UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

Bachelor of Science Honors in Integrative Neuroscience

Faculty of Science

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Table of Contents

1. INTRODUCTION

a. Background

The proposed Integrative Neuroscience program emphasizes an interdisciplinary approach to the study of neuroscience, with a goal to understand the function of the nervous system at the molecular, structural, behavioural, and cognitive levels. The Faculties of Science, Health Science, and Social Science and Humanities will jointly offer the program and will be housed in the Faculty of Science. The program integrates the study of the molecular principles underlying cellular organization at the microscopic level and their influence on functional circuits at the macroscopic level, which together form the basis for the study of nervous system function, behaviour, movement and neurological diseases. In addition, the program studies neuroscience from an evolutionary perspective and includes a comparative analysis of the nervous system and behaviour among different animal groups. The proposed program will provide a unique offering relative to other universities and follows the UOIT approach in the development of all science programs, which provides basic foundational knowledge in all the core science disciplines. This ensures UOIT science graduates are prepared for the future evolution of both their discipline and their scientific workplace.

Students graduating from this program will be well equipped for careers in the biological sciences, for post-degree opportunities such as medicine, dentistry, optometry and physical or occupational therapy, and to enter graduate programs in the neuroscience area. The program includes a Co-operative Education option, which reinforces the career-oriented mission of UOIT. The program's interdisciplinary emphasis and content both complement existing UOIT biological science programs at the undergraduate and graduate levels, and builds upon their strengths. In particular, the program complements other programs and specializations (including pharmaceutical biotechnology, pharmaceutical chemistry, pharmacology, life sciences) that provide opportunities to study the scientific foundational aspects that underpin the health-care industry. The program also complements and is supported by behavioural psychology courses taught in the UOIT Faculty of Social Science and Humanities and courses on the neuroscientific bases of movement and disease taught by the Faculty of Health Science (see Appendix A-Program Map).

Faculty members associated with the Integrative Neuroscience program will also participate in the existing Applied Bioscience MSc and PhD graduate programs, which are among the strongest UOIT programs in terms of student numbers and faculty research strengths. Applied Bioscience is also a major theme in UOIT's Strategic Research Plan, and faculty in this program would contribute to existing strengths.

b. Student Demand

Enquiries related to the existence of UOIT programs in the area of Neuroscience have regularly arisen at Open House events and events such as the Ontario University Fair. We believe that the program would be very attractive to students looking to study within this field. Its unique name and advanced scientific emphasis and content, which simultaneously denotes a similarity

to other Ontario and Canadian neuroscience programs and a positive differentiation from them, would also contribute to the programs attractiveness.

Projected enrolment levels for the first four years of operation and steady-state enrolment are given in the Business Plan in Section of this document.

c. Societal Need

Students graduating from the Integrative Neuroscience program will be well equipped for careers in the biological and life sciences, for post-degree opportunities such as medicine, dentistry, optometry, and physical or occupational therapy, and to enter graduate programs and research positions in Neuroscience or other areas of the Life Sciences. Disorders of the brain and nervous system are some of the leading health issues facing Canadians of all ages and walks of life. In a societal context, these diseases must be tackled from many levels including scientific research and study that help to understand causes, healthcare solutions which enhance treatment, as well as social awareness and impacts on society. The Integrative Neuroscience curriculum will adequately cover these three areas of focus, and will be delivered by the 3 Faculties which have the appropriate expertise. By the end of the program, students will have developed a unique skill-set and deep knowledge of the field of Neuroscience from the scientific, clinical, and social perspectives.

d. Duplication

The proposed program was not duplicated from a particular program in Canada. Instead, it was designed as a program with an interdisciplinary approach to the study of the nervous system of animals with particular emphasis on human neuroscience. This is built on the core science and biology strength of our current programs and research focuses, with the experience of the Faculties of Health Science and Social Science and Humanities. Many undergraduate BSc programs with the name “neuroscience” exist in Canada, most with a behavioural psychology emphasis. None of which we are aware has the emphasis of the proposed program, although a number of undergraduate and graduate programs have some similar components. For example, Ontario Neuroscience programs at the graduate level include those at Western, Toronto, Ottawa, and McMaster. A number of graduate programs with a similar name or a field with similar emphasis to the proposed program exist in the US and the UK (Cornell, UCLA, Manchester are examples).

Compared to our other offerings in the Faculty of Science, this program will have a strong emphasis on laboratory experience, with 16 out of the 40 required courses having a formal laboratory component. This does not include the thesis option and the potential for additional neuroscience laboratory/research experience in our new undergraduate research experience program. Further information can be found under Program Structure-Experiential Learning Opportunities.

We anticipate that because of the unique curriculum and intensive laboratory experience, graduates will be well qualified to undertake a wide-range of graduate programs related to

Psychology, Pharmacology, Molecular and Cellular Neuroscience, Human Neuroscience and Behavior, Neurobiology and Neuroscience using model organisms.

Ontario Universities with undergraduate BSc neuroscience programs include the following:

University of Windsor:	Behaviour, Cognition and Neuroscience	a combined biology/psychology program
Laurentian University	Behavioural neuroscience	
University of Toronto at Scarborough	Neuroscience	significant number of Psychology courses, greater emphasis on behavioural aspects
McMaster University	Psychiatry and Behavioural Neurosciences	
Carleton University	Neuroscience	Offered by the Dept. of Psychology
Brock University	Neuroscience	Neurobiology, neuromotor and neuropsychology streams

e. Rational for degree nomenclature

The Bachelor of Science in "Integrative Neuroscience" is a true reflection of the program content and learning outcomes. First, the level of Science study in the curriculum is consistent with other BSc programs at UOIT and throughout Ontario, with an array of science courses in the mathematics, physics, chemistry, and biology disciplines. Second, there is a comprehensive and broad selection of neuroscience courses from the cognitive and behavioral sciences, molecular and cellular neurosciences, and areas of neuroscience that focus on motor control and disease. Students receive a comprehensive understanding of neuroscience in their 4 years of study but must demonstrate the "integration" of their broad knowledge in the different areas of neuroscience in their final 4th year course Advanced Topics in Integrative Neuroscience (See Appendix B). Moreover, the program will have the oversight of an Integrative Neuroscience Curriculum Committee with members from different Faculties and with different neuroscience expertise, which will monitor whether students are achieving the learning outcomes of the program. Finally, because we intend on maintaining modest enrollment numbers, we will be able to more easily monitor achievement of the "integrative" features of the learning outcomes.

2. DEGREE REQUIREMENTS

a. Program learning outcomes and degree level expectations

Upon graduation, students of the Integrative Neuroscience (IN) program will have specialized abilities that are consistent with the provincial degree level expectations:

1. *Depth and breadth of knowledge*

The integrated approach of the Integrative Neuroscience program exposes students to a variety of science disciplines, which provides them with the scientific basis necessary for understanding the molecular basis of brain function. The contribution of neuroscience courses offered from other Faculties provides the appropriate breadth of an integrative neuroscience program. Specifically:

- Students will develop knowledge and of the key concepts, major fields, methodologies, current advances in the sciences through core courses in biology, chemistry, physics, mathematics, and neuroscience.
- Students will be able to explain concepts in neuroscience from the cellular to the behavioral levels in both human and non-human animals.
- Describe the neuroscience of human movement, mental health and their pathological implications

2. *Knowledge of Methodologies*

As a multidisciplinary specialization, Integrative Neuroscience students will learn a variety of techniques that include laboratory protocols in biology and chemistry, quantitative analyses in mathematics and statistics, and a variety of computer software applications for writing, data analysis and modeling. Specifically:

- Students will evaluate the appropriateness of different methods in neuroscience research and solve problems using well-established ideas and techniques
- Students will formulate arguments or solve problems in the neuroscience field using these methods in their term papers and the more in-depth hands-on research courses.

3. *Application of knowledge*

The Integrative Neuroscience program emphasizes adaptability by teaching a wide range of topics that will be periodically reviewed for their inclusion of important trends in the neuroscience sector. This is done to maintain program relevance with a rapidly changing job market and the development of the discipline. Specifically:

- Students will design research experiments and implement new approaches to neuroscience problems.
- Develop and demonstrate they have acquired important technical skills from advanced lab and computer training and apply these skills to answer new questions

4. *Communication skills*

An important deliverable of the program will be effective communication skills, particularly since the exchange of information and knowledge across disciplines will be essential for addressing neuroscience problems. Specifically:

- Students will demonstrate the ability to communicate information, arguments, and analyses accurately and reliably, orally and in writing in a range of core neuroscience and elective courses.

Most of the upper-year courses in the program map include communication-based assessments such as group projects and presentations. Group work not only offers experience with group dynamics, but also emphasizes management skills and workload delegation.

5. *Awareness of limits of knowledge*

- Students will evaluate the limits of their own knowledge based on uncertainties in the field of neuroscience
- Students will be able to recognize the uncertainties in the interpretation of scientific data

6. *Autonomy and professional capacity*

Students will gain qualities and transferable skills necessary for further study, employment, community involvement and other related activities. Specifically:

- Students will demonstrate the ability to work effectively and professionally with others, and the capacity to make decisions in complex contexts through a graduated progression from core coursework, specialized coursework in neuroscience, and hands-on work in research-related courses.

Table 1: Mapping of the Degree Level Expectations with learning outcomes and program curriculum

Degree Level Expectations	Program Learning Outcomes	How the Program Design & Requirement Elements Support the Attainment of Student Learning Outcomes	Learning Outcome: Method of Assessment
Depth and breadth of knowledge	Students will develop knowledge and of the key concepts, major fields, methodologies, current advances in the sciences through core courses in biology, chemistry, physics, mathematics, and neuroscience. Students will be able to explain concepts in neuroscience from the cellular to the behavioral levels in both human and non-human animals. Describe the neuroscience of human movement, mental health and their pathological implications	Core courses in biology, chemistry, physics, mathematics and neuroscience and psychology. Elective courses from the faculty of Social Science and humanities Specific neuroscience courses such a neuroscience, brain and behavior, developmental psychology, cognitive psychology, animal behavior and neuropharmacology Various Kinesiology courses that are directly in line with the program objectives such as courses focusing on the science of human movement. NSCI4999 will ensure students can integrate and apply their knowledge	Tests, quizzes, essays, presentations, assignments; exams Students build on knowledge by completing assignments and tests aimed at deepening their understanding and application of scientific techniques to complex scientific problems. Neuroscience and kinesiology Laboratory assignments allow them to gain a deeper understanding of the field Research proposal/group assignments
Knowledge of methodologies	Students will evaluate the appropriateness of different methods in neuroscience research and solve problems using well-established ideas and techniques Students will formulate arguments or solve problems in the neuroscience field using these methods in their term papers and the more in-depth hands-on research courses.	Lab component of BIOL1010, 2010, 2030, 2020, 3060 and various CHEM courses. Senior Biology courses and NSCI4999 have a strong focus on analyzing research papers BIOL2010 and BIOL2080 use online and computer based resources to analyse physiology, protein and genome data. HLSC 2400U and 3470U have an associated laboratories which reinforce the lecture with relevant methodology Students use excel and sigma plot to analyze data	Laboratory assignments, laboratory quizzes, formal laboratory reports; laboratory presentations in chemistry, biology, physics and kinesiology Tests, exams, assignments Thesis research/document In total 16 courses in this program will have formal lab components in different disciplines

Application of knowledge	Students will design research experiments and implement new approaches to neuroscience problems. Develop and demonstrate they have acquired important technical skills from advanced lab and computer training and apply these skills to answer new questions	Formal lab components of BIOL and CHEM courses and senior BIOL courses BIOL2020U Introduces students to fundamental principles of classical genetics which is the foundation of many branches of modern biology Senior BIOL courses encompass self-directed learning opportunities that involve applying knowledge HLSC 2400U and 3470U have an associated laboratory which reinforce the lecture with applications NSCI4999 will apply all of the students' knowledge to new problems in neuroscience	Formal lab reports; lab presentations; assignments that analyse current scientific literature; specific application-based questions on exams Genetic Simulations Comprehensive written reports
Communication skills	Students will demonstrate the ability to communicate information, arguments, and analyses accurately and reliably, orally and in writing in a range of core neuroscience and elective courses.	BIOL2030; NSCI4410/4420 (thesis); BIOL2080- students interpret scientific information and generate scientific reports/papers BIOL2030 and 3020 include writing exercises focusing on revision and resubmission Senior BIOL courses (ie BIOL 4080 and 4030) require students to present concepts both orally and in written form	Presentations in several senior BIOL courses, lab reports, essays; final thesis presentation/document Writing exercises NSERC-style research proposal
Awareness of limits of knowledge	Students will evaluate the limits of their own knowledge based on uncertainties in the field of neuroscience Students will be able to recognize the uncertainties in the interpretation of scientific data	Senior neuroscience courses will expose students to gaps in knowledge on how the brain functions and causes of some disorders. By examining scientific data in senior BIOL and neuroscience courses students will recognize the uncertainties in science	Oral presentations, essays, group projects; class participation

Autonomy and professional capacity	Students will demonstrate the ability to work effectively and professionally with others, and the capacity to make decisions in complex contexts through a graduated progression from core coursework, specialized coursework in neuroscience, and hands-on work in research-related courses.	Several BIOL courses have group projects/assignments BIOL4080 (Bioethics) is a required course that covers biological science from different perspectives Discuss prominent female scientists Group assignments in NSCI4999	Argumentative essays; case studies; term papers; class discussion In-class discussions involving the examination of a variety of current issues in bioethics from multiple world views (e.g. social, religious, cultural, age, gender, ideology, economic, political) when possible and appropriate

Demonstrating and documenting student achievement of the program learning outcomes

The assignments, exams, projects and laboratories that are associated with the program courses should be a direct gauge on whether students are achieving the learning outcomes. In addition, achievement in courses such as Advanced Topics in Integrative Neuroscience, as well as the undergraduate thesis, will be an accurate reflection that students are sufficiently completing the learning outcomes of the program. The Integrative Neuroscience Curriculum Committee, which will include faculty from Science, Health Science, and Social Science and Humanities, will meet on an annual based to determine whether students are adequately meeting the learning outcomes of the program by reviewing major assignments and course outcomes.

In addition, the program will compile data throughout the program such as how well students are performing during their undergraduate thesis and/or during research placements in faculty laboratories. After program completion, graduates will be tracked by implementing a First Destination Survey and having them create a LinkedIn profile, which will be linked to a profile created for the Faculty of Science.

b. Admission requirements

Admission requirements are in line with Faculty of Science and UOIT practices. Please see the University Calendar.

c. Program structure

Overview

The Integrative Neuroscience program curriculum can be divided into the following subcategories:

Core Science Courses Providing Breadth

Integrative Neuroscience majors will take the same first-year and second year courses required of all Biological Science students, including Biology I and II, Mathematics for Bioscience, Chemistry I and II, as well as organic chemistry, physics, first year psychology, Statistics and Probability for Biological Science, and Biochemistry; these provide a firm and broad background in all the core areas of science.

Core Science Biology Courses

The core biology courses provide the appropriate foundation and serve a prerequisites for the core Integrative Neuroscience courses. These are as follows: Cell Biology, Human Physiology, Human Anatomy, Genetics and Molecular Biology, Fundamentals of Microbiology, and Comparative Zoology. The majority of these courses are completed by the end of the second

year of the program, so that students are well-grounded in biology and have achieved the necessary pre-requisites for specialized courses in years three and four of the program. All of these courses are currently listed in the University Undergraduate Calendar.

Core Neuroscience Courses

There are a total of 15 courses that are core to the Integrative Neuroscience program. There are four additional Psychology courses in this group: Brain and Behaviour, Abnormal Psychology, Cognitive Psychology, and Developmental Psychology. These courses provide students with the required knowledge describing how the human brain is related to behaviour, personality and disorders. All are listed in the current University Undergraduate Calendar, and provide a foundation in behavioural and cognitive aspects of neuroscience.

Additional neuroscience courses will be offered by the Faculties of Science and Health Science that, with the five psychology courses, make the program unique and innovative. These include Principles of Pharmacology and Toxicology, Fundamentals of Neuroscience, Animal Behaviour, Neuropharmacology, Introduction to Movement Neuroscience, Anatomy of Human Movement, Human Motor Control and Learning, Advanced Topics in Neuromuscular Physiology and Pathophysiology, and Exploring Mental Health and Developmental Disabilities. Advanced Topics in Integrative Neuroscience will be a new course developed specifically for this program and will serve to integrate the breadth of neuroscience covered in this program and will be a key course in monitoring achievement of the program learning outcomes. These courses were carefully chosen to provide students with a true integrative approach to neuroscience and to allow for the achievement of the learning outcomes for the program.

In the fourth year of the program, students have the option of an honours thesis project, directed studies project, senior biology and health science electives.

Electives

There are six courses (18 credit hours) allocated as free elective courses. It is proposed that 12 of these credit hours be applied to courses outside of the Faculty of Science.

Experiential Learning Opportunities

As noted in the learning objectives and consistent with UOIT's mission, this program puts a high priority on practical application of academic knowledge. Each semester student enroll in courses that have practical laboratory components. Many of these components and exercises are directly used in relevant work environments. In total, 16 courses in the Integrative Neuroscience program have formal laboratory components. In the fourth year of the program, students have an opportunity to apply the comprehensive scientific knowledge acquired during

their undergraduate program. As an option, students have the opportunity to enrol in the Integrative Neuroscience Thesis course which include one-on-one faculty directed research. Such experiences are highly valued by graduate departments and future employers as examples of independent work.

The Co-operative education program is another option for applied learning experiences in the Integrative Neuroscience program.

The Faculty of Science has also implemented the Undergraduate Research Experience Program which is a series of three research elective courses that students can take in their 2nd and 3rd years. These courses provide student with the opportunity to gain practical and research experience early in their program. Students have the option of taking one, two or all three courses. If students take these three courses and enroll in the undergraduate thesis they will have completed 15 credit hours of research experience in their undergraduate degree.

Governance

The Integrative Neuroscience program will be led by a program director from the Faculty of Science with a program-specific curriculum committee that will include core faculty from the Faculties of Science, Health Science, and Social Science and Humanities. The committee representation will reflect the true integrative nature of this program. This committee will be responsible for determining whether students are achieving the learning outcomes and future changes to the program.

Table 2: The Integrative Neuroscience Curriculum Committee

	Faculty	Rank	Courses taught in program	Expertise	Committee Role
Sean Forrester, PhD	Science	Associate Professor	Cell Biology; Principles of Pharmacology and Toxicology	Neurochemistry of nematodes	Program Director
Annette Tavares, MSc	Science	Associate Teaching Professor	Comparative Zoology; Animal Behavior	Animal Behavior; animal comparative anatomy	Member
Mathew Shane, PhD	Social Science and Humanities	Associate Professor	Abnormal Psychology; Cognitive Psychology; Advanced Topics in Integrative Neuroscience	Neuromodulation; neural systems in affective disorders	Member

Bernadette Murphy, PhD	Health Science	Professor	Anatomy of Human Movement	neurophysiology of musculoskeletal treatments	Member

d. Calendar Copy

Program Information: Bachelor of Science (Honours) in Integrative Neuroscience

General Information. The Integrative Neuroscience program at UOIT prepares students for leadership roles in the cross-disciplinary field of neuroscience. The program integrates the fields of molecular/cellular biology, comparative zoology, animal behaviour and psychology and human neuroscience into a single program providing students with an interdisciplinary focus to the study of the nervous system of animals with particular focus on human neuroscience. The program combines disciplinary study in the natural sciences in the first two years of study, and specialized study in the last two years of the program.

In addition to the regular program, a co-op program is also available. Students in Life Sciences interested in the co-op program, should contact the Faculty of Science Co-op Coordinator as early as the fall of their second year.

Careers. The Integrative Neuroscience program provides a strong background for students interested in post-degree studies such as medical school, dentistry, optometry, physical or occupational therapy or graduate school. It also fulfils UOIT's mandate for offering "market driven" programs that are relevant and reflective of the knowledge-based economy. Jobs in the scientific-based health-related area are believed to be an important area of growth and anticipated demand for highly skilled and trained personnel. The broad skills base acquired through the program will permit a variety of complementary career paths in other areas of biological science, including particularly those requiring strong scientific-based knowledge in health-related areas.

Admissions requirements. Admission is competitive. The specific average or standing required for admission varies from year to year. Students are selected by taking into consideration a wide range of criteria including school marks, distribution of subjects taken, and performance in subjects relevant to the academic program. Possession of the minimum requirements does not guarantee acceptance. Preference will be given to applicants with the best qualifications. Current Ontario secondary school students must complete the Ontario Secondary School Diploma (OSSD) with six 4U or 4M credits including English (ENG4U), Advanced Functions (MHF4U), and two of Biology (SBI4U), Calculus and Vectors (MCV4U), Chemistry (SCH4U), or Physics (SPH4U). In addition, a combined minimum 70 per cent average in math and science

courses is required. It is recommended that all four MCV4U, SBI4U, SCH4U and SPH4U be taken. All other applicants should refer to admissions for the requirements for their specific category of admission.

Program details and degree requirements. Although reasonable efforts will be made to adhere to the following program map, course requirements and term offerings may change.

YEAR 1

Semester 1 (15 credit hours)

BIOL 1010U - Biology I
CHEM 1010U - Chemistry I
PHY 1030U - Introductory Physics++
MATH 1015U - Mathematics for Bioscience++
Elective

Semester 2 (15 credit hours)

BIOL 1020U - Biology II
CHEM 1020U - Chemistry II
PHY 1040U - Physics for Biosciences++
PSYC 1000U - Introductory Psychology
CSCI 1040 – Introduction to Programming for Scientists

++Students who wish to take upper-year physics courses must take MATH 1000U or MATH 1010U, MATH 1020U, PHY 1010U or PHY 1030U, and PHY 1020U. However, students who achieve a B standing or higher in PHY 1040U will be permitted to proceed to higher-level physics courses. Students who wish to take upper-year mathematics courses must take MATH 1000U or MATH 1010U, and MATH 1020U.

YEAR 2

Semester 1 (15 credit hours)

BIOL 2010U - Human Physiology
BIOL 2030U - Cell Biology
CHEM 2020U - Introduction to Organic Chemistry
STAT 2020U - Statistics and Probability for Biological Science
Elective

Semester 2 (15 credit hours)
BIOL 2020U - Genetics and Molecular Biology
BIOL 2050U - Human Anatomy
BIOL 2080U - Biochemistry I
PSYC 2010U – Developmental Psychology
PSYC 2050U - Brain and Behaviour

YEAR 3
Semester 1 (15 credit hours)
BIOL 3020U - Principles of Pharmacology and Toxicology
BIOL 3610U - Comparative Zoology
HLSC 2400U - Introduction to Movement Neuroscience
HLSC 3470U - Anatomy of Human Movement
PSYC 2060U - Cognitive Psychology

Semester 2 (15 credit hours)
BIOL 3060U - Fundamentals of Neuroscience
HLSC 3410U - Human Motor Control and Learning
PSYC 2030U - Abnormal Psychology
Two Electives

YEAR 4
Semester 1 (15 credit hours)
BIOL 4620U - Animal Behaviour
HLSC 4414U - Advanced Topics in Neuromuscular Physiology and Pathophysiology
NSCI 4410U - Integrative Neuroscience Thesis I **or** Senior Biology elective**
Two Electives

Semester 2 (15 credit hours)
BIOL 4820U - Neuropharmacology
BIOL 4080U - Bioethics
HLSC 4808U - Exploring Mental Health and Developmental Disabilities
NSCI 4999U – Advanced Topics in Integrative Neuroscience
NSCI 4420U - Integrative Neuroscience Thesis II*** **or** Senior Biology elective **

Notes:
No more than 42 credit hours may be taken at the first-year level.

**Electives and breadth requirements
In order to satisfy breadth requirements, students must complete 18 elective credit hours, including one senior science elective. A senior science elective is defined as any 3000 or 4000-level science course not specified in the course map. 12 credit hours must be in courses outside of the Faculty of Science.

***Students in clear academic standing who have completed 90 credit hours of their program and six third-year required courses may optionally apply to take a two-course sequence consisting of NSCI 4410U – Integrative Neuroscience Thesis Project I and NSCI 4420U – Integrative Neuroscience Thesis Project II. Students not accepted to take the thesis courses must complete two additional senior biology electives instead. A senior biology elective is defined as any 4000-level biology course not specified in the course map.

3. RESOURCE REQUIREMENTS

a. Enrollment projections

We anticipate an initial cohort of 25 students with a steady state of 30 students per year. Total enrolment throughout years 1-4 of the program are as follows and has taken into account a retention rate of 80% between year 1 and 2.

Cohort	**2020-2021**	**2021-2022**	**2022-2023**	**2023-2024**
Year 1	**25**	**30**	**30**	**30**
Year 2		**20**	**25**	**25**
Year 3			**20**	**25**
Year 4				**20**
Total	**25**	**50**	**75**	**100**

This program has been developed with consideration to our teaching expertise and the courses currently offered by the Faculties of Science, Health Science, and Social Science and Humanities.

Only one new course Advanced Topics in Integrative Neuroscience will have to be developed. We currently have a strong group of neuroscience faculty that will directly contribute to teaching the courses and supervising honors thesis students. Most of the Faculty listed as core to this program are also graduate faculty in UOIT's Applied Bioscience MSc/PhD program.

b. Faculty members

Since this program draws on the existing expertise in Neuroscience at UOIT, no new faculty members are required for this program. The majority of courses (>95%) in this program are taught by non-sessional faculty including the core science, biology, and neuroscience courses. The core faculty that will teach the core neuroscience courses in the program and/or provide thesis supervision are as follows.

	Faculty	Rank	Expertise
Sean Forrester, PhD	Science	Associate Professor	Neurochemistry of nematodes
Annette Tavares, MSc	Science	Associate Teaching Professor	Animal behavior; animal comparative anatomy
Jason Chung, PhD	Science	Academic Associate	Neuroscience and Neuropharmacology
Hélène LeBlanc, PhD	Science	Associate Professor	Olfactory reception of insects
Mathew Shane, PhD	Social Science and Humanities	Associate Professor	Neuromodulation; neural systems in affective disorders
Leigh Harkins, PhD	Social Science and Humanities	Associate Professor	Abnormal psychology; personality psychology
Bernadette Murphy, PhD	Health Science	Professor	sensorimotor integration, neural adaptation and learning, effects of movement-based interventions on neural function
Paul Yielder, PhD	Health Science	Professor	musculoskeletal MRI; neuroanatomy; neuroscience

c. Additional academic and non-academic human resources

The current courses offered in the program have the capacity to absorb the projected student enrollments. Marginal increases in various areas would be required to accommodate the increased enrolments. The major components include teaching assistantships in the laboratories and tutorials, and increased administrative and faculty supervisory workload resulting from thesis supervisions. There are three courses offered by the Faculty of Health Science that offer a lab component that will require additional resources to accommodate an increase in enrollment starting in 2022.

d. Student Support Requirements

All undergraduate students have access to an extensive support system that ensures a quality student experience. In addition to the outlined services below, students may also take advantage of the Campus Childcare Centre, Campus Bookstores, Housing and Living Resources

as well as the Student Association. Further information can be found at: http://studentlife.uoit.ca/

Academic Advising

The Faculty of Science Academic Advising Office is committed to assisting students in developing and reaching their academic and personal goals. Academic Advising serves as the undergraduate students' main point of contact within the Faculty of Science. The Science

Academic Advising team assists students by:

- Addressing questions and concerns related to all aspects of student life;
- Helping establish realistic educational goals and future planning;
- Assessing and discussing academic progress and standing;
- Discussing program and course selections;
- Helping to address academic difficulties;
- Interpreting academic policies and procedures;
- Discussing issues affecting academic performance;
- Providing advice regarding withdrawing from, adding or dropping courses;
- Providing guidance for successful progression towards graduation;
- Providing tips for academic success;
- Connecting students with appropriate campus services (e.g. Student Learning Center, Accessibility Services, etc.) for additional assistance.

Student Learning Centre

The Student Learning Centre fosters a high level of academic excellence in the UOIT community by working with all UOIT students, undergraduate and graduate, to achieve educational success. Foundational knowledge and prerequisite skills are essential to all university level courses, and competency with these skills is vital for strong academic performance. The subject specialists offer support services in mathematics, writing, study skills, ESL and physics. With the additional support of peer tutors and workshops, the Centre can further accommodate the needs of a specific course or program. http://studentlife.uoit.ca/student-learning/

Student Accessibility Services

The staff work as a collaborative team to ensure students with disabilities have equal opportunities for academic success. The SAS operates under the Ontario Human Rights Code (OHRC) and the Accessibility for Ontarians with Disabilities Act (AODA). Services are provided for students with documented disabilities. Accommodation supports include but are not limited to:

- Adaptive technology training;
- Alternate format course material;
- Learning skills support;
- Testing support; and
- Transition support for incoming students.

Career Centre
The Career Centre offers comprehensive career service assistance and a variety of valuable resources to help students along their career paths:

- Assistance with creating effective job-search documents;
- Career Counselling;
- Interview preparation;
- Job market information; and
- Job search strategies.

A variety of events hosted on campus during the academic year including employer information and networking sessions, job fairs, and interviews conducted by leading employers.

Student Engagement and Equity
The Student Engagement and Equity supports students' successful transition into the university and provides opportunities for them develop your leadership and professional skills throughout their university career.

Services provided through Student Engagement and Equity includes:

- Orientation and events through first year
- Specialized programming for first generation, graduate, indigenous, international, mature, online, transfer, and diploma-to-degree pathways students
- Equity and inclusivity programming
- Assistance and advice for living off campus
- Peer mentoring to help students through first year
- Opportunities to grow and develop leadership skills through the Ambassador program.

Student Mental Health Services
Student Mental Health Services helps students learn how to better manage the pressures of student life. Students can:

- Attend a drop-in session;
- Participate in events and activities that promote positive health and well-being;
- Access tools and resources online to learn about mental health and how to maintain good health and wellness;
- Work with a mental health professional to address concerns;
- Contact the Student Lifeline for immediate help and assistance; and
- Get answers to frequently asked questions about mental health.

Student Mental Health Services offers short-term counselling and therapy services to students. Students in distress will also be provided support and counselling as needed. There is no cost and services are confidential. For students who need long-term counselling support or specialized mental health services, UOIT will provide referrals to assist the student in accessing resources in the local community or in the student's home community.

Athletics and Recreation Faculties
UOIT offers a number of recreation facilities and fitness opportunities to meet all lifestyles and needs. On-campus facilities include the state-of-the-art FLEX Fitness Centre which overlooks Oshawa Creek, five gymnasiums, a 200-metre indoor track, two aerobic/dance studios, the Campus Ice Centre, Campus Fieldhouse, a soccer pitch, a fastball diamond, squash courts and an indoor golf-training centre.

Campus Health Centre
The Campus Health Centre provides assistance in numerous confidential health-care options including:

- A medical clinic with daily access to physician and nursing staff;
- Allergy injections, immunizations and influenza injections;
- An on-site laboratory (blood work, STI testing, throat swabs, etc.);
- Complementary Health Services featuring acupuncture, chiropractic, custom orthotics, massage therapy, nutritional counselling and physical therapy;
- Gynaecological health-care and prescriptions; and
- Treatment of disease, illness and injury.

Student Awards and Financial Aid
Student Awards and Financial Aid (SAFA) is dedicated to helping students understand the variety of options available to finance their education. Budgeting and financial planning are essential to their success and Student Awards and Financial Aid is on hand to help create the right financial plan. Financial assistance can be in the form of bursaries, employment (both on-campus and off), parental resources, scholarships, student lines of credit and the Ontario Student Assistance Program (OSAP).

e. Physical resource requirements

To accommodate increased undergraduate Science program enrolments and to accommodate an increase number of students in the HLSC course that have associated labs, additional lab sections will become available. We currently have the teaching laboratory space to accommodate 30 net new students per year.

No significant increased resource requirements are anticipated in terms of library holdings, information technology support and student services, and special equipment.

4. BUSINESS PLAN

Only limited additional resources will be required to support this program. The direct costs will be mainly an instructor and additional TA time.

We are estimating the only financial needs to be the creation of one new course (Advanced Topics in Integrative Neuroscience) and additional lab and tutorial sections to accommodate the new students. Please refer to the attached Proposal Budget for additional information.

Appendix A: Program Maps

Program map

The following table shows the courses, laboratories and tutorials taken by semester for the regular and Co-op programs. As seen by the Calendar copy, the Co-op program intersperses the work terms in sync with the regular program, so that no additional courses are required for its implementation. "B" denotes a bi-weekly lab or tutorial. New courses are italicized.

