAM DEVELOPMENT COMMITTEE

MINOR PROGRAM CHANGES

FORM C

A.2 MINOR COURSE CHANGES REQUIRING ADDITIONAL RESOURCES OR AFFECTING DEGREE REQUIREMENTS

*If this is a minor course and calendar change (usually noted on a Form E) requiring additional resources or affecting degree requirements, please provide the current course information and the proposed new course information by cutting and pasting from the current undergraduate or graduate web calendar and clearly marking deletions with strikethrough (~~strikethrough~~) and additions/new information with **bolding and underlining**. Examples of minor course changes include: deleting courses, course description changes, pre/anti/co- requisite changes, contact hour/lab requirement changes, course title changes, renumbering courses, and/or cross-listing courses. Minor course calendar changes, which do not require additional resources or do not affect degree requirements, should be submitted on a **Form E**.*

N/A

B. RATIONALE

Please provide a rationale for the proposed change(s).

The change is to give students more freedom to take a course relevant to their study, but outside the Department of Chemistry and Biochemistry.

B.1 Indigenous (First Nations, Métis, or Inuit) Content, Perspectives, or Material

The University of Windsor is committed to building stronger, more meaningful partnerships with Indigenous students, scholars and communities. In revising this program(s), how has consideration been given to incorporating Indigenous (First Nations, Métis, or Inuit) content, perspectives, or material into the curriculum?

Not relevant to the requested change.

C. RESOURCES

C.1 Available Faculty and Staff Resources (QAF sections 2.1.7, 2.1.8, 2.1.9 and 2.1.10)

Describe, in general terms, all faculty and staff resources (e.g., administrative, teaching, supervision) from all affected areas/departments currently available and actively committed to support the program change(s). Please do not name specific individuals.

N/A

C.1.1 Faculty Expertise in Support of the Revised Program

Provide an assessment of faculty expertise available and committed to actively support the revised program. Please do not name specific individuals.

N/A

C.1.2 Extent of Reliance on Adjunct, Limited-term, and Sessional Faculty in Delivering the Revised Program

Describe the area's expected reliance on, and the role of adjunct, limited-term, and sessional faculty in delivering the revised program.

N/A

C.1.3 Graduate Faculty Qualifications and Supervisory Loads (FOR GRADUATE PROGRAMS ONLY)

Explain how supervisory loads will be distributed, and describe the qualifications and appointment status of faculty who will provide instruction and supervision in the revised program.

N/A

C.1.4 Financial Assistance for Graduate Students (where appropriate) (FOR GRADUATE PROGRAMS ONLY)

Where appropriate to the revised program, provide evidence that financial assistance for graduate students will be sufficient to ensure adequate quality and numbers of students.

PROGRAM DEVELOPMENT COMMITTEE

MINOR PROGRAM CHANGES

FORM C

N/A

C.2 Other Available Resources (Ministry sections 3 and 4)

Provide evidence that there are adequate resources available and committed to the revised program to sustain the quality of scholarship produced by undergraduate students as well as graduate students' scholarship and research activities, including for example: staff support, library, teaching and learning support, student support services, space, equipment, facilities, GA/TA

N/A

C.3 Resource Implications for Other Campus Units (Ministry sections 3 and 4)

Describe the reliance of the proposed program revisions on existing resources from other campus units, including for example: existing courses, equipment or facilities outside the proposer's control, external resources requiring maintenance or upgrading using external resources
Provide relevant details.

N/A

C.4 Anticipated New Resources (QAF sections 2.1.7, 2.1.8 and 2.1.9; Ministry section 4)

*List all **anticipated new resources** originating from within the area, department or faculty (external grants, donations, government grants, etc.) and committed to supporting the revisions to this program.*

N/A

C.5 Planned Reallocation of Resources and Cost-Savings (QAF section 2.1.7 and 2.1.9; Ministry section 4)

Describe all opportunities for internal reallocation of resources and cost savings identified and pursued by the area/department in support of the revisions to this program. (e.g., streamlining existing programs and courses, deleting courses, etc.).

N/A

C.6 Additional Resources Required – Resources Requested (QAF section 2.1.7 and 2.1.9)

*Describe all **additional faculty, staff and GA/TA resources** (in all affected areas and departments) required to run the revised program.*

Faculty:	N/A
Staff:	N/A
GA/TAs:	N/A

C.6.1 Additional Institutional Resources and Services Required by all Affected Areas or Departments

*Describe all **additional institutional resources and services** required by all affected areas or departments to run the revised program, including library, teaching and learning support services, student support services, space and facilities, and equipment and its maintenance.*

Library Resources and Services:	N/A
Teaching and Learning Support:	N/A
Student Support Services:	N/A
Space and Facilities:	N/A
Equipment (and Maintenance):	N/A

University of Windsor
Program Development Committee

***5.4 Psychology (Graduate) – New Course Proposal**

Item for: Approval

**MOTION: That the following courses addition be approved:^
PSYC-9050. Preparing for Clinical Internships**

^Subject to approval of expenditures required.

Rationale/Approvals

- The change has been approved by the Department of Psychology Council, the Faculty of Arts, Humanities and Social Sciences Council, Faculty of Graduate Studies Council.
- *See attached.*

**PROGRAM DEVELOPMENT COMMITTEE
NEW COURSE PROPOSALS
FORM D**

TITLE OF PROGRAM(S)/CERTIFICATE(S):	Clinical Psychology
DEPARTMENT(S)/SCHOOL(S):	Psychology
FACULTY(IES):	Arts, Humanities, & Social Sciences

Proposed change(s) effective as of* [Fall, Winter, Spring]: <i>*(subject to timely and clear submission)</i>	Winter 2020
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A. NEW COURSE PROFILE

Course # and Title: PSYC-9050. Preparing for Clinical Internships

A.1 Calendar Description

Calendar descriptions should be written in the third person and should provide a general outline of the course material. Where appropriate, examples of topics or themes, which might be covered in the course, should also be provided.

This one-term course is intended to assist students with their development and submission of written applications and preparation for the interviews that occur in the process of obtaining required one-year pre-doctoral internships in CPA- or APA-accredited clinical settings. (Prerequisites: completion of all required courses and practica, acceptance of dissertation proposal by the preceding June 15, consent of Director of Clinical Training.) (1.5 hours per week, graded P/F)

A.2 Other Course Information

Please complete the following tables.

Credit weight	Total contact hours	Delivery format				Breakdown of contact hours/week			
		In-class	e-learning	Distance	Other flexible learning delivery <i>[please specify]</i>	Lecture	Lab/Tutorial	Online	Co-op/practicum/experiential learning
1.5	18	Seminar				1.5			

Pre-requisites	Co-requisites	Anti-requisites	Cross-listed with:	Required course?	Replacing old course*** <i>[provide old course number]</i>

*****Replacing Old Course: this does not mean that the former course will be deleted from the calendar. If it is to be deleted, a Form E must be completed.**

Will students be able to obtain credit for the new course and the course(s) that it is replacing?

B. RATIONALE

B.1 Course Goal(s)

Please provide a statement about the purpose of the course within the program of study or as an option.