Integrative Neuroscience Program Map – Regular program and Co-op Program academic terms

UOIT Honours BSc in Integrative Neuroscience			
L=Lab, T=Tutorial, B=Bi-weekly *Italicized* indicates new course, others are existing courses			
Semester 1			
Course #	Course Name	Lectures/wk	Lab/Tutorial/wk
BIOL 1010U	Biology I – Molecular and Cellular Systems	3	3LB
CHEM 1010U	Chemistry I	3	1.5TB, 3LB
PHY 1030U	Introductory Physics	3	1,5TB, 3LB
MATH 1015U	Mathematics for Bioscience	3	1.5T
	Elective		
Semester 2			
BIOL 1020U	Biology II – Diversity of Life/Principles of Ecology	3	3LB
CHEM 1020U	Chemistry II	3	3LB
PHY 1040U	Physics for Biological Science	3	1.5TB, 3LB
PSYC 1000U	Introductory Psychology	3	0
CSCI 1040U	Introduction to Programming for Scientists	3	1.5LB
Semester 3			
BIOL 2010U	Human Physiology	3	3LB
BIOL 2030U	Cell Biology	3	3LB
CHEM 2020U	Introduction to Organic Chemistry	3	1.5T, 3LB
STAT 2020U	Statistics and Probability for Biological Science	3	
	Elective		
Semester 4			
BIOL 2050U	Human Anatomy	3	3LB
BIOL 2020U	Genetics and Molecular Biology	3	3LB
BIOL 2080U	Biochemistry I	3	2T
PSYC 2050U	Brain and Behaviour	3	0
PSYC 2010U	Developmental Psychology	3	0
Semester 5			
BIOL 3020U	Principles of Pharmacology and Toxicology	3	0
BIOL 3610U	Comparative Zoology	3	0
HLSC 2400U	Introduction to Movement Neuroscience	3	1T, 2L
HLSC 3470U	Anatomy of Human Movement	3	2L
PSYC 2060U	Cognitive Psychology	3	0
Semester 6			

HLSC 3410U	Human Motor Control and Learning	3	2L
BIOL 3060U	Fundamentals of Neuroscience	3	3LB
PSYC 2030U	Abnormal Psychology	3	0
	Elective	3	
	Elective	3	
Semester 7			
HLSC 4414U	Advanced Topics in Neuromuscular Physiology and Pathophysiology	3	1.5T
BIOL 4620U	Animal Behaviour	3	0
One of	NSCI 4410U Integrative Neuroscience Thesis I **Or** Senior Biology Elective	3	0
	Elective	3	0
	Elective	3	0
Semester 8			
BIOL 4080U	Bioethics	3	0
BIOL 4820U	Neuropharmacology	3	0
NSCI 4999U	Advanced Topics in Integrative Neuroscience	3	0
HLSC 4808U	Exploring Mental Health and Developmental Disabilities	3	0
One of	NSCI 4420U Integrative Neuroscience Thesis II **Or** Senior Biology Elective	3	0

Appendix B: New Course Proposal

NEW COURSE TEMPLATE

Faculty: Faculty of Science			
Full Course Title: Advanced Topics in Integrative Neuroscience			
Short Form Course Title (max 30 characters): Adv. Tps. in Integ. Neurosci.			
Subject Code and Course number: NSCI 4999U	**Cross-listings:**	☒ **Core** ☐ **Elective**	**Credit weight: 3 cr. hrs.**
Is the course: ☒ Undergraduate ☐ Graduate ☐ Professional (e.g. some Education courses are classified as professional)			
Contact hours (please indicate number of total hours for each component): ☒ Lecture __3hrs___ ☐ Lab _____ ☐ Tutorial _____ ☐ Other _____			

PROGRAM(S) (if applicable, form should accompany a program adjustment/proposal)

BSc (Hons) Integrative Neuroscience

CALENDAR DESCRIPTION

This advanced course covers a comprehensive examination of the field of neuroscience by reading and presenting papers from the primary research literature. Topics may include but are not limited to: neural development, neurobiology of movement and disease, neuropharmacology, molecular neurobiology, neurobiology of behavior, neurochemistry and the neuroscience of model organisms and invertebrates. Students will be required to give an oral presentation based on a primary research paper. Group projects will also include the preparation and peer review of a research grant proposal.
Credit hours: 3
Lecture: 3
Prerequisite(s): Fourth year standing in the Integrative Neuroscience program.

Prerequisites	**4th year standing in Integrative Neuroscience program**
Co-requisites	
Credit restrictions	
Credit exemptions	
Grading scheme	**x letter grade ☐ pass/fail**

LEARNING OUTCOMES

1. Apply and integrate previous neuroscience knowledge to new developments in the field

2. Understand the current approaches and methodology used in modern neuroscience research

3. Explain current tools and research used in the field of neuroscience

4. Apply and integrate previous neuroscience knowledge to generate new research questions and approaches in neuroscience

COURSE INSTRUCTIONAL METHOD

(check all that may apply)	**x CLS (in-class)**	**☐ HYB (in-class and online)**
	☐ WB1 (synchronous online delivery)	
	☐ WEB (asynchronous online delivery)	

TEACHING AND ASSESSMENT METHODS

Class participation, oral presentation, research proposal

CONSULTATION AND FINANCIAL IMPLICATIONS, WHERE APPROPRIATE

This course will require funding to deliver one non-lab/tutorial based course including instructor salary and TA assistance.

EFFECTIVE SEMESTER (Specify Term e.g. Fall 2017)

Winter 2024

APPROVAL DATES

Curriculum Committee approval	***April 24, 2018***
Faculty Council approval	***December 4, 2018***
Submission to CPRC/GSC	

NEW COURSE TEMPLATE

Faculty: Faculty of Science			
Full Course Title: Integrative Neuroscience Thesis Project I			
Short Form Course Title (max 30 characters): Integr. Neuroscience Thesis I			
Subject Code and Course number: NSCI 4410U	**Cross-listings:**	☒ **Core** ☐ **Elective**	**Credit weight: 3 cr. hrs.**
Is the course: ☒ Undergraduate ☐ Graduate ☐ Professional (e.g. some Education courses are classified as professional)			
Contact hours (please indicate number of total hours for each component): ☐ Lecture _____ ☐ Lab _____ ☐ Tutorial _____ ☒ Other __9 hrs___			

PROGRAM(S) IMPACTED

B.Sc. (Hons) Integrative Neuroscience

CALENDAR DESCRIPTION

The thesis project provides students with the opportunity, under the supervision of a faculty member, to integrate and synthesize knowledge gained throughout their program of study and to satisfy specific objectives and requirements. The project will be selected to include research that has been approved by the supervising faculty member. Students will submit a progress report at the end the first semester. Once all work is completed, each student must submit a thesis and make a presentation based on their research in the following semester.
Credit hours: 3
Other hours: 9
Prerequisite(s): Students will have completed 90 credit hours in their area of specialization and be in clear standing. Students must obtain prior consent of a faculty member.
Note(s): Students are expected to take NSCI 4420U in the following semester.

Prerequisites	Students will have completed 90 credit hours in their area of specialization and be in clear standing. Students must obtain prior consent of a faculty member. ☐ **With concurrency?**
Co-requisites	
Credit restrictions	☐ **Equivalency***
Grading scheme	☒ **letter grade** ☐ **pass/fail**

LEARNING OUTCOMES

Students who successfully complete the course have reliably demonstrated the ability to:

- Employ and synthesize the skills established in the individual courses in the student's program of study
- Define a project and be responsible for carrying it out to a satisfactory conclusion.
- Accept responsibility for managing time and financial constraints associated with carrying out a technical project

- Prepare technical presentations and reports, and format them for specific purposes make technical oral presentations before an audience of peers.
- Participate actively in technical presentations by others, and to articulate appropriate questions to the speaker.
- Prepare a detailed technical final report outlining the problem definition, the methodology of tackling the problem, and summarizing the conclusions.

COURSE INSTRUCTIONAL METHOD

(check all that may apply) ☐ **CLS (in-class)** ☐ **HYB (in-class and online)**
☒ **IND (individual studies)** ☐ **OFF (off-site)**
☐ **WB1 (synchronous online delivery)**
☐ **WEB (asynchronous online delivery)**

TEACHING AND ASSESSMENT METHODS

The two, one-semester courses (NSCI 4410U and NSCI 4420U) will include independent research conducted by the student, with the guidance of a faculty supervisor, during a minimum of 9 hrs per week. The time allotted will ensure that students will obtain the basic training required to properly conduct the research related to their thesis projects. This time will also be used to prepare students for presentation of their work and to prepare technical reports. The main form of assessment will be a written document, or thesis, that is required before the end of the second semester. In addition, students will be graded on their performance at the end of the first semester.

CONSULTATION AND FINANCIAL IMPLICATIONS, WHERE APPROPRIATE

The offering of a thesis project and acceptance of student to the project will be up to the individual faculty members. The availability of projects will vary slightly from year to year. A small stipend to offset the cost of research lab materials used may be required.

DOES THIS COURSE CONTAIN ANY INDIGENOUS CONTENT? ☐ **Yes** ☒ **No**

If yes, please ensure the consultation above includes the Indigenous Education Advisory Circle

EFFECTIVE SEMESTER (Specify First Active Term e.g. Fall 2017)

FALL 2023

APPROVAL DATES

Curriculum Committee approval	***April 24, 2018***
Faculty Council approval	***December 4, 2018***
Submission to CPRC/GSC	

NEW COURSE TEMPLATE

Faculty: Faculty of Science			
Full Course Title: Integrative Neuroscience Thesis Project II			
Short Form Course Title (max 30 characters): Integ. Neuroscience Thesis II			
Subject Code and Course number: NSCI 4420U	**Cross-listings:**	☒ **Core** ☐ **Elective**	**Credit weight: 3 cr. hrs.**
Is the course: ☒ Undergraduate ☐ Graduate ☐ Professional (e.g. some Education courses are classified as professional)			
Contact hours (please indicate number of total hours for each component): ☐ Lecture _____ ☐ Lab _____ ☐ Tutorial _____ ☒ Other __9 hrs___			

PROGRAM(S) IMPACTED

BSc (Hons) Integrative Neuroscience

CALENDAR DESCRIPTION

A continuation of the project started in NSCI 4410U. Students will make presentations based on their research and submit a written thesis.
Credit hours: 3
Other hours: 9
Prerequisite(s): NSCI 4410U
Note(s): Students are expected to take this course immediately after NSCI 4410U.

Prerequisites	**NSCI 4410U** ☐ **With concurrency?**
Co-requisites	
Credit restrictions	☐ **Equivalency***
Grading scheme	☒ **letter grade** ☐ **pass/fail**

LEARNING OUTCOMES

Students who successfully complete the course have reliably demonstrated the ability to:

- Employ and synthesize the skills established in the individual courses in the student's program of study
- Define a project and be responsible for carrying it out to a satisfactory conclusion.
- Accept responsibility for managing time and financial constraints associated with carrying out a technical project
- Prepare technical presentations and reports, and format them for specific purposes make technical oral presentations before an audience of peers.
- Participate actively in technical presentations by others, and to articulate appropriate questions to the speaker.
- Prepare a detailed technical final report outlining the problem definition, the methodology of tackling the problem, and summarizing the conclusions.

COURSE INSTRUCTIONAL METHOD

(check all that may apply)	☐ **CLS (in-class)**	☐ **HYB (in-class and online)**
	☒ **IND (individual studies)**	☐ **OFF (off-site)**
	☐ **WB1 (synchronous online delivery)**	
	☐ **WEB (asynchronous online delivery)**	

TEACHING AND ASSESSMENT METHODS

The two, one-semester courses (NSCI 4410U and NSCI 4420U) will include independent research conducted by the student, with the guidance of a faculty supervisor, during a minimum of 9 hrs per week. The time allotted will ensure that students will obtain the basic training required to properly conduct the research related to their thesis projects. This time will also be used to prepare students for presentation of their work and to prepare technical reports. The main form of assessment will be a written document, or thesis, that is required before the end of the second semester. In addition, students will be graded on their performance at the end of the first semester.

CONSULTATION AND FINANCIAL IMPLICATIONS, WHERE APPROPRIATE

The offering of a thesis project and acceptance of student to the project will be up to the individual faculty members. The availability of projects will vary slightly from year to year. A small stipend to offset the cost of research lab materials used may be required.

DOES THIS COURSE CONTAIN ANY INDIGENOUS CONTENT? ☐ **Yes** ☒ **No**

If yes, please ensure the consultation above includes the Indigenous Education Advisory Circle

EFFECTIVE SEMESTER (Specify First Active Term e.g. Fall 2017)

Winter 2024

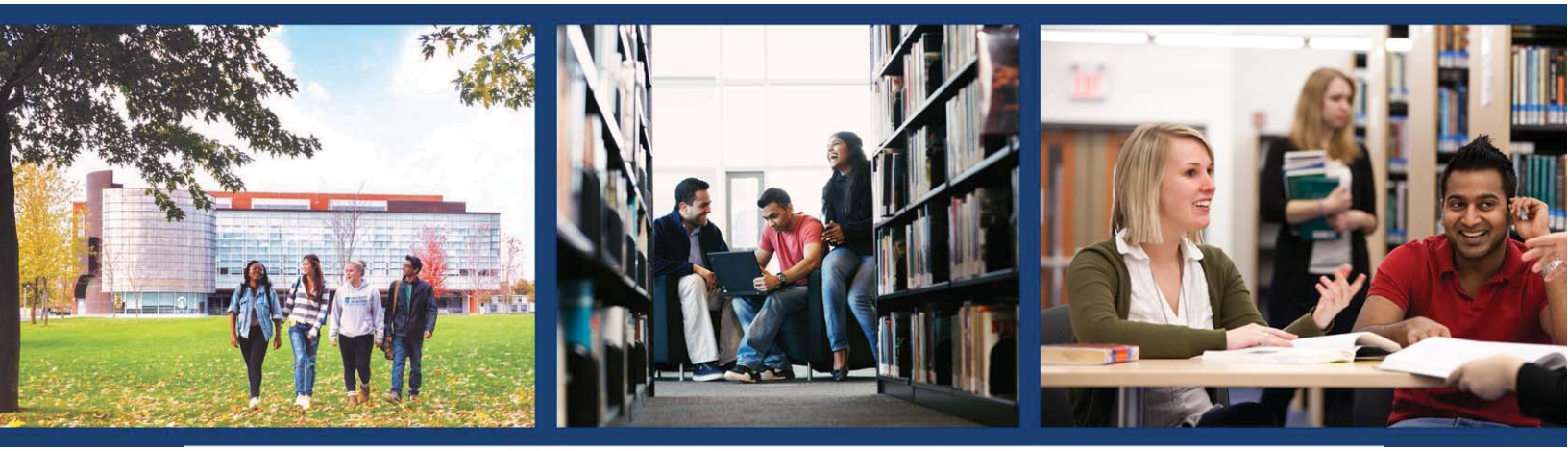
APPROVAL DATES

Curriculum Committee approval	***April 24, 2018***
Faculty Council approval	***December 4, 2018***
Submission to CPRC/GSC	

Appendix C: Library Report

Library statement for new program proposal: BSc. Integrative Neuroscience

Prepared by: Meg Miller, Science & Energy Systems Librarian
March 20, 2018



University of Ontario Institute of Technology | Library

Contents

Summary & Recommendations

The University of Ontario Institute of Technology Library is well positioned to support the new program of Integrative Neuroscience. The Library possesses resources covering the various concepts, principles, qualitative and quantitative methods covered in the areas of Neuroscience, Life Science, Health Science and Social Science that will meet the information needs of both faculty and students of this new program.

Recommendations

- Determine scope of new curricular offerings and identify where collections need to expand as well as estimated costs (one-time and/or ongoing) to support acquisition of monographs and any new subscriptions required
- Identify courses containing specific research methods components and work towards incorporating research (information literacy) skills
- Encourage students to seek one-on-one and small group consultations with a librarian for assistance with information literacy skills, particularly for independent research projects, theses, and dissertations.

Introduction

The University of Ontario Institute of Technology (UOIT) Library system is comprised of two locations: the main branch is located in North Oshawa, and the Social Science and Education Library in the downtown core. The Library offers vibrant and inviting learning spaces geared to meeting different learning styles by offering individual and group study space, as well as computer workstations and laptop rental. Electronic resources are accessible at all times on campus as well as remotely.

The Library's research and special collections total approximately 103,000 print volumes and over 97,000 journal subscriptions. The Library provides access to more than 650,000 eBooks, and primary source materials. Collection strengths support the research and instructional programs at UOIT.

Instruction

The Library plays an important role in linking teaching and research in the University. Information literacy instruction is offered to assist in meeting degree expectations in the ability to gather, evaluate and interpret information. These library services are aligned with the Association of College and Research Libraries (ACRL) Framework for Information Literacy for Higher Education.

The Library facilitates formal instruction integrated into the class schedule and hands-on tutorials related to course assignments. Recently covered topics covered in the Faculty of Science include: Introduction to the Library, and Library Research Skills both basic and advanced. Subject specialists also create online guides to support students in using Library resources specific to their program.

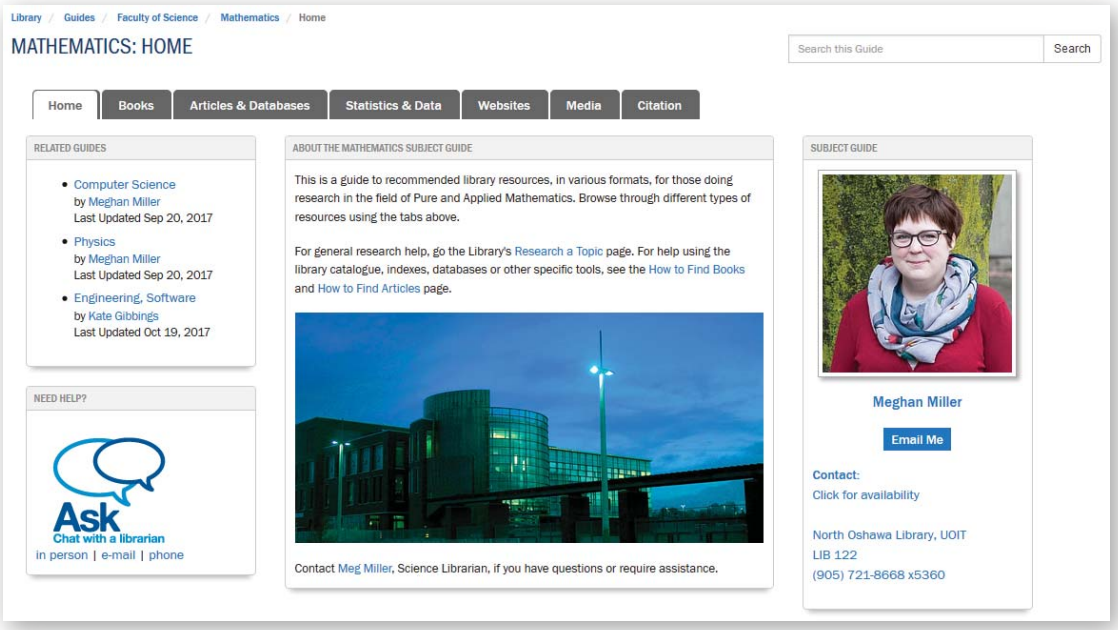


Figure 1: Mathematics research guide

Students may obtain in-depth research help and ask general questions through email, telephone, and virtual chat reference. The Library belongs to a consortium of Ontario universities that partner to deliver virtual chat reference offering 67 hours of chat service per week (fall and winter terms; reduced hours in summer).

Researcher Support

Open Access and Research Data Management

The Library provides support to faculty and students in complying with the Tri-Agency Open Access Policy (SSHRC, NSERC, CIHR). Faculty and students can make their work open access by publishing in an open access or hybrid journal, by depositing their work in a subject repository, or by depositing their work in UOIT's institutional repository, e-scholar@UOIT (https://ir.library.dc-uoit.ca). The Library provides direct support to faculties through subject specialists and online guidance with the Library's Open Access Guide (http://guides.library.uoit.ca/openaccess).

The Library has a Research Data Management guide (http://guides.library.uoit.ca/rdm) to support faculty and students in creating data management plans and sharing research data.

Research Metrics

The Library supports various departments on campus by fielding requests for reports on author, article, journal and institutional metrics. Subscribed tools include: Web of Science, Scopus, Journal Citation Reports (JCR) and InCites. The Library's Research Metrics guide (http://guides.library.uoit.ca/researchmetrics) provides background information and support for these tools.

Theses and Dissertations

The Library ensures that the UOIT community has access to national and international thesis and dissertation databases. Access to *PQDT* (ProQuest Dissertations and Theses) and the *Theses Canada Portal* is provided through the Library website. The Library plays a key role in the dissemination and preservation of UOIT theses, managing copies in the institutional open-access digital repository, *e-scholar@UOIT*, as well as maintaining print copies in the Library archives.

Collections

The library collects materials which support of the Bachelor of Science in Integrated Neuroscience. The physical collection of materials supporting this program is found at the North Oshawa location.

As a member in two key consortia, the UOIT Library is able to take advantage of the increased bargaining power of a collective through which we subscribe to a wide array of scholarly content.

The Canada Research Knowledge Network (CRKN) is a partnership of Canadian universities, dedicated to expanding digital content for the academic research and teaching enterprise in Canada. Through the coordinated leadership of librarians, researchers, administrators and other stakeholders in the research community, CRKN undertakes large-scale content acquisition and licensing initiatives in order to build knowledge infrastructure and research and teaching capacity in Canada's universities.

The Ontario Council of University Libraries (OCUL) leads and participates in a number of initiatives with the goal of enhancing research supports and creating rich learning environments for Ontario's diverse and growing student population. These resources span an impressive array of information resources (content), digital infrastructure, data, and maps and geospatial resources.

Research Databases, Journals and Conference Proceedings

Research databases provide access to journals and other academic resources such as conference proceedings, theses and dissertations, trade publications and reports. The Library almost exclusively acquires online journals, providing access to more than 97,000 titles across all disciplines.

Access to the literature in each subject area is best achieved by searching Library databases. Selected databases to access the literature for neuroscience include:

Highly Relevant Databases: Science & Health Science	**Relevant Databases:** Multidisciplinary/Related Disciplines
• *Biosis Citation Index* • *CINAHL* • *Cochrane Database of Systematic Reviews* • *MEDLINE* • *ProQuest Science* • *PubMed* • *SciFinder* • *Scopus* • *Web of Science*	Multidisciplinary*:* • *Academic OneFile* • *Academic Search Premier* • *JSTOR* • *ProQuest Dissertations and Theses (PQDT)* • *Scholars Portal Journals*** Psychology*:* • *CogNet* • *DSM Library* • *PsycARTICLES* • *PsycINFO*

** Scholars Portal provides a shared technology infrastructure and shared collections for all 21 university libraries in the province (e.g. Springer; Taylor & Francis; Cambridge; Oxford).

The Library provides access, through subscription, to all of the top 10 English language journals ranked by impact factor by Incites Journal Citation Reports in the category of Neuroscience. Additionally found is a sampling of top ranked UOIT Library journals from within disciplines that support this program:

Sample Highly Ranked Journals ***Source:*** *Journal Citation Reports (Clarivate Analytics).* ***Year:*** *2016,* ***Language:*** *English,* ***Ranked by****: Impact Factor.*	
Category: *Neuroscience*	
• Nature Reviews Neuroscience • Nature Neuroscience • Annual Review of Neuroscience • Trends in Cognitive Sciences • Behavioral and Brain Sciences	• Neuron • Progress in Neurobiology • Molecular Psychiatry • Acta Neuropathologica • Biological Psychiatry
Category: *Behavioral Sciences*	***Category:*** *Clinical Neurology*
• Trends in Cognitive Sciences • Behavioral and Brain Sciences • Neuroscience and Biobehavioral Reviews • Cortex • Autism Research	• Brain • Annals of Neurology • Alzheimers & Dementia • Movement Disorders • Neuroscientist
Category: *Science, Multidisciplinary*	***Category:*** *Biotechnology & Applied Microbiology*
• Nature • Science • Nature Communications • Scientific Data • Journal of the Royal Society	• Nature Reviews Drug Discovery • Nature Biotechnology • Genome • Genome Biology • Trends in Biotechnology

Though this list does not include open access journal titles, the Library recognizes that numerous high quality journals are open access. Open access journals are indexed in Library databases and search tools, including those in the Directory of Open Access Journals (DOAJ), meaning that they appear in Library users' search results.

Books and eBooks

The Library has over 12,600 print titles covering diverse topics in the sciences. The chart below details collection breadth in neuroscience and related topic areas.

Number of hardcopy books and e-books		
Topic	**Hardcopy**	**Electronic**
Neuroscience	205	1 215
Kinesiology	80	165
Pharmacology	272	1 391
Psychology	2 872	9 768

Examples of relevant publishers include: Taylor & Francis, Springer and Wiley.

Students also have online access to the latest editions of key reference resources such as Springer Protocols, Merck Index & the McGraw-Hill Encyclopedia of Science and Technology.

Statistics and Data

To support research that requires statistics and datasets, the Library subscribes to three collections: Statistics Canada's Data Liberation Initiative (DLI), odesi, and the Interuniversity Consortium for Political and Social Research (ICPSR).

Streaming Video

The Library invests in streaming video collections in order to make media more accessible to faculty and students. DVDs purchases continue by faculty request.

Library Services

Interlibrary Loan

The UOIT Library offers an Interlibrary Loan service for materials that are not immediately available through its print and online collection. Resources are delivered in print or electronically depending on copyright and licensing details. Students and faculty may also visit most other Canadian university libraries and borrow books as Reciprocal Borrowers.

Website

The Library website is a research and teaching venue, providing an overview of library services, and immediate access to 660,000 eBooks and over 90,000 Journals.

The website includes a Research section that provides guidance on search strategies, evaluating and analyzing information sources, citing materials, conducting literature reviews, copyright compliance, and academic integrity.

Conclusion

In conclusion, the Library is well positioned to support the BSc. in Integrated Neuroscience. We look forward to continuing to work closely with the Faculty of Science to ensure we keep abreast of shifts and changes in curricular focus to support our students.

Appendix: North Oshawa Specs

North Oshawa Library	
Audience ***UOIT:*** *Faculties of Engineering and Applied Science; Energy Systems and Nuclear Science; Science; Health Sciences; Business and Information Technology* ***DC:*** *Schools of Science and Engineering Technology; Health and Community Services; Justice and Emergency Services; Business, IT and Management; Media, Art and Design; Interdisciplinary Studies*	American Library Association (ALA) award winning building opened in 2004
	77,500 square feet
	Silent study zones (3rd and 4th floors)
	Reading room with fireplace (2nd floor)
	Library Den (collaborative study space)
	Special Collections room
	2 Library Orientation classrooms
	10 group study rooms
	Recording room
	Adaptive technology area
	560 seats
	92 computer workstations with Microsoft Office Suite
	143 accessible Ethernet ports
	Photocopiers, printers (including 3D printer) and scanners
	Student lockers
	ITS Software Support personnel

Appendix D: Statement of Resource Availability

PROGRAM FINANCIAL SUMMARY

Enrolement	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Year 1	25	30	30	30	30	30
Year 2	0	20	24	24	24	23
Year 3	0	0	20	24	24	22
Year 4	0	0	0	20	24	24
Year 5	0	0	0	0	20	24
TOTAL New Students	**25**	**50**	**74**	**98**	**122**	**126**

Revenue	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Domestic Tuition	$168,033	$346,148	$527,668	$719,767	$922,918	$981,773
International Tuition	$32,174	$66,278	$101,034	$137,816	$176,714	$187,983
Grant	$68,221	$234,679	$418,055	$601,432	$784,809	$792,449
Total Revenue	**$268,427**	**$ 647,104**	**$ 1,046,757**	**$ 1,459,015**	**$ 1,884,440**	**$ 1,962,205**

Course Summary	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
# of lecture sections	0	0	0	1	1	1
# of labs	6	8.5	12	13	13	13
# of tutorials	2.5	2.5	3.5	4.5	4.5	4.5

Required Hires	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
# of TTT	0	0	0	0	0	0
# of TF	0	0	0	0	0	0
# of PT Faculty	0	0	0	1	1	1

Expenses Academic Salaries	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
FT Faculty	$ -	$ -	$ -	$ -	$ -	$ -
FT Benefits (18.5%)	$ -	$ -	$ -	$ -	$ -	$ -
FT Total	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
PT Faculty	$ -	$ -	$ -	$ 9,702	$ 10,187	$ 10,697
Additional TAships	$ 2,822	$ 10,371	$ 12,445	$ 16,334	$ 17,151	$ 18,008
TAs	$ 14,110	$ 14,815	$ 21,779	$ 29,401	$ 30,871	$ 32,415
Lab Instructors	$ 35,646	$ 53,024	$ 78,600	$ 89,407	$ 93,878	$ 98,572
PT Benefits (11%)	$5,784	$8,603	$12,411	$15,933	$16,730	$17,566
PT Total	**$ 58,362**	**$ 86,813**	**$ 125,234**	**$ 160,778**	**$ 168,817**	**$ 177,258**
Total Academic Salaries	**$ 58,362**	**$ 86,813**	**$ 125,234**	**$ 160,778**	**$ 168,817**	**$ 177,258**

Support Staff Salaries	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
0	$0	$0	$0	$0	$0	$0
0	$0	$0	$0	$0	$0	$0
0	$0	$0	$0	$0	$0	$0
0	$0	$0	$0	$0	$0	$0
0	$0	$0	$0	$0	$0	$0
Benefits (18.5%)	$0	$0	$0	$0	$0	$0
Total Support Staff Salaries	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Operational Expense	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Instructional Supplies	$1,950	$2,925	$4,225	$4,875	$4,875	$4,875
Start-up	$0	$0	$0	$0	$0	$0
PD ($2,000/ faculty)	$0	$0	$0	$0	$0	$0
Travel	$0	$0	$0	$0	$0	$0
Recruitment/Moving Expenses	$0	$0	$0	$0	$0	$0
Promotion	$1,000	$500	$500	$500	$500	$500
Telecommunication	$0	$0	$0	$0	$0	$0

Office Supplies	$0	$0	$0	$0	$0	$0
Equipment	$0	$0	$0	$0	$0	$0
TOTAL Operating	**$2,950**	**$3,425**	**$4,725**	**$5,375**	**$5,375**	**$5,375**

Capital	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
TOTAL Capital	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Total Expenses	**$61,312**	**$90,238**	**$129,959**	**$166,153**	**$174,192**	**$182,633**

NET Income with Grant	**$207,115**	**$556,866**	**$916,798**	**$1,292,862**	**$1,710,248**	**$1,779,572**
NET Income without Grant	**$138,895**	**$322,187**	**$498,742**	**$691,430**	**$925,440**	**$987,123**

Appendix E: Course Outlines

BIOL1010U - Biology I

Molecular and Cellular Systems Fall 2017 Syllabus

Course Description

This course examines the evolutionary basis of life at the cellular level. Topics will include the basic structure and function of cells, cell energetics, respiration, photosynthesis, the structure and function of DNA, the control of gene expression, cell division, genetics and the evolution of multicellularity.

Objectives and Outcomes

This course provides an introduction to biological science. Lectures are designed to ensure that students learn the important biological concepts necessary to build a strong foundation for future courses. These concepts are reinforced through periodic online quizzes. The laboratory sessions are designed to expand on these concepts providing hands-on experiences that permit students to become familiar with lab procedures, data acquisition, and the interpretation of results leading to conclusions from their observations. Students' mastery of this material are assessed through one midterm test and a final exam.

Lecture Times

CRN (Section)	Time	Room
40050 (001)	Monday and Wednesday 8:10 a.m. – 9:30 a.m.	UB-2080
40051 (002)	Monday and Wednesday 2:10 p.m. – 3:30 p.m.	UB-2080
40052 (003)	Wednesday and Friday 11:10 – 12:30 p.m.	UB-2080

Instructor Contact Information

Lecturers:

Mary Olaveson: Office UA3061 | Phone (905) 721-8669 ext. 2979 | Email via Blackboard only

Office hours – see **"BIOL1010 Instructor Contact Information"** on *Blackboard for detailed office hours*

Annette Tavares: Office UA3063 | Phone (905) 721-8669 ext. 3641 | Email via Blackboard only

Office hours – see **"BIOL1010 Instructor Contact Information"** on *Blackboard for detailed office hours*

Lab Coordinator:

Dr. Sylvie Bardin: Office ERC3010 | Phone (905) 721-8669 ext. 5430 | Email via Blackboard only

Office hours – please email via Blackboard for an appointment

Textbook Information

Morris, JR, Hartl DL, Knoll AH, Lue RA, Michael M, Berry A, Biewener A, Farrell B, Holbrook NM. 2016. **Biology: How Life Works** (2nd ed.)**.** WH Freeman and Company. New York NY. 1225 pp.

- The textbook and access code for the textbook website (= Launchpad) can be purchased at the UOIT Bookstore (see the UOIT Campus Bookstore website)
- The textbook is packaged in three formats as follows:
  (1) hardcover package (includes e-textbook and LaunchPad access code)
  (2) loose-leaf package (includes e-textbook and LaunchPad access code)
  (3) e-book package (includes LaunchPad access code)
- NOTE: **If you purchase a used textbook, you will still need to purchase the e-book package** (option (3) above) in order to have access to the LaunchPad resources used in this course.
- To register for access to the LaunchPad website, refer to instructions posted on Blackboard (in the folder entitled: "**BIOL1010 Textbook Information and Access**").