PROGRAM DEVELOPMENT COMMITTEE

NEW COURSE PROPOSALS

FORM D

The internship preparation course is designed to facilitate timely completion of the multiple components of applications and interview preparations for very competitive one-year full-time internship placements that are required for all advanced PhD students in the clinical psychology program, and to give students formal credit for all the work entailed.

B.2 Indigenous (First Nations, Métis, or Inuit) Content, Perspectives, or Material

The University of Windsor is committed to building stronger, more meaningful partnerships with Indigenous students, scholars and communities. In developing this course, how has consideration been given to incorporating Indigenous (First Nations, Métis, or Inuit) content, perspectives, or material into the curriculum?

This course entails explicit articulation of previous training experiences and goals for internship training that involve diverse populations, including indigenous populations.

B.3 LEARNING OUTCOMES (QAF section 2.1.1, 2.1.3, and 2.1.6)

*Please complete the following table. State the specific learning outcomes that make up the goal of the course (what will students know and be able to do at the end of this course?) and link the learning outcomes to the Characteristics of a University of Windsor Graduate outlined in "To Greater Heights" by listing them in the appropriate rows. Please note that a learning outcome may link to more than one of the specified Characteristics of a University of Windsor Graduate, and that a single course might not touch on each of the Characteristics. **If a specific learning outcome is not applicable for the course, please enter N/A or not applicable.** Information on learning outcomes is appended to this form (Appendix A). Proposers are also strongly encouraged to contact the Centre for Teaching and Learning for assistance with the articulation of learning outcomes.*

Learning Outcomes This is a sentence completion exercise. At the end of the course, the successful student will know and be able to:	Characteristics of a University of Windsor Graduate A U of Windsor graduate will have the ability to demonstrate
A. Follow guidelines and procedures for writing and submitting quality internship applications by posted deadlines.	A. the acquisition, application and integration of knowledge
B. Access, retrieve and review information describing multiple possible internship programs	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
C. Evaluate training opportunities described in internship manuals and websites and assess the extent to which various placements "fit" with personal career aspirations and goals for internship training.	C. critical thinking and problem-solving skills
D. Demonstrate good understanding of written guidelines for internship applications, and accuracy in reporting accrued practicum hours.	D. literacy and numeracy skills
E. Demonstrate honest self-assessment of current knowledge and skills by identifying strengths, weaknesses, and gaps in training; articulating personal learning goals that will facilitate professional development, independence, and readiness for entry into the profession.	E. responsible behaviour to self, others and society
F. Write effective curriculum vitae, personal essays, and cover letters required for internship applications.	F. interpersonal and communications skills
Seek and incorporate feedback from peers, advisors, and the instructor on all components of the written application.	

**PROGRAM DEVELOPMENT COMMITTEE
NEW COURSE PROPOSALS
FORM D**

G. Contribute to personal and professional development of other students in the class by engaging in discussion, offering assistance and constructive feedback related to others' applications and internship training goals, and participating in interview role-plays.	G. teamwork, and personal and group leadership skills
H. Produce components of application that reflect individually unique essays and responses to interview questions that are compelling to others	H. creativity and aesthetic appreciation
I. Produce written applications that include articulation of values and aspirations related to continuous professional learning and development.	I. the ability and desire for continuous learning

B.4 Demand for Course

Please provide as much information on projected enrolment as possible.

Projected enrolment levels for the first 5 years of the new course. (offered every 3 years in rotation with other options – option enrollment is normally between 8-15 given our fluctuating cohort size)	Year 1	Year 2	Year 3	Year 4	Year 5
	10	8-15	8-15	8-15	8-15

B.4.1 Impact of New Course on Enrolment in Existing Courses

What will be the impact of offering the new course on enrolments in existing courses in the program or Department?

There will be no impact on enrolments in existing courses in the program or Department. We are simply assigning credit to be reflected on student transcripts, for work that all clinical students are required to do under the direction and supervision of the Director of Clinical Training during the APPIC internship application and interview process.

B.5 Student Workload

*Provide information on the expected workload per week of a student enrolled in this course.
NOTE: Student workload should be consistent with the credit weight assigned to the course.*

Average number of hours per week that the student will be expected to devote to:	
1.5	Lectures
	Tutorials
	Labs
	Practical experience
1	Independent Study
.5	Reading for the course
1.5	Work for assessment (essays, papers, projects, laboratory work)
	Meeting with others for group work/project assignments
	Studying for tests/examinations
.5	Other: <i>[specify]</i> Practice responding to anticipated interview questions with peers and faculty.
How does the student workload for this course compare with other similar courses in the department/program area?	
About half as much work as 3 credit courses offered in the graduate program.	

PROGRAM DEVELOPMENT COMMITTEE

NEW COURSE PROPOSALS

FORM D

RESOURCES

C.1 Available Faculty and Staff Resources (QAF sections 2.1.7, 2.1.8, 2.1.9 and 2.1.10)

Describe, in general terms, all faculty and staff resources (e.g., administrative, teaching, supervision) from all affected areas/departments currently available and actively committed to support the new course). Please do not name specific individuals.

This will be taught every year by the faculty member who is the current Director of Clinical Training, as part of their regular teaching load.

C.1.1 Faculty Expertise in Support of the Revised Program

Provide an assessment of faculty expertise available and committed to actively support the new course. Please do not name specific individuals.

The faculty member must occupy the role of Director of Clinical Training – the faculty member responsible for affirming student eligibility and readiness for internship and be familiar with the Association of Psychology Post-doctoral and Internship Centers (APPIC) application procedures.

C.1.2 Extent of Reliance on Adjunct, Limited-term, and Sessional Faculty in Delivering the Revised Program

Describe the area’s expected reliance on, and the role of adjunct, limited-term, and sessional faculty in delivering the new course.

There will be no reliance upon adjunct, limited-term, or sessional faculty in the delivery of this course.

C.2 Resource Implications for Other Campus Units (Ministry sections 3 and 4)

Describe the reliance of the proposed new course on existing resources from other campus units, including for example: faculty teaching, equipment or facilities outside the proposer’s control, external resources requiring maintenance or upgrading using external resources. Provide relevant details.

None.

C.3 Anticipated New Resources (QAF sections 2.1.7, 2.1.8 and 2.1.9; Ministry section 4)

*List all **anticipated new resources** originating from within the area, department or faculty (external grants, donations, government grants, etc.) and committed to supporting the new course.*

None.

C.4 Planned Reallocation of Resources and Cost-Savings (QAF section 2.1.7 and 2.1.9; Ministry section 4)

Describe all opportunities for internal reallocation of resources and cost savings identified and pursued by the area/department in support of the new course. (e.g., streamlining existing programs and courses, deleting courses, etc.).

None.

C.5 Additional Resources Required – Resources Requested (QAF section 2.1.7 and 2.1.9)

*Describe all **additional faculty, staff and GA/TA resources** (in all affected areas and departments) required to offer the new course.*

Faculty:	n/a
Staff:	n/a
GA/TAs:	n/a

C.6.1 Additional Institutional Resources and Services Required by all Affected Areas or Departments

**PROGRAM DEVELOPMENT COMMITTEE
NEW COURSE PROPOSALS
FORM D**

*Describe all **additional institutional resources and services** required by all affected areas or departments to offer the new course, including library, teaching and learning support services, student support services, space and facilities, and equipment and its maintenance.*

Library Resources and Services:	Some new books may be requested.
Teaching and Learning Support:	n/a
Student Support Services:	n/a
Space and Facilities:	n/a
Equipment (and Maintenance):	n/a

**University of Windsor
Program Development Committee**

***5.5: Masters and Doctoral – Program Requirements - Minor Program Change (Form C)**

Item for: **Approval**

MOTION: That the program requirements for the Masters and Doctoral Committees be changed in accordance with the program/course change forms*.

**Subject to approval of the expenditures required.*

Rationale/Approvals:

- The proposal has been approved by the Faculty of Graduate Studies Council.
- *See attached.*

PROGRAM DEVELOPMENT COMMITTEE MINOR PROGRAM CHANGES FORM C

TITLE OF PROGRAM(S)/CERTIFICATE(S):	Program Requirements for Master's and Doctoral Committees
DEPARTMENT(S)/SCHOOL(S):	N/A
FACULTY(IES):	Faculty of Graduate Studies

Proposed change(s) effective as of* [Fall, Winter, Spring]: <i>*(subject to timely and clear submission)</i>	Winter 2020
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A.1 PROGRAM REQUIREMENT CHANGES

Please provide the current program requirements and the proposed new program requirements by cutting and pasting from the current undergraduate or graduate web calendar (www.uwindsor.ca/secretariat/calendars) and clearly marking deletions with strikethrough (~~strikethrough~~) and additions/new information with **bolding and underlining**.

Example:
Degree requirements: WXYZ-1000, ~~WXYZ-1010~~, WXYZ-1100, WXYZ-2100, WXYZ-3100, WXYZ-4100, plus three additional courses at the **3000-level or** 4000-level.

Program Requirements for the Master's Degree:

[...]

Committees: Research undertaken as part of a Master's program is normally directed by a faculty supervisor and advised by a Master's committee. By the end of the first term of registration in the thesis, the program will recommend the appointment of members of the Master's committee, whose appointments must be approved by the Faculty of Graduate Studies. At the same time the candidate will be required to validate the *Non-Exclusive License to the University of Windsor* authorizing the University to archive, reproduce, and distribute the thesis.

The Master's thesis committee will include as a minimum ~~an advisor~~ **a research supervisor or co-supervisors** from the program, who is **(are)** a member of graduate faculty, ~~and two~~ **one other program reader, and one outside program reader from the University of Windsor.** ~~faculty members, one of whom shall belong to a program other than the one in which the student is obtaining the degree.~~ **The outside program reader may not be cross appointed to the program in which the student is registered.** Additional members may be added with the approval of the program and the Faculty of Graduate Studies.

The majority of the members of an advisory committee must have graduate faculty status and the supervisor must have **full** graduate faculty status. In the case of co-supervision one of the co-supervisors must have **full** graduate faculty status, see Senate Policy on Graduate Faculty Designation.

[...]

Program Requirements for the Degree of Doctor of Philosophy

[...]

Committees: Research undertaken as part of a doctoral program is normally directed by a faculty supervisor and advised by a doctoral committee.

PROGRAM DEVELOPMENT COMMITTEE MINOR PROGRAM CHANGES FORM C

By the end of the first term of registration in the dissertation, the program will recommend the appointment of members of the doctoral committee, whose appointments must be approved by the Faculty of Graduate Studies. At the same time the candidate will be required to validate the *Non-Exclusive License to the University of Windsor* authorizing the University to archive, reproduce, and distribute the dissertation.

The doctoral committee will consist of a research advisor from the program, who is a member of graduate faculty, two other faculty members in the program, and one from another program area at the University of Windsor. Additional members may be added with the approval of the program and the Faculty of Graduate Studies. This committee will, from time to time, review the student's progress.

The doctoral committee will **include as a minimum** ~~consist of~~ a research advisor **supervisor or co-supervisors** from the program, who is(are) a member of graduate faculty, two other ~~faculty members in the program~~ **program readers**, and one ~~from another~~ **outside** program area **reader** ~~at from~~ the University of Windsor. **The outside program reader may not be cross appointed to the program in which the student is registered.** Additional members may be added with the approval of the program and the Faculty of Graduate Studies. This committee will, from time to time, review the student's progress.

The majority of the members of an advisory committee must have graduate faculty status and the supervisor must have **full** graduate faculty status. In the case of co-supervision one of the co-supervisors must have **full** graduate faculty status, see **Senate Policy on Graduate Faculty Designation**.

[...]

A.2 MINOR COURSE CHANGES REQUIRING ADDITIONAL RESOURCES OR AFFECTING DEGREE REQUIREMENTS

*If this is a minor course and calendar change (usually noted on a Form E) requiring additional resources or affecting degree requirements, please provide the current course information and the proposed new course information by cutting and pasting from the current undergraduate or graduate web calendar and clearly marking deletions with strikethrough (~~strikethrough~~) and additions/new information with **bolding and underlining**.*

*Examples of minor course changes include: deleting courses, course description changes, pre/anti/co- requisite changes, contact hour/lab requirement changes, course title changes, renumbering courses, and/or cross-listing courses. Minor course calendar changes, which do not require additional resources or do not affect degree requirements, should be submitted on a **Form E**.*

N/A

B. RATIONALE

Please provide a rationale for the proposed change(s).

The two paragraphs being revised reflect the calendar language for master's thesis committees and doctoral dissertation committees. The changes will clarify the role of cross-appointed faculty members on supervisory committees, and reflect current practice.

B.1 Indigenous (First Nations, Métis, or Inuit) Content, Perspectives, or Material

The University of Windsor is committed to building stronger, more meaningful partnerships with Indigenous students, scholars and communities. In revising this program(s), how has consideration been given to incorporating Indigenous (First Nations, Métis, or Inuit) content, perspectives, or material into the curriculum?

The committee approval process allows for the inclusion of additional members to the students' committees. These additional members may come from within the University or from outside the University, as deemed appropriate by the AAU.

PROGRAM DEVELOPMENT COMMITTEE

MINOR PROGRAM CHANGES

FORM C

C. RESOURCES

C.1 Available Faculty and Staff Resources (QAF sections 2.1.7, 2.1.8, 2.1.9 and 2.1.10)

Describe, in general terms, all faculty and staff resources (e.g., administrative, teaching, supervision) from all affected areas/departments currently available and actively committed to support the program change(s). Please do not name specific individuals.

There are sufficient faculty and staff resources for the changes to the program requirements.

C.1.1 Faculty Expertise in Support of the Revised Program

Provide an assessment of faculty expertise available and committed to actively support the revised program. Please do not name specific individuals.

There is sufficient faculty expertise.

C.1.2 Extent of Reliance on Adjunct, Limited-term, and Sessional Faculty in Delivering the Revised Program

Describe the area's expected reliance on, and the role of adjunct, limited-term, and sessional faculty in delivering the revised program.

N/A

C.1.3 Graduate Faculty Qualifications and Supervisory Loads (FOR GRADUATE PROGRAMS ONLY)

Explain how supervisory loads will be distributed, and describe the qualifications and appointment status of faculty who will provide instruction and supervision in the revised program.