Lecture Topics and Associated Textbook Chapters

Topics with Mary Olaveson - September 13 to October 18, 2017	
Introduction – Exploring Life – Defining Cells	Chapter 1
Chemistry of Life - Macromolecules	Chapter 2
Information Storage – Nucleic Acids	Chapter 3
Information Transfer – Proteins	Chapter 4
Cell Membranes and Transport – Lipids	Chapter 5
Energetic and Metabolism – Carbohydrates	Chapter 6
Cellular Respiration	Chapter 7
Photosynthesis	Chapter 8
Topics with Annette Tavares - October 20 to December 4, 2017	
Cell Communication	Chapter 9
Cell Form and Function	Chapter 10
Cell Division	Chapter 11
DNA Replication	Chapter 12
Mutation and DNA Repair	Chapter 14
Genetic Variation	Chapter 15
Mendelian Inheritance	Chapter 16
Beyond Mendel	Chapter 17
Genetic / Environmental Influences	Chapter 18

Lecture Slides and Note-Taking Resources

- Lecture slides and related materials (e.g. wireframe notes) will be available in the folder entitled "**BIOL1010 Lecture Content**".
- **Wireframe notes will be posted before each lecture** to help with note-taking during lecture.
- Print / download the wireframe notes and bring them to lecture.
- Powerpoint lecture slides presented in lecture will not be posted before lectures.
- All **lecture slides will be posted after each lecture has been presented to the entire class.**
- Other resources (e.g. videos, animations, published papers, etc.) will be posted with each lecture as appropriate.

BIOL1010 Evaluation Details		
Component	**Mark**	**Details**
Midterm	**20%**	**Wednesday October 25, 2017** (in-class) • The format is 50 multiple-choice questions (in 1-hour time period) • **Students must attend the correct CRN in which you are registered to write your midterm test!**
Participation Activities	**5%**	• Assigned randomly throughout the term • Marking criteria will be outlined in class • **Requires attendance / participation in class - no exceptions**
Online Lecture Quizzes (online - through Blackboard)	**20%**	• Six (6) online quizzes designed to supplement lecture material will be posted throughout the term on Blackboard in the folder entitled "**BIOL1010 Online Lecture Quizzes**" on Blackboard. • Students must follow the instructions provided with each quiz and adhere to the stated deadlines in order to receive full credit for the quiz; each quiz will be worth 4% of the final mark in the course. • The **best 5** of 6 **quizzes will be used to calculate your quiz mark**.
Laboratories	**25%**	• Five (5) labs during term – **attendance is mandatory** • You are **permitted to miss one lab with appropriate documentation**. If you miss more than one lab even with appropriate documentation, you will receive a mark of zero for each lab missed. Missed labs will not be rescheduled. • **Evaluation:** **Quizzes** (5 quizzes each worth 2%) ..... **10%** **Assignments** (5 reports each worth 3%) ..... **15%** • Students **do not have to pass the Lab Component to pass BIOL1010** • Please **refer to the "BIOL1010 Laboratory Guidelines" posted on Blackboard in the folder entitled "BIOL1010 Laboratory Information"** for more information regarding the labs
Final Exam	**30%**	**In Final Exam Period – December 6 to 17, 2017** – date / time / location TBA • The **final exam is cumulative** with emphasis on material covered after the midterm test • The format is 100 multiple-choice questions (in 2-hour exam period) • **Follow instructions for your CRN to write your final exam!**

Course Expectations

It is important for students at university to become **active learners**. Students are responsible for:

- attending and actively participating in all lectures
- making their own notes, reading all assigned references and using textbook resources
- preparing for labs in advance and completing laboratory assignments and quizzes in allotted time
- completing online quizzes after reviewing resources provided
- undertaking private study (on a regular basis)
- seeking help from instructors, TAs, Bio-Help TAs, PASS sessions, Science Café, peer tutors

Getting Help with Course Content

Bio-Help Drop-in Sessions

There are no tutorials in BIOL1010; instead **there are weekly, non-mandatory Bio-Help Sessions** scheduled to get help with the lecture and lab content as well as other topics such as note-taking and studying skills and review of midterm results.

These sessions **begin the week of September 11, 2017** and continue until the Final Exam period.
Just drop by and ask your questions!

Schedule for Bio-Help Drop-in Sessions ((posted on Blackboard in "**BIOL1010 Bio-Help Drop-in**" folder)

Day	Time	Room	Bio-Help TA
Monday	3:30 p.m. to 5:00 p.m.	**UA3140**	Sarah Behnami, Siddiq Moola, Luis Salgado
Thursday	11:00 a.m. to 12:30 p.m.	**UL-3**	Sarah Abdelmassih, Sarah Behnami, Michael Jeffrey
Friday	11:00 a.m. to 12:30 p.m.	**UL-3**	Sarah Abdelmassih, Sheena Gopal, Zahra Mortaji

PASS (Peer-Assisted Study Sessions) by Student Learning Services

PASS is a peer-led, informal, fun and interactive way to improve your understanding of course material, develop effective study strategies and prepare for upcoming BIOL1010 tests and exams. PASS attendance is free, completely voluntary and no registration is required. Visit the PASS website for more information or to see other PASS supported courses.

The Pass Leader for BIOL1010 is **Hafsa Zia** who is a current UOIT student. She has previously completed this course will be attending all lectures this semester to help her facilitate two group study sessions each week. Consult the Blackboard folder "**BIOL1010 PASS Help**" for the PASS schedule.

Peer Tutoring

BIOL1010 peer tutors work one-on-one to provide academic support based on students' individual needs.

Book an appointment through the Student Life Portal or contact the Student Learning Center at 905-721-8668, ext. 6578. Appointments are 45 minutes in length.

UOIT Science Cafe

The UOIT Science Café offers additional academic support (in Biology, Chemistry, Math and Physics) outside of the regular work week.

The **Café is available every Saturday (starting Sept.16, 2017) from 11 a.m. to 3 p.m. in UA-3230.**

No registration required; simply drop by! For more information about the UOIT Science Café, please visit: www.facebook.com/UOITScienceCafe/.

BIOL1010 Summary Laboratory Information

*For detailed laboratory information, please consult the **Lab Guidelines** on Blackboard*
(in the folder entitled: "**BIOL1010 Laboratory Information**").

Lab Personnel

Lab Coordinator - **Dr. Sylvie Bardin** (see contact information on page 1 of this syllabus)

Lab TAs - Jarret Arbing, Everett Cochrane, Michael Greenberg, Tyler Harrow-Lyle, Zahra Mortaji, Elizabeth Revel-Roy

Please contact your TA via Blackboard email only

Lab Start Dates

BIOL1010 labs start on September 13, 2017

- Refer to the Laboratory Schedule posted in folder entitled: "**BIOL1010 Laboratory Information"** on Blackboard to find the date you will have labs
- Note the CRN number for your lab section, room, time and your TA

Laboratory Objectives

The objectives of the laboratory component of BIOL1010 are:

- to give students practical experience with some of the techniques / procedures used in biology
- to have students develop technical skills used in modern biology laboratories
- to help students develop analytical skills required to evaluate scientific data and interpret results

Laboratory Format and Lab Resources

- **All laboratory sessions are mandatory**.
- Each student will perform a total of five 3-hour lab sessions per term (one session every other week).
- Each lab will begin with a laboratory quiz.
- **Lab assignments are due at the end of each lab session.**
- The Blackboard folder entitled: "**BIOL1010 Laboratory Information"** contains all of the information you need for the labs including:
  - Lab Schedule - the times and locations of your labs
  - Lab Safety Rules and Guidelines
  - Laboratory Manual - contains **all documents required** for each of the five BIOL1010 labs

Summary Lab Schedule and Tentative Lab Topics

Lab #	Tentative topics	Dates (2017)
1	Introduction to Microscopy	September 13 to September 22
2	Membrane structures and functions	September 27 to October 6
3	Analysis of enzyme activity: Turnip peroxidase	October 11 to October 20
Reading Break (no labs scheduled)		**October 24 to October 27**
4	Photosynthesis and respiration in aquatic system	October 31 to November 10
5	Plasmid DNA extraction	November 14 to November 24

Lab Preparation

Before coming to each lab you are required to:

- Print the introduction/protocol, and assignment files and come to the lab with a hard copy of these documents – **you will not be permitted entry to the lab without these documents printed**
- Complete the pre-lab questions in the lab assignment (when required) and show it to your TA as you enter the lab – you will not be permitted entry to the lab without completing this pre-lab work.
- Read and study the introduction and protocol in preparation for the lab quiz
- Review the lab assignment so you are sufficiently prepared for your lab
- Come appropriately dressed for the lab – wear long pants, socks and closed (non-slip) toed shoes
  NOTE: students wearing shorts, skirts, shoes with no socks or socks not long enough to cover the ankles, or sandals will not be permitted entry to the lab
- Always bring your lab coat and safety glasses or goggles to each lab
- Please do not wear contact lenses to the lab; wear your glasses instead with goggles over them
- Please also bring the following supplies to every lab period:
  - a waterproof pen (such as a "Sharpie")
  - a pencil/eraser for drawing diagrams
  - a ruler with a cm and mm scale
  - a calculator

Frequently Asked Questions about BIOL1010 Lectures and Labs

How to I find information about BIOL1010?

- All of the information for BIOL1010 can be found on Blackboard by clicking on the folder tabs on the left side of the course home page. Visit Blackboard frequently to keep up-to-date throughout the term.

What is the Preparedness Quiz in BIOL1010 and how can I prepare in advance?

- It is an initial assessment of your background knowledge as you enter first-year Biology.
- There is no preparation involved - just answer the questions honestly and as best you can.
- It will be assigned during the first week of classes and will be **available in the "BIOL1010 Preparedness Quiz" folder on Blackboard from Monday Sept. 11 to Monday Sept. 18 (by 7 p.m.).**
- Do not worry about your mark for this quiz – use it as a guide for topics to focus on in BIOL1010.
- **Students who do the Preparedness Quiz by the deadline will receive 3 participation marks**.

What happens if I miss the Preparedness Quiz?

- If you are registered in BIOL1010 before the Quiz deadline (Friday Sept.15), you will not get the participation marks.
- If you are not registered in BIOL1010 before the Quiz deadline (Friday Sept.15), you should contact the lecturers (through Blackboard email).

What are the participation activities in BIOL1010 lectures?

- There will be a number of in-class activities randomly presented throughout the course for which students can gain participation marks.
- Generally these activities will not be announced in advance. To receive credit for participation, **students must be in attendance at the lecture when the activity occurs** – no exceptions.

What happens if I miss the participation activities?

- Students who are not present in class when the activity is done will not receive credit regardless of the reason for their absence. Medical notes or other documentation will not be accepted.

What are the Online Lecture Quizzes in BIOL1010?

- There are six (6) online lecture quizzes which will be assigned throughout term.
- There is a schedule posted on Blackboard in the folder entitled "**BIOL1010 Online Lecture Quizzes**"; note the Quiz deadlines by checking the **BIOL1010 Calendar** on Blackboard.
- The learning modules, videos, readings and other resources along with the quiz questions will be posted in the folder entitled "**BIOL1010 Online Lecture Quizzes**".
- Students are advised to do the quizzes well before the deadline to avoid any last minute technical issues which may result in lost credit for missed or incomplete quizzes.
- There will be no courtesy reminder emails or announcements sent.
- **It is the responsibility of each student to keep track of quiz deadlines and complete them in a timely manner to receive credit for their work.**
- Final quiz marks are based on the results of the 5 best quizzes (the lowest quiz mark is omitted).

What happens if I miss an Online Lecture Quiz?

- Online Lecture **Quizzes must be completed and submitted by the posted deadline** (posted on Blackboard).
- There is no option for late submission of these online lecture quizzes or extension of the deadline.
- Medical notes or other documentation will not be accepted for a missed Quiz except in extenuating circumstances (which will be assessed on a case-by-case basis).

Where do I get a lab coat and protective eyewear (goggles) for the labs in BIOL1010?

- Lab coats can be purchased at the UOIT Bookstore (see the UOIT Campus Bookstore website).
- Purchase the UOIT lab coat so it can be used in all of your lab courses.
- Protective eyewear (safety glasses or goggles) can also be purchased at the UOIT Bookstore – **make sure that they protect the sides of your eyes.**

What happens if I forget to print a hardcopy of the required lab documents (introduction, protocol, and assignment files) for a lab in BIOL1010?

- If you **have not printed the required files and/or brought them to your lab, you will be denied entry** to the lab.
- If you have been denied entry to a lab, you **will receive zero on the quiz, assignment and all coursework associated with lab.**

What happens if I am late for a lab in BIOL1010?

- Students will not be permitted in the lab if they are more than 10 minutes late and will receive zero (0) on all assignments associated with the missed lab.
- Students arriving during the quiz will not receive any extra time to complete the quiz.

What happens if I miss a lab in BIOL1010?

- **If you miss your lab for a valid reason, you must submit proper documentation within 3 working days to the Lab Coordinator - Dr. Sylvie Bardin.**
- Valid reasons for missing a lab are medical reasons or death in the family/family tragedy.
- If you miss a lab for medical reasons you must submit a UOIT Medical Statement form completed by your doctor – **NOTE: NO other documents from your doctor will be accepted.**
- If you miss a lab due to a family death or family tragedy, a death certificate or other appropriate documentation must be submitted for consideration.
- Other reasons may be considered on a case-by-case basis with submission of documents.
- **You are permitted to miss one lab with appropriate documentation**. Upon receipt of suitable and verifiable documentation by the Lab Coordinator, Dr. Sylvie Bardin, you will be excused for the missed lab **one time only**. Your lab assignments and quiz marks for the excused lab will be re-weighted to the other four labs.
- If you miss more than one lab, even with appropriate documentation, you will receive a mark of zero (0) on all assignments associated with the missed lab.
- **Missed labs will not be rescheduled**. There are **no make-up assignments** and you are responsible for learning the missed material on your own.

What is the Midterm Test and when is it scheduled in BIOL1010?

- Details for the **midterm test (scheduled for Wednesday October 25, 2017 in-class)** will be posted in the folder entitled: "**BIOL1010 Midterm and Final Exam Information**").
- The format is 50 multiple-choice questions only in a 1 hour time period (in-class)
- The midterm will test your understanding of material covered in the lectures (by Mary Olaveson) and online lecture quizzes from the first half of the course (from Wednesday September 13 to Wednesday October 18, 2017).

What happens if I miss the Midterm Test in BIOL1010?

- **If you miss the midterm test for a legitimate reason** (e.g. illness or death in the family) **and can provide appropriate documentation** (e.g. a UOIT Medical Statement completed by your doctor or a photocopy of a death certificate), you will not be penalized.
- Contact the Faculty of Science Academic Advisor, at science.advising@uoit.ca and **submit your documentation within 3 working days**. The academic advisor will verify the documentation and will advise the instructors accordingly. The usual accommodation, assuming appropriate documentation, will be to re-weight the grading scheme to allocate the missed test marks to the final exam mark.
- If you **miss a test without a legitimate reason** or do not provide the suitable documentation by the stated 5-day deadline, **you will receive a mark of zero**.
- If you cannot write the midterm for any other reason, it MUST be discussed with the instructor(s) at least 7 days before the midterm date. A decision will be made on a case-by-case basis.
- **There are no make-up tests** – this Faculty of Science Policy will be followed in all cases.

What is the Final Exam and when is it scheduled in BIOL1010?

- Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class.
- **Check the published Examination Schedule on MyCampus for an updated information.**
- Details for the final exam (scheduled in the December 2017 Final Exam Period) will be posted in the folder entitled: "**BIOL1010 Midterm and Final Exam Information**") once the date is finalized.
- The format is 100 multiple-choice questions only in a 2 hour time period.
- The final exam will test your understanding of material covered in the lectures (by Annette Tavares) and online lecture quizzes from the second half of the course (from Friday October 20 to Monday December 4, 2017).
- Since the **final exam is cumulative**, there will be some questions from the first half of the course.

What happens if I miss the Final Exam in BIOL1010?

- Students are advised to obtain their UOIT Student ID Card well in advance of the examination period as they will not be able to write their exams without a current, valid UOIT Student ID. Student ID can be obtained at the **Campus ID Services (Room C-128, Gordon Wiley Building).**
- Students who are unable to write the final examination when scheduled due to religious obligations may make arrangements to write a deferred examination by submitting a Request for Accommodation for Religious Obligations to the Science Academic Advising Office as soon as possible and no later than three weeks prior to the first day of the final examination period.
- **If you miss the final exam for a legitimate reason** and can provide appropriate documentation (e.g. UOIT Medical Statement), you will need to contact the Faculty of Science Academic Advisor, at science.advising@uoit.ca and **submit your documentation within 3 working days of the scheduled date of the final exam** in the course involved. You will need to follow the procedures for applying to write a deferred final exam (refer to the UOIT Academic Calendar (2017-2018).

What are the course evaluations in BIOL1010?

- Student evaluation of teaching is a highly valued way to monitor the quality of UOIT's programs and instructional effectiveness. Course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes in each semester.
- Students are encouraged to participate actively in this process and will be notified of the dates when evaluations are requested. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

When is the last day of classes and what does it mean?

- All term work (in-class activities, lab work, quizzes, tests, etc.) **must be completed and submitted by the last day of classes (Monday December 4, 2017).**
- There is **no option to complete or submit any term work once the term has ended and the final exam period has started.** There will be **no option to do alternative work** (extra assignments, or other 'special' activities) **to make-up missed term work.**

Where do I find my marks in BIOL1010?

- During the Fall 2017 semester, marks for quizzes, laboratory quizzes / assignments and the midterm test will be posted in the "**BIOL1010 My Grades**" folder on Blackboard.
- The **final exam marks or final course marks will not be posted on Blackboard**.

Where do I find my final grade in BIOL1010?

- The final grades will be released to students through MyCampus at the end of term after marks are submitted by course instructors and reviewed by the Faculty of Science Administration.
- Note **once released** to the students on MyCampus by the Registrar's Office, the **grades are final and are not subject to discussion or negotiation with the instructor.**
- There is **no option to do extra assignments or other activities to make up for a poor or unsatisfactory performance in a course.**

Can I review my final exam after the final grades are released?

- In BIOL1010, students have the option to view their final exam. To facilitate this process, **students must submit** a completed Science Final Exam View Request form to the instructor electronically or in person before an exam viewing will be arranged.
- Students may appeal their final grade by following established university-wide procedures; consult the Registrar's Office for information on how to deal with your concerns

Important Dates and Academic Policies at UOIT

- Additional information for students and useful links to academic policies and services at UOIT can be found on Blackboard (in the folder entitled: "**Important UOIT Links**").

Important Academic Dates for 2017-2018

- Always check the Important UOIT Academic Dates for Undergraduates to avoid missing university deadlines throughout the semester. Refer to the UOIT Academic Calendar for 2017/2018 for university policies and program and courses descriptions and requirements**.**

Faculty of Science Policies

- Key Faculty of Science policies:
  - If you have already written or submitted a test, assignment, or any other term work, you cannot receive consideration for your performance on it "after the fact".
  - There are no make-up exams, tests or assignments. The normal Policy for missed term work is to re-weight the remaining work of the course to account for the missing grade. Normally the re-weighting will be applied to the final exam in the course.
- For more complete details of academic policies for the Faculty of Science, please refer to the link to Academic Policies on the Faculty of Science website.

Learning Considerations at UOIT

- Students with diverse learning styles and needs are welcome in this course. If you have a disability or health consideration (e.g. hearing, learning, medical, physical, psychiatric or visual disability) that may require accommodations, please feel free to approach the instructors in this course and/or the Student Accessibility Services, which support accessible and equal education.
- Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code by seeking completing a request through Student Accessibility Services; requests must be made in a timely manner. Students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.
- Decisions made in accordance with the Ontario Human Rights Code will be consistent with and supportive of the essential requirements of courses / programs, and provided so the dignity of students with disabilities are respected while encouraging integration and equality of opportunity.

Academic Integrity (Plagiarism, Cheating)

- Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship which is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by disciplinary action.
- Students are expected to be familiar with and abide by UOIT's Regulations on Academic Conduct which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from UOIT. Being unfamiliar with the regulations on academic conduct is not a defense against its application.
- Specifically **students should seek credit only for their own individual work** (e.g. their own ideas and efforts). Always paraphrase the work of others (never copy word to word) and always give proper acknowledgement using appropriate citations within the text of the submitted work. A reference list for all sources of information cited in the body of the written work must be included in a standard format at the end of the submitted work. If a report fails to identify the student's own contribution clearly, it will be considered inadequate. This may result in the work being awarded a mark of zero (0%) or more severe academic sanctions. **Copying the work of another student, instructor, TA or copying a previously published work** (e.g. books, journals, newspapers, textbooks, websites, etc.) **and submitting this material as your own work** (for assignments, laboratory work, presentations, etc.) **is considered plagiarism**. This type of academic misconduct will not be tolerated. Students who cheat in this manner will receive a mark of zero for the submitted work involved (even if only a small portion of the work has been plagiarized) and a minor academic misconduct document will be filed with Academic Advising. Note that you will not receive any warning; you will be penalized at the very first offence). However, depending on the severity of the plagiarism or if plagiarism has already occurred in this or any other courses taken at UOIT, additional significant academic penalties may be imposed. You can learn more by consulting the link to Academic Integrity.
- Cheating during midterm tests and final exams is a serious academic offence and students will be penalized according to the Regulations on Academic Conduct.
- REMEMBER that academic offences can carry significant academic consequences. You should refer to the UOIT Academic Calendar for 2017/2018 for further details.

Use of Turnitin at UOIT

- UOIT is committed to the fundamental values of preserving academic integrity so UOIT faculty members reserve the right to use electronic means to detect and help prevent plagiarism.
- Students agree that by taking this course assignments may be subject to submission for textual similarity review by Turnitin.com where submitted assignments will be included in the Turnitin restricted access database for five academic years solely for the purpose of detecting plagiarism.
- The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the UOIT Turnitin.com website.
- Students who do not wish to have their work submitted to Turnitin.com must provide a special assignment cover sheet with their assignment at the time of submission to the instructor. A signed Turnitin.com Assignment Cover sheet can be obtained at the following link: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf.

Additional Information and Important UOIT Links

- Additional information for students and useful links to general UOIT information at UOIT can be found on Blackboard (in the folder entitled: "**Important UOIT Links**").

Religious Observances

- Special consideration is provided for recognized holy days, which may be observed by our students (refer to http://www.interfaith-calendar.org/2017.htm).
- Though not all holy days require students to be absent from school, accommodations can be considered in those cases when students are required to be absent.
- **It is your responsibility to check due dates for all course work and tests or exams** and to inform your instructors or Science Academic Advising Office well in advance of any potential conflicts between religious observances and coursework at least 3 weeks prior to the deadline.
- Failure to do so may result in any consideration being denied. Documentation may be required.

Prevention of Sexual Violence

- UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.
- If you think you have been subjected to or witnessed sexual violence:
  - Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence.
  - Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more.
- To make an appointment with a Support Worker call 905-721-3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

Freedom of Information and Protection of Privacy Act (FIPPA)

- UOIT is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA") which provides a mechanism for requesting records held by the university.
- FIPPA requires that UOIT not disclose personal information of its students without their consent.
- It has important implications for the submission of course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.
- FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.
- If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at: accessandprivacy@uoit.ca.

PHY 1030U Introductory Physics

Faculty of Science

Course outline for Fall 2017

Lecture 1	Lecture 2	Room	Professor
Tuesday 3:40-5:00pm	Thursday 3:40-5:00pm	UA1140	Dr. Rupinder Brar

Instructor Contact Information

Instructor Name	Office	Phone	Email
Dr. Rupinder Brar	UA2025	x2812	please use blackboard email

Laboratory Coordinator	Office	Phone	Email
Dr. Valeri Kapoustine	UA3065	x2990	valeri.kapoustine@uoit.ca

Course Description

This calculus-based course introduces basic concepts of physics for students i) who did not take high school calculus or ii) who are enrolled in biological or forensic sciences. It gives an introduction to basic mechanics, Newton's laws of motion; kinematics and dynamics in one and two dimensions; work and energy; forces; momentum and collisions; gravitation; simple harmonic motion; mechanical and sound waves.

Learning Outcomes

On the successful completion of the course, students will be able to: Demonstrate a sound knowledge of, and be able to apply and solve problems using physics theory related to basic mechanics, including: kinematics, dynamics, energy, momentum, gravitation, and waves. Demonstrate a good knowledge of physics laboratory techniques related to mechanics.

Course Design

Lectures

Each course section will have two 80 minute lectures per week. Lectures comprise the most important part of your physics learning process. Lectures will be interactive and you must bring writing materials and/or your laptop to work on problems during class. Your instructor may ask questions throughout the lecture, and you may be expected to respond and participate whenever appropriate.

Laboratories

The lab component of the course consists of one 3 hour session, every second week, as determined by your individual schedules. The labs are intended to give you practical experience with some concepts seen in lectures. Details on the labs can be found on Blackboard.

Tutorials

The tutorial component of the course consists of one 80 minute session every second week, starting the week of September 12. A full tutorial schedule, along with tutorial worksheets and solutions, when appropriate, will be posted on Blackboard. Please refer to this schedule for your tutorial dates and times; there might be slight changes from your MyCampus schedule.

Each tutorial will be an opportunity for practicing problem solving, with supervision and help, in areas that have been covered previously in Lecture. During each Tutorial students will complete a tutorial worksheet that will be handed in to the TA at the end. The worksheets will be marked.

Outline of Topics in the Course

- Introduction (Chapter 1)
- Kinematics in One Dimension (Chapter 2)
- Vectors (Chapter 3)
- Kinematics in Two Dimensions (Chapter 4)
- Forces (Chapters 5, 6, 7)
- Conservation of Momentum (Chapter 9)
- Conservation of Energy (Chapters 10, 11)
- Gravity (Chapter 13)
- Simple Harmonic Motion (Chapter 14)
- Waves (Chapters 20,21)
- Circular Motion and Forces (Chapter 8) (Time permitting)
- Rotational Motion (Chapter 12) (Time permitting)

Texts

Text

Physics for Scientists and Engineers, Third or Fourth Edition by Randall D. Knight. This textbook is an excellent book (the best first year physics book I've read), and you will find it useful to read.
Note that the second edition of the textbook is fine, although there are some differences between the books. Earlier editions may be used, but it is the students' responsibility to adjust for page changes, question number changes and other alterations between editions. References to the text in lectures will be in regard to the fourth edition. You do not need a MasteringPhysics access code or the *Student Workbook*.

Computers and Calculators

Any scientific calculator will be adequate for assignments but a non-programming one is required for exams (same requirements as in Calculus). Laboratory exercises, tutorials, assignments and some lectures may require your laptop computer and its special software.

Evaluation Method

Assignments and Modules

There will be practice Modules assigned from Lon-Capa (a free online homework system) for each topic covered in the course. Modules are designed to help you master material introduced in lecture. Modules are marked for correct completeness. More formal Assignments will be given more infrequently also from Lon-Capa. These assignments are graded for credit.

Midterm and Final Exam

There will be two midterm tests, in Early October and in Early November, and a final exam in December. The exam will cover material of the whole course. Check Blackboard calendar for dates.

Marking Scheme

- Laboratory: 20%
- Lecture quizzes (and participation): 5%
- Modules and Assignments: 10%
- Tutorial Work: 10%
- Midterms (2×10): 20%
- Final Exam: 35%

In order to pass the course you have to obtain at least overall 50% in addition to getting at least 50% on your total lab mark.

Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services. Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

If you miss a test, or other major evaluation you will be given a mark of zero unless you provide the student advisor with an acceptable written explanation, with medical or other documentation as appropriate.

Sexual Violence

UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, UOIT can help. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.
If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

BIOL1020U - Biology II

Diversity of Life and Principles of Ecology Winter 2018 Syllabus

Course Description

This course explores the diversity of all organisms (e.g. prokaryotes, protists, fungi, plants and animals). It addresses the evolutionary relationships among these organisms and how each is uniquely adapted to survive and reproduce. The second half of the course introduces the main concepts and principles of ecology and gives a basic understanding of populations, communities and ecosystems.

Objectives and Outcomes

This course provides the student with an introduction to biological diversity, evolution and ecology. Lectures are designed to ensure that students learn the important biological concepts outlined in this course. The drop-in sessions are available for students to ask questions and to clarify problems with the material presented in the lectures. The laboratory sessions are designed to expand on the concepts developed in the lectures. The lab assignments require the students to describe lab procedures, data acquisition, results and to discuss and conclude the outcomes of their observations.

Lecture Times

CRN (Section)	Time	Room
70001 (001)	Tuesday and Thursday 9:40 a.m. – 11:00 a.m.	UA-1350
70002 (002)	Monday and Wednesday 3:40 p.m. – 5:00 p.m.	UB-2080

Instructor Contact Information

Lecturers:

Annette Tavares: Office UA3063 | Phone (905) 721-8668 ext. 3641 | Email via Blackboard only

Office hours – see **"BIOL1020 Instructor Contact Information"** on *Blackboard for detailed office hours*

Mary Olaveson: Office UA3061 | Phone (905) 721-8668 ext. 2979 | Email via Blackboard only

Office hours – see **"BIOL1020 Instructor Contact Information"** on *Blackboard for detailed office hours*

Lab Coordinator:

Dr. George Stamatiou: Office ERC2028 | Phone (905) 721-8668 ext. 2082 | Email via Blackboard only

Office hours – please email via Blackboard for an appointment

Textbook Information

*If you have a textbook and access code from BIOL1010, you can use it for this course, but you must access the BIOL1020 Launchpad content via the NEW URL posted on Blackboard (in the folder entitled "**BIOL1020 Textbook Information and Access**")*

Morris, JR, Hartl DL, Knoll AH, Lue RA, Michael M, Berry A, Biewener A, Farrell B, Holbrook NM. 2016. **Biology: How Life Works** (2nd ed.). WH Freeman and Company. New York NY. 1225 pp.

- The textbook and access code for the textbook website (= Launchpad) can be purchased at the UOIT Bookstore (see the UOIT Campus Bookstore website)
- The textbook is packaged in three formats as follows:
  (1) hardcover package (includes e-textbook and LaunchPad access code)
  (2) loose-leaf package (includes e-textbook and LaunchPad access code)
  (3) e-book package (includes LaunchPad access code)
- NOTE: If you purchase a used textbook, you will still need to purchase the e-book package (option (3) above) in order to have access to the LaunchPad resources used in this course.
- To register for access to the LaunchPad website, refer to instructions posted on Blackboard (in the folder entitled: "**BIOL1020 Textbook Information and Access**").

Lecture Topics and Associated Textbook Chapters

Topics with Annette Tavares - January 9 to February 27, 2018	
Evolution	Chapter 21
Species and Speciation	Chapter 22
Evolutionary Patterns	Chapter 23
Eukaryotic Cells: Origin and Diversity	Chapter 27
Being Multicellular	Chapter 28
Animal Diversity	Chapter 44
Animal Behaviour	Chapter 45
Topics with Mary Olaveson - February 28 to April 5, 2018	
Carbon Cycling	Chapter 25
Bacteria and Archaea	Chapter 26
Plant Diversity	Chapter 33
Fungi	Chapter 34
Population Ecology	Chapter 46
Species Interactions	Chapter 47
Biomes and Global Ecology	Chapter 48
The Anthropocene	Chapter 49

Lecture Slides and Note-Taking Resources

- Lecture slides and related materials (e.g. wireframe notes) will be available in the folder entitled "**BIOL1020 Lecture Content**".
- **Wireframe notes will be posted before each lecture** to help with note-taking during lecture.
- Print / download the wireframe notes and bring them to lecture.
- Powerpoint lecture slides presented in lecture will not be posted before lectures.
- All **lecture slides will be posted after each lecture has been presented to the entire class.**
- Other resources (e.g. videos, animations, published papers, etc.) will be posted with each lecture as appropriate.

BIOL1020 Evaluation Details

Component	Mark	Details
Midterm	**20%**	**For CRN 70002 Monday February 26, 2018** (in-class) **For CRN 70001 Tuesday February 27, 2018** (in-class) • The format is 50 multiple-choice questions (in 1-hour time period) • **Students must attend the correct CRN in which you are registered to write your midterm test!**
Online Lecture Quizzes (online - through Blackboard)	**20%**	• Six (6) online quizzes designed to supplement lecture material will be posted throughout the term on Blackboard in the folder entitled "**BIOL1020 Online Lecture Quizzes**" on Blackboard. • Students must follow the instructions provided with each quiz and adhere to the stated deadlines in order to receive full credit for the quiz; each quiz will be worth 4% of the final mark in the course. • The **best 5** of 6 **quizzes will be used to calculate your quiz mark**.
Laboratories	**25%**	• Five (5) labs during term – **attendance is mandatory** • You are **permitted to miss one lab with appropriate documentation**. If you miss more than one lab even with appropriate documentation, you will receive a mark of zero for each lab missed. Missed labs will not be rescheduled. • **Evaluation:** **Quizzes** (4 quizzes each worth 1.25%) ..... **5%** **Pre-Lab Assignments** (5, each worth 1%) ..... **5%** **Lab Assignments** (5 reports each worth 1%) ..... **5%** **Formal Lab Report** ..... **5%** **Lab Practicum (virtual bell ringer test)** ..... **5%** • Students **do not have to pass the Lab Component to pass BIOL1020** • Please **refer to the "Labs 2018" folder posted on Blackboard in the folder entitled "BIOL1020 Laboratory Information"** for more information regarding the labs
Final Exam	**35%**	**In Final Exam Period – April 11 to 22, 2018** – date / time / location TBA • The **final exam is cumulative** with emphasis on material covered after the midterm test • The format is 100 multiple-choice questions (in 2-hour exam period) • **Follow instructions for your CRN to write your final exam!**

Course Expectations

It is important for students at university to become **active learners**. Students are responsible for:

- attending and actively participating in all lectures
- making their own notes, reading all assigned references and using textbook resources
- preparing for labs in advance and completing laboratory assignments and quizzes in allotted time
- completing online quizzes after reviewing resources provided
- undertaking private study (on a regular basis)
- seeking help from instructors, TAs, Bio-Help TAs, PASS sessions, Science Café, peer tutors

Getting Help with Course Content

Bio-Help Drop-in Sessions

There are no tutorials in BIOL1020; instead **there are weekly, non-mandatory Bio-Help Sessions** scheduled to get help with the lecture and lab content as well as other topics such as note-taking and studying skills and review of midterm results.

These sessions **begin the week of January 15, 2018** and continue until the Final Exam period.
Just drop by and ask your questions!

Schedule for Bio-Help Drop-in Sessions (also posted on Blackboard)

Day	Time	Room	Bio-Help TA
Tuesday	12:40 p.m. to 2:00 p.m.	**UL-2**	Erin Ussery, Jarret Arbing, Siddiq Moola
Thursday	2:10 p.m. to 3:30 p.m.	**UL-1**	Tyler Harrow-Lyle, Jarret Arbing, Kenneth Clarke
Friday	11:10 a.m. to 2:00 p.m.	**UL-1**	Tyler Harrow-Lyle, Luis Salgado, Kenneth Clarke, Erin Ussery, Siddiq Moola

PASS (Peer-Assisted Study Sessions) by Student Learning Services

PASS is a peer-led, informal, fun and interactive way to improve your understanding of course material, develop effective study strategies and prepare for upcoming BIOL1020 tests and exams. PASS attendance is free, completely voluntary and no registration is required. Visit the PASS website for more information or to see other PASS supported courses.

The Pass Leader for BIOL1020 is **Hafsa Zia** who is a current UOIT student. She has previously completed this course will be attending all lectures this semester to help her facilitate two group study sessions each week. Please consult Blackboard for the PASS schedule.

Peer Tutoring

BIOL1020 peer tutors work one-on-one to provide academic support based on students' individual needs.

Book an appointment through the Student Life Portal or contact the Student Learning Center at 905-721-8668, ext. 6578. Appointments are 45 minutes in length.

UOIT Science Cafe

The UOIT Science Café offers additional academic support (in Biology, Chemistry, Math and Physics) outside of the regular work week.

The **Café is available every Saturday (starting January 20, 2018) from 11 a.m. to 3 p.m. in UA-3230.**

No registration required; simply drop by! For more information about the UOIT Science Café, please visit: www.facebook.com/UOITScienceCafe/.

BIOL1020 Summary Laboratory Information

*For detailed laboratory information, please consult the **Lab Guidelines** on Blackboard*
(in the folder entitled: "**BIOL1020 Laboratory Information**").

Lab Personnel

Lab Coordinator - **Dr. George Stamatiou** (see contact information on page 1 of this syllabus)

Lab TAs - Erin Ussery, Luis Salgado, Elizabeth Revel-Roy, Jarret Arbing, Tyler Harrow-Lyle

Please contact your TA via Blackboard email only

Lab Start Dates

BIOL1020 labs start on January 15, 2018

- Refer to the Laboratory Schedule posted in folder entitled: "**BIOL1020 Laboratory Content"** on Blackboard to find the date you will have labs
- Note the CRN number for your lab section, room, time and your TA

Laboratory Objectives

The objectives of the laboratory component of BIOL1020 are:

- to give students practical experience with some of the techniques / procedures used in biology
- to have students develop technical skills used in modern biology laboratories
- to help students develop analytical skills required to evaluate scientific data and interpret results

Laboratory Format and Lab Resources

- **All laboratory sessions are mandatory**.
- Each student will perform a total of five 3-hour lab sessions per term (one session every other week).
- Each lab will begin with a laboratory quiz.
- **Lab assignments are due at the end of each lab session unless otherwise indicated.**
- The Blackboard folder entitled: "**BIOL1020 Laboratory Content"** contains all of the information you need for the labs including:
  - Lab Schedule - the times and locations of your labs
  - Lab Safety Rules and Guidelines
  - Laboratory Folders - contains **all documents required** for each of the five BIOL1020 labs

Summary Lab Schedule and Tentative Lab Topics

Lab #	Tentative topics	**Dates** (2018)
1	Bioinformatics	January 15 – January 25
2	Formal Lab Report Information and Data	January 29 – February 8
3	Microscopy and Protist Diversity	February 12 – February 16 and February 26 – March 1
4	Animal Diversity	March 5 – March 15
5	Plant and Fungal Diversity	March 19 – March 29

NOTE: There are no labs scheduled during Reading Week - February 19 to 23, 2018

Lab Preparation

Before coming to each lab you are required to:

- Print the introduction/protocol, and assignment files and come to the lab with a hard copy of these documents – **you will not be permitted entry to the lab without these documents printed**
- Complete the pre-lab questions in the lab assignment (when required) and show it to your TA as you enter the lab – you will not be permitted entry to the lab without completing this pre-lab work.
- Read and study the introduction and protocol in preparation for the lab quiz
- Review the lab assignment so you are sufficiently prepared for your lab
- Come appropriately dressed for the lab – wear long pants, socks and closed (non-slip) toed shoes

  NOTE: students wearing shorts, skirts, shoes with no socks or socks not long enough to cover the ankles, or sandals will not be permitted entry to the lab
- Always bring your lab coat and safety glasses or goggles to each lab
- Please do not wear contact lenses to the lab; wear your glasses instead with goggles over them
- Please also bring the following supplies to every lab period:
  - a waterproof pen (such as a "Sharpie")
  - a pencil/eraser for drawing diagrams
  - a ruler with a cm and mm scale
  - a calculator

Formal Lab Report Information

- You will be provided with data for the formal lab report on Blackboard during Lab 2. You will be given instructions in data analysis (statistical tests) and the format for writing a Formal Lab Report; these instructions will also be posted on Blackboard in the Lab 2 folder.
- A hard copy of your **Formal Lab Report** (using data provided in Lab 2) will be **due at the beginning of Lab 4.**
- A late penalty (10% per day) will be applied to Reports that are not submitted on time. All students are required to submit a Formal Lab Report. If you miss Lab 2 for any reason, you will still have to submit a Formal Lab Report worth 5% of your final mark. It will be your responsibility to review the material in Lab 2 and attend the BIOLOGY Drop-in sessions to answer any questions on how to perform the calculations and how to use the software.

Lab Practicum (Virtual Bell Ringer) Information

- The practicum will be a "***virtual" bell ringer test***.
- All information on the test will be based on Labs 1 through 5.
- The test will take place during the first half hour of your last lab period (Lab 5).
- You will be shown a series of PowerPoint slides with specimen photos/illustrations and questions.
- You will have one (1) minute for each slide, to answer the questions pertaining to the slide.
- Slides will not be revisited and if you arrive late you will not get any extra time or view previously shown slides.
- Following your test, you will complete a 2.5 hour lab and hand in a Lab Report at the end of the lab.

Frequently Asked Questions about BIOL1020 Lectures and Labs

How to I find information about BIOL1020?

- All of the information for BIOL1020 can be found on Blackboard by clicking on the folder tabs on the left side of the course home page. Visit Blackboard frequently to keep up-to-date throughout the term.

What are the Online Lecture Quizzes in BIOL1020?

- There are six (6) online lecture quizzes which will be assigned throughout term.
- There is a schedule posted on Blackboard in the folder entitled "**BIOL1020 Online Lecture Quizzes**"; note the Quiz deadlines by checking the **BIOL1020 Calendar** on Blackboard.
- The learning modules, videos, readings and other resources along with the quiz questions will be posted in the folder entitled "**BIOL1020 Online Lecture Quizzes**".
- Students are advised to do the quizzes well before the deadline to avoid any last minute technical issues which may result in lost credit for missed or incomplete quizzes.
- There will be no courtesy reminder emails or announcements sent.
- **It is the responsibility of each student to keep track of quiz deadlines and complete them in a timely manner to receive credit for their work.**
- Final quiz marks are based on the results of the 5 best quizzes (the lowest quiz mark is omitted).

What happens if I miss an Online Lecture Quiz?

- Online Lecture **Quizzes must be completed and submitted by the posted deadline** (posted on Blackboard).
- There is no option for late submission of these online lecture quizzes or extension of the deadline.
- Medical notes or other documentation will not be accepted for a missed Quiz except in extenuating circumstances (which will be assessed on a case-by-case basis).

Where do I get a lab coat and protective eyewear (goggles) for the labs in BIOL1020?

- You may use the same lab coat you used for BIOL1010.
- If you do not already have a lab coat. they can be purchased at the UOIT Bookstore (see the UOIT Campus Bookstore website).
- Purchase the UOIT lab coat so it can be used in all of your lab courses.
- Protective eyewear (safety glasses or goggles) can also be purchased at the UOIT Bookstore – **make sure that they protect the sides of your eyes.**

What happens if I forget to print a hardcopy of the required lab documents (introduction, protocol, and assignment files) for a lab in BIOL1020?

- If you **have not printed the required files and/or brought them to your lab, you will be denied entry** to the lab.
- If you have been denied entry to a lab, you **will receive zero on the quiz, assignment and all coursework associated with lab.**

What happens if I am late for a lab in BIOL1020?

- Students will not be permitted in the lab if they are more than 10 minutes late and will receive zero (0) on all assignments associated with the missed lab.
- Students arriving during the quiz will not receive any extra time to complete the quiz.

What happens if I miss a lab in BIOL1020?

- **If you miss your lab for a valid reason, you must submit proper documentation within 3 working days to the Lab Coordinator - Dr. George Stamatiou.**
- Valid reasons for missing a lab are medical reasons or death in the family/family tragedy.
- If you miss a lab for medical reasons you must submit a UOIT Medical Statement form completed by your doctor – **NOTE: NO other documents from your doctor will be accepted.**
- If you miss a lab due to a family death or family tragedy, a death certificate or other appropriate documentation must be submitted for consideration.
- Other reasons may be considered on a case-by-case basis with submission of documents.
- **You are permitted to miss one lab with appropriate documentation**. Upon receipt of suitable and verifiable documentation by the Lab Coordinator, Dr. George Stamatiou, you will be excused for the missed lab **one time only**. Your lab assignments and quiz marks for the excused lab will be re-weighted to the other four labs.
- If you miss more than one lab, even with appropriate documentation, you will receive a mark of zero (0) on all assignments associated with the missed lab.
- **Missed labs will not be rescheduled**. There are **no make-up assignments** and you are responsible for learning the missed material on your own.

What is the Midterm Test and when is it scheduled in BIOL1020?

- Details for the **midterm test (scheduled for Monday February 26 or Tuesday February 27, 2018 (in-class based on your CRN)** will be posted in the folder entitled: "**BIOL1020 Midterm and Final Exam Information**").
- The format is 50 multiple-choice questions only in a 1 hour time period (in-class)
- The midterm will test your understanding of material covered in the lectures (by Annette Tavares) and online lecture quizzes from the first half of the course.

What happens if I miss the Midterm Test in BIOL1020?

- **If you miss the midterm test for a legitimate reason** (e.g. illness or death in the family) **and can provide appropriate documentation** (e.g. a UOIT Medical Statement completed by your doctor or a photocopy of a death certificate), you will not be penalized.
- Contact the Faculty of Science Academic Advisor, at science.advising@uoit.ca and **submit your documentation within 3 business days**. The academic advisor will verify the documentation and will advise the instructors accordingly. The usual accommodation, assuming appropriate documentation, will be to re-weight the grading scheme to allocate the missed test marks to the final exam mark. **There are no make-up tests** – this Faculty of Science Policy will be followed in all cases.
- If you **miss a test without a legitimate reason** or do not provide the suitable documentation by the stated 3-day deadline, **you will receive a mark of zero**.
- If you cannot write the midterm for any other reason, it MUST be discussed with the instructor(s) at least 7 days before the midterm date. A decision will be made on a case-by-case basis.

What is the Final Exam and when is it scheduled in BIOL1020?

- Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class.
- **Check the published Examination Schedule on MyCampus for an updated information.**
- Details for the final exam (scheduled in the April 2018 Final Exam Period) will be posted in the folder entitled: "**BIOL1020 Midterm and Final Exam Information**") once the date is finalized.
- The format is 100 multiple-choice questions only in a 2 hour time period.
- The final exam will test your understanding of material covered in the lectures (by Mary Olaveson) and online lecture quizzes from the second half of the course.
- Since the **final exam is cumulative**, there will be some questions from the first half of the course.

What happens if I miss the Final Exam in BIOL1020?

- Students are advised to obtain their UOIT Student ID Card well in advance of the examination period as they will not be able to write their exams without a current, valid UOIT Student ID. Student ID can be obtained at the **Campus ID Services (Room C-128, Gordon Wiley Building).**
- Students who are unable to write the final examination when scheduled due to religious obligations may make arrangements to write a deferred examination by submitting a Request for Accommodation for Religious Obligations to the Science Academic Advising Office as soon as possible and no later than three weeks prior to the first day of the final examination period.
- **If you miss the final exam for a legitimate reason** and can provide appropriate documentation (e.g. UOIT Medical Certificate), you will need to contact the Faculty of Science Academic Advisor, at science.advising@uoit.ca and **submit your documentation within 3 business days of the scheduled date of the final exam** in the course involved. You will need to follow the procedures for applying to write a deferred final exam (refer to the UOIT Academic Calendar (2017-2018).

What are the course evaluations in BIOL1020?

- Student evaluation of teaching is a highly valued way to monitor the quality of UOIT's programs and instructional effectiveness. Course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes in each semester.
- Students are encouraged to participate actively in this process and will be notified of the dates when evaluations are requested. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

When is the last day of classes and what does it mean?

- All term work (in-class activities, lab work, quizzes, tests, etc.) **must be completed and submitted by the last day of classes (Monday April 9, 2018).**
- There is **no option to complete or submit any term work once the term has ended and the final exam period has started.** There will be **no option to do alternative work** (extra assignments, or other 'special' activities) **to make-up missed term work.**

Where do I find my marks in BIOL1020?

- During the Winter 2018 semester, marks for quizzes, laboratory quizzes / assignments and the midterm test will be posted in the "**BIOL1020 My Grades**" folder on Blackboard.
- The **final exam marks or final course marks will not be posted on Blackboard**.

Where do I find my final grade in BIOL1020?

- The final grades will be released to students through MyCampus at the end of term after marks are submitted by course instructors and reviewed by the Faculty of Science Administration.
- Note **once released** to the students on MyCampus by the Registrar's Office, the **grades are final and are not subject to discussion or negotiation with the instructor.**
- There is **no option to do extra assignments or other activities to make up for a poor or unsatisfactory performance in a course.**

Can I review my final exam after the final grades are released?

- In BIOL1020, students have the option to view their final exam. To facilitate this process, **students must submit** a completed Science Final Exam View Request form to the instructor electronically or in person before an exam viewing will be arranged.
- Students may appeal their final grade by following established university-wide procedures; consult the Registrar's Office for information on how to deal with your concerns

Important Dates and Academic Policies at UOIT

- Additional information for students and useful links to academic policies and services at UOIT can be found on Blackboard (in the folder entitled: "**Useful UOIT Links**").

Important Academic Dates for 2017-2018

- Always check the Important UOIT Academic Dates for Undergraduates to avoid missing university deadlines throughout the semester. Refer to the UOIT Academic Calendar for 2017/2018 for university policies and program and courses descriptions and requirements**.**

Faculty of Science Policies

- Key Faculty of Science policies:
  - If you have already written or submitted a test, assignment, or any other term work, you cannot receive consideration for your performance on it "after the fact".
  - There are no make-up exams, tests or assignments. The normal Policy for missed term work is to re-weight the remaining work of the course to account for the missing grade. Normally the re-weighting will be applied to the final exam in the course.
- For more complete details of academic policies for the Faculty of Science, please refer to the link to Academic Policies on the Faculty of Science website.

Learning Considerations at UOIT

- Students with diverse learning styles and needs are welcome in this course. If you have a disability or health consideration (e.g. hearing, learning, medical, physical, psychiatric or visual disability) that may require accommodations, please feel free to approach the instructors in this course and/or the Student Accessibility Services, which support accessible and equal education.
- Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code by seeking completing a request through Student Accessibility Services; requests must be made in a timely manner. Students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.
- Decisions made in accordance with the Ontario Human Rights Code will be consistent with and supportive of the essential requirements of courses / programs, and provided so the dignity of students with disabilities are respected while encouraging integration and equality of opportunity.

Academic Integrity (Plagiarism, Cheating)

- Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship which is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by disciplinary action.
- Students are expected to be familiar with and abide by UOIT's Regulations on Academic Conduct which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from UOIT. Being unfamiliar with the regulations on academic conduct is not a defense against its application.
- Specifically **students should seek credit only for their own individual work** (e.g. their own ideas and efforts). Always paraphrase the work of others (never copy word to word) and always give proper acknowledgement using appropriate citations within the text of the submitted work. A reference list for all sources of information cited in the body of the written work must be included in a standard format at the end of the submitted work. If a report fails to identify the student's own contribution clearly, it will be considered inadequate. This may result in the work being awarded a mark of zero (0%) or more severe academic sanctions. **Copying the work of another student, instructor, TA or copying a previously published work** (e.g. books, journals, newspapers, textbooks, websites, etc.) **and submitting this material as your own work** (for assignments, laboratory work, presentations, etc.) **is considered plagiarism**. This type of academic misconduct will not be tolerated. Students who cheat in this manner will receive a mark of zero for the submitted work involved (even if only a small portion of the work has been plagiarized) and a minor academic misconduct document will be filed with Academic Advising. Note that you will not receive any warning; you will be penalized at the very first offence). However, depending on the severity of the plagiarism or if plagiarism has already occurred in this or any other courses taken at UOIT, additional significant academic penalties may be imposed. You can learn more by consulting the link to Academic Integrity.
- Cheating during midterm tests and final exams is a serious academic offence and students will be penalized according to the Regulations on Academic Conduct.
- REMEMBER that academic offences can carry significant academic consequences. You should refer to the UOIT Academic Calendar for 2017/2018 for further details.

Use of Turnitin at UOIT

- UOIT is committed to the fundamental values of preserving academic integrity so UOIT faculty members reserve the right to use electronic means to detect and help prevent plagiarism.
- Students agree that by taking this course assignments may be subject to submission for textual similarity review by Turnitin.com where submitted assignments will be included in the Turnitin restricted access database for five academic years solely for the purpose of detecting plagiarism.
- The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the UOIT Turnitin.com website.
- Students who do not wish to have their work submitted to Turnitin.com must provide a special assignment cover sheet with their assignment at the time of submission to the instructor. A signed Turnitin.com Assignment Cover sheet can be obtained at the following link: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf.

Additional Information and Useful UOIT Links

- Additional information for students and useful links to general UOIT information at UOIT can be found on Blackboard (in the folder entitled: "**Useful UOIT Links**").

Religious Observances

- Special consideration is provided for recognized holy days, which may be observed by our students (refer to http://www.interfaith-calendar.org/2018.htm).
- Though not all holy days require students to be absent from school, accommodations can be considered in those cases when students are required to be absent.
- **It is your responsibility to check due dates for all course work and tests or exams** and to inform your instructors or Science Academic Advising Office well in advance of any potential conflicts between religious observances and coursework at least 3 weeks prior to the deadline.
- Failure to do so may result in any consideration being denied. Documentation may be required.

Prevention of Sexual Violence

- UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.
- If you think you have been subjected to or witnessed sexual violence:
  - Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence.
  - Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more.
- To make an appointment with a Support Worker call 905-721-3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

Freedom of Information and Protection of Privacy Act (FIPPA)

- UOIT is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA") which provides a mechanism for requesting records held by the university.
- FIPPA requires that UOIT not disclose personal information of its students without their consent.
- It has important implications for the submission of course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.
- FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.
- If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at: accessandprivacy@uoit.ca.

CHEM 1020
Chemistry II

Course Outline and Information
Winter 2018

1. COURSE INSTRUCTORS AND CONTACT INFORMATION

LECTURE INSTRUCTOR CRN 70052 & 70053 Jan 8th – Feb 16th	LECTURE INSTRUCTOR CRN 70052 & 70053 Feb 26th – Apr 22nd	SENIOR LABORATORY INSTRUCTOR
Stephanie Mavilla Faculty of Science/Education Office: UA 3075 Email: Blackboard Office Hours: • Tuesday, 3 – 4 pm • Thursday, 3 – 4 pm • **OR** by Appointment	Cristen Hucaluk Faculty of Science Office: UA 3075 Email: Blackboard Office Hours: • Tuesday, 9:30 – 11am • Thursday, 9:30 – 11am • Open door policy	Dr. Richard Bartholomew, Email: Richard.Bartholomew@uoit.ca Office: UA 3071

2. COURSE DETAILS AND IMPORTANT DATES

Lecture Classes Begin	Laboratory Sessions Begin	Mid-term Break	Classes End	Final Exam Period
Week of January 8th 2018	Week of January 15th, 2018	Week of February 19th -23rd 2018	Thursday, April 9th, 2018	April 11th - 22nd, 2018

3. COURSE DETAILS AND SCHEDULES

LECTURES	ROOM	LABORATORIES
SECTION 001 (CRN 70052)		**All laboratory sessions are held in UA 3680.**
Tuesday, 12:40pm – 2:00pm	UA 1350	
Thursday, 12:40pm – 2:00pm	UA 1350	**The first lab session is on Monday, January 15th, 2018**.
SECTION 002 (CRN 70053)		Please consult your
Tuesday, 11:10 am – 12:30pm	UB 1350	Laboratory Section and Schedule
Thursday, 11:10 am – 12:30pm	UB 1350	on MyCampus

4. COURSE DESCRIPTION

Introduction to the fundamental principles governing chemical transformations. Students will gain an understanding of the properties of liquids, solids, solutions; phase changes, rates of reaction and reaction mechanisms; chemical and ionic equilibria; buffers; introduction to organic chemistry and biochemistry, redox reactions and electrochemistry. (Prerequisite(s): CHEM 1010U**)**

Credit Hours	Lecture Hours	Laboratory Hours	Drop In sessions
3	3 Weekly	3 Biweekly	See Posted Schedule

This course continues the study of chemistry principles from the first course (CHEM 1010U) and serves to provide students with a solid foundation for more advanced studies of chemistry as well as other fields such as biochemistry and forensic science.

5. REQUIRED COURSE MATERIALS

1. **Chemistry, 7th Edition**, John E. McMurry, Robert C. Fay, and Jill K. Robinson, Pearson, 2016.
   Bundled with "Mastering General Chemistry Student Access Kit (7th Edition)"
   Available in the bookstore as either:
   - ISBN: 9780321723437 (E-book and MC access)
   - ISBN: 9780321723035 (Text and MC access)
2. **Laboratory Manual** for CHEM 1020 is available through Blackboard.

6. LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

- Discuss the dipole moment of a molecule and relate this to properties of the compound
- Describe a solution and characterize its properties
- Describe and calculate the rate of a reaction and express a rate law for the reaction
- Relate the reaction rate and temperature for a given reaction
- Define chemical equilibrium both qualitatively and quantitatively
- Qualitatively and quantitatively define a solution as either acidic or basic
- Discuss the dissociation of water and calculate pH of an acidic or basic solution
- Discuss buffers and calculate the pH of a buffer solution
- Discuss solubility equilibria and calculate the solubility of a compound in solutions of various conditions
- Draw structures and name simple organic compounds and identify organic functional groups
- Differentiate between major classes of biological molecules
- Describe electrolytic cells and calculate cell potential and free energy changes involved in the reactions.

Specific learning outcomes by chapter will also be provided and students are encouraged to reference these when studying.

7. BLACKBOARD SITE

This course has a Blackboard site that will be the source of on-line communication and information about all aspects of CHEM 1020. The site will provide access to the course syllabus, assignments, lecture material, and any other materials that are relevant to the course. The site provides a forum for communication with the instructor and with other students through email and discussion boards. The site will be changed as the semester proceeds, so you should check it regularly for updates and messages.

8. PROVISIONAL SCHEDULE OF LECTURE MATERIAL

The following Table is a provisional schedule of the chapters and topics that are covered in CHEM 1020U. Every effort will be made to adhere to this schedule, but events may require some alterations from time to time. Major alterations to the schedule of to the topics covered will be discussed in class prior to implementation. A Course Outline will be available that will summarize the topics in each chapter as well as recommended problems at the end of each chapter. Students are responsible for all of the material contained in the Course Outline regardless of whether it was covered in class or not.

Students are responsible for all material presented in lectures, assigned readings, assignment problems, and homework problems.

TABLE 1. PROVISIONAL SCHEDULE OF LECTURE MATERIAL (CHEM1020 CRN 70052 and CRN 70053)

WEEK	DATE	CLASS	CHAPTER	TOPIC
1	January 8-12, 2018	1 2	Intro/Math 8,9,10	• Introduction to CHEM 1020U • Brief Review of Topics from CHEM 1010U
2	January 15-19, 2018	1 2	11 11	• Liquids, Solids, and Phase Changes • Liquids, Solids, and Phase Changes
3	January 22-26, 2018	1 2	12 12	• Solutions and Their Properties • Solutions and Their Properties
4	January 29 - February 2, 2018	1 2	12 18	• Solutions and Their Properties • Electrochemistry
5	February 5-9, 2018	1 2	18 13	• Electrochemistry • Chemical Kinetics
6	February 13,2018	1	13	• Chemical Kinetics
6	**February 15, 2018**	**2 Thursday**		• **TERM TEST 1 (Covers all material from Weeks 1-5 and includes material from Chapters 8 – 13 and 18)**
	February 19-23, 2018		**NO CLASSES**	**FAMILY DAY and MID-TERM BREAK**
7	February 26 – March 2, 2018	1 2	14 14	• Chemical Equilibrium • Chemical Equilibrium *** students are responsible for reading all sections of the chapter before coming to class***
8	March 5-9, 2018	1 2	15 15	• Aqueous Equilibria: Acids and Bases • Aqueous Equilibria: Acids and Bases
9	March 12-16, 2018	1 2	15 16	• Aqueous Equilibria: Acids and Bases • Applications of Aqueous Equilibria
10	March 19, 2018	1	16	• Applications of Aqueous Equilibria
10	**March 22, 2018**	**2 Thursday**		• **TERM TEST 2 (Covers all material from Weeks 7-9 and includes material from Chapters 14, 15, and 16)**
11	March 26-30 , 2017	1 2	23 23	• Organic and Biological Chemistry • Organic and Biological Chemistry
12	April 3-5, 2018	1 & 2		• Review of Course Material
13	**April 11-22, 2018**			**UOIT FINAL EXAMINATION PERIOD (Students are advised not to make other commitments during this period)**

9. COURSE EVALUATION

At the end of the course, each student will be receive a single final grade which will encompass their combined performances in the lecture, laboratory, and tutorial components.

ITEM	CONTRIBUTION TO THE FINAL GRADE
Final Examination	40%
Term Test 1	15%
Term Test 2	15%
Assignments (Blackboard-based)	10%
Laboratory	20%

10. TERM TESTS

There will be two term tests through the course of the semester. The first will be held on **Thursday, February 15th, 2018**. The second will be held on **Thursday, March 22nd, 2018.**

Both term tests will be held during the regular class time. The first term test will be a combination of multiple choice and short answer and will be 80 minutes long. The second term test will be held in 2 stages, an individual portion and a group portion. Both will be conducted during the normal class time. The individual portion will be conducted during the first 45 minutes of the test period, the group portion following immediately afterwards. During the individual potion, students will be expected to work by themselves to answer the questions to the best of their ability; test papers will be collected after the 45 minute time period is up. A second copy of the test (possibly with some small changes to a few questions) will then be given out for students to work on in small groups of 3 or 4. Only one copy of the test will be handed in per group, with all group member names written clearly on the front page.

The final mark of the second term test will be based on both the individual (75%) and group (25%) portions. However, note that your final test mark cannot be lower than your individual portion (that is, your group work mark will never reduce your total mark lower than your individual mark).

11. FINAL EXAMINATION

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students must present their current student ID card at each examination. If a student fails to produce their student ID card, they will be required to immediately obtain a substitute card from the Campus ID Services. No extension of the examination will be permitted to compensate for the delay encountered.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students, who through religious obligations are unable to write a final examination when scheduled, will be permitted to write a deferred examination. These students are required to submit a **Request for Accommodation for Religious Obligations** to the Faculty of Science as soon as possible and **no later than three weeks prior to the first day of the UOIT final examination period.**

Students who miss an exam for medical or compassionate grounds may submit a request for deferral, along with supporting documentation, to the Faculty **within five (5) working days** after the scheduled writing of the examination.

Further information on Final Examination Policy can be found in Academic Regulations in the 2016-2017 Undergraduate Academic Calendar.

12. PROBLEM-SOLVING FROM THE TEXTBOOK

For each chapter a set of problems taken from the textbook will be provided to illustrate and provide practice with the types of problems in the course. By doing these problems (and more if you have time!) you will gain proficiency at the questions likely to appear on the tests and examinations. Merely studying the examples in class and reading the solutions manual will not help you very much - you must struggle with the problems to become skilled.

13. LABORATORY SCHEDULE

The Laboratory portion of CHEM 1020U will begin the week of January 15th, 2018 and will continue until the end of the semester. Students are advised to attend the laboratory sessions that are recorded in your MyCampus schedule.

NOTE that one of the criteria for receiving a PASS grade for the course CHEM 1020 is that you also receive a PASS grade in the Laboratory component of the course.

Laboratory sessions are biweekly and are three hours in duration. Laboratory experiments are designed to illustrate the concepts learned in the lectures and to give students experience in some of the fundamental techniques of a chemistry laboratory.

Attendance at laboratory sessions is mandatory. A student who misses more than two (2) laboratory periods will not receive credit for the laboratory portion of the course. This may result in failure of the course. Missed laboratories can sometimes be re-scheduled (see below).

SAFETY and SAFE PRACTICES are paramount in all laboratories. In that regard, it is important that students in the laboratory be properly attired. Lab coats and safety glasses (available at the UOIT Bookstore) are required at all times. Open-toed shoes and clothing that exposes large areas of the body are forbidden.

Short laboratory equipment and technique videos have been made to help your understanding and performance when conducting each experiment. Videos can be found in Blackboard under the Laboratories folder. **Students should read the laboratory experiment and watch any necessary videos before attending laboratory sessions**.

Consult the laboratory outline information and safety file in the Laboratory folder in Blackboard for additional information including the laboratory outline and the schedule of laboratory experiments. Further information about the experiments, proper laboratory reports, and laboratory regulations can be found in the Laboratory Manual (posted on Blackboard).

14. POLICIES RELATED TO MISSED LABORATORIES, TERM TESTS, AND THE FINAL EXAMINATION

If you should miss a term test or the final examination due to illness or bereavement, you must provide documentation to the Faculty of Science Advising Office **within five (5) days of the laboratory, test or exam.** An official form is available from the Faculty of Science Advising Office (also available from the Registrar's Office). You must use this form.

Term tests will not be re-scheduled. Instead, the marks missed will be added to the marks apportioned for the final examination. If the final examination is missed and acceptable documentation is provided, the student will be eligible to write a "deferred exam" early in the following semester.

If you anticipate missing a term test (for a medical reason, as an example), you should discuss this with the instructor **at least two days before the test**. Normally, these marks will be apportioned to the remaining test or final examination in accordance with the above guidelines.