N/A

C.1.4 Financial Assistance for Graduate Students (where appropriate) (FOR GRADUATE PROGRAMS ONLY)

Where appropriate to the revised program, provide evidence that financial assistance for graduate students will be sufficient to ensure adequate quality and numbers of students.

N/A

C.2 Other Available Resources (Ministry sections 3 and 4)

Provide evidence that there are adequate resources available and committed to the revised program to sustain the quality of scholarship produced by undergraduate students as well as graduate students' scholarship and research activities, including for example: staff support, library, teaching and learning support, student support services, space, equipment, facilities, GA/TA

N/A

C.3 Resource Implications for Other Campus Units (Ministry sections 3 and 4)

Describe the reliance of the proposed program revisions on existing resources from other campus units, including for example: existing courses, equipment or facilities outside the proposer's control, external resources requiring maintenance or upgrading using external resources. Provide relevant details.

N/A

C.4 Anticipated New Resources (QAF sections 2.1.7, 2.1.8 and 2.1.9; Ministry section 4)

*List all **anticipated new resources** originating from within the area, department or faculty (external grants, donations, government grants, etc.) and committed to supporting the revisions to this program.*

N/A

PROGRAM DEVELOPMENT COMMITTEE MINOR PROGRAM CHANGES FORM C

C.5 Planned Reallocation of Resources and Cost-Savings (QAF section 2.1.7 and 2.1.9; Ministry section 4)

Describe all opportunities for internal reallocation of resources and cost savings identified and pursued by the area/department in support of the revisions to this program. (e.g., streamlining existing programs and courses, deleting courses, etc.).

N/A

C.6 Additional Resources Required – Resources Requested (QAF section 2.1.7 and 2.1.9)

*Describe all **additional faculty, staff and GA/TA resources** (in all affected areas and departments) required to run the revised program.*

Faculty:	N/A
Staff:	N/A
GA/TAs:	N/A

C.6.1 Additional Institutional Resources and Services Required by all Affected Areas or Departments

*Describe all **additional institutional resources and services** required by all affected areas or departments to run the revised program, including library, teaching and learning support services, student support services, space and facilities, and equipment and its maintenance.*

Library Resources and Services:	N/A
Teaching and Learning Support:	N/A
Student Support Services:	N/A
Space and Facilities:	N/A
Equipment (and Maintenance):	N/A

**University of Windsor
Program Development Committee**

5.6: **Waiver of Program Deletion for One Year – Honours Anthropology and Combined Honours Anthropology**

Item for: **Approval**

MOTION: That Sociology, Anthropology and Criminology be given a one-year waiver of the deletion of the Honours Anthropology and Combined Honours degree programs. ^

^Subject to the approval of expenditures required.

- Rationale/Approvals:** Based on the application of the Senate Policy on Course and Program Changes and using official enrolment numbers generated by the Institutional Analysis, the department was notified that Honours Anthropology and Combined Honours is marked for deletion, unless successfully appealed.
- The Senate Policy states that “where an undergraduate program does not have more than a total of the equivalent of five full-time students for three successive years or not more than ten for five successive years, the program should be deleted.”
 - The request been approved by the Department of Sociology, Anthropology, and Criminology, and the Faculty of Arts, Humanities and Social Sciences Council.
 - *See attached.*

APPEAL TO PDC REGARDING THE DELETION OF THE PROGRAM

Title of Program identified for deletion under the Policy on Course and Program Changes: BA (Honours)

Anthropology; Combined BA (Honours) Anthropology

Department/School: Department of Sociology, Anthropology, and Criminology

Faculty: Faculty of Arts, Humanities, and Social Sciences

1. The appeal is to: (please check one of the following)

- remove the enrolment threshold from the program (provide rationale below);
- extend the time for the program to meet the enrolment threshold (especially for new programs) (provide rationale below); or
- xx extend the time before the program must be deleted in order to provide the affected program additional time to devise alternative programming or prepare for program deletion (provide rationale below)

Rationale:

2a. What is the impact of maintaining the program on the academic viability or quality of other programs (within and outside the AAU)? (i.e., financial and human resource implications)

There are no financial obligations to maintaining these programs. There are also no human resource implications as all program coursework is already offered through department's usual suite of courses.

2b. What is the impact of deleting the program on the academic viability or quality of other programs (within and outside the AAU)? (i.e., financial and human resource implications)

Deletion of program will have a direct negative impact on enrollment in Forensics and Arts and Science programs and an indirect negative impact on criminology and sociology undergraduate and graduate enrollment.

Arts and Science Students are typically exceptional students whom the University wants to recruit. They enrich learning in their classes. Although the Combined B.A. Honours in Forensics has been moved to the Faculty of Science, FAHSS is still very much involved in this combined major program. Students in it must pick a second major from FAHSS to fulfil degree requirements. Forensics has long been a core field in the broader discipline of anthropology, and the department has an accomplished forensic anthropologist actively involved with these students. The anthropology program at Windsor thus offers them an excellent second major in FAHSS.

3. What is the impact of maintaining or deleting the program on special populations?

Deleting the program will have an indirect but significant negative impact on the university's relationships with First Nations communities in the area and Windsor Police Service. The discipline of anthropology has always maintained close relations with First Nation and forensic anthropology, in particular, has worked closely with police investigation.

4. What is the academic uniqueness or exceptional quality of the program to be deleted?

Anthropology is the nexus of Arts, Humanities, Social Science and Science. Deletion of the program will lead to the deletion of a focal point for interdisciplinary studies and learning. Anthropology also centres its attention on conditions of social marginalization around the world, so the student body would lose a significant portion of that knowledge in their education.

5. Other information the AAU wishes PDC to take into consideration when reviewing the appeal of the program deletion:

The program was slated for deletion while the only two anthropologists in the department were on parental leave and/or on sabbatical. However, since their return, two additional anthropologists have been hired bringing the total to four full-time anthropologists. The first new appointment is permanent, starting on January 1st, 2016 (and on sabbatical during the 2019 calendar year). The second is tenure-track, starting on January 1st, 2018. The department needs time to develop a strategy to move forward and increase enrollment. The waiver we are requesting would cover the time period of one year.

University of Windsor
Program Development Committee

*5.7 Computer Science (Graduate) Summary of Minor Course and Calendar Changes

Item for: *Information*

Forwarded by: School of Computer Science

<p>Please specify to which calendar [Undergraduate or Graduate] the changes will be made. Include the effective date* [Fall, Winter, Spring, 20XX]. *(subject to timely and clear submission)</p> <p>These changes require no new resources.</p>	<p>Winter 2020</p>
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A. Proposed Course Calendar Revisions

<p><i>Please provide the current and the proposed new course information by cutting and pasting from the current undergraduate or graduate online calendar (www.uwindsor.ca/secretariat/calendars) and clearly marking deletions with strikethrough (strikethrough) and additions/new information with bolding and underlining.</i></p> <p><i>For contact hour/laboratory requirement changes which do not always appear in the calendar, please type in the current information and clearly mark deletions with strikethrough (strikethrough) and additions/new information with bolding and underlining.</i></p> <p><i>Example: 03-101. University Senates — Role and Power—This course explores the history, role, and power of Senates in Canadian universities. (Also offered as 04-101.) (Prerequisite: 03-100.) 2 lecture hours and 1 tutorial hour per week <u>3 lecture hours/week</u></i></p>

COMP-8590. **Statistical** Machine Learning and Optimization
Focusing on several central statistical learning problems, this ~~This~~ course presents **introduces the** important machine **elements of statistical** learning techniques. **Statistical learning refers to a set of tools for modelling and understanding complex datasets. It blends Statistics with methods in machine learning, and its main goal is to “learn from the data”; that is: to extract important patterns and trends from the data, and understand “what the data says”.** such as supervised, semi-supervised, and unsupervised learning, and probabilistic model building; topics include decision trees, neural networks, Bayesian learning, instance based learning, and reinforcement learning. Optimization topics include: simulated annealing, tabu search or evolutionary algorithms, gradient methods, constraint optimization, ant-colony optimization, and other heuristic search methods. Efficiencies and limitations of each of these will be discussed and the correlation between the different approaches will be highlighted. **Topics include: linear methods for regression, linear methods for classification; resampling methods, model assessment and selection, regularization; non-linear models, basis expansions; tree-based methods; support vector machines, kernel methods; unsupervised learning. Additional topics may include: matrix factorization methods; network-based machine learning; kernel smoothing methods; model inference and averaging; boosting methods; neural networks; prototype methods; ensemble learning; graphical models; high-dimensional problems. The legal, societal and ethical implications of artificial intelligence and machine learning are also discussed.** (Prerequisite: B.Sc. [Hons, Computer Science] or with the permission of the instructor.)

COMP-8610. ~~Artificial~~ Neural Networks **and Deep Learning**
This course introduces the fundamentals of ~~Artificial N~~neural Nnetworks **and deep learning**. ~~Standard n~~Neural network architectures are discussed along with their associated set of learning algorithms. ~~Application classes of~~

PROGRAM DEVELOPMENT COMMITTEE

SUMMARY OF COURSE AND CALENDAR CHANGES

FORM E

~~neural networks are also presented. Topics include: supervised and unsupervised learning, associative learning, competitive learning, probably approximately correct learning, adaptive learning, pattern recognition, linear separability, gradient-descent and optimization. Students will be required to investigate selected architectural and/or shallow and deep learning models of some neural networks, including autoencoders; and convolutional, recurrent, recursive, adversarial and probabilistic networks. Applications of deep learning to computer vision, speech recognition, natural language processing, and others. The legal, societal and ethical implications of artificial intelligence and machine learning are also discussed.~~ classes of neural networks are also presented. Topics include: supervised and unsupervised learning, associative learning, competitive learning, probably approximately correct learning, adaptive learning, pattern recognition, linear separability, gradient descent and optimization. Students will be required to investigate selected architectural and/or learning models of some neural networks. (Prerequisite: B.Sc. [Hons, Computer Science] or with the permission of the instructor.)

COMP-8740. Machine Learning and Pattern Recognition

This course is a general introduction to ~~M~~machine ~~L~~earning and ~~P~~pattern ~~R~~ecognition. Topics may include: Bayesian learning, estimation, distance-based models, linear methods, support vector machines, kernels, dimensionality reduction, feature extraction and selection, clustering, performance evaluation, regression, representation learning, regularization, decision trees, random forest, neural networks and deep learning models. **Topics also include the legal, societal and ethical implications of machine learning and pattern recognition. Applications in bioinformatics, genomics, networks, computer vision, speech, and natural language may be discussed.** (Prerequisite: B.Sc. (Hons., Computer Science) or permission of instructor.)

A.1 Indigenous (First Nations, Métis, or Inuit) Content, Perspectives, or Material

The University of Windsor is committed to building stronger, more meaningful partnerships with Indigenous students, scholars and communities. In revising this/these course(s), how has consideration been given to incorporating Indigenous (First Nations, Métis, or Inuit) content, perspectives, or material into the curriculum?

Indigenous students are encouraged to take this course to strengthen its diversity.

B. Learning Outcomes for EACH Course Listed Above

*Please complete the following table. State the specific learning outcomes that make up the goal of the course (what will students know and be able to do at the end of this course?) and link the learning outcomes to the Characteristics of a University of Windsor Graduate outlined in "To Greater Heights" by listing them in the appropriate rows. Please note that a learning outcome may link to more than one of the specified Characteristics of a University of Windsor Graduate, and that a single course might not touch on each of the Characteristics. **If a specific learning outcome is not applicable for the course, please enter N/A or not applicable.** Proposers are strongly encouraged to contact the Centre for Teaching and Learning for assistance with the articulation of learning outcomes. **Where there are changes to the learning outcomes, please clearly mark deletions with strikethrough (~~strikethrough~~) and additions/new information with bolding and underlining.** COPY AND PASTE THE FOLLOWING ROW and TABLE, AND COMPLETE THEM FOR EACH COURSE LISTED ABOVE.*

**PROGRAM DEVELOPMENT COMMITTEE
SUMMARY OF COURSE AND CALENDAR CHANGES
FORM E**

COURSE NUMBER AND TITLE:	COMP-8590. <u>Statistical</u> Machine Learning and Optimization
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Course Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
At the end of the course, the successful student will know and be able to:	A U of Windsor graduate will have the <u>ability to demonstrate:</u>
A. Apply <u>statistical</u> machine learning concepts and optimization methods to concrete bioinformatics problems.	A. the acquisition, application and integration of knowledge
B. Solving specific bioinformatics problems by using techniques such as microarray data analysis or prediction of protein functions. <u>Define methods for solving classification, clustering, regression and other statistical machine learning problems.</u>	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
C. Use and combine several efficient machine learning and optimization strategies to solve a specific difficulty. <u>Solve practical classification, clustering, and regression problems by using and combining several statistical machine learning approaches.</u>	C. critical thinking and problem-solving skills
D. Write coherently, concisely, and clearly in a range of formats and for a variety of audiences.	D. literacy and numeracy skills
E. <u>Explain the societal, legal and ethical implications of statistical machine learning and optimization.</u>	E. responsible behaviour to self, others and society
F. Present research clearly and respond effectively to critical questions.	F. interpersonal and communications skills
G.	G. teamwork, and personal and group leadership skills
H. <u>Design new algorithms in statistical machine learning.</u> <u>Identify situations in statistical machine learning, and propose solutions.</u>	H. creativity and aesthetic appreciation
I. Describe Understand how new knowledge leads to more efficient approaches and abilities to solve complex problems.	I. the ability and desire for continuous learning