Students may be excused from laboratories, term tests, and the final examination due to religious observance. However, application to be excused must be submitted **at least seven (7) days in advance** of the observance. To be excused from laboratories you should submit the documentation to Dr. Richard Bartholomew. To be excused from term tests and final examinations, you should submit the documentation to the Faculty of Science Advising Office.
If you miss a laboratory you should speak to Dr. Bartholomew as soon as possible. In rare cases, laboratories may be re-scheduled, but this is dependent on space being available. As a consequence, re-scheduling is often somewhat difficult. When a student has missed a laboratory without an acceptable excuse and the laboratory cannot be re-scheduled, the student will receive a grade of zero. Further details on the policies regarding missed laboratories can be found in the laboratory manual.

15. POLICY ON "CARRY FORWARD OF LABORATORY MARKS"

If you should fail the course but pass the laboratory portion, you may be eligible to "carry forward" your laboratory marks. That is, you may be able to repeat the course without having to repeat the laboratories. In order to qualify for this option a number of conditions must be met including:

- You must have completed all the laboratory work with a passing grade.
- You may only "carry forward" the mark to the next offering of Chemistry 1010U.
- You must apply to Faculty of Science Advising Office, for the "carry forward" no later than the last day to add courses in the term – generally set as 7 days after the start of classes
- Your application to "carry forward" must be approved by the Dean of the Faculty of Science (or designate).

Other conditions also apply; these will be explained if you apply for the "carry forward".

16. GENERAL POLICIES OF THE FACULTY OF SCIENCE

The policies of the Faculty of Science can be reviewed at

http://www.science.uoit.ca/undergraduate/current-students/academic-policies.php

Where any conflict arises between the policies presented in this syllabus (or given in the course) and the general policies of the Faculty of Science, the general policies of the Faculty of Science shall prevail. The staff members in the Science Academic Advising Office have compiled a list of frequently asked advising questions for the Faculty of Science. If you have a question about the policies of the Faculty of Science, you may find it helpful to check the website:

17. ACCESSIBILITY

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services. Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with their instructor as soon as possible. Students who require alternative testing and examination arrangements or other academic accommodations must contact the Centre for Students with Disabilities (B297) as early as possible to ensure that your needs can be met.

18. ACADEMIC INTEGRITY

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education.

Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action. Students are expected to be familiar with UOIT's regulations on Academic Conduct which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offenses. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information on academic integrity is available in the 2017-2018 Undergraduate Academic Calendar (see Academic Regulations).

19. ACADEMIC SUPPORT SERVICES

Support services are available to all UOIT students in academic development, study skills, counselling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

20. FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT

UOIT is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA").

In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of

Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on

your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

21. COURSE EVALUATIONS

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via Blackboard.

S.G. Mavilla
C. Hucaluk
January 2018

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

COURSE SYLLABUS

Chemistry 1010 – Chemistry I – Fall 2017

Course Instructors:

CRN 42936
Cristen Hucaluk

Email: Cristen.Hucaluk@uoit.ca
Use the Blackboard Email for questions
Office: UA 3075
Office Hours: Monday and Wednesday
1:00 pm – 2:30 pm
Open door policy

CRN 40169 40170
Jan Matejovic

Email: jan.matejovic@uoit.ca
Use the Blackboard Email for questions
Office: UA 2015
Office Hours: Will be held in UA 2029
Monday and Wednesday
2:00 pm – 3:30 pm
Friday 2:15 pm – 3:00 pm

Senior Laboratory Instructor:

Richard Bartholomew
Office UA 3071
Email:
Richard.bartholomew@uoit.ca

Course Details and Important Dates:

First day of classes: September 7th 2017
Co-curricular Period: October 26-29th 2017
Last day of classes: December 4th 2017
Fall exam period: December 6th – 17th 2015 – Students are advised to not make commitments during this period.

Lectures:	**Labs: All labs in UA 3480**
CRN 40169 – Tuesday and Thursday 4:40pm – 5:00pm SIRC 2060 **CRN 40170** – Monday and Wednesday 5:10pm – 6:30pm UB 2080 **CRN 42936 –** Monday and Wednesday 9:40am – 11:00am UB 2080	Please consult your schedule in MyCampus **Tutorials:** Please consult your schedule in MyCampus

Course Description:

This course will introduce the basic concepts of chemistry including simple reactions and stoichiometry; acids, bases, salts; titration; gases; atomic and molecular structure and bonding; introduction to nuclear chemistry and the law of radioactive decay.

Learning Outcomes:

Upon successful completion of the course, students will possess basic understanding of the following concepts of chemistry:

- Discuss and describe characteristics of the periodic table and the elements found within it
- Perform and express accurate and precise calculations for the various chemical concepts discussed
- Describe and compare the characteristics of atoms molecules and ions.
- Evaluate mass relationships in chemical reactions
- Classify reactions that occur in aqueous solutions and identify the components of those solutions
- Describe the electronic structure of the atom
- Discuss the periodicity observed in the periodic table
- Describe an ionic bond making reference to ionization energies, electron affinities and lattice energies
- Describe a covalent bond in terms of the theories of bonding discussed including lewis bond theory, VSEPR theory, and Molecular Orbital theory
- Discuss the properties and behavior of ideal and non-ideal gases
- Predict the spontaneity of a reaction based on the thermodynamic principles of Enthalpy, Entropy, and Energy

A detailed list of learning outcomes listed by chapter is presented at the end of this syllabus.

Course Design:
Lectures 2 x 1.5 hours weekly
Tutorials 1 x 1.5 hours biweekly
Laboratories 1 x 3 hours biweekly
Online Assignments through Blackboard
Suggested textbook practice problems – Available in the text and in Mastering Chemistry

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Outline of Course Topics:

The class will meet twice a week for 1.5 hours. Students are responsible for all Independent study material, material presented in lecture, assigned readings and homework problems. The following is a provisional lecture schedule:

Chapter	Topic	Lectures
	Introduction	0.5
2.1 – 2.3 2.11, 2.12	Module 1: The periodic Table and Naming	Independent study
1	Module 2: Chemical Tools: Experimentation and Measurement	Independent study
2.9	Module 3: The mole and unit conversion	Independent study
2	Atoms, Molecules and Ions	1
3	Mass Relationships in Chemical Reactions	3
4	Reactions in Aqueous Solution	3
	Test on Chapters 1-4	1
5	Periodicity and the Electronic Structure of Atoms	3
6	Ionic Compounds: Periodic Trends and Bonding Theory	3
7	Covalent Bonds and Electron Dot Structures	1
8	Covalent Bonds: Bonding Theories and Molecular Structures	2
	Test on Chapters 5-8	1
10	Gases: Their Properties and Behaviour	2
9 and 17	Thermochemistry: Chemical Energy Thermodynamics: Entropy, Free energy and Equilibrium (17.10 17.11 not covered)	3
	Exam Review	remaining

Required texts:

Required:

1) McMurry and Fay, Chemistry, 7th edition (Pearson Prentice Hall, 2015) bundled with "Mastering General Chemistry Student Access Kit (7th Edition).
   Available from the bookstore as either:
   a. ISBN: 9780321723437 (E-book and MC access)
   b. ISBN: 9780321741035 (Text and MC Access)

2) Laboratory Manual for Chemistry 1010 (Available through Blackboard)

Optional:

1) Mastering Chemistry stand-alone access code **(no textbook included)** – available online at masteringchemistry.com

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Evaluation Method:

Students will receive a single, final grade assessing their performance in the laboratory, tutorial, and lecture components combined.

Laboratories	**15%**
Independent Study	**4%**
Tutorials	**10%**
Assignments	**6%**
Term Test 1	**12.5%**
Term Test 2	**12.5%**
Final Exam	**40%**

To receive a passing grade in the course a passing grade must be achieved in *each* of the laboratory (i.e. at least 7.5/15) and the lecture (at least 42.5/85) portions of the course.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

Term Tests:

There will be two term tests through the course of the semester. The first will be Tuesday October 10 (CRN 40169) and Wednesday October 11 (CRN 40170 and 42936). The second will be Thursday November 16 (CRN 40169) and Wednesday November 15 (CRN 40170 and 42936). Both exams will be held during the regular class time. Each test will be weighted equally for a total of 25% of your grade.

The first term tests in October will be held in 2 stages, an individual portion and a group portion. Both will be conducted during the normal class time. The individual portion will be conducted during the first 45 minutes

of the test period, the group portion following immediately afterwards. During the individual potion, students will be expected to work by themselves to answer the question to the best of their ability; test papers will be collected after the 50 minute time period is up. A second copy of the test (possibly with some small changes to a few questions) will then be given out for students to work on in small groups of 3 or 4. Only one copy of the test will be handed in per group, with all group member names written clearly on the front page.

The final mark of the first term tests will be based on both the individual (75%) and group (25%) portions. However, note that your final test mark cannot be lower than your individual portion (that is, your group work mark will never reduce your total mark lower than your individual mark).

The second term test held in November, and the exam will be entirely independent, there will be no group portion to these tests.

Final Exam:

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times. The format of the final exam will be similar to that of the second term test.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

Laboratory Schedule:

Laboratory experiments will be conducted to emphasize and illustrate the concepts learned in lecture and to gain expertise with the fundamental techniques involved in chemistry. Laboratory sessions are biweekly and three hours long. **Laboratories will begin the week of September 11, 2017. Please attend lab on the dates listed in your MyCampus schedule.**

Attendance at laboratory sessions is mandatory. No student who misses more than **two (2)** laboratory periods will receive credit for the laboratory portion of the course. This may result in failure of the course. Missed laboratories can sometimes be re-scheduled (see below).

To perform experiments, students should be properly attired: a lab coat and safety glasses are required (both are available at the bookstore), open-toed shoes are forbidden, clothing should not expose large areas of the body (no shorts, tank tops, etc.).

Short laboratory equipment and technique videos have been made to help your understanding and performance when conducting each experiment. Videos can be found in Blackboard under the Laboratories folder. Students should read the laboratory experiment and watch any necessary videos before attending lab.

Further information about experiments, laboratory reports and laboratory regulations can be found in the laboratory manual (posted on Blackboard).

Policy on "Carry Forward" of Laboratory Marks

If you should fail the course but pass the laboratory portion, you may be eligible to "carry forward" your laboratory marks. That is, you may be able to repeat the course without having to repeat the laboratories. In order to qualify for this option a number of conditions must be met including:

- You must have completed all the laboratory work with a passing grade.
- You may only "carry forward" the mark to the next offering of Chemistry 1010U.
- You must apply to Faculty of Science Advising Office, for the "carry forward" no later than the last day to add courses in the term – generally set as 7 days after the start of classes
- Your application to "carry forward" must be approved by the Dean of the Faculty of Science (or designate).

Other conditions also apply; these will be explained if you apply for the "carry forward".

Policies on Missed Laboratories, Term Tests and the Final Exam

If you should miss a term test or the final exam due to illness or bereavement, you must provide documentation to the Faculty of Science Advising Office within **five (5)** days of the laboratory, test or exam. An official form is available from the office (and from the Registrar's Office) and you must use this form. **Term tests will not be re-scheduled; the marks missed will be added to the marks apportioned for the final exam**. If the final exam is missed and acceptable documentation is provided, the student will be eligible to write a "deferred exam" early in the following semester.

If you *anticipate* missing a term test (for a medical reason, as an example), you should discuss this with the instructor at least **two days before the test**. Normally, these marks will be apportioned to the final exam in accordance with the above guidelines.

Students may be excused from laboratories, term tests and the final exam due to religious observance. However, application to be excused must be submitted at least **seven (7)** days in advance of the observance. To be excused from laboratories you should submit the documentation to Richard Bartholomew. To be excused from term tests and final exams you should submit the documentation to the Faculty of Science Advising Office.

If you miss a laboratory you should speak to Richard Bartholomew as soon as possible. In rare cases laboratories may be re-scheduled, but this is dependent on space being available, so re-scheduling may be difficult. When a student has missed a laboratory without an acceptable excuse and the laboratory cannot be re-scheduled, the

student will receive a grade of zero. Further details on the policies regarding missed laboratories can be found in the laboratory manual.

Tutorials

Tutorials will begin the week of September 18; there will be 5 tutorials throughout the semester. Please attend your tutorial as it is listed in your MyCampus schedule. Tutorials occur biweekly and are 1.5 hours in length. The purpose of tutorials is to help you understand the course materials and strengthen your problem solving skills. This will be achieved through a variety of independent and group problem solving activities. The cumulative value of the tutorials is 6% and will be awarded based on the TA's evaluation of your participation in the group. Those who show up on time, earnestly participate and are generally good citizens of the course will receive marks reflecting that. Tardiness, disruptive behaviour, lack of effort and delinquency will all be cause for loss of marks for a given tutorial. Your mark for each tutorial will contribute equally towards your final tutorial grade. If you are not present for a tutorial you will receive a mark of 0. If you miss a tutorial you should speak to your course instructor as soon as possible. In some cases, it may be possible to reschedule your tutorial; however, this is dependent on space being available

Textbook Problems

For each chapter a set of problems taken from the textbook will be provided to illustrate and provide practice with the types of problems in the course. By doing these problems (and more if you have time!) you will gain proficiency at the questions likely to appear on the examinations. Merely studying the examples in class and reading the solutions manual will not help you very much - you must struggle with the problems to become skilled.

These selected practice problems will also be available in Mastering Chemistry – an online tool associated with the textbook, or can be purchased independently from it. To register for Mastering Chemistry you will require a course ID. The course ID for CHEM 1010 in fall 2017 is MCCHEM1010F17. Once you are registered for Mastering Chemistry, questions will be visible under the assignments tab.

There is no due date and no marks associated with completing these textbook problems – either in hard copy or online.

Assignments and Blackboard Site

This course has a Blackboard site (available at https://uoit.blackboard.com/) that will provide on-line access to the course syllabus, materials, assignments, etc. Laboratory materials will also be distributed through this site. The site provides a forum for communication (through e-mail and discussion boards) with instructors and other students. The site will be changed as the semester proceeds, so you should check it regularly for updates and messages.

Course Assignments will also be available on the Blackboard site. An announcement will be posted prior to the assignment with the availability dates and due dates for the assignment. It is your responsibility to be aware of assignments and due dates by regularly checking the announcements and assignments page.

Textbook Website

Built to complement the textbook, the companion website is accessible through Mastering Chemistry. Many of the videos and activities suggested to you in each of the lecture sections will be from this website. It is suggested that you login and create an account early on so that when you are prompted to link to a video or an activity through a lecture you already have access.

Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via MyCampus and Blackboard.

Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services. Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Academic Integrity

Students are expected to know and abide by the University of Ontario Institute of Technology policy on Academic Honesty which is described in detail in the current UOIT calendar.

General Faculty of Science Policies

The policies of the Faculty of Science can be reviewed at

www.science.uoit.ca/index.php?option=com_content&task=view&id=121&Itemid=140

Where any conflict between the policies presented in this syllabus (or given in the course) and the general policies of the Faculty of Science arises, the general policies of the Faculty of Science shall prevail.

Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

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UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, ***UOIT can help****. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.*

If you think you have been subjected to or witnessed sexual violence:

- *Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca*
- *Learn more about your options at: www.uoit.ca/sexualviolence*

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.ca for support.

Furthermore, please notify your professor if you are comfortable in doing so. This will enable them to provide any resources and help that they can.

Learning Outcomes by Chapter:

Upon successful completion of the course students will possess basic understanding of the following concepts of chemistry:

Chapter 1 – Chemical Tools: Experimentation and Measurement

- Recognize the seven basic SI units of measure and give the numerical equivalent of the common metric prefixes used with these units.
- Express numbers in scientific notation.
- Express temperatures using Fahrenheit, Celsius, and Kelvin temperature scales.
- Use dimensional analysis to convert quantities to new units.
- Determine the number of significant digits in a measured quantity.
- State the result of a calculation involving measured quantities to the correct number of significant digits.

Chapter 2 – Atoms, Molecules, and Ions:

- Give the symbol and name of the elements mentioned in this chapter.
- Identify the group and period to which an element belongs.
- Identify the regions of the periodic table (metals, metalloids, nonmetals, alkali metals, alkaline earth metals, transition metals).
- Explain the law of a) conservation of mass and b) definite proportions.
- Explain the law of multiple proportions.
- Describe the atom in terms of composition, mass, and volume of the nucleus relative to the mass and volume occupied by the electrons.
- Write and interpret isotope symbols, determining the number of protons, neutrons, and electrons.
- Given the mass and natural abundance of all isotopes of a given element, calculate the average atomic mass of that element.
- Describe the difference between compounds and mixtures, heterogeneous and homogeneous mixtures, elements and atoms, and atoms and molecules.
- Identify which substances are ionic and which are molecular.
- Give formulas and names of common polyatomic ions, ionic compounds, and molecular compounds.

Chapter 3 – Mass Relationships in Chemical Reactions:

- Write and balance chemical equations for simple chemical reactions.
- Calculate molar mass.
- Determine the number of moles and grams of one reactant needed to react with a given number of moles and grams of another reactant, and the number of moles and grams of product(s) that result from the reaction.
- Determine the percent composition, empirical formula and molecular formula of a compound.
- Use combustion analysis data to obtain the empirical formula of a compound containing carbon, hydrogen, and one other element.
- From empirical formula and molar mass, determine the molecular formula of a compound.
- Calculate percent yield.

- Calculate the mass of products produced from a given mass of reactants when the theoretical yield is less than 100%.
- Identify the limiting and excess reactants in a reaction mixture.
- Determine the mass of excess reactant remaining at the end of a reaction and the mass of product(s) produced.

Chapter 4 – Reactions in Aqueous Solutions:

- Describe how to prepare a solution of known molarity by dissolving a solid in a solvent, and by diluting a more concentrated solution.
- Determine the final concentration of solution after dilution.
- Interconvert solution molarity, solution volume, solute moles, and solute grams.
- Convert between moles and volume using molarity in stoichiometry calculations
- Determine the concentration of a solution using titration data
- Classify substances as electrolytes or nonelectrolytes.
- Write molecular, ionic, and net ionic equations for precipitation, acid-base, and redox reactions.
- Use solubility rules to predict whether a precipitate might form when aqueous salt solutions are mixed.
- Identify common strong acids and strong bases.
- Assign oxidation numbers to each atom in a chemical species.
- In a redox reaction, identify the species oxidized, the species reduced, the oxidizing agent, and the reducing agent.
- Using an activity series, predict whether a redox reaction will occur when a metal is placed in contact with a solution containing an ion of a different metal.
- Balance redox reactions by the oxidation-number method or by the half-reaction method.
- Determine the concentration of a species using data from a redox titration.

Chapter 5 – Periodicity and the Electronic Structure of Atoms:

- Relate wavelength, frequency, and energy of electromagnetic radiation.
- Use the Balmer-Rydberg equation to calculate the wavelength and energy of a photon absorbed or released when an electron changes orbitals in the hydrogen atom.
- Use a set of quantum numbers to describe a particular orbital.
- Sketch, name, and describe each of the *s, p,* and *d* orbitals.
- Predict ground-state electron configurations for elements and ions; use orbital-filling diagrams to determine the number of unpaired electrons in these species.
- Define and discuss the Aufbau Principle, Pauli Exclusion Principle and Hunds Rule
- Write general valence-shell electron configuration for each group of the periodic table, and identify the blocks in which the elements are located.
- Given a set of atoms, discuss their relative ionic radii.

Chapter 6 – Ionic Compounds: Periodic Trends and Bonding Theory:

- Given a set of ions discuss their relative ionic radii
- Predict and explain which has the higher first ionization energy for any pair of elements.
- Predict the higher second, third, fourth, etc. ionization energy for any pair of elements.

- Predict which has the more negative first electron affinity for any pair of elements.
- Discuss periodic trends in ionization energy and electron affinities
- Identify the energies involved in a Born-Haber calculation of lattice energy. Know whether these energies are positive or negative, large or small, and use the Born-Haber cycle to calculate the lattice energy of an ionic compound.
- Predict which of two ionic compounds should have the greater lattice energy on the basis of ionic charges and ionic radii.
- Give the noble gas configuration of cations and anions in ionic compounds.

Chapter 7 – Covalent Bonding and Electron Dot Structures:

- Predict which compounds are ionic and which are molecular.
- Use the periodic table to discuss periodic trends in electronegativity.
- Write Lewis symbols for atoms and tell how many electrons must be shared to enable the atom to achieve a completed valence shell. Give the symbol of the noble gas with the same number of valence electrons.
- For each atom in an Electron-dot structure give the number of bonded electron pairs and the number of nonbonded electron pairs.
- For a given Electron-dot structure, give the number of single bonds, double bonds, and triple bonds.
- Draw Electron-dot structures of molecules and polyatomic ions, employing multiple bonding and resonance structures as needed.
- Determine the formal charge on each atom in a resonance structure and use the formal charges to select the best resonance structure.

Chapter 8 – Covalent Compounds: Bonding Theories and Molecular Structure

- Use the VSEPR model to predict geometries of molecules and polyatomic ions, including those with more than one central atom.
- Discuss Valence bond theory
- Sketch and identify the hybrid or atomic orbitals used by each atom to form bonds in molecules and polyatomic ions. Show which orbital overlaps result in σ bonds and which result in π bonds.
- Use the periodic table to predict whether a given bond is ionic, polar covalent, or nonpolar covalent.
- Use a table of electronegativities to compare bond polarities.
- Define and calculate dipole moments within a molecule
- Identify and discuss the different types of intermolecular interactions and Relate the magnitude of the dipole moment to the strength of the intermolecular interactions
- Sketch a molecular orbital diagram for a diatomic molecule in the first or second period. Use the molecular orbital diagram to determine the number of unpaired electrons and to calculate the bond order of the molecule described.

Chapter 10 – Gases: Their Properties and Behaviours:

- Interconvert units of pressure.

- Use the ideal gas law to calculate pressure, volume, moles of gas, or temperature, given the other three variables.
- Use the ideal gas law to calculate final pressure, volume, moles of gas, or temperature from initial pressure, volume, moles of gas, and temperature.
- Perform stoichiometric calculations relating the mass of a reactant to the mass, moles, and volume or pressure of a gaseous product.
- Use the ideal gas law to determine the molar mass of a gas.
- Use the ideal gas law to determine the density of a gas.
- Use Dalton's law to calculate the partial pressure of a gas in a mixture.
- Explain each of the gas laws using the Kinetic Molecular Theory.
- Use Graham's law to calculate the relative rates of effusion of two different gases.
- State conditions under which a gas is expected to behave ideally or nonideally.
- Discuss the earth's atmosphere and pollutants

Chapter 9 – Thermochemistry: Chemical Energy

- Differentiate between the concepts of heat and temperature.
- Identify and describe features of a state function.
- Define and calculate *PV* work. Know whether work is being done by the system or on the system.
- Differentiate between energy and enthalpy and perform calculations interconverting the two. From *H* or *E* tell whether energy is being lost from or gained by the system.
- Given a balanced chemical equation and enthalpy change for a chemical reaction, calculate the enthalpy change per mole or per gram of each reactant and product.
- Perform calculations involving specific heat (or molar heat capacity), heat flow, and temperature change.
- Use Hess's law to determine *H* values.
- Use standard heats of formation to calculate a standard heat of reaction.
- Use bond dissociation energies to approximate a standard heat of reaction.

Chapter 17 – Thermodynamics: Entropy, and Free Energy:

- Predict whether entropy increases or decreases for a chemical reaction or physical change.
- Use the equation $\Delta G = \Delta H - T\,\Delta S$ to determine whether a forward reaction or its reverse reaction is favoured.
- Use ΔH and ΔS to determine the temperature at which a reversible system is at equilibrium.
- Qualitatively determine whether simple chemical or physical changes are spontaneous.
- Qualitatively predict whether the sign of ΔS is positive or negative for a chemical or physical change.
- Calculate the standard entropy of reaction from the standard molar entropies of products and reactants.
- Determine whether a reaction is spontaneous by determining the sign of ΔS_{total}.
- Use the equation $\Delta G = \Delta H - T\,\Delta S$ to calculate the free energy of reaction and to determine the temperature at which a nonspontaneous reaction becomes spontaneous.
- Calculate the standard free energy of reaction from standard free energies of formation.

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

PHY 1040U PHYSICS FOR BIO-SCIENCES Winter 2018

COURSE OUTLINE

The following is an approximate schedule of material to be covered in the lectures. Chapter numbers refer to the textbook. Highlighted cells indicate assignment or midterm dates.

Date	Topics	Chapters	Comments
Jan 08	Intro – Charges and Fields	25-26	Biological application: water dipole, Electrical properties of cell membranes
Jan 10	Charges and Fields	25-26	
Jan 15	Gauss' Law	27	
Jan 17	Electric Potential	28	**Assignment 1 posted**
Jan 22	Potentials and Fields	28-29	Biological application: Nerve Membranes, Defibrillators
Jan 24	Potentials and Fields	29	**Assignment 1 Due**
Jan 29	Current & Resistance	30	Biological application: Nerve impulse propagation, Nervous System
Jan 31	Current & Resistance	30	**Assignment 2 posted**
Feb 05	Fundamental of Circuits	31	Biological application: Electrical Biosafety
Feb 07	Fundamental of Circuits + Midterm review	31	**Assignment 2 Due**
Feb 12	**Midterm I**		
Feb 14	The Magnetic Field	32	Biological application: MRI, Biomagnetism, Heart & Brain Magnetic fields
Feb 19-25	**Reading Week**		
Feb 26	EM Induction	33	**Assignment 3 posted.**
Feb 28	EM Fields & waves	34	
Mar 05	Wave Optics	22	**Assignment 3 Due**
Mar 07	Wave Optics	22	Biological Applications: Colour Vision, the Eye
Mar 12	Ray Optics	23	Biological Applications: Colour Vision, the Eye, Lenses
Mar 14	Ray Optics	23	
Mar 19	**Midterm II**		
Mar 21	Atomic Physics	41	**Assignment 4 Posted**
Mar 26	Nuclear Physics	42	Biological applications: x-rays, NMR, radiation Bio-Physics
Mar 28	Nuclear Physics	42	**Assignment 4 Due**
Apr 02	Review		
Apr 04	Review		

Faculty of Social Science & Humanities

Introductory Psychology: PSYC 1000U-001
Course outline for Winter 2018

1. Course Details & Important Dates*

Term	Section	Course Type	Day	Time
Winter	001	Lecture	Friday	11:10 am-2:00 pm

Location	CRN #	Classes Start	Classes End	Final Exam Period
DTR100	70481	January 8th	April 9th	April 11th-22nd

* for other important dates go to: www.uoit.ca >Current Students >Important Dates

Online Lectures: Lectures will also be available to view online. They can be accessed through the following link (copy and paste link into web browser to avoid any issues): https://mediasite.uoit.ca/Mediasite/Catalog/Full/e700d69a0d7d41baa7fc889876dce65921

2. Instructor/TA Contact Information

Instructor Name	Office	Phone	Email
Dr. Karla Emeno	DTC 625	905-721-8668 ext. 5972	Karla.Emeno@uoit.ca
Office Hours: Friday, 2-3 pm (or by appointment)			
TAs: Alisia Palermo (Alisia.Palermo@uoit.ca), Victoria Hall (Victoria.Hall@uoit.ca), and Laleh Dadgardoust (Laleh.Dadgardoust@uoit.ca)			

Note: Contact the professor or course TAs via email, rather than through Blackboard Messages, to ensure a quicker response.

3. Course Description

This course introduces students to the study of human thought and behaviour. Through a survey of major theories, principles, and research findings across a variety of fields within psychology, students will gain a better understanding of why people think and behave as they do. Typical topics include: the history of psychology, research methods, the brain, sensation and perception, learning, memory, personality, social influences, psychological disorders and treatment.

4. Learning Outcomes

On the successful completion of the course, students will be able to:

1. Differentiate psychological facts from myths
2. Match definitions and explanations of psychological concepts with their appropriate terms and labels
3. Match prominent psychologists with their theories, principles, or concepts
4. Identify which psychological concepts are being used in particular examples
5. Remember the methodological design and findings of key psychological studies
6. Determine the implications of psychological findings for human behaviour

5. Course Design

The course will consist of once a week in-class lectures and assigned readings from the course textbook. The course Blackboard site contains all course requirements, lecture notes, discussion board, and other related materials. **Students should consult the Blackboard site regularly.**

6. Outline of Topics in the Course

Below is listed a tentative sequence of topics for the course:

Class 1 (January 12) – The Story of Psychology (Prologue)

Class 2 (January 19) – Thinking Critically with Psychological Science (Chapter 1)

Class 3 (January 26) – The Biology of Mind (Chapter 2)

Class 4 (February 2) – Sensation and Perception (Chapter 6)

Class 5 (February 9) – Midterm 1, 11:30 am-1:30 pm (test covers Prologue and Chs. 1, 2, and 6)

Class 6 (February 16) – Developing through the Life Span (Chapter 5)

No Class on February 23 – Midterm Break

Class 7 (March 2) – Learning (Chapter 7)

Class 8 (March 9) – Memory (Chapter 8)

Class 9 (March 16) – Midterm 2, 11:30 am-1:30 pm (test covers Chs. 5, 7, and 8)

Class 10 (March 23) – Personality (Chapter 14)

No Class on March 30 – Good Friday

Class 11 (April 6) – Disorders & Treatment (Chapter 15 & 16)

Class 12 (April 9) – Social Psychology (Chapter 13) – Note: this class is on a Monday

April 11-22 – Final Exam, Scheduled by Registrar (exam covers Chs. 13-16)

7. Required Texts/Readings

Myers, D.G., & DeWall, C. N. (2015). *Psychology (11th Edition).* Worth Publishers. (UOIT loose-leaf customized version: ISBN-10: 1319124887, ISBN-13: 9781319124885; Hardcover version: ISBN-10: 1-4641-4081-2, ISBN-13: 978-1-4641-4081-5)

A customized loose-leaf version of the text was developed in order to bring down the cost. This customized version can be purchased from the UOIT bookstore. The non-customized hardcover version can be purchased online through Chapters or Amazon.ca.

A copy of the textbook has been placed on 3-hour course reserve at the Social Science and Education Library. This copy can be accessed at the circulation desk (call number BF121 .M94 2015).

8. Evaluation Method

The evaluation for the course will consist of the following: Two midterms worth 30% each, a final exam worth 35%, and core research module worth 5%. In order to keep evaluations fair for all students, grades will NOT be adjusted on an individual student basis for ANY reason. Extra credit work will not be assigned.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

9. Assignments and Tests

Both midterms and the final exam will consist of multiple-choice questions covering the content in the textbook, lectures, and any additional assigned material. The midterms and final will be closed-book and non-cumulative. The two midterms will be held during regularly scheduled class time (see schedule) and the final exam will be held during the final exam period. The date and time of the final exam will be scheduled by the Registrar and will be posted later in the semester.

Missed Midterm

If a student has missed a scheduled in-term exam (i.e., midterm) due to physical or psychological illness, she or he must submit a UOIT Medical Statement, along with supporting documentation, to the FSSH Academic Advising Office within 3 days of the missed exam date. Note: The medical statement form must be signed by the treating physician or licensed practitioner within 24hrs of the missed date or deadline. If a student has missed a scheduled in-term exam (i.e., midterm) due to exceptional circumstances, she or he must submit an Academic Consideration Form, along with supporting documentation, to the FSSH Academic Advising Office within 3 days of the missed exam date. The Academic Advising Office will review the documentation and inform the student of the outcome of his or her request in writing via email. It will be at the course instructor's discretion to determine how the missed in-term exam will be addressed and resolved (e.g., make-ups).

Missed Final Exam

If a student has missed a scheduled final examination due to physical or psychological illness, she or he must apply for a deferral using the Application for Deferred Final Examination within 3 working days of the missed exam date. A UOIT Medical Statement, along with supporting documentation and a $45 examination fee (per exam), must be submitted to the Registrar's Office. If a student has missed a scheduled final examination due to exceptional circumstances, she or he must apply for a deferral using the Application for Deferred Final Examination within 3 working days of the missed exam date. An Academic Consideration Form, along with supporting documentation, must be submitted to the Registrar's Office. The most recent version of all forms can be found on MyCampus under the 'UOIT Documents' tab or on the website at www.uoit.ca/studentforms.

Religious Observance

If a student is requesting consideration for a religious observance for any in-term exam (i.e., midterm), she or he must submit a UOIT Academic Consideration Form to the FSSH Academic Advising Office 15 working days prior to the exam date. The Academic Advising Office will review the form and inform the student of the outcome of his or her request in writing via email. It will be at the course instructor's discretion to determine how the missed in-term exam will be addressed and resolved (e.g., make-ups).

If a student is requesting consideration for a religious observance for a final exam, she or he must apply for a deferral using the Application for Deferred Final Examination and a UOIT Academic Consideration Form 15 working days prior to the first final examination date. The most recent version of all forms can be found on MyCampus under the 'UOIT Documents' tab or on the website at www.uoit.ca/studentforms.

Academic Advising Office
55 Bond St East Rm 403
E: sshadvising@uoit.ca
T: 905-721-8668 x 3838
F: 905-721-3372

10. Core Research Module

CORE RESEARCH MODULE (5%)

The Core Research Module (CRM) in PSYC1000U is worth 5% of your total grade in the course, and is designed to provide students with opportunities to gain a richer understanding of the ways in which psychological research is conducted. Through the CRM, students will learn about the importance of operationalizing independent and dependent variables, about the comparison of experimental and control groups, and about how careful study design can help test specific experimental hypotheses.