**PROGRAM DEVELOPMENT COMMITTEE
SUMMARY OF COURSE AND CALENDAR CHANGES
FORM E**

COURSE NUMBER AND TITLE:	COMP-8610. Artificial-Neural Networks and Deep Learning
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Course Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
At the end of the course, the successful student will know and be able to:	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
A. <u>Explain artificial neural network or deep learning methods for classification, for regression, and for clustering, and apply them to concrete practical problems.</u>	A. the acquisition, application and integration of knowledge
B. <u>Define artificial neural networks or deep learning methods for solving classification, clustering, regression and optimization problems.</u>	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
C. <u>Solve practical classification, clustering, and regression problems by using and combining several deep learning concepts or strategies.</u>	C. critical thinking and problem-solving skills
D. <u>Write coherently, concisely, and clearly in a range of formats and for a variety of audiences.</u>	D. literacy and numeracy skills
E. <u>Explain the societal, legal and ethical implications of deep learning.</u>	E. responsible behaviour to self, others and society
F. <u>Present research work to computer science audiences, and answer questions.</u>	F. interpersonal and communications skills
G.	G. teamwork, and personal and group leadership skills
H. <u>Design new deep learning approaches.</u> <u>Identify situations in deep learning, and propose solutions.</u>	H. creativity and aesthetic appreciation
I. <u>Identify how good theoretical and practical knowledge of problems leads to efficient machine learning solutions and optimization solutions.</u>	I. the ability and desire for continuous learning

**PROGRAM DEVELOPMENT COMMITTEE
SUMMARY OF COURSE AND CALENDAR CHANGES
FORM E**

COURSE NUMBER AND TITLE:	COMP-8740. Machine Learning and Pattern Recognition
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Course Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of the course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
A. Explain machine learning and pattern recognition methods for classification, clustering, regression and representation learning, and apply them to concrete practical problems.	A. the acquisition, application and integration of knowledge
B. Define methods for solving classification, clustering, regression and representation learning problems.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
C. Solve practical classification, clustering, regression and representation problems by using and combining several machine learning and pattern recognition concepts and strategies.	C. critical thinking and problem-solving skills
D. Write coherently, concisely, and clearly in a range of formats and for a variety of audiences. Write project reports, research articles and survey papers.	D. literacy and numeracy skills
E. <u>Explain the societal, legal and ethical implications of machine learning and pattern recognition.</u>	E. responsible behaviour to self, others and society
F. Present research work to computer science audiences, and answer questions.	F. interpersonal and communications skills
G.	G. teamwork, and personal and group leadership skills
H. Design new algorithms in machine learning and pattern recognition. Identify situations in machine learning and pattern recognition and propose solutions.	H. creativity and aesthetic appreciation
I. Identify how good theoretical and practical knowledge of problems leads to efficient machine learning and pattern recognition solutions.	I. the ability and desire for continuous learning

**University of Windsor
Program Development Committee**

***5.8: Social Work – PhD Program Learning Outcomes**

Item For: **Information**

<p>Program Learning Outcomes (Degree Level Expectations) <i>This is a sentence completion exercise. Please provide a minimum of 1 learning outcome for each of the boxes associated with a graduate attribute.</i></p> <p><u>At the end of this program, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A UWindsor graduate will have the ability to demonstrate:</u></p>	<p>OCGS-approved Graduate Degree Level Expectations</p>
<p>A.</p> <ul style="list-style-type: none"> • Investigate a substantive area relevant to social work policy or practice, including theoretical frameworks, scope, relevance and severity • Identify issues of oppression, how they have been addressed, and the effectiveness of previous efforts • Explore a range of research paradigms, methods and analysis strategies, and make decisions about the appropriateness of each given a particular scenario • Identify appropriate strategies for mobilizing/translating research results to influence positive change in community, program development, and policy • Analyze the emergence and evolution of the social work profession in terms of practice, education, and research 	<p>A. the acquisition, application and integration of knowledge</p>	<ol style="list-style-type: none"> 1. Depth and Breadth of Knowledge 2. Research and Scholarship 3. Level of Application of Knowledge 6. Awareness of Limits of Knowledge
<p>B.</p> <ul style="list-style-type: none"> • Conduct a thorough literature review in a substantive area of interest • Critique existing knowledge and formulate a research question (C) • Develop a research proposal that uses appropriate methods, whether mixed/multi, qualitative or quantitative methods • Competently conduct independent research using at least one research paradigm (mixed/multi or qualitative or quantitative methods) (A) • Interpret quantitative and qualitative research findings 	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>	<ol style="list-style-type: none"> 2. Research and Scholarship 3. Level of Application of Knowledge 6. Awareness of Limits of Knowledge

<p>Program Learning Outcomes (Degree Level Expectations) <i>This is a sentence completion exercise. Please provide a minimum of 1 learning outcome for each of the boxes associated with a graduate attribute.</i></p> <p><u>At the end of this program, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A UWindsor graduate will have the ability to demonstrate:</u></p>	<p>OCGS-approved Graduate Degree Level Expectations</p>
<ul style="list-style-type: none"> • Articulate the implications of the findings for social work research, theory development and practice (A) • Disseminate knowledge gained from empirical research and from conceptual knowledge development (A) 		
<p>C.</p> <ul style="list-style-type: none"> • Critically analyze the literature in a substantive area of interest • Use problem-solving strategies to take a position on a social need and on strategies for addressing that need • Critically analyze the historical context, philosophical assumptions and current debates related to positivist/postpositivist, interpretative, critical. and postmodern paradigms • Examine potential disciplinary and interdisciplinary tensions related to social work theory and contexts of practice and scholarship 	<p>C. critical thinking and problem-solving skills</p>	<ol style="list-style-type: none"> 1. Depth and Breadth of Knowledge 2. Research and Scholarship 3. Level of Application of Knowledge 4. Professional Capacity/autonomy 6. Awareness of Limits of Knowledge
<p>D.</p> <ul style="list-style-type: none"> • Conduct a thorough literature review • Competently use the APA format for writing a paper, a proposal, and a dissertation including citations and the reference list. • Conduct qualitative and quantitative data analysis for a variety of data 	<p>D. literacy and numeracy skills</p>	<ol style="list-style-type: none"> 2. Research and Scholarship 5. Level of Communication Skills
<p>E.</p> <ul style="list-style-type: none"> • Adhere to the Social Work Code of Ethics, UW-REB policies, and Tri-Council policies and other ethical standards related to social work research and practice (e.g., issues of conflict of interest, appropriate authorship, intellectual property attributions) • Use scientific rigor and integrity in obtaining, recording, analyzing, interpreting and reporting data 	<p>E. responsible behaviour to self, others and society</p>	<ol style="list-style-type: none"> 4. Professional Capacity/Autonomy 6. Awareness of Limits of Knowledge
<p>F.</p> <ul style="list-style-type: none"> • Use the communication skills necessary to interact positively with research participants, clients and professionals • Use a range of media to communicate effectively, (orally, in writing, and in visual forms), to a variety 	<p>F. interpersonal and communications skills</p>	<ol style="list-style-type: none"> 5. Level of Communication Skills