Below are important details regarding how you can complete all CRM requirements. So please read everything very carefully!

How much is the CRM worth of my total grade? The CRM is worth 5% of your total grade in the course. Only by completing all CRM requirements, can you obtain the full 5% towards your course grade.

How will students accrue CRM credits? You will accrue CRM credits by a) participating in faculty-run research studies, and/or b) reading and submitting short guided reviews of contemporary research articles.

How many CRM credits do I need to obtain? One CRM credit = 1% towards your final grade. Thus, to obtain the full 5%, you will need to accrue 5 CRM credits over the course of the term.

Participating in Research Studies

Participating in research studies is a great – and often fun – way to gain hands-on experience with psychology research studies. These studies are run by UOIT professors and graduate students, who conduct research aimed at furthering a wide variety of scientific missions. They are all safe and fully approved by the UOIT Research Ethics Board, and

provide an optimal way to learn how psychological research is conducted.

To participate in these studies, please go to the Psychology Participation website at http://uoit.sona-systems.com, where you will find a list of all the studies that are currently seeking participants. The first thing you will do is register on the site, after which you will be asked to answer a few questions that provide basic information about yourself (e.g. age, gender, written/spoken languages, etc.). For answering these questions, you will automatically receive 0.5 CRM credits. After that, you will receive CRM credits in the following amounts:

Lab-based studies: The majority of research studies require that you come to the psychology laboratory in order to participate. For these *lab-based studies*, you will receive 1 CRM credit for every hour of participation (calculated in 30-minute intervals).

Online-only studies: Some studies only require online participation to complete the study. For these *online-only studies*, you will receive 0.5 CRM credits for every hour of participation (calculated in 30 minute intervals).

Guided Reviews of Contemporary Research Articles

If you do not want to participate in research studies, you may instead choose to read selected research articles, and to complete guided reviews of these articles. While this will not provide you with the same hands-on experience that you would get by participating in the research studies; the questions you will be required to answer will teach you important concepts regarding the purpose, design and implementation of the conducted research.

To get started, you will need to download the articles, as well as the questions that you must answer within your review, from Blackboard. A submission portal will also be created in Blackboard that you can use to upload the completed document. Each article that you read and submit answers for will be graded on a pass/fail basis, and all passing submissions will accrue 1 CRM credit.

Deadline for Receiving CRM Credits

Research studies are typically run throughout the semester with data collection ending on the last day of classes. You can sign up to participate in these studies at any point. The deadline for submitting guided article reviews is also the last day of scheduled classes. Guided article reviews will be submitted via Blackboard and will not be accepted once the due date has passed.

Deadline for CRM Credits: Monday, April 9th

11. Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services in a timely manner, and provide relevant and recent documentation to verify the effect of their disability and to allow the University to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity.

12. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aims and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5.16 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

13. Faculty of Social Science and Humanities Statement on Inclusivity

The Faculty of Social Science and Humanities is committed to building a truly inclusive educational community where faculty, students, and staff share the responsibility for promoting the values of fairness, justice, and non-discrimination, and for ensuring myriad voices, faces, and experiences are recognized and represented. We embrace and honour the dignity of individuals and groups, and believe that diversity, in all its complex dimensions, lays the foundation for academic excellence and creative learning. The Faculty is, therefore, dedicated to creating a welcoming and supportive campus culture and to challenging all forms of systemic discrimination experienced by historically disadvantaged groups, including but not limited to groups marked by race, ethnicity, sex, religion, age, disability, sexuality, gender identity and expression, and socioeconomic status.

14. Turnitin

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must inform their instructor at the time the work is assigned and provide, with their assignment, a signed Turnitin.com Assignment Cover sheet.

15. Final Examinations

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

See “Assignments and Tests” section on pages 4-5 for information regarding missed final exams. Further information on final examinations can be found in Section 5.25 of the Academic Calendar.

16. Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Social Science & Humanities.

UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Social Science & Humanities encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at accessandprivacy@uoit.ca.

17. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

Course Outline – CSCI 1040U – Fall 2017

Faculty of Science

CSCI 1040U: Introduction to Programming for Scientists
Course outline for Fall 2017

1. Course Details & Important Dates*

Term	Course Type	Day	Time
Fall 2017	Undergraduate	Tuesdays	8:10am – 9:30am
		Thursdays	8:10am – 9:30am

Location	CRN #	Classes Start	Classes End	Final Exam Period
UA 1350	43124	Sept. 7, 2017	Dec. 4, 2017	Dec. 6 - Dec. 17, 2017

Important Date	Date
Thanksgiving	Oct. 9, 2017
Co-curricular period	Oct. 26, 2017
Co-curricular period	Oct. 27, 2017

* for other important dates go to: www.uoit.ca >Current Students >Important Dates and Deadlines

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Randy J. Fortier	UA 2032	905-721-8668 x2114	randy.fortier@uoit.ca
Office Hours: Mondays, 10:30am - 11:20am, UA 2032 Tuesdays, 9:30am – 10:20am, UA 2032 Tuesdays, 1:00pm – 1:50pm, UA 2032			

Laboratory/Teaching Assistant Name	Email
Prateek Panwar	prateek.panwar@uoit.ca
Riley Weagant	riley.weagant@uoit.ca
Hunter Thompson	hunter.thompson@uoit.net
Martin Tuzim	martin.tuzim@uoit.net

3. Course Description

The course serves as an introduction to programming and computational science. Topics covered include solving problems with computers, storing and retrieving data, common algorithms, data structures, procedures, functions, object-oriented programming, and applications of programming from different domains.

4. Learning Outcomes

On the successful completion of the course, students will be able to:

- Understand the architecture of computers
- Write programs in Python, using various programming constructs
- Solve problems by developing a strategy
- Understand some well-known algorithms
- Plotting of scientific data
- Generate data using stochastic and other simulations
- Explain the major advancements in artificial intelligence (time permitting)

5. Course Design

Lectures in this course will include both presented material, and interactive elements. The classroom interaction will be designed to solidify concepts and techniques learned in the lectures. Examples for this course could include programs, diagrams, and pseudocode.

In order to achieve success in this course, students must attend all lectures and labs. Regular absences mean that you miss critical information and just are not able to catch up. The instructor will provide the majority of classroom materials on the Blackboard site. The TAs will supervise the laboratories, while you complete an assignment designed by the instructor. The instructor and the TAs will collaborate on the marking of some course components (e.g. tests).

6. Outline of Topics in the Course

1. Basic computer programming with Python
2. Conditionals, loops, and lists
3. Functions, function calling, and argument passing
4. Data analysis and plotting
5. Stochastic and other simulations
6. Artificial intelligence (time permitting)
7. Databases (time permitting)

7. Required Texts/Readings

The required textbook for this course is an electronic book. To access this book, use the following instructions:

- Sign in or create an account at learn.zybooks.com
- Enter zyBook code: **`UOITCSCI1040uFortierFall2017`**
- Subscribe (your subscription will last until January 13th, 2018)

Additional online readings may be assigned or recommended during the course.

8. Assignments and Tests

Labs	Nearly every week	10%
Assignment #1	October 12, 2017	10%
Assignment #2	November 7, 2017	10%
Test #1	October 19, 2017	15%

Test #2	November 14, 2017	20%
Final examination	TBA, December 2017	35%

Any student who misses an examination without a valid medical reason and documentation will receive zero for that examination. Those who submit medical documentation, or otherwise notify the instructor, within 24 hours will either be given a makeup exam or will have the weight of the examination added to the final exam.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

For assignments and lab assignments, a late penalty of 10% per day late will be applied, in the absence of a medical note, to a maximum of 3 days late. After 3 days, the assignment will not be accepted.

Lab assignments are due within one week of the beginning of your lab period, but it is recommended that you finish the labs during the lab period itself in order to ensure proper feedback.

9. Students with Disabilities

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

- Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite
- Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.
Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

10. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

In this course, specifically, examples of academic misconduct may include (but are not limited to) sharing work on individual assignments with anyone other than the TAs or the instructor, sharing work on group assignments with anyone outside of your group, sharing information (in person or electronically) with anyone other than the invigilators during a test, and using a tool to automatically generate code, graphs, or other product (unless explicitly permitted by the instructor). Violators will face a minimum of a zero mark for that course component, and likely further disciplinary action through the academic integrity council.

11. Safety

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.cafor support.

UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca

Learn more about your options at: www.uoit.ca/sexualviolence

12. Final Examinations

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

13. Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

14. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

Human Physiology Syllabus
BIOL2010U

Course Details and Important Dates

Lectures: It is highly suggested that you attend lectures and take notes to supplement the lecture slides for deeper understanding of the content.

Lecture CRN:40067		
Day	**Time**	**Location**
Monday	3:40 to 5:00 p.m.	UB2080
Thursday	3:40 to 5:00 p.m.	UB2080

First lecture for winter term: Thursday September 6, 2018
Last lecture for winter term: Monday December 3, 2018
Special Notes: Thanksgiving is Monday October 8 and the Fall Study Week is Tuesday October 9 to Friday October 12 – no classes scheduled during this time
Final exam period: December 7 to 16, 2018

** For other important dates click here*

Course Personnel and Contact Information:

Lecturer: Annette Tavares
Office: UA3063
Tel. 905 721-8668 ext 3641 Email: via Blackboard only

Office Hours: Tuesdays 8:30 to 9:30 a.m. and Fridays 2:00 to 3:00 p.m. or by appointment any other time (please email via Blackboard for a specific time).

Laboratory Co-ordinator: Dr. George Stamatiou
Office: UB2028
Phone: 905-721-8668 ext. 2082 Email: via Blackboard only

Laboratory Instructors:

TA Name	Office	Email	Phone	Consultation times
Mr. Jordan Anderson	UAB450	Via Blackboard	(905) 721-8668 Ext. 2342	By appointment please email via Blackboard
Ehab BakBak	TBA	Via Blackboard	N/A	By appointment please email via Blackboard

Course Design

- Students will be guided through the subject by structured lectures, in-class activities, case studies, tests and laboratory assignments and quizzes. The normal modes of teaching will be 3 hours of lectures per week delivered as two 1.5 hour sessions and 3 hours of labs, biweekly.
- Students have the roles of active learners and have the responsibility of attending and actively participating in all planned student learning experiences, i.e. lectures and laboratories and undertaking such other private study as will benefit their learning towards the objectives of the subject. Although no minimum attendance is required, students must be aware that sessions are available only at the times specified and cannot be repeated.
- Non-contact hours - students should expect to spend on average about 6 hours per week out of class in reviewing theoretical material, preparing practical reports and reviewing literature for a pass in the subject.

Required Text:

- Principles of Human Physiology by Cindy L. Stanfield. 6th Edition. Pearson Education Inc. Two options available at campus bookstore:
  - Loose-leaf text + Mastering Physiology access code
  - E-book + Mastering Physiology access code

Course Evaluation, Marks Distribution and Test Dates:

Midterm Test (Thursday October 25, 2018 - in class)	25%
Case Studies (2 x 5% each)	10%
Final Exam: Date TBA	35%
Laboratory	30%*

- *Please refer to the "BIOL2010 Laboratory Guidelines" file posted on Blackboard for more information regarding the labs.*
- ***The laboratory component must be passed, as well as the lecture material, to successfully complete this course.***

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

Lecture Schedule

Please note that this schedule is a proposed outline and coverage of material and the specified dates may be subject to change.

Date	Lecture #	Lecture Topic	Chapter
September 6	1	Welcome Information and Textbook Resource Orientation	
September 10 September 13	2 3	Introduction and Homeostasis Cell Membrane Transport	1 4
September 17 September 20	4 5	Endocrine System Nerves Cells and Electrical Signaling 1	6 7
September 24 September 27	6 7	Nerves Cells and Electrical Signaling 2 Synapses/Neural Integration	7 8
October 1 October 4	8 9	CNS – Functional Anatomy CNS - Integrated CNS Function	9
October 8-12	**Thanksgiving Holiday and Fall Reading Week – no classes**		
October 15 October 18	10 11	Autonomic and Motor Systems Introduction to Immunity	10 23
October 22	12	Muscle Physiology 1	12
October 25	Midterm Test - Covers Lectures 2-11 inclusive; 25% of final grade		
October 29 November 1	13 14	Muscle Physiology 2 Cardiovascular System – Blood	12 15
November 5 November 8	15 16	Cardiovascular System – Blood Flow/Pressure Cardiovascular System – Cardiac Function	14 13
November 12 November 15	17 18	Respiratory System	17
November 19 November 22	19 20	Urinary System	18
November 26 November 29	21 22	Gastrointestinal system	20
December 3	23	Reproductive System overview	22

Laboratory Information

Please note that labs start the week of September 17th, in UB4050.

For detailed information regarding BIOL2010 laboratory policies and schedule, please consult the files entitled Lab Guidelines Fall 2018 and Summary Lab Schedule on Blackboard in the Laboratories content area.

All labs take place in room UB4050			
Lab CRN	**Week***	**Day**	**Time**
40069	Week 1	Tuesday	8:10 am - 11:00 am
42223	Week 1	Tuesday	12:40 pm - 3:30 pm
40070	Week 1	Wednesday	8:10 am - 11:00 am
40074	Week 2	Tuesday	8:10 am - 11:00 am
42296	Week 2	Tuesday	12:40 pm - 3:30 pm
41131	Week 2	Wednesday	8:10 am - 11:00 am

Check MyCampus and Blackboard regularly for lab schedules and updates.

Getting Help With BIOL2010 Content:

You can get help with course content in several ways:

- For lecture material, visit Annette's office hours or make an appointment (via Blackboard email) if you are unable to make it to office hours.
- For lab help, visit the **BioHelp Drop-in Session**:

Day	**Time**	**Room**	**Bio-Help TA**
Monday	2:00 p.m. to 3:30 p.m.	**UL-10**	Ehab BakBak

  - ✓ These sessions **begin the week of September 10, 2018** and continue until the Final Exam period. No appointment needed, just drop in.
  - ✓ *Note: although other TA's will be present for other courses, Ehab BakBak will be your primary contact for BIOL2010 lab help.*

- **Science Café**
  - ✓ The Café is available every Wednesday (starting Sept. 12, 2018) from 3:30 to 7:30 p.m. in UA3230.
  - ✓ No registration required; simply drop by! For more information about the UOIT Science Café, please visit: www.facebook.com/UOITScienceCafe/.

Faculty of Science Academic Policy Summary

For complete Academic Policy details, please click Academic Policies for the Faculty of Science or see the Academic Policies link in the Important UOIT Links content area on the course Blackboard page.

***Missed Term Tests (Midterms)**:*
If you miss a Science test due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Statement, death certificate), and submit it to the Science Academic Advisor (science.advising@uoit.ca) within **3 business days** of missing the test or assignment.

If you are aware in advance that you cannot write a test for any other reason, you **must** discuss this with the Science Academic Advisor and the instructor of the course at least **2 business days before** you are scheduled to write it. Exceptions to this deadline include Varsity Athletics, Religious Observances, and test-course conflicts. **Failure to submit the appropriate documentation by the correct deadline will result in a zero grade for the test.**

Submission of Assignments:
Preferred submission is as a hardcopy unless otherwise indicated by the instructor or TA. If you submit an assignment by email, it is your responsibility to ensure that the instructor or TA has received that assignment. If you have not received a confirmatory email from the instructor or TA within 24 hours of submitting the assignment, it is your responsibility to follow up by either emailing the assignment again or submitting a hard copy directly to the instructor or TA as soon as possible. You have the option of submitting assignments late but you will incur a late submission penalty of 10% per day (including weekends) deducted from the total mark for that assignment.

If you miss any Science assignment (e.g. weekly assignment, term paper deadline, or quiz) due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Statement, death certificate) and submit it to the course instructor indicated on the Blackboard site for the course within **3 business days of missing the work.**

If you know in advance that you may not be able to complete an assignment or other work due to a legitimate reason, you must contact the course instructor at least 2 business days before the posted deadline. If you are unsure of the information required or of who to contact, please contact the Science Academic Advisor immediately. Note that there are special deadlines for Varsity Athletics and Religious Observances. For these circumstances you must follow the correct deadlines.

Failure to submit the appropriate documentation and contact the correct instructor by the deadline will result in a zero grade for the assignment.

***PLEASE NOTE:** If you have already written or submitted a test, quiz, or other term work, you cannot receive consideration for your performance on it after the fact; regardless of the reason for your poor performance.

When a student has sufficient grounds for special consideration (such as documented illness or death in the family) the normal policy in the Faculty of Science for any missed term work is to re-weigh the remaining work in the course to account for the missing grade, in accordance with the regulations given below for term tests, quizzes, assignments, labs, and tutorials. Students who do not provide sufficient grounds, as determined by the course instructor, will receive a grade of zero for the missed work.

There are no make-up exams, tests, quizzes, or assignments. There is no option to complete or submit any term work once the term has ended and the final exam period has started. Also there will be no option to do alternative work (extra assignments, or other 'special' activities to make-up missed term work or in an attempt to improve your grade.

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.ca for support.

Final Examinations and Final Grades
Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious obligations may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

If you miss or anticipate missing a final exam in a Science course you must obtain the appropriate supporting documentation (UOIT Medical Statement, death certificate) and

complete the Application for Deferred Final Examinations. All forms must then be submitted to the Science Academic Advisor by the deferred examination deadline. The deadlines are as follows:

For missed exams due to illness or other unanticipated reasons the deadline is five calendar days after the date of the scheduled examination (e.g. if the exam was on a Monday, the deadline would be Saturday of that week - a fax sent on the Saturday and picked-up by the Advisor on Monday would be acceptable).

If you find you are not able to get supporting documentation by the deadline, please submit your Application for Deferred Final Examination by the deadline and discuss other arrangements with the Advisor. If you are not sure whether or not your circumstances warrant special consideration, you should speak to the Academic Advisor immediately. Failure to submit the appropriate documentation by the deadline may result in a zero grade for the exam.

Further information on final examinations can be found in the Academic Calendar.

***Final Examination Deferrals**:*

All deferred Fall and Winter final examinations for Science exams will be written during the week before the first week of classes in the next academic term and students are expected to be prepared to write at that time (e.g. April deferred exams are written during the week before classes begin in May). All deferred Spring and Summer exams will be written the week following the end of the exam period. Students must notify the Academic Advisor on their Application for Deferred Final Examinations of any reason why they may not be able to write at that time. The Science Academic Advisor will contact all students via email within three days of receiving the Application to inform them of the decision and to confirm the time and location of the exam(s) if appropriate.

PLEASE NOTE: Students who have legitimate grounds for missing a test/exam should not write the exam expecting to later decide whether or not the exam will count. If you choose to write an exam under any circumstances the decision is irreversible. If you are concerned about your ability to perform on the exam, you should speak to the Science Academic Advisor about your options in advance of the exam. Please contact the Science Academic Advisor via: science.advising@uoit.ca.

Final Examination Viewing:

Students wishing to view their final exam must submit a written request no later 1 week (7 days) after the release of final grades for that semester, stating why they would like to view the exam. Reasons may include, to calculate the final numeric grade (in cases where it is difficult to infer) or to determine which items of the course material gave you the most difficulty. To request an exam view, please complete the Science Final Exam

View Request form and submit it to the course instructor via email. There is no fee associated with viewing a final exam.

Students will have 15 minutes to look over their final exam. Only the use of a calculator is permitted during the exam view appointment. No writing instruments, cell phones or other electronic devices will be permitted. Missed exam view appointments will not be rescheduled.

Please note, this is an opportunity for students to view their answers and see where any mistakes were made. As per UOIT policy (section 5.24.5.1) unless a clerical error has occurred, instructors may not make changes to the final grade awarded in a course as a result of an exam view. If, after viewing the final exam script, you wish to dispute the final grade awarded, you will need to submit for a Final Grade Appeal through the Registrar's Offices. For more information on Final Grade Appeals, please refer to section 5.11.2 of the UOIT Academic Calendar or contact the Science Advising Office.

***Final grades**:*

Final grades are posted to MyCampus by the Registrar's office (RO) approximately one-and-a-half weeks after the end of the final exam period. Official grades are released by the RO only and your final grades cannot be released by anyone else. Please do not contact your instructor for this information. Grades will be posted in accordance with the Grading Scale as indicated in the UOIT Academic Calendar.

Your final exam grades will not be posted on Blackboard, but you will be able to infer your grade based on your final exam grade and your term work grades. *Please note that there are no options to do extra assignments or other activities to make up for unsatisfactory performance in a course.*

Student Conduct

Lecture and Laptop Etiquette:

Stay on Task - Stay focused, and stay engaged. Remember, you are in the classroom to learn. Constantly remind yourself why you are here!

Don't Distract Others - Don't distract others with your computer. Research shows that if a flashy image is in an individual's line of sight, no matter how hard they try, their concentration will shift to the flashy, moving object on your computer screen. Be respectful of the fact that others are in lecture to learn. Also don't distract others with excessive talking in class. Your instructor WILL ask you to leave if you are talking excessively during the lecture.

Don't Distract Yourself - Keep non-classroom related communication to a minimum. This includes chat. Chat should not be running during classroom hours. There is no need to check email during class. Check before class begins, during official break (if given) or at the end of class. It is your responsibility to be engaged! Take notes, think about what the lecturer is saying, think of questions to ask to clarify material – be an active learner, not a passive one!

Academic Integrity: Plagiarism and Cheating

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. **Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.**

Students are expected to be familiar with and abide by UOIT's regulations on **Academic Conduct** which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and
tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. **A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.**

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

Click here for further information on academic integrity.

Turnitin

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their

assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must provide with their assignment at the time of submission to the instructor a signed Turnitin.com Assignment Cover sheet: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services.

Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Freedom of Information and Protection of Privacy Act (FIPPA)

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at accessandprivacy@uoit.ca.

Religious Observances

It is Faculty of Science policy to provide special consideration for recognized holy days (Interfaith Calendar) which may be observed by our students. Though not all holy days

require students to be absent from school, accommodations may still be necessary in some cases. As a student, it is **your** responsibility to check the dates for all course work and exams on a regular basis and notify the Science Academic Advisor per the options below. Documentation which confirms your faith is required in all cases.

Please note:

1. If the holy day will conflict with scheduled labs and tutorials you must inform the Senior Lab Instructor or tutorial TA of any potential conflicts at least 7 business days before the scheduled meeting time of the lab or tutorial.

2. If the holy day will conflict with the due date for an assignment you must inform the instructor at least 7 days before the due date.

3. If the holy day will conflict with tests or exams you must inform your instructors and the Science Academic Advisor of any potential conflicts at least 7 business days prior to the date of the test/exam. Note that the deadline for final exams is at least three weeks prior to the examination period as per the Final Exams policy below.

Failure to contact the appropriate person by the deadline will result in special consideration not being granted. Note that the dates indicated on the website above are the dates which will be recognized by the Faculty of Science. Should your holy day fall on alternate dates (e.g. those holy days which are based on lunar cycles) you will be

required to provide additional proof of the date of your holy day by the deadline as specified above.

UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

Sexual Violence Policy

If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca
- Learn more about your options by clicking here.

Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

Dr. Sean Forrester

BIOL2030: Cell Biology
Course outline for Fall 2017

1. Course Details & Important Dates

Term	Course Type	Lecture Day	Time/Location
Fall	Hybrid Lecture + Lab	Monday	University Pavilion UP1500

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Sean Forrester	UA4018		Via Blackboard
Office Hours: By appointment – please arrange via Blackboard email			

Laboratory Instructor	Office	Phone	Email
Sylvie Bardin	ECR3010		Via Blackboard
Office Hours: By appointment			
Lab TAs: Zahra Mortaji and Luis Salgado			

Labs will start the week of Sep 11, 2017

2. Other Support

Biology Drop-in Sessions		
Monday	3:30-5pm	UL3
Friday	11:10am-12:30pm	UL3

These are to provide consultation on lecture and laboratory material

3. Course Description

This course provides the student with an introduction to the discipline of Cell Biology with the focus on cell structure and function. This course involves a "hybrid lecture approach" with both In-Class Lectures (delivered by the Instructor) and On-Line Lectures (posted on Blackboard). Lectures are designed to ensure that students learn the important concepts outlined in this course. The Lab Assignments are designed to provide students with an opportunity to expand their laboratory skills to the study of cellular biology.
Expectations: It is important for students at university to become "active learners" who are fully engaged in getting the most out of this course. Students are responsible for attending and actively participating in all lectures, reading the recommended references and undertaking private study. Each student is also expected to attend Labs, perform all

experimental work and to complete Assignments as instructed in their laboratory manuals. By using an "active learning strategy", students will learn more effectively and will get the most benefit from this course.

4. Required Texts/Readings

The required textbook, which will be available at the UOIT Bookstore or online is:

- Essential Cell Biology (4rd Edition, 2014/or Latest edition): Alberts, Bray, Hopkin, Johnson, Lewis, Raff, Roberts and Walter. Garland Science. New York, N.Y. 740 pp. with accompanying CD-ROM "ECB-4 Interactive"
- The Laboratory Manual, and lectures will be made available through Blackboard throughout the fall semester.

5. Outline of Topics in the Course*

WEEK	DATE	Lecture #	Lecture Topic	Text Chapter
1	Sept. 11th	In-class Online	Overview of Course Content Introduction to Cell Structure	1
2	Sept. 18th	In-class Online	Protein Structure Protein Function	4 4
3	Sept. 25th	Online Online	DNA Structure DNA Synthesis	5 6
4	Oct. 2th	Online	Transcription and Translation	7
5	Oct. 9th	In-class Online	Control of Gene expression Membrane Structure	8 11
6	Oct. 16th	In-class Online	Membrane transport part 1 Membrane transport part 2	12
7	Oct. 23th	MIDTERM (25%)	Based on in-Class and online Lectures Weeks 1 to 5	
8	Oct. 30th	Online	Intracellular transport Endocytosis	15
9	Nov. 6th	In-class Online	Cell Communication I Cytoskeleton	16 17
10	Nov. 13th	In-class Online	Cell Communication II Cell Cycle	16 18
11	Nov. 20th	In-class Online	Cell Number Control Mitosis and Cytokinesis	18 18
12	Nov. 27th	In-class Online	Course Wrap-up and Final Exam Information Cellular Communities- Tissues, Stem Cells and Cancer	20

*Subject to change. Some changes to the schedule and content may be made.

6. Evaluation Method

- Mid-Term Test (In Class - Monday October 23th, 2017) 25%
- Final Examination (Date TBA in December Exam Period 2017) 40%
- Laboratory Component 35%

7. Assignments and Tests

General Information: If you have already written or submitted a Test, Quiz, or other Term Work, you cannot receive consideration for your performance on it "after the fact". The normal Policy in the Faculty of Science for any missed Term Work is to re-weight the remaining work of the course to account for the missing grade, in accordance with the regulations given below for Term Tests, Assignments, and Labs.
There are no Make-up Exams, Tests, Quizzes, or Assignments.

Mid-Term Test: If you miss a Science Term Test (e.g., a Mid-Term Test) due to illness or a death in the family, you must obtain the appropriate documentation (UOIT Medical Certificate, Death Certificate), and submit it to the course instructor within 5 days of missing the Test.

If you aware in advance that you cannot write a Test for any reason, you must discuss this with the Instructor of the Course at least 2 days before you are scheduled to write the Test.

Biol 2030 Laboratory Guidelines

The objectives of the laboratory component of Biology 2030U are to:

- Give you practical experience with some of the techniques and procedures used for the study of Cell Biology.
- Help you develop analytical skills required to analyze scientific data and interpret results.
- Learn to write scientifically

Important people:

- ✓ Senior laboratory Coordinator: Dr. Sylvie Bardin
  - Contact using the Blackboard email of the course
  - Office: ERC 3010; phone: 905-721-8668 ext. 5430
  - In case of emergency use the following email: sylvie.bardin@uoit.ca

Dr. Sylvie Bardin is responsible for writing and compiling the laboratory manual and associated assignments, as well as ensuring the smooth functioning of the labs. She is also responsible for dealing with students concerns (both academic and attendance). Please contact Dr. Bardin if you have any concerns about the labs. She will be available during most regular laboratory periods, via e-mail or by appointment; response to your emails will be provided within two working days.

- ✓ Teaching assistant: Zahra Mortaji and Luis Salgado
  - Contact using the Blackboard email of the course

The teaching assistants is responsible for helping you understand the concepts taught in the laboratory and for evaluating your performance.

Important Information

- You will perform one laboratory every other week for a total five labs per term. The laboratory session is 3 h long and will take place in room UB 4050. Please refer to the Laboratory schedule posted on Blackboard to determine when your lab session is.
- Laboratories start on **Sep 14 for week 2** and **Sep 21 for week 1**.
- All laboratory sessions are mandatory. If you miss a lab session, you will receive zero (0) for all the assignments associated with the lab unless you have a legitimate reason (medical reason or death in the family) for missing the lab and submit appropriate documentation to the Lab coordinator (Dr. Sylvie Bardin) **within 3 working days** of missing the lab.
- You will automatically fail the course if you perform less than four labs per semester (regardless of whether you have legitimate reasons for missing the labs).
- You must pass the laboratory component of the course with a minimum of 50% to pass the course.

Laboratory Format**:**
The general format for each lab period will consist of:

- 10 min quiz on the lab you will be performing.
- A brief introduction by your TA explaining what you will be doing during the lab. The TA will also use this introduction period to describe the safety precaution relevant to the lab you are going to perform.
- A period where you will perform the lab.
- Time to analyze, discuss results and complete an assignment.
- You will work in groups of two students in most labs (please refer to the protocol sections of each lab for additional information).

Dress code

- Wear pants/trouser and flat bottom closed shoes with long socks when working in the lab (no skin should be visible when seating). Avoid loose clothing. You must also wear your lab coat and protective eyeware during each lab.
- If you are inappropriately dressed you will not be permitted to perform the lab. You will be asked to leave the lab and will receive 0 on all assignments associated with the lab.

- If you do not have a lab coat or safety glasses, you may borrow a lab coat and safety glasses. We have a very limited number of extra lab coats and safety glasses available on the first come, first serve basis. You will only be allowed to use this service once. So if you come to the lab for the second time with no lab coat or safety glasses or if the extra lab coats/safety glasses are already being used, you will be ask to leave the lab and you will receive 0 on all the assignments associated with the lab.

Introduction, protocol and lab assignment files must be printed out before coming to the labs. You will be responsible for printing the introduction, protocol and lab report files posted on Blackboard **prior to** coming to your laboratory period. **You will be asked to leave the labs if you come to the lab without these documents printed out.** Think

about printing these files ahead of time as the printers may not be working just before your lab session (and a printer not working will not be an acceptable reason for not having the files printed out). You may also be required to print and complete a pre-lab assignment before coming to the lab. In this case, the completed pre-lab assignment will have to be submitted at the beginning of the lab in order for you to do the lab.

Along with the printout of the laboratory introduction, protocol and assignment, and the standard note taking supplies, you should bring the following supplies to every lab period:

- a waterproof pen (such as "Sharpie")
- a pencil/eraser for drawing diagrams
- a ruler with a cm and mm scale
- a calculator

Quiz:
To take full advantage of the lab period you are expected to **read and understand** the material presented in the introduction and protocol sections of each lab as well as any additional reading material mentioned in the introduction and protocol sections **before coming to the lab**. You will be tested on your knowledge of this material via a quiz that will be delivered at the beginning of each lab. The quiz will be "closed book" and time limited (10 min); **Note, that you will not have time to successfully complete the quiz unless you have reviewed the material ahead of time!**

Late arrival to the labs:
Students will not be allowed in the lab if they are more than **10 min** late and will receive zero (0) on all assignments associated with the missed lab. Students arriving during the quiz will not receive any extra time to complete the quiz.

Attendance and assignment submission
Students are responsible for signing:

- **the attendance sheet** at the beginning of each lab; without these signatures, students missing the lab will receive a zero on all assignments associated with the lab.
- **the assignment submission sheet** each time students submit an assignment to a TA. Your signature is the only way you can prove that you actually handed in an assignment if the assignment is gone missing. Without these signatures, students will receive zero on their assignment.

Laboratory assignments and reports:
Some lab assignments will be due at the end of the lab period while others (homework assignments) will be due at the beginning of your next lab session.

- For lab assignments due at the end of the lab: The laboratory session has been designed with enough time to complete the lab activity and complete the lab assignment **if you come to the lab prepared**. If you feel that you are struggling to finish, this likely indicates that you need to improve your preparation to the lab. You may want to talk to your TA or lab coordinator for some advice achieving this. Note that late submission of in-lab assignments will not be accepted.

- For homework assignments are usually submitted electronically to TurnItIn at a specified date and time. If late submission is allowed, the penalty will be of 10 % penalty per 24 h late (including weekend).
- Even though you are require to complete the totality of your assignments (perform all the drawings, answer all the questions performed all the calculations) your lab assignment may be spot marked.

Missed labs:

- All laboratory sessions are mandatory.
- You are permitted to miss one lab with appropriate documentation. If you miss more than one lab, even with appropriate documentation, you will fail the lab and therefore fail the course. Missed labs will not be rescheduled.
- **If you miss your lab for a valid reason you must submit proof of the reason within 5 working days to Dr. Sylvie Bardin.**
- Valid reasons for missing a lab are medical reasons or death in the family/family tragedy. Other reasons may be considered on a case by case basis as long as documentation has been provided.
- If you miss a lab for medical reasons you must submit a UOIT Medical Statement form completed by your doctor – **NOTE**: no other documents from your doctor will be accepted.
- If you miss a Lab due to a family death or family tragedy, a death certificate or other appropriate document must be submitted.
- Upon receipt of the documentation you will be excused for the missed lab and your lab marks will be reweighted on the four other labs. There are no make-up assignments and you are responsible for learning the missed material on your own.

Plagiarism and cheating:

Even though you collect data in the lab as part of a group, **all work that you submit must be done on your own**. COPYING OR ALLOWING YOUR WORK TO BE COPIED IS AN ACADEMIC MISCONDUCT (SEE CALENDAR) AND WILL BE SEVERELY PENALIZED. You will receive zero on your assignment even if only a small part of the assignment has been copied and an academic misconduct report will be filed against you with the Science student advisor.

Lab Evaluation

The laboratory component of the course is worth 35 % of the final mark. Student must pass the laboratory component of the course, with a minimum of 50% to pass the course. The evaluation scheme for the laboratory component of the course is as follows:

- Lab 1 to 4: 24%
  - 6% each lab:
    - 2% for the pre-lab
    - 2 % for the quiz
    - 2% for the lab assignment
- Lab 5 quiz: 4%
- Final lab report: 7 %

Safety

When working in the laboratory you may use reagents, which are toxic, caustic, flammable, and handle a variety of microorganisms. The department provides safeguards, as well as competent supervision when working with these materials. In addition you will be provided with education on safety procedures and proper laboratory practices. But ultimately, it is your responsibility to be careful. Carelessness on your part can result in serious injury and/or illness to yourself as well as others. For your own safety and for the safety of those around you, please follow the guidelines mentioned below.

1. Wear a lab coat and protective glasses at all times.
2. Do not wear contact lenses.
3. You will be working with a variety of chemicals and microorganisms. To avoid any contamination, please observe the following:
   - Wash your hands before and after the lab period.
   - While working avoid touching your face with your hands. Do not put your pens, pencils, etc. in your mouth.
   - Do not mouth-pipette.
   - Keep coats, packs, purses etc. in the designated area and off the lab bench. If you store your personal items on the lab bench, you risk contaminating them and carrying the contaminations with you when you leave the lab.
   - Wear gloves when working with dangerous chemical or dangerous microorganisms and when handling colored reagents. People that tend to wear gloves all the time are more likely to develop dermatitis/allergies from the gloves, so wear gloves when needed. Discard gloves outside-in into the orange biohazard bags or glove waste container when you are done working or when the gloves get contaminated. Make sure to wash your hands and wrists after removing your gloves.
4. Do not eat, drink or chew gum in the lab.
5. Wear trousers and flat bottom closed shoes with socks when in the lab (legs and feet must be completely covered).
6. Long hair must be tied back.
7. Do not wear mascara (especially during the microscopy lab).
8. Remove hanging jewelry when working with biohazards, flames or moving machinery.
9. Restrain loose clothing.
10. You will be handling glassware during the labs. Handle all glassware with care. Cuts to your hand are especially dangerous due to the many nerves and tendons in your hands.
11. Follow instructions for disposal of live cultures, contaminated glass and plastics, chemical reagents, etc. Improper disposal of these items could harm the person that handles wastes and can contaminate the environment.
    a. Do not discard live culture down the sink; Culture tubes or flasks must be placed in the bucket at the end of the benches so they can be autoclaved before disposal.
    b. Do not discard used Petri Dishes in the regular garbage. They must be discarded into the orange biohazard bags so they can be autoclaved.
    c. Sharps, such as tips and slides, must be discarded in the biohazard boxes that you can find on the benches. **DO NOT DISCARD PAPERS OR GLOVES IN THESE BOXES.**
    d. Glass pipettes should be placed **tips down** in the pipette washers placed beside each bench.
    e. Chemical reagents must be discarded in the appropriate waste container as directed by your instructor.
12. Report all spills, no matter how small, to your lab instructor who will then supervise the cleanup.

13. Inform the laboratory coordinator of any allergies you may have (such as latex or iodine) or any other medical conditions that he/she should be aware of.
14. Know where the nearest fire exit is and evacuate the building if the fire alarm sounds.
15. Anyone who is not following the safety guideline given by the instructor or who acts recklessly will be ask to leave the lab.

Above all, be careful, use common sense, follow instructions given by your lab instructor, and read the manual before you come to the lab.
If you are prepared and organized, you are less likely to have an accident.

8. Students with Disabilities

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite

Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams.
Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.
Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

9. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

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Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

10. Final Examinations

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

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If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

12. Course Evaluations

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13. Faculty of Science Policies

Academic polices or the Faculty of Science can be found at
http://science.uoit.ca/undergraduate/current-students/academic-policies.php

CHEM 2020U
Intro to Organic Chemistry

Course Outline and Information
Fall 2017

1. INSTUCTOR INFORMATION

Instructor	Contact	Office Hours
Stephanie Mavilla Faculty of Science/Education	Blackboard Messaging UA 3075	Wed/Fri 1 – 2 (UA 3075) (Appointments can be made outside this time)

2. LECTURE AND TUTORIAL INFORMATION

CRN 42937	CRN 40185	Tutorials
Wednesdays 8:10 – 9:30 UA 1140 Fridays 8:10 – 9:30 UA 1140	Wednesdays 11:10 – 12:30 J102 Fridays 11:10 – 12:30 J102	Weekly *Friday* Tutorials ***Note**: Tutorials will start on September 15th 40197 9:40 – 11:00 UA 3230 41148 9:40 – 11:00 UA 3240 41240 12:40 – 2:00 UA 3230 43121 12:40 – 2:00 UA 3240 40195 3:40 – 5:00 ERC 1054 40196 3:40 – 5:00 ERC 1056

3. COURSE DETAILS AND IMPORTANT DATES

Lectures Start	Co-Curricular Period	Lectures End	Final Examination Period
Thursday, September 7th 2017	October 26th – 29th 2017	Monday, December 4th, 2017	December 6th – 17th 2017

4. LABORATORY INFORMATION

Labs Begin	Labs are Cancelled	Lab Schedule	Senior Lab Instructor
The week of September 11th, 2017	The week of October 23rd, 2017	Refer to the Lab Manual	Stephanie Mavilla (UA 3075) Contact: Stephanie.mavilla@uoit.ca

5. COURSE DESCRIPTION

An introduction to the principles and techniques of organic chemistry, including a study of the correlation of reactions and physical properties of organic compounds with structure and energetic concepts; structure, bonding, properties, reactions and synthesis of mono-functional aliphatic and aromatic compounds; stereochemistry and reaction mechanism theory; study of infrared, nuclear magnetic resonance and mass spectroscopy. (Prerequisites: CHEM 1020U)

Credit Hours	Lecture Hours	Laboratory Hours	Tutorials
3	3 Weekly	3 Biweekly	1.5 Weekly

6. REQUIRED COURSE MATERIALS

1. **Organic Chemistry: Mechanistic Patterns**, Ogilvie, Ackroyd, Browning, Deslongchamps, Lee, and Saur; Nelson, 2018.
   Available in the bookstore or online as:
   - ISBN: 9780176500269, 017650026X (Print Copy)
   - ISBN: 9780176729028, 017672902X (E-Text)
2. **Laboratory Manual** for CHEM 2020 is available through Blackboard.

7. SUGGESTED COURSE MATERIALS

1. Organic Molecular Model Kit
2. Laboratory textbook: The students **Lab Companion Laboratory Techniques for Organic Chemistry 2nd edition** (Standard Scale and Microscale) by John W Lehman, Pearson Prentice Hall (2008) – Available in the bookstore.

8. BLACKBOARD SITE

This course has a Blackboard site that will be the source of on-line communication and information about all aspects of CHEM 2020. The site will provide access to the course syllabus, lecture material, Practice problems, and any other materials that are relevant to the course. The site provides a forum for communication with the instructor and with other students through email and discussion boards. The site will be changed as the semester proceeds, so you should check it regularly for updates and messages.

9. COURSE EVALUATION

At the end of the course, each student will be receive a single final grade which will encompass their combined performances in the lecture, laboratory, and tutorial components.

ITEM	CONTRIBUTION TO THE FINAL GRADE
Final Examination	40 %
Term Test 1	17.5 %
Term Test 2	17.5 %
Tutorials	10 %
Laboratory	15 %

10. PROVISIONAL SCHEDULE OF LECTURE MATERIAL

The following Table is a provisional schedule of the chapters and topics that are covered in CHEM 1020U. Every effort will be made to adhere to this schedule, but events may require some alterations from time to time. Major alterations to the schedule of to the topics covered will be discussed in class prior to implementation. A Course Outline will be available that will summarize the topics in each chapter as well as recommended problems at the end of each chapter. Students are responsible for all of the material contained in the Course Outline regardless of whether it was covered in class or not. **Students are responsible for all material presented in lectures, assigned readings, assignment problems, and homework problems**.

WEEK	DATE	CLASS	CHAPTER	TOPIC
1	September 8th	1	Intro/Ch. 1	• Introduction to CHEM 2020 • Carbon and Its Compounds
2	September 13th September 15th	1 2	Ch. 1 Ch. 2	• Carbon and Its Compounds • Anatomy of an Organic Molecule
3	September 20th September 22nd	1 2	Ch. 2 Ch. 3	• Anatomy of an Organic Molecule • Molecules in Motion: Conformations by Rotation
4	September 27th September 29th	1 2	Ch. 3 Ch. 4	• Molecules in Motion: Conformations by Rotation • Stereochemistry: 3D Structure in Molecules
5	October 4th **October 6th**	1 **2**	Ch. 4 **Midterm I**	• Stereochemistry: 3D Structure in Molecules • **Chapters 1 - 4**
6	October 11th October 13th	1 2	Ch. 6 Ch. 5	• Acids and Bases • Organic Reaction Mechanisms
7	October 18th October 20th	1 2	Ch. 5 Ch. 8	• Organic Reaction Mechanisms • π Bonds as Nucleophiles
8	October 25th October 27th	1 No Class	Ch. 8 N/A	• π Bonds as Nucleophiles • Co-Curricular Break (study time!)
9	November 1st November 3rd	1 2	Ch. 8 Ch. 11	• π Bonds as Nucleophiles • Substitution Reactions
10	November 8th **November 10th**	1 **2**	Ch. 11 **Midterm II**	• Substitution Reactions • **Chapters 1-4, 5, 6, 8, and 11**
11	November 15th November 17th	1 2	Ch. 12 Ch. 12	• Elimination Reactions • Elimination Reactions
12	November 22nd November 24th	1 2	Ch. 13 Ch. 13	• NMR • NMR
13	November 29th December 1st	1 2	Ch. 14 Ch. 14	• IR/MS • IR/MS
December 6th – 17th		**Final Exam (TBD)**		• **All Course Content**

11. TERM TESTS

There will be two term tests through the course of the semester. The first will be held on **Friday, October 6th, 2017**. The second will be held on **Friday, November 10th, 2017.**

Both term tests will be held during the regular class time and will be 80 minutes long unless otherwise noted.

12. FINAL EXAMINATION

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students must present their current student ID card at each examination. If a student fails to produce their student ID card, they will be required to immediately obtain a substitute card from the Campus ID Services. No extension of the examination will be permitted to compensate for the delay encountered.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students, who through religious obligations are unable to write a final examination when scheduled, will be permitted to write a deferred examination. These students are required to submit a **Request for Accommodation for Religious Obligations** to the Faculty of Science as soon as possible and **no later than three weeks prior to the first day of the UOIT final examination period.**

Students who miss an exam for medical or compassionate grounds may submit a request for deferral, along with supporting documentation, to the Faculty **within five (5) working days** after the scheduled writing of the examination.

Further information on Final Examination Policy can be found in Academic Regulations in the 2016-2017 Undergraduate Academic Calendar.

13. PROBLEM-SOLVING FROM THE TEXTBOOK

For each chapter a set of problems taken from the textbook will be provided to illustrate and provide practice with the types of problems in the course. By doing these problems (and more if you have time!) you will gain proficiency at the questions likely to appear on the tests and examinations. Merely studying the examples in class and reading the solutions manual will not help you very much - you must struggle with the problems to become skilled.

14. LABORATORY SCHEDULE

The Laboratory portion of CHEM 2020U will begin the week of September 11th, 2017 and will continue until the end of the semester. Students are advised to attend the laboratory sessions that are recorded in your MyCampus schedule.

NOTE that one of the criteria for receiving a PASS grade for the course CHEM 2020 is that you also receive a PASS grade in the Laboratory component of the course.

Attendance at laboratory sessions is mandatory. A student who misses more than two (2) laboratory periods will not receive credit for the laboratory portion of the course. This may result in failure of the course. Missed laboratories can sometimes be re-scheduled (see below).

SAFETY and SAFE PRACTICES are paramount in all laboratories. In that regard, it is important that students in the laboratory be properly attired. Lab coats and safety glasses (available at the UOIT Bookstore) are required at all times. Open-toed shoes and clothing that exposes large areas of the body are forbidden.

Short laboratory equipment and technique videos have been made to help your understanding and performance when conducting each experiment. Videos can be found in Blackboard under the Laboratories folder. **Students should read the laboratory experiment and watch any necessary videos before attending laboratory sessions**.

Consult the laboratory outline information and safety file in the Laboratory folder in Blackboard for additional information including the laboratory outline and the schedule of laboratory experiments. Further information about the experiments, proper laboratory reports, and laboratory regulations can be found in the Laboratory Manual (posted on Blackboard).

15. POLICIES RELATED TO MISSED LABORATORIES, TERM TESTS, AND THE FINAL EXAMINATION

If you should miss a term test or the final examination due to illness or bereavement, you must provide documentation to the Faculty of Science Advising Office **within five (5) days of the laboratory, test or exam.** An official form is available from the Faculty of Science Advising Office (also available from the Registrar's Office). You must use this form.

Term tests will not be re-scheduled. Instead, the marks missed will be added to the marks apportioned for the final examination. If the final examination is missed and acceptable documentation is provided, the student will be eligible to write a "deferred exam" early in the following semester.

If you anticipate missing a term test (for a medical reason, as an example), you should discuss this with the instructor **at least two days before the test**. Normally, these marks will be apportioned to the remaining test or final examination in accordance with the above guidelines.

Students may be excused from laboratories, term tests, and the final examination due to religious observance. However, application to be excused must be submitted **at least seven (7) days in advance** of the observance. To be excused from laboratories you should submit the documentation to Dr. Richard Bartholomew. To be excused from term tests and final examinations, you should submit the documentation to the Faculty of Science Advising Office.

If you miss a laboratory you should speak to Dr. Bartholomew as soon as possible. In rare cases, laboratories may be re-scheduled, but this is dependent on space being available. As a consequence, re-scheduling is often somewhat difficult. When a student has missed a laboratory without an acceptable excuse and the laboratory cannot be re-scheduled, the student will receive a grade of zero. Further details on the policies regarding missed laboratories can be found in the laboratory manual.

16. GENERAL POLICIES OF THE FACULTY OF SCIENCE

The policies of the Faculty of Science can be reviewed at

http://www.science.uoit.ca/undergraduate/current-students/academic-policies.php

Where any conflict arises between the policies presented in this syllabus (or given in the course) and the general policies of the Faculty of Science, the general policies of the Faculty of Science shall prevail. The staff members in the Science Academic Advising Office have compiled a list of frequently asked advising questions for the Faculty of Science. If you have a question about the policies of the Faculty of Science, you may find it helpful to check the website.

17. ACCESSIBILITY

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services. Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with their instructor as soon as possible. Students who require alternative testing and examination arrangements or other academic accommodations must contact the Centre for Students with Disabilities (B297) as early as possible to ensure that your needs can be met.

18. ACADEMIC INTEGRITY

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education.

Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action. Students are expected to be familiar with UOIT's regulations on Academic Conduct which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offenses. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information on academic integrity is available in the 2017-2018 Undergraduate Academic Calendar (see Academic Regulations).

19. ACADEMIC SUPPORT SERVICES

Support services are available to all UOIT students in academic development, study skills, counselling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

20. FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT

UOIT is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA").

In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of

Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

21. COURSE EVALUATIONS

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via Blackboard.

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

FACULTY OF SCIENCE

STAT2020U: Statistics & Probability for Biological Science

Course outline for Fall, 2017

1. Course Details & Important Dates*

Course Type	CRN	Day	Time	Location
Lecture	40414	Tuesday Thursday	3:40-5:00pm 3:40-5:00 pm	UB2080 UB2080

Classes Start	Classes End	Final Exam Period
Sept 7, 2017	Dec 4, 2017	Dec 6 – 17, 2017

See below "Outline of Topics in this Course" for a detailed week by week breakdown of in class lectures.

* for other important dates go to: www.uoit.ca >Current Students >Important Dates and Deadlines

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Isaac Ye (section 001)	UA2021	Ext. 2825	Please use Blackboard E-mail
Office Hours: Tuesday's from 2:00-3:30pm, Thursday's from 2:00-3:30pm in UA2021.			

Grader/Teaching Assistant Name	Office	Phone	Email
Jean Nsanzeryaka	UA4120	N/A	Please use Blackboard E-mail
Office Hours: Monday's from 11:00-12:00pm in UA4120.			

3. Course Description

This course introduces the concepts and techniques of statistics and probability to collect, present, analyze and interpret data, and make decisions in the presence of variability. Students study a selection of topics relevant to biological science, selected from: basic concepts of probability theory: events, sample spaces, probability; basic concepts of discrete mathematics: set theory, propositional logic, combinatorics; probability: marginal probability, conditional probability, independence, discrete and continuous random variables; probability distributions: binomial, exponential, uniform, normal, etc.; mean and variance; the central limit theorem; statistical inference: estimation, significance tests, confidence intervals; Chi Square Tests; introduction to experimental design. Introduction to correlation and regression.

4. Learning Outcomes

On the successful completion of the course, students will be able to:
Describe, interpret and analyze data. Calculate summary statistics such as central tendencies, dispersion, quartiles and percentiles. Graphically display data using histograms, stem-and-leaf plots and boxplots. Describe shape and skewness of data. Compute the probability of an event, marginal, joint and conditional probabilities. Describe the concept of random variables, and setting up a discrete mass function. Identify a variety of probability distributions, both discrete and continuous and the ability to calculate various probabilities, and distribution summary statistics. Computing confidence intervals for both large and small sample sizes based on a single mean. Distinguish between independent, paired or pooled data and calculating confidence intervals based on the difference between two means. Write a testable hypothesis and explain the difference between the null and alternative hypothesis. Define statistical significance and explain the meaning of a p-value. Carry out a hypothesis test for both univariate (large and small sample size) and bivariate data (independent, paired or pooled). Describe the purpose and calculate Pearson Correlation Coefficient as well as the least squares line and goodness of fit. Applying all learning outcomes stated above in SAS (statistical analysis system).

5. Course Design

Each week you will have two 1.5 hour lectures. A total of 6 online timed quizzes (in Maple T.A.) will be completed throughout the duration of the course, consisting of 10 multiple choice/true false/fill in the blank questions (see below “Assignment and Tests” to view a detailed breakdown of quiz dates). Throughout the course, you will be completing 5 assignments based on the material taught throughout the course. Pop quizzes in lecture and weekly online quizzes will allow for practice and feedback. SAS software will be used near the end of the semester in lectures, quizzes and assignments. One midterm and 1 final exam.

6. Outline of Topics in the Course

Week 1 (Sept 7-8) *Chapter 1: Data and Distributions*

- Data, Populations and Samples (Section 1.1);
- Histograms and Stem and Leaf Plots (Section 1.2).

Week 2 (Sept 11-15) *Chapter 1: Data and Distributions*

- Histograms and Stem and Leaf Plots – Cont'd (Section 1.2);
- Continuous Distributions (Section 1.3).

- Discrete Distributions – Cont'd (Section 1.3).

Week 3 (Sept 18-22) *Chapter 1: Data and Distributions & Chapter 2: Measures of Center*

- Standard Normal and Nonstandard Normal Distribution (Section 1.4).

- Binomial Distribution (Section 1.6);
- Measures of Center for Data and Distributions (Section 2.1).

Week 4 (Sept 25-29) *Chapter 2: Measures of Center*

- The Mean and Median of Continuous Distributions (Section 2.1);
- Measures of Variability (Section 2.2).

- Quartiles and the Interquartile Range, Boxplots and outliers (Section 2.3).

Week 5 (Oct 2-6) *Chapter 3: Bivariate and Multivariate Data and Distributions*

- Bivariate Data (Section 3.1);
- Correlation, Pearson's Sample Correlation Coefficient and Causation (Section 3.2);
- Fitting a line to Bivariate Data (Section 3.3).

- The Least Squares Regression Line and Assessing the Fit of the Least Squares Line (Section 3.3);
- Plotting the Residuals (Section 3.3).

Week 6 (Oct 9-13) *Chapter 5: Probability and Sampling Distributions*

- Probability, sampling space and events (Section 5.1);
- Operations on Events and Associated Rules of Probability (Section 5.2).

- Conditional Probability and Independence (Section 5.3);
- Random Variables and Probability Distributions (Section 5.4).

6. Outline of Topics in the Course cont…

***Week 7* (Oct 16-20)** *Chapter 5: Probability and Sampling Distributions*

- Mean and Variance of a Random Variable (Section 5.4);
- Sampling Distributions (Section 5.5);
- The Mean, Variance and Standard Deviation of the Sample Mean (Section 5.6).

- The Central Limit Theorem, empirical rule and continuity correction (Section 5.6).

Week 8 (Oct 23-27) *Chapter 7: Estimation and Statistical Intervals*

- Large-Sample Confidence Intervals for a Population Mean (Section 7.2);
- 95% Confidence Interval, Other Confidence Levels and a General Formula and Sample Size Formula (Section 7.2).

No lecture during Co-curricular period (No lecture on Thursday, Oct 26)

Week 9 (Oct 30- Nov 3) *Chapter 7: Estimation and Statistical Intervals and Midterm*

- Large-Sample One sided Confidence Intervals (Section 7.2);
- Large-Sample Confidence Intervals for a Population Proportion and Sample Size Formula (Section 7.3);
- The t-Distribution and Small-Sample t Confidence Interval (Section 7.4).

MIDTERM IN CLASS ON THURSDAY, NOV 2

Week 10 (Nov 6-10) *Chapter 7: Estimation and Statistical Intervals & Chapter 8: Testing Statistical Hypotheses*

- The t-Distribution and Small-Sample t Confidence Interval – Cont'd (Section 7.4);
- Hypothesis Testing, Type I and Type II Error and p-values (Section 8.1).

- Hypothesis Testing, Type I and Type II Error and p-values – Cont'd (Section 8.1);
- Tests Concerning a Single Mean (Section 8.2).

Week 11 (Nov 13-17) *Chapter 8: Testing Statistical Hypotheses*

- Tests Concerning a Single Mean – Cont'd (Section 8.2);
- Tests Concerning a Difference Between Two Means: Paired Data (Section 8.2).

- Tests Concerning a Difference Between Two Means: Independent Data (Section 8.2);
- The Pooled Two-Sample t Procedure (Section 8.2).

6. Outline of Topics in the Course cont…

Week 12 (Nov 20-24) *Chapter 8: Testing Statistical Hypotheses*

- The Pooled Two-Sample t Procedure – Cont'd (Section 8.2);
- Review of all hypothesis procedures;
- Chi-Squared Test for Independence (Section 8.3).

- Chi-Squared Test for Independence – Cont'd (Section 8.3);
- Chi-Squared Test for Comparing Several Populations (Section 8.3).

Week 13 (Nov 27- Dec 1) *SAS Statistical Program*

- Introductory to SAS;
- Understanding the Basic Concepts of SAS;
- Univariate analysis in SAS (histogram/boxplot/stem and leaf), Correlation and Regression in SAS, Single Mean Hypothesis in SAS.

- Understanding How to Read SAS output;
- Ability to interpret SAS output;
- Paired/Independent/Pooled Hypothesis and Confidence intervals in SAS, Chi-Squared Test in SAS.

7. Required Texts/Readings

REQUIRED:
Applied Statistics FOR ENGINEERS AND SCIENTISTS, Devore – Farnum - Doi, Third Edition, CENGAGE Learning Nelson Education, 2014. ISBN 113311136X*.*

RECOMMENDED/OPTIONAL:

Student Solutions Manual For Devore – Farnum - Doi 3rd ed. Applied Statistics for Engineers and Scientists. 2014. ISBN 1133492185.

The text and solution manual is available on reserve (3 hr) at the library…just visit the reserve desk (on the left when you first enter the library) and ask for STAT2020.

Additional readings may be assigned or recommended during the course.

8. Evaluation Method

The course mark will be calculated as follows:

Online quizzes: 10%
In lecture quizzes: 10%
Assignments: 10%
Midterm: 30% **(Thursday, November 2 – in class)**
Final Exam: 40%

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

9. Assignments and Tests

Online Quizzes:

Online quizzes will be completed in MapleTA and are to be completed individually. There will be 6 online quizzes throughout this course. Your lowest quiz will be dropped. Quizzes will consist of 10 multiple choice/fill in the blank questions and you will have 30 minutes to complete each quiz. Each quiz will be made available for 3 days, and you have TWO attempts at each quiz. Your best attempt counts. The quiz schedule is as follows:

Quiz 1 – covers lectures 1, 2, 3 and 4. Must be taken sometime between 8pm Friday September 22 and 8pm Monday September 25.
Quiz 2 – covers lectures 5, 6 and 7. Must be taken sometime between 8pm Friday September 29 and 8pm Monday October 2.
Quiz 3 – covers lectures 8 and 9. Must be taken sometime between 8pm Friday October 6 and 8pm Tuesday October 10. *Note the extra day due to Thanksgiving.
Quiz 4 – covers lectures 10, 11, 12 and 13. Must be taken sometime between 8pm Friday October 20 and 8pm Monday October 23.
Quiz 5 – covers lectures 14, 15, 16, 17, 18 and 19. Must be taken sometime between 8pm Friday November 17 and 8pm Monday November 20.
Quiz 6 – covers lectures 20, 21, 22 and 23. Must be taken sometime between 8pm Friday December 1 and 8pm Monday December 4.

In lecture Quizzes:

These short quizzes will take place using Blackboard software and must be completed in your lecture section. They will not be announced in advance, and can occur at any point during the lecture. The lowest *three* will not count towards your final grade.

9. Assignments and Tests cont…

Assignments:

Assignments are to be completed individually. There will be 5 assignments throughout this course. Your lowest assignment will be dropped. Your assignments are to be submitted to your Grader/Teaching Assistant's drop box (Jean Nsanzeryaka) located on the 4th floor of the UA building. Be sure to submit your assignment on time and to the correct drop box. Late assignments are not accepted in this course. Assignments submitted into the incorrect drop box are not accepted in this course. Your drop box is labelled Jean Nsanzeryaka **– STAT 2020.** Here is the assignment schedule:

-Assignment 1 is posted on Friday, Sept 8 and is due on Thursday, Sept 21 at 6:00pm in Jean Nsanzeryaka's drop box

-Assignment 2 is posted on Friday, Sept 22 and is due on Thursday, Oct 5 at 6:00pm in Jean Nsanzeryaka's drop box

-Assignment 3 is posted on Friday, Oct 6 and is due on Thursday, Oct 19 at 6:00pm in Jean Nsanzeryaka's drop box

-Assignment 4 is posted on Friday, Oct 20 and is due on Thursday, Nov 9 at 6:00pm in Jean Nsanzeryaka's drop box

-Assignment 5 is posted on Friday, Nov 10 and is due on Thursday, Nov 30 at 6:00pm in Jean Nsanzeryaka's drop box

NOTE: Regarding missed work:

- **If you miss an online quiz, in lecture quiz or an assignment, then you receive a 0 on it. We recognize that times may arise when you are forced to miss a quiz/lecture/assignment, but it is for this very reason that the single lowest online quiz mark, three lowest in lecture pop quizzes and the single lowest assignment mark is dropped. This is extremely generous, so no notes will be accepted for missed quizzes and/or assignments. This policy applies to all students.**

Midterm Tests and Final Exam:

A non-programmable, non-graphing, scientific calculator is permitted. Laptops will NOT be permitted during the midterm test and final exam. The final exam will test all material covered in the course. You will be provided a formula sheet for both the midterm and the final exam.

9. Assignments and Tests cont…

Missed Tests (Midterm or Final Exam):

The normal policy on missed (midterm and other) tests is as follows: If you miss a test for a legitimate reason and can provide appropriate documentation, you will not be penalized. Legitimate reasons are illness or death in the family, and appropriate documentation is a UOIT Medical Certificate or a photocopy of a death certificate, respectively. You should submit documentation to the student advisor in science, within 5 days of missing the test. If you are not able to do so for any reason, you must contact the academic advisor (via email if at all possible at science.advising@uoit.ca) within this time to make other arrangements. The usual accommodation for a missed midterm test will be to re-weight the grading scheme to allocate the missed test mark to the final exam mark.

If you miss a test without a legitimate reason or do not provide the proper documentation, you will receive a mark of zero. If the test is written, the decision is irreversible. If you are contemplating not writing a test for any reason, please speak to the science academic advisor in advance of the test, as well as informing the instructor.

For further policies and information relating to the Faculty of Science and this course, please refer to http://www.science.uoit.ca/undergraduate/current-students/academic-policies.php (copy and paste into your browser)

You can also find the answers to many frequently asked advising questions by referring to http://www.science.uoit.ca/undergraduate/current-students/academic-advising/faqs/ (copy and paste into your browser)

10. Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services. Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

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Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

12. Final Examinations

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

13. Freedom of Information and Protection of Information Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Information Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students. If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at accessandprivacy@uoit.ca.

14. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

15. Student Sexual Violence Policy

UOIT is committed to the prevention of sexual violence in all its forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

16. Additional Supports

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.ca for support.

Human Anatomy Syllabus
BIOL2050U

Calendar Description: This course is an introduction to the study of body structure with a strong emphasis on human anatomy. Emphasis will be put on the description of bones and joints, muscles, nerves, and blood vessels and lymphatics. The structure of various organs found in the thoracic, abdominal and pelvic cavities will also be described.

Course Details and Important Dates

Lectures: It is highly suggested that you attend lectures and take notes to supplement the lecture slides. There will be in-class activities and/or in-class practice questions in some lectures to aid students in further understanding/application of lecture material.

Lecture CRN:70034		
Day	**Time**	**Location**
Tuesday	11:00 a.m. to 12:30 p.m.	UA1120
Thursday	11:00 a.m. to 12:30 p.m.	UA1120

First lecture for winter term: Tuesday January 9, 2018
Last lecture for winter term: Thursday April 5, 2018
Final exam period: April 11 to 22, 2018
* *For other important dates click here*

Laboratories: Please note that labs begin on January 18 or 19 (Week 2) or January 25 (Week 1) and take place in UB4050.

For detailed information regarding BIOL2050 laboratory policies and schedule, please consult the file entitled Lab Guidelines W2018 on Blackboard in the Laboratories content area.

All labs take place in room UB4050			
Lab CRN	**Week**	**Day**	**Time**
70035	Week 1	Thursday	8:10 to 11:00 a.m.
72259	Week 1	Thursday	12:40 to 3:00 p.m.
70037	Week 2	Thursday	8:10 to 11:00 a.m.
72257	Week 2	Thursday	12:40 to 3:00 p.m.
70036	Week 2	Friday	8:10 to 11:00 a.m.

Course Personnel and Contact Information:

Lecturer: Annette Tavares

Office: UA3063
Tel. 905 721-8668 ext 3641 Email: via Blackboard only

Office Hours: Tuesdays 1:30 to 3:00 p.m. Fridays 9:00 to 10:00 a.m. or by appointment any other time (please email via Blackboard for a specific time).

Laboratory Co-ordinator: Dr. George Stamatiou

Office: UB2028
Phone: 905-721-8668 ext. 2082 Email: via Blackboard only

Laboratory TA's:

Lidya Salim
Email: via Blackboard only

Tamara Dzikewicz
Email: via Blackboard only

Please note that TA's will provide their specific contact information during the first lab. Please make sure to make note of this information.

Extra Anatomy Help

UOIT Science Café - starting January 20 from 11:00 a.m. until 3:00 p.m. in UA-3230 Study and get help in a relaxed atmosphere with complimentary hot beverages. Details on Blackboard.