<p>Program Learning Outcomes (Degree Level Expectations) <i>This is a sentence completion exercise. Please provide a minimum of 1 learning outcome for each of the boxes associated with a graduate attribute.</i></p> <p><u>At the end of this program, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A UWindsor graduate will have the ability to demonstrate:</u></p>	<p>OCGS-approved Graduate Degree Level Expectations</p>
<p>of audiences both in formal (e.g. debates, seminar/conference presentations, publishable manuscripts) and in informal (e.g. interaction with other students, faculty) contexts</p> <ul style="list-style-type: none"> • Listen to and receive feedback from peers, supervisors, and other researchers • Prepare to write research proposals, grant proposals and complete Research Ethics Board applications 		
<p>G.</p> <ul style="list-style-type: none"> • Use leadership skills, articulate a vision, identify problems and solutions, empower and enable others and/or facilitate teamwork (F) • Apply effective project management through the setting of research goals and intermediate milestones and through the prioritization of activities 	<p>G. teamwork, and personal and group leadership skills</p>	<p>4. Professional Capacity/Autonomy 5. Level of Communication Skills</p>
<p>H.</p> <ul style="list-style-type: none"> • Regularly consult scholarly literature and inside and outside the direct field of research to consider alternative ways of conceptualizing ideas • Encourage feedback from peers, faculty, and community players to broaden the understanding of an issue and to devise knowledge translation plan 	<p>H. creativity and aesthetic appreciation</p>	<p>2. Research and Scholarship 4. Professional Capacity/autonomy 6. Awareness of Limits of Knowledge</p>
<p>I.</p> <ul style="list-style-type: none"> • Articulate one’s self-development and how it relates to one’s professional advancement • Identify areas for future self-development 	<p>I. the ability and desire for continuous learning</p>	<p>4. Professional Capacity/autonomy</p>

**University of Windsor
Program Development Committee**

***5.9: Political Science (Graduate) – Course Learning Outcomes**

Item For: **Information**

List of Learning Outcomes:

POLS 8000. Scope and Approaches in Political Science
POLS 8010. Selected Topics in Contemporary Political Theory)
POLS 8020. International Relations Theory
POLS 8200. Federalism in Canada
POLS 8210. Canadian Politics – Participation and Processes
POLS 8220. Canadian Public Policy
POLS 8230. Canadian Foreign Policy
POLS 8300. International Organizations
POLS 8320. The Third World in International Relations
POLS 8330. International Political Economy
POLS 8340. International Security
POLS 8400. American Politics and Government
POLI- 8420. Politics in the Developed World
POLS 8679. Islamic Political Thought
POLS 8910. Selected Topics in Political Science
POLS 8920. Readings in an Approved Special Field
POLS 8010. Selected Topics in Contemporary Political Theory
POLS 8960. Major Paper
POLS 8970. Thesis

POLS 8000 – Scope and Approaches in Political Science

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of this course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
Appraise diverse theoretical, political, and methodological perspectives on issues of social and political importance.	A. the acquisition, application and integration of knowledge
Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research. Design a research project and select appropriate methods.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
	C. critical thinking and problem-solving skills
Prepare, present and defend research persuasively both orally and in writing.	D. literacy and numeracy skills
	E. responsible behaviour to self, others and society
	F. interpersonal and communications skills
Apply appropriate quantitative and qualitative analysis techniques to academic research, independently and in a cooperative team environment.	G. teamwork, and personal and group leadership skills
	H. creativity and aesthetic appreciation
Pursue knowledge acquisition and skills development to become current and competitive in a knowledge-based economy.	I. the ability and desire for continuous learning

POLS 8010 – Selected Topics in Contemporary Political Theory

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of this course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
Identify and explain theories of millenarianism, the history and ideological development of the millenarian movements and their belief systems. Analyze the legal, societal and political ramifications of modern religious and political movements.	A. the acquisition, application and integration of knowledge
Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
	C. critical thinking and problem-solving skills
Prepare, present and defend research persuasively both orally and in writing.	D. literacy and numeracy skills
	E. responsible behaviour to self, others and society
	F. interpersonal and communications skills
	G. teamwork, and personal and group leadership skills
	H. creativity and aesthetic appreciation
Recognize the diversity of religious and political movements across the world and over time.	I. the ability and desire for continuous learning

POLS 8020 – International Relations Theory

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<p>At the end of this course, the successful student will know and be able to:</p>	<p>A U of Windsor graduate will have the ability to demonstrate:</p>
<p>Identify and explain major themes, debates, and concepts related to the critical study of geopolitics in relation to international relations.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Dissect and synthesize specialised literature on international relations theory.</p> <p>Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
	<p>D. literacy and numeracy skills</p>
<p>Engage in self-directed learning and engage more effectively in the political, economic, and social life of one’s community.</p>	<p>E. responsible behaviour to self, others and society</p>
<p>Recognize, discuss, and contribute to arguments about geopolitics and international relations with consideration of critical and geographical approaches to the topic.</p>	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8200 – Federalism in Canada

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<p>At the end of this course, the successful student will know and be able to:</p>	<p>A U of Windsor graduate will have the ability to demonstrate:</p>
<p>Appraise diverse theoretical, political, and methodological perspectives on issues of federalism in Canada.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Prepare, present and defend research persuasively both orally and in writing.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
<p>Engage in constructive dialogue and debate concerning complex and controversial Canadian political issues, presenting well-reasoned arguments while being respectful of alternative opinions.</p>	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
<p>Recognize the implications of federalism for political legitimacy and social cohesion.</p>	<p>I. the ability and desire for continuous learning</p>

POLS 8210. Canadian Politics – Participation and Processes

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<p>At the end of this course, the successful student will know and be able to:</p>	<p>A U of Windsor graduate will have the ability to demonstrate:</p>
<p>Appraise diverse theoretical, political and methodological perspectives on issues of social and political importance in Canada.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Thoroughly research and investigate Canadian political issues, synthesize data and information from varying sources and present descriptive and empirical evidence to support conclusions.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Assess literature related to a specialized area of expertise in Canadian politics.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
<p>Prepare, present and defend research persuasively both independently and in a cooperative team environment.</p>	<p>G. teamwork, and personal and group leadership skills</p>
<p>Critically assess institutions, ideas and behaviours to generate ideas about improving Canadian politics.</p>	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8220. Canadian Public Policy

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of this course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
Identify key public policy issues and tools to solve public problems, as well as explain why policy goals are not often met in Canada. Apply theory of policy stages to specific policy examples.	A. the acquisition, application and integration of knowledge
	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
	C. critical thinking and problem-solving skills
Plan, write, and defend a policy brief.	D. literacy and numeracy skills
	E. responsible behaviour to self, others and society
Engage in constructive dialogue and debate concerning the merits of policy solutions and why they emerge.	F. interpersonal and communications skills
	G. teamwork, and personal and group leadership skills
Recommend solutions to policy problems in the Canadian context.	H. creativity and aesthetic appreciation
	I. the ability and desire for continuous learning

POLS 8230. Canadian Foreign Policy

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Critically analyze major issues and phenomena related to Canadian foreign policy such as human security, Canadian defense policy, peacekeeping, and aid and development policy.</p> <p>Critically analyze how the Canadian government approaches its foreign policies.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Dissect academic foreign policy literature by identifying its research questions, main findings and contributions, as well as weaknesses.</p> <p>Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Prepare, present and defend research persuasively both orally and in writing.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8300. International Organizations

<p>Learning Outcomes <i>This is a sentence completion exercise.</i></p> <p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Analyze the institutional structure of international organizations, their operating procedures, main policy-making responsibilities and evolution.</p> <p>Critically assess what the existence of international organizations means for the states that comprise them, as well for concepts like sovereignty, citizenship and democracy.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Dissect academic literature by identifying its research questions, main findings and contributions, as well as weaknesses.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
<p>Respect arguments made by others on disputable political issues.</p>	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
<p>Perform comparative analyses of regional organizations to generate ideas about improving international organizations of which Canada is a member.</p>	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8320. The Third World in International Relations

<p>Learning Outcomes <i>This is a sentence completion exercise.</i></p> <p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Critically assess the major themes, theories, and methods in the field of international relations and comparative politics of developing countries.</p> <p>Apply the comparative method used by political scientists to analyse issues facing developing countries.</p> <p>Analyze relevant concepts as Third World, G-77, the Non-Aligned Movement, North-South divide, colonialism, imperialism, international development, foreign aid, globalization, and several other.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Thoroughly research and investigate issues related to the international relations of the Third World, synthesize data and information from varying sources and present descriptive and empirical evidence to support conclusions.</p> <p>Formulate and communicate persuasively orally and in writing arguments based on information, theories, and concepts pertaining to comparative politics.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8330. International Political Economy

<p>Learning Outcomes <i>This is a sentence completion exercise.</i></p> <p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Analyze the concept of free markets, the role of state institutions, as well as recent developments in international political economy.</p> <p>Apply international political economy theories to policy issues.</p> <p>Appraise diverse theoretical, political, and methodological perspectives on issues of international political economy.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Prepare, present and defend research persuasively both orally and in writing.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8340. International Security

<p>Learning Outcomes <i>This is a sentence completion exercise.</i></p> <p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Analyze the legal, societal and political ramifications of issues concerning internal security.</p> <p>Recognize the international norms and practices associated with security.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Dissect academic security literature by identifying its research questions, main findings and contributions, as well as weaknesses.</p> <p>Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Prepare, present and defend research persuasively both orally and in writing.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8400. American Politics and Government

<p>Learning Outcomes <i>This is a sentence completion exercise.</i></p> <p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Critically analyze how American government institutions and political organizations function.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Use statistical and mathematical tools in interpreting and analyzing political indicators and trends.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
<p>Analyze and evaluate political science proposals, their effect on the political situation and their effectiveness.</p>	<p>C. critical thinking and problem-solving skills</p>
	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
<p>Identify, formulate, and propose solutions to political problems.</p> <p>Act effectively and responsibly in the public sphere through the application of academic knowledge to public problems, in concert with others.</p>	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLI- 8420. Politics in the Developed World

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of this course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
	A. the acquisition, application and integration of knowledge
Dissect academic literature, government publication and other documents related to the Canada-US border by identifying its research questions, main findings and contributions, as well as weaknesses. Compare and synthesize information about political, economic, environmental and social impacts of specific border policy options.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
	C. critical thinking and problem-solving skills
Write a comprehensive, concise and well-structured paper analyzing some specific aspect of Canada-US border policy.	D. literacy and numeracy skills
	E. responsible behaviour to self, others and society
Engage in constructive dialogue and debate concerning border policy options.	F. interpersonal and communications skills
	G. teamwork, and personal and group leadership skills
Defend a specific policy option in light of the benefits and costs of a variety of perspectives.	H. creativity and aesthetic appreciation
	I. the ability and desire for continuous learning

POLS 8679 – Islamic Political Thought

<p>Learning Outcomes <i>This is a sentence completion exercise.</i></p> <p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Explain the intricate relations between religion and state in the Muslim world in past and present.</p> <p>Appraise diverse theoretical, political, and methodological perspectives on Islamic political thought.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Dissect primary Islamic political texts by identifying their research questions, main findings and contributions.</p> <p>Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Prepare, present and defend research persuasively both orally and in writing.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
<p>Recognize the value of different political, legal and cultural traditions.</p>	<p>I. the ability and desire for continuous learning</p>

POLS 8910 – Selected Topics in Political Science

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Critically assess the major themes, theories, and methods in the field of political science.</p> <p>Apply methods used by political scientists to analyse political issues.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Thoroughly research and investigate political issues, synthesize data and information from varying sources and present descriptive and empirical evidence to support conclusions.</p> <p>Formulate and communicate persuasively orally and in writing arguments based on information, theories, and concepts pertaining to specific political science topics.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
	<p>I. the ability and desire for continuous learning</p>

POLS 8920 .Readings in an Approved Special Field

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Analyze the legal, societal and political ramifications of issues based on familiarity with existing literature on political issues.</p> <p>Appraise diverse theoretical, political, and methodological perspectives on issues of social and political importance.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Apply appropriate quantitative and qualitative analysis techniques to academic research.</p> <p>Formulate research questions and develop appropriate data collection and analysis strategies in order to conduct independent original research.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Prepare, present and defend research persuasively both orally and in writing.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
<p>Pursue knowledge acquisition and skills development to become current and competitive in a knowledge-based economy.</p>	<p>I. the ability and desire for continuous learning</p>

POLS 8960. Major Paper

<p>Learning Outcomes <i>This is a sentence completion exercise.</i></p> <p><u>At the end of this course, the successful student will know and be able to:</u></p>	<p>Characteristics of a University of Windsor Graduate</p> <p><u>A U of Windsor graduate will have the ability to demonstrate:</u></p>
<p>Analyze the legal, societal and political ramifications of issues based on familiarity with existing literature on political issues.</p> <p>Appraise diverse theoretical, political, and methodological perspectives on issues of social and political importance.</p>	<p>A. the acquisition, application and integration of knowledge</p>
<p>Design and implement a research project and select appropriate methods.</p>	<p>B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)</p>
	<p>C. critical thinking and problem-solving skills</p>
<p>Prepare, present and defend research persuasively both orally and in writing.</p>	<p>D. literacy and numeracy skills</p>
	<p>E. responsible behaviour to self, others and society</p>
	<p>F. interpersonal and communications skills</p>
	<p>G. teamwork, and personal and group leadership skills</p>
	<p>H. creativity and aesthetic appreciation</p>
<p>Pursue knowledge acquisition and skills development to become current and competitive in a knowledge-based economy.</p>	<p>I. the ability and desire for continuous learning</p>

POLS 8970. Thesis

Learning Outcomes <i>This is a sentence completion exercise.</i>	Characteristics of a University of Windsor Graduate
<u>At the end of this course, the successful student will know and be able to:</u>	<u>A U of Windsor graduate will have the ability to demonstrate:</u>
Analyze the legal, societal and political ramifications of issues based on familiarity with existing literature on political issues. Appraise diverse theoretical, political, and methodological perspectives on issues of social and political importance.	A. the acquisition, application and integration of knowledge
Design and implement an original research project and select appropriate methods to fill an important gap in the political science literature.	B. research skills, including the ability to define problems and access, retrieve and evaluate information (information literacy)
	C. critical thinking and problem-solving skills
Prepare, present and defend research persuasively both orally and in writing.	D. literacy and numeracy skills
	E. responsible behaviour to self, others and society
	F. interpersonal and communications skills
	G. teamwork, and personal and group leadership skills
	H. creativity and aesthetic appreciation
Pursue knowledge acquisition and skills development to become current and competitive in a knowledge-based economy.	I. the ability and desire for continuous learning