PASS Sessions - PASS, Peer Assisted Study Sessions, are weekly review sessions that are peer-led, informal, fun and interactive. Your pass leader this semester will be Crystal Barekzai. Schedule will be posted soon on Blackboard.

Course Design

Students will be guided through the subject by structured lectures, in-class activities, tests and laboratory assignments and quizzes. The normal modes of teaching will be 3 hours of lectures per week delivered as two 1.5 hour sessions and 3 hours of labs, biweekly.

Students have the roles of active learners and have the responsibility of attending and actively participating in all planned student learning experiences, i.e. lectures and laboratories and undertaking such other private study as will benefit their learning towards the objectives of the subject. Although no minimum attendance is required, students must be aware that sessions are available only at the times specified and cannot be repeated.

Learning Outcomes

On the successful completion of the course, students will be able to:

- Achieve a deeper understanding of important concepts of human anatomy
- Achieve an understanding of basic histology as it relates to the structures they will study and the functions of those structures
- Understand the relationship between structure and function of major body structures
- Achieve a deeper understanding of the gross anatomy and important details of bones, joints, muscles, nerves, blood vessels and lymphatics.
- Explore details of the heart and circulatory system, digestive system, respiratory system and special senses (eye and ear structure)
- Achieve a basic understanding of brain structure
- Experience hands-on exploration of many of the structures/organs by examining and handling specimens in the laboratory and relating these specimens to virtual cadaver dissections using virtual cadaver dissection software.

Required Texts/Resources:

- Principles of Human Anatomy 14th Edition by Gerald J. Tortora and Mark T. Nielsen (Can also use 13th edition)
- Atlas of Human Anatomy by Mark Nielsen and Shawn Miller
- Anatomy and Physiology Revealed Online access – required for the laboratories

Course Evaluation, Marks Distribution and Test Dates:

Term Test 1 (Tuesday February 13, 2018 - in class)	15%
Term Test 2 (Thursday March 8, 2018 - in class)	20%
Laboratory (must be passed to pass course)	30%*
*(see Laboratory syllabus/guidelines posted on Blackboard for more details)	
Final Exam: Date TBA	35%

Important Note: the **Virtual Laboratory Bell Ringer Test** will take place in the **lecture on Tuesday April 3rd, 2018**

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

Lecture Outline:

Week of:	Lecture	Text Chapter
January 9/11	*Welcome Information* Lecture 1 – Anatomical Terms and Positions Lecture 2 – Tissues (Part 1)	 Chapter 1 Chapter 3
January 16/18	Lecture 3 - Tissues (Part 2) Lecture 4 - Bone Tissue	Chapter 3 Chapter 6
January 23/25	Lectures 5 and 6 - The Axial Skeleton	Chapter 7
Jan. 30/Feb. 1	Lecture 7 and 8 – The Appendicular Skeleton	Chapter 8
February 6/8	Lecture 9 – Joints Lecture 10 – Muscle Tissue/Muscular System (Part 1)	Chapter 9 Chapter 10/11
February 13 February 15	**Term Test 1 – in class (15%) (Lectures 1-8)** Lecture 11 – The Muscular System (Part 2)	 Chapter 11
Feb. 19-23	**Reading Week – No lectures or labs**	
February 27 March 1	Lecture 12 – The Muscular System (Part 3) Lecture 13 - Cardiovascular System: The Heart	Chapter 11 Chapter 13
March 6 **March 8**	Lecture 14 – Cardiovascular System: Blood Vessels **Term Test 2 – in class (20%) (Lectures 9-12)**	Chapter 14
March 13/15	Lecture 15 - The Lymphatic System Lecture 16 – Spinal Cord and Brain	Chapter 15 Chapter 17/18
March 20/22	Lecture 17 - The Respiratory System Lecture 18 – The Digestive System (Part 1)	Chapter 23 Chapter 24
March 27/29	Lectures 19 – The Digestive System (Part 2) Lecture 20 – The Urinary System (Part 1)	Chapter 24 Chapter 21
April 3 April 5	**Virtual Bell Ringer Test (10%)** Lecture 21 – The Urinary System (Part 2)	 Chapter 21

Please note that the above schedule is a proposed outline and coverage of material on the specified dates may be subject to change.

Faculty of Science Academic Policy Summary

For complete Academic Policy details, please click Academic Policies for the Faculty of Science or see the Academic Policies link in the Important UOIT Links content area on the course Blackboard page.

Missed Term Tests (Midterms):
If you miss a Science test due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Statement, death certificate), and submit it to the Science Academic Advisor (science.advising@uoit.ca) within **3 business days** of missing the test or assignment.

If you are aware in advance that you cannot write a test for any other reason, you **must** discuss this with the Science Academic Advisor and the instructor of the course at least **2 business days before** you are scheduled to write it. Exceptions to this deadline include Varsity Athletics, Religious Observances, and test-course conflicts. **Failure to submit the appropriate documentation by the correct deadline will result in a zero grade for the test.**

Submission of Assignments:
Preferred submission is as a hardcopy unless otherwise indicated by the instructor or TA. If you submit an assignment by email, it is your responsibility to ensure that the instructor or TA has received that assignment. If you have not received a confirmatory email from the instructor or TA within 24 hours of submitting the assignment, it is your responsibility to follow up by either emailing the assignment again or submitting a hard copy directly to the instructor or TA as soon as possible. You have the option of submitting assignments late but you will incur a late submission penalty of 10% per day (including weekends) deducted from the total mark for that assignment.

If you miss any Science assignment (e.g. weekly assignment, term paper deadline, or quiz) due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Statement, death certificate) and submit it to the course instructor indicated on the Blackboard site for the course within **3 business days of missing the work.**

If you know in advance that you may not be able to complete an assignment or other work due to a legitimate reason, you must contact the course instructor at least 2 business days before the posted deadline. If you are unsure of the information required or of who to contact, please contact the Science Academic Advisor immediately. Note that there are special deadlines for Varsity Athletics and Religious Observances. For these circumstances you must follow the correct deadlines.

Failure to submit the appropriate documentation and contact the correct instructor by the deadline will result in a zero grade for the assignment.

*****PLEASE NOTE:** If you have already written or submitted a test, quiz, or other term work, you cannot receive consideration for your performance on it after the fact; regardless of the reason for your poor performance.

When a student has sufficient grounds for special consideration (such as documented illness or death in the family) the normal policy in the Faculty of Science for any missed term work is to re-weigh the remaining work in the course to account for the missing grade, in accordance with the regulations given below for term tests, quizzes, assignments, labs, and tutorials. Students who do not provide sufficient grounds, as determined by the course instructor, will receive a grade of zero for the missed work.

There are no make-up exams, tests, quizzes, or assignments. There is no option to complete or submit any term work once the term has ended and the final exam period has started. Also there will be no option to do alternative work (extra assignments, or other 'special' activities to make-up missed term work or in an attempt to improve your grade.

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.ca for support.

Final Examinations and Final Grades:

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious obligations may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

If you miss or anticipate missing a final exam in a Science course you must obtain the appropriate supporting documentation (UOIT Medical Statement, death certificate) and complete the Application for Deferred Final Examinations.

Completed applications and supporting documentation must be submitted no later than **three working days** after the scheduled examination date. The processing time

for deferral decisions usually takes up to five working days. Deferral decisions are always at the discretion of the university. Deferral decisions will be emailed to the student's UOIT.net account. If approved, students will initially be notified of the deferred exam time period. Once the schedule has been set, students will receive confirmation details about their deferred exam.

Please note: If you are granted an examination deferral and did not write the deferred exam on the scheduled date, a grade of **zero** will be recorded for the final examination.

Final Examination Viewing:

Students wishing to view their final exam must submit a written request no later 1 week (7 days) after the release of final grades for that semester, stating why they would like to view the exam. Reasons may include, to calculate the final numeric grade (in cases where it is difficult to infer) or to determine which items of the course material gave you the most difficulty. To request an exam view, please complete the Science Final Exam View Request form and submit it to the course instructor via email. There is no fee associated with viewing a final exam.

Students will have 15 minutes to look over their final exam. Only the use of a calculator is permitted during the exam view appointment. No writing instruments, cell phones or other electronic devices will be permitted. Missed exam view appointments will not be rescheduled.

Please note, this is an opportunity for students to view their answers and see where any mistakes were made. As per UOIT policy (section 5.24.5.1) unless a clerical error has occurred, instructors may not make changes to the final grade awarded in a course as a result of an exam view. If, after viewing the final exam script, you wish to dispute the final grade awarded, you will need to submit for a Final Grade Appeal through the Registrar's Offices. For more information on Final Grade Appeals, please refer to section 5.11.2 of the UOIT Academic Calendar or contact the Science Advising Office.

***Final grades**:*

Final grades are posted to MyCampus by the Registrar's office (RO) approximately one-and-a-half weeks after the end of the final exam period. Official grades are released by the RO only and your final grades cannot be released by anyone else. Please do not contact your instructor for this information. Grades will be posted in accordance with the Grading Scale as indicated in Section 5.8 of the UOIT Academic Calendar.

Your final exam grades will not be posted on Blackboard, but you will be able to infer your grade based on your final exam grade and your term work grades. Please note

that there are no options to do extra assignments or other activities to make up for unsatisfactory performance in a course.

Student Conduct

Lecture and Laptop Etiquette:

Stay on Task - Stay focused, and stay engaged. Remember, you are in the classroom to learn. Constantly remind yourself why you are here!

Don't Distract Others - Don't distract others with your computer. Research shows that if a flashy image is in an individual's line of sight, no matter how hard they try, their concentration will shift to the flashy, moving object on your computer screen. Be respectful of the fact that others are in lecture to learn. Also don't distract others with excessive talking in class. Your instructor WILL ask you to leave if you are talking excessively during the lecture.

Don't Distract Yourself - Keep non-classroom related communication to a minimum. This includes chat. Chat should not be running during classroom hours. There is no need to check email during class. Check before class begins, during official break (if given) or at the end of class. It is your responsibility to be engaged! Take notes, think about what the lecturer is saying, think of questions to ask to clarify material – be an active learner, not a passive one!

Academic Integrity: Plagiarism and Cheating

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. **Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.**
Students are expected to be familiar with and abide by UOIT's regulations on **Academic Conduct (Section 5.15 of the Academic Calendar)** which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The

regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. **A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.**

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

Click here or click on the Academic Integrity icon on your desktop for further information on academic integrity.

Turnitin

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must provide with their assignment at the time of submission to the instructor a signed Turnitin.com Assignment Cover sheet:
http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services.

Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity

and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Freedom of Information and Protection of Privacy Act (FIPPA)

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.

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FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at accessandprivacy@uoit.ca.

Religious Observances

It is Faculty of Science policy to provide special consideration for recognized holy days (Interfaith Calendar) which may be observed by our students. Though not all holy days

require students to be absent from school, accommodations may still be necessary in some cases. As a student, it is **your** responsibility to check the dates for all course work and exams on a regular basis and notify the Science Academic Advisor per the options below. Documentation which confirms your faith is required in all cases.

Please note:

1. If the holy day will conflict with scheduled labs and tutorials you must inform the Senior Lab Instructor or tutorial TA of any potential conflicts at least 7 business days before the scheduled meeting time of the lab or tutorial.

2. If the holy day will conflict with the due date for an assignment you must inform the instructor at least 7 days before the due date.

3. If the holy day will conflict with tests or exams you must inform your instructors and the Science Academic Advisor of any potential conflicts at least 7 business days prior to the date of the test/exam. Note that the deadline for final exams is at least three weeks prior to the examination period as per the Final Exams policy below.

Failure to contact the appropriate person by the deadline will result in special consideration not being granted. Note that the dates indicated on the website above are the dates which will be recognized by the Faculty of Science. Should your holy day fall on alternate dates (e.g. those holy days which are based on lunar cycles) you will be required to provide additional proof of the date of your holy day by the deadline as specified above.

Sexual Violence Policy

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If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

COURSE SYLLABUS

Biology 2080 – Biochemistry – Winter 2018

Course Instructor:
Cristen Hucaluk

Email: Cristen.Hucaluk@uoit.ca
Use the Blackboard Email for questions
Office: UA 3075
Office Hours: Tuesdays and Thursdays 9:30 – 11:00am
Open Door policy

Course Details and Important Dates:
First day of classes: January 8th 2018
Midterm break: February 19 – 25th 2018
Last day of classes: April 9th 2018
Fall exam period: April 11-22nd 2018

Lectures:	**Tutorials**
Tuesday 3:40 – 5:00pm UP1500	Wednesday 9:10 – 11:00am ERC1056
Thursday 3:40 – 5:00pm UP1500	Wednesday 1:10 – 3:00pm UL8
	Friday 9:10 – 11:00am UA3240
	Friday 9:10 – 11:00am UL12

Course Description:

This course examines the chemical nature of the building blocks found in cells. The topics covered include; protein structures and functions; enzyme thermodynamics, kinetics and regulation; lipid structures and functions; role of lipids and proteins in the structure of biological membranes; nucleotides and the structure of nucleic acids; the biochemistry of DNA replication, transcription and translation.

Learning Outcomes:

Upon successful completion of the course students will be able to:

- Discuss and describe DNA and RNA structure and metabolism including a detailed description of the processes of replication, transcription and translation

- Perform calculations to prepare a buffer of desired pH
- Identify and draw amino acids and relate the structure of a protein to its function
- Use the Mechaelis Menten equation to describe an enzyme catalyzed reaction
- Describe the structure of lipids and biological membranes

A detailed list of learning outcomes listed by chapter is presented at the end of this syllabus.

Course Design:
Lectures 2 x 1.5 hours weekly
Tutorials 1 x 2 hours weekly

Outline of Course Topics:
The class will meet twice a week for 1.5 hours. Students are responsible for all material presented in lecture and assigned readings. The following is a provisional lecture schedule:

Chapter	Topic	Approximate # of lectures
8	Nucleotides and Nucleic acids	2
25	DNA Metabolism	2
26	RNA Metabolism	2
27	Protein Metabolism	2
	Term Test 1	1
2	Water	2
3	Amino Acids, Peptides and Proteins	2
4	The Three-Dimensional Structure of Proteins	2
5	Protein Function	2
6	Enzymes	2
	Term Test 2	1
10	Lipids	2
11	Biological Membranes and Transport	2
12	Biosignaling	Time permitting

Prerequisite: CHEM 2020U (Organic Chemistry) BIOL 1020U (Biology II)

Textbook: Nelson, D. Cox, Michael. Lehninger Principles of Biochemistry. 7th ed. W.H. Freeman and Company. 2008.

Suggested: Sapling Plus access – comes packaged with the textbook through the bookstore

Evaluation Method:

Tutorials	**20%**
Midterm I	**20%**
Midterm II	**20%**
Final Exam	**40%**

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

Tutorials:

Tutorials will begin the week of Monday January 15th and occur weekly and are 2 hours in length. The purpose of tutorials is to help you understand the course materials. This will be achieved through a combination of tutorial, in-class quizzes, individual and group in-class assignments, independent in-class work, review material, and/or question and answer period. The cumulative value of the tutorials is 20% and will be awarded through grades on assignments, quizzes, attendance and participation in each tutorial. Your mark for each tutorial will contribute equally towards your final tutorial grade.

Term Tests:

There will be two term tests through the course of the semester. The first will be Tuesday February 6th 2018 The second will be Thursday March 22nd 2018 Both exams will be held during the regular class time and will be 80 minutes long.

Final Exam:

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

Policies on Missed Term Tests and the Final Exam

If you should miss a term test or the final exam due to illness or bereavement, you must provide documentation to the Faculty of Science Advising Office within **five (5)** days of the laboratory, test or exam. An official form is available from the office (and from the Registrar's Office) and you must use this form. **Term tests will not be re-scheduled; the marks missed will be added to the marks apportioned for the final exam**. If the final exam is missed and acceptable documentation is provided, the student will be eligible to write a "deferred exam" early in the following semester.

If you *anticipate* missing a term test (for a medical reason, as an example), you should discuss this with the instructor at least **two days before the test**. Normally, these marks will be apportioned to the final exam in accordance with the above guidelines.

Students may be excused from term tests and the final exam due to religious observance. However, application to be excused must be submitted at least **seven (7)** days in advance of the observance. To be excused from term tests and final exams you should submit the documentation to the Faculty of Science Advising Office.

Blackboard Site

This course has a Blackboard site (available at https://uoit.blackboard.com/) that will provide on-line access to the course syllabus, materials, assignments, etc. Laboratory materials will also be distributed through this site. The site provides a forum for communication (through e-mail and discussion boards) with instructors and other students. The site will be changed as the semester proceeds, so you should check it regularly for updates and messages.

Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via MyCampus.

Accessibility

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services**

(SAS) as soon as possible. Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite. Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.
Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

General Faculty of Science Policies

The policies of the Faculty of Science can be reviewed at

www.science.uoit.ca/index.php?option=com_content&task=view&id=121&Itemid=140

Where any conflict between the policies presented in this syllabus (or given in the course) and the general policies of the Faculty of Science arises, the general policies of the Faculty of Science shall prevail.

Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

Learning Outcomes by Chapter:

Upon successful completion of the course students will possess basic understanding of the following concepts of chemistry:

Chapter 8 – Nucleotides and Nucleic Acids

- Understand the structure and function of nucleic acids
- Identify, draw, compare and contrast purine and pyrimidine nitrogenous bases
- Draw a mechanism for the formation of the ring in the pentose ring in nucleotides
- Draw a mechanism for the formation and cleavage of the N-glycosidic bond
- Identify and draw a mechanism for the formation of the Phosphodiester bond linking nucleotides together in DNA
- Describe the major characteristics of DNA highlighting important chemical interactions that impart structure and functionality

Chapter 25 – DNA Metabolism

- Explain why there is a need for DNA replication
- Explain why DNA replication has a leading strand and a lagging strand
- List, explain the role of, and identify on a diagram the major enzymes involved in DNA replication
- Draw a mechanism for the reaction carried out by DNA polymerase in replicating DNA
- Explain why DNA replication must be accurate, and describe and illustrate the proofreading mechanisms used to ensure accuracy

Chapter 26 – RNA Metabolism

- State the central dogma of Biochemistry
- Compare and contrast DNA and RNA
- Understand the difference between the coding strand vs. the template strand in DNA and identify each in the process of transcription
- List, explain the role of, and identify on a diagram the major enzymes involved in transcription
- Draw a mechanism for the reaction carried out by RNA polymerase in transcribing DNA
- Compare the mechanism and active site of DNA and RNA polymerase
- List and describe the events involved in the 3 phases of transcription in Prokaryotes
- Describe the events involved in transcription in Eukaryotes
- Compare and contrast transcription in Prokaryotes and Eukaryotes
- List and describe the 3 ways in which eukaryotic RNA is processed after transcription
- Compare and contrast replication vs. transcription

Chapter 27 – Protein Metabolism

- Describe the major characteristics of the genetic code
- Explain what is meant by open reading frame (ORF) and explain why there are multiple ORF's
- Define and describe the term codon and the importance of the Wobble hypothesis
- List and describe the five stages in protein synthesis

- List and describe the essential components in protein synthesis
- Describe the importance and role of the A, P and E sites in the bacterial ribosome
- Describe the major characteristics of a molecule of tRNA
- Draw the mechanism for the activation of a molecule of tRNA and discuss the free energy changes involved with this process
- Describe with use of a diagram the stages of initiation elongation and termination of protein synthesis
- Show a mechanism for the formation of the peptide bond
- Compare and contrast prokaryotic and eukaryotic translation.

Chapter 2 – Water

- Discuss the important structural characteristics of water
- Identify and discuss the important characteristics of the Hydrogen bond
- Define and calculate the osmotic pressure of a given solution
- Discuss the ionization of water
- Define and calculate pH and relate this to the acidity and basicity of a given solutuion
- Be able to calculate and relate pH, Ka, Kb, pKa, pKb values
- Know and be able to manipulate the Henderson-Hasselbalck equation to describe a buffer solution
- Identify the major buffering systems in the body

Chapter 3 – Amino Acids, Peptides and Proteins

- Describe and discuss the important structural characteristics of an amino acid
- Draw and classify the 20 common amino acids
- Be able to identify the 20 common amino acids using their 3 letter abbreviations
- Define and calculate the isoelectric point for any amino acid, or for a small polypeptide chain
- Draw a mechanism for the formation of the peptide bond
- Understand how the structure of a protein relates to its function
- List and describe the ways that a mixture of proteins can be separated, including ion exchange chromatography, size exclusion chromatography, affinity chromatography, electrophoresis, Isoelectric focusing, two dimensional electrophoresis and protein sequencing

Chapter 4 – The Three – Dimensional Structure of Proteins

- Describe the nature of the peptide bond and how it places restrictions on protein folding
- List and describe the 4 levels of protein structure
- Describe and draw a diagram of the major classes of protein secondary structure including beta pleated sheets and alpha helices
- Compare and contrast fibrous and globular proteins and relate structure to function
- Describe the structure of α-keratin, collagen, silk fibroin, and relate structure to function

Chapter 5 – Protein Function

- Define and quantitatively describe binding with respect to Ligand and Protein concentrations

- Describe the various descriptions for binding and the key features of each including the lock and key model, and the induced fit model
- Describe Myoglobin with respect to structure and key amino acid residues, and its ability to bind oxygen making specific note of how structure relates to function
- Describe Hemoglobin with respect to structure and key amino acid residues, and its ability to bind oxygen making specific note of how structure relates to function
- Compare and contrast myoglobin and hemoglobin

Chapter 6 – Enzymes

- Define and explain the role of enzymes making reference to the free energy changes in a reaction process
- Derive the Michaelis Menten equation and use it to describe the rate of an enzyme catalyzed reaction
- Define and calculate Km, Vmax, Kcat and catalytic efficiency
- Derive the Lineweaver-burke double reciprocal plot and discuss its uses
- Define Kinetic mechanism
- Describe a typical sequential mechanism and a typical Ping-Pong mechanism and illustrate how to identify each using a Lineweaver-burke plot
- Define Enzyme Inhibition
- Compare and contrast competitive, uncompetitive and mixed inhibition
- Describe the four major methods by which enzymes act
- Illustrate the mechanism of the Serine Proteases making specific note of important amino acid residues and how structure relates to function.

Chapter 10 – Lipids

- Briefly list the biological function of lipids
- List, and describe with diagrams, and compare and contrast the 8 major categories of biological lipids including fatty acids, glycerolipids, glycerophospholipies, sphingolipids, sterol lipids, prenol lipids, saccharolipids and polyketides

Chapter 11 – Biological Membranes and Transport

- List the functions of membranes
- List and describe the common features of membranes
- Describe the Fluid Mosaic Model of membranes
- List and be able to identify on a diagram the types of membrane proteins
- Describe using diagrams the models for glucose and lactose transport across biological membranes

Faculty of Social Science & Humanities

Introduction to Brain and Behavior PSYC2050U
Course Outline for Winter 2015/2016

Course Time: Monday 11:10-2:00pm
Course Location: Regent Hall

Professor: Dr. Matthew S. Shane
Office: DTS-619, 6th Flr, 2 Simcoe St W (CIBC Building)
Office hours: Wednesday 2:30-4:30, or by appointment.
EMAIL: matthew.shane@uoit.ca

Major Research Interests: Functional Magnetic Resonance Imaging; Learning and Error Processing; Empathy; The Criminal Brain

Teaching Assistant: Carolina Rodriguez
Office: DTA-207, Charles Street Building
Office hours: Wednesday 4:00-5:00, or by appointment.
EMAIL: Carolina.rodriguez@uoit.ca

Course Description: The human brain may be the most complex structure in the known universe. Exactly how this 3 pound organ engenders and shapes our actions and experiences is one of the most exciting – and fastest developing - areas of modern science. We are, indeed, on the cusp of a "neural revolution", through which our understanding of the intricacies of the brain is likely to dramatically change our understanding of our selves, and of the world in which we live. This course is designed as a broad introduction to neural structure and function, to provide an overview of the current state of knowledge in the field of neuroscience. We will begin at the level of a single neuron, and learn how it communicates with other neurons in the brain. The course will then focus on individual human processes, starting with "basic" processes like vision, hearing and motor movements, moving on to more "complex" processes like attention, memory and learning, and finally on to more "social" processes like emotion, consciousness and cooperation. Throughout the course, a major focus will involve contrasting neural processes that occur within and without conscious awareness, and demonstrating just how much our brain "computes" the world in which we live without us even knowing it.

Prerequisites: Introductory Psychology (Psych 1000; minimum grade: D).
Essentials of Biology (Biol 1841 or equivalent; minimum grade: D)

If you do not meet these requirements, you must talk to me prior to the 2nd class. Special circumstances will be considered on a case by case basis, but only until the 2nd class.

Learning Objectives: After completing this course, students should have:

1. Developed a basic understanding of how a neuron works, and how it communicates with other neurons.

2. Developed a basic understand of neuroanatomy, including the ability to identify regions of the brain involved in sensory processing, motor movements, memory, language and emotion.

3. Gained insight into the methodologies utilized to study the brain in both humans and animals, and the ability to identify appropriate and useful methodologies for investigating specific research questions.

4. Gained exposure to a variety of pathological states, and a basic understanding of their neural underpinnings.

5. Developed skills for summarizing, evaluating, and critiquing research in the primary neuroscience literature.

Required Materials:

Watson, N.V., & Breedlove, S.M. (2015).
The Mind's Machine: Foundations of brain and behavior (2nd Ed.).
Sinauer Associates Inc.

Can you "get by" with the 1st edition? Yes – but used 2nd editions may be available by now as well.

Additional selected readings will be provided on Blackboard.

The textbook is available in both the North Campus bookstore, and the temporary bookstore downtown (in the Charles St. Building library). No doubt you may also be able to find copies online. You can, if you wish, also purchase the e-version at www.coursesmart.com. It's the exact same book, but make sure you're aware of the benefits and drawbacks of the e-book format.

Course Website: The course website is accessible through: https://uoit.blackboard.com/.

The course website will include this syllabus, a list of all required readings and assignments, links to interesting related web content, any scheduling updates discussed in class, and a course discussion board.

In addition, you may find the textbook companion website very helpful at www.mindsmachine.com. The website includes outlines, reviews, sample test questions, flash cards, activities, and further reading activities broken down by each chapter. It's really quite well done, and easy for all students to access.

Finally, I would recommend that everyone locate a "brain atlas" online, and gain some experience navigating through it, and learning the various brain regions. Some popular ones can be found at:

- www.brain-map.org
- www.med.harvard.edu/AANLIB/home.html
- www.thehumanbrain.info

There's no mandatory curriculum attached to the brain atlases, but you may find it useful to gain experience clicking through the various parts of the brain, and familiarizing yourself with their locations and names. Some introductory brain anatomy will be tested on exams, and so I point you to these atlases as study tools, rather than mandatory course content.

Attendance: I know you've all experienced classes where the information in lectures is practically verbatim the textbook, and so you wonder why you really need to be in class at all. Let me say right off the bat: this is not one of those courses. In this class, attendance will be very important, and will have a large impact on your final grade. That isn't to say that there won't be any overlap between textbook and lecture material – of course there will be. But there will be a lot of new information provided in lectures as well (particularly in the 2nd half of the course), and that lecture-based material *will* end up on your tests and exams. So try to be here as much as possible, and get course notes from a friend when you can't be here. If you happen to be taking this course as an elective: great! But know that this isn't necessarily a "bird course". And if you are the type of person that tries to make up for missed classes by thorough cramming with the text book…you might want to find another course.

Evaluation: Course evaluations will consist of the following:

Assignment	% of Final Grade
Midterm test[1]	(30%)
Final exam[2]	(40%)
Research Paper[3]	(30%)

[1] The midterm test will be in multiple-choice format, and will cover material from both lectures and readings. While I do not have a specific formula for testing reading vs. lecture material, you can be fairly certain that lecture material will carry considerable weight on exams.

[2] The final exam will be held during exam week. It will be in multiple-choice format, and will cover material from both lectures and readings. While I do not have a specific formula for testing reading vs. lecture material, you can be fairly certain that lecture material will carry considerable weight on exams. This final exam will not be cumulative.

[3] This assignment is designed to give you some direct exposure to original journal articles that study the brain. For the assignment, you will be required to write a medium length (6 double-spaced pages) paper. These papers will be required in APA style, and will require a minimum of 5 original journal references. ½ page summaries of your paper may be submitted by Mar 21st, 2016.

Other Academic Policies:

Policy for missed tests: It is, obviously, imperative that you attend the in-class tests. And so it is strongly recommended that you notify me in advance if you will be unable to attend class on the date of a test. With sufficient preparation, the opportunity to write a make-up exam may be possible. However, leniency will be granted for students only under emergency situations, *and when appropriate documentation is supplied.* If the missed test is due to illness, you must submit a completed UOIT Medical Statement to the Academic Advising Office within 5 business days of the missed exam/deadline. Please note: All UOIT Medical Statement forms must be completed, signed and dated by the treating physician no later than 24 hrs. after the missed exam/deadline. If the missed work is due to extreme compassionate circumstances (e.g., death in the family, etc.), relevant documentation is required. Please contact the Academic Advising Office for details.

Policy for missed final exam: If, due to exceptional circumstances, a student has missed the final examination he or she may apply for a deferral using the Application for Deferred Final Examination. Supporting documentation (Medical Statement, etc., as listed above) is also required, and must be submitted to the Academic Advising Office within 5 business days of the missed exam. Further information can be found in section 5.24.1.5 in the Academic Calendar.

Students who are unable to write a final examination when scheduled due to religious obligations may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

Academic Advising Office
55 Bond St East Rm 403
E: sshadvising@uoit.ca
T: 905-721-8668 x 3838
F: 905-721-3372

Policy for late assignments: Papers are due on the last day of class, which should provide everyone with ample preparation time. Thus, barring specific unavoidable circumstances, little leniency will be provided for late assignments (they will be docked 10% for each day that they are late). If you anticipate something preventing you from submitting your paper in time, please let me know as soon as possible – these circumstances will be handled on a case-by-case basis. After the fact, without medical documentation (covering *the majority of the semester*), little leniency will be provided.

Classroom Courtesy: While it is difficult to get completely away from lecture-based curriculum, my goal is to keep the class as interactive as possible. I thus want each student to feel welcome to express his or her views, while showing respect to others. Treat others as you would like to be treated. You can disagree with a student (or with me!) but please do so politely – comment

on ideas rather than the person. Laptops are, of course, allowed in the classroom, but please limit their use to note-taking. And please put all cells on silent.

Office hours: It is our goal to provide each student with all of the assistance that s/he needs to succeed in this course. If you are having difficulties in the class, are struggling with any of the material, or are simply curious about cognitive psychology, do not hesitate to visit either Isabella or myself during our office hours. If you absolutely cannot make it to our office hours, please email or phone us to set up another appointment. We will make every effort to meet with you at a mutually convenient time.

Accessibility: Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services in a timely manner, and provide relevant and recent documentation to verify the effect of their disability and to allow the University to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. [NOTE: Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Academic Integrity and Turnitin.com: Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aims and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may

require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must inform their instructor at the time the work is assigned and provide with their assignment a signed Turnitin.com Assignment Cover sheet:
http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf
Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

COURSE CALENDAR

Date	Topic	Readings	
Section 1: Neuroanatomy, Neural Transmission and Methodology			
Jan. 11th	Introduction to, and History of, Brain and Behavior	Chapter 1	
Jan. 18h	Neuroanatomy and Electrical Conduction of Neural Signals	Chapter 2 pgs. 20-43; Chapter 3 pgs. 50-69	
Jan. 25th	Chemical Transmission and Experimental Methods	Chapter 4 pgs. 78-94; Chapter 2 pgs. 44-47; Chapter 3 pgs. 70-75	
Section 2: "Lower-order" Systems: Sensation, Perception, Movement, Pain			
Feb. 1st	Vision (and the other senses)	Chapters 6 & 7	
Feb. 8th	The Sensorimotor System: Movement and Pain	Chapter 5	
Feb. 15th	**Midterm Break – No classes**		
Feb. 22nd	Hormones and Sex / Sleep and Biological Rhythms	Chapter 8 pgs. 208-225; Chapter 9 pgs. 280-296	
Feb 29th	**Midterm test on Section 1 and 2 curriculum – 90 minutes**		
Section 3: "Higher-order" Systems: Memory, Attention and Decision-Making			
Mar 7h	Memory, Learning and Plasticity	Chapter 13	
Mar. 14th	Attention and Consciousness	Chapter 14	
Mar. 21st	Language and Laterality	Chapter 15	***optional ½ page summaries due**
Section 4: Emotion, Social Processing and Psychopathology			
Mar. 28th	The Emotion System: Introduction to Affective Neuroscience	Chapter 11	
Apr. 4th	Psychopathology: Introduction to Clinical Neuroscience	Chapter 12	***Final Paper Due**

BIOL 2020U – Genetics and Molecular Biology

BIOL 2020U provides an overview of the classical genetics and molecular biology.

Times: Lectures are in UB2080 on Fridays from 14:10 – 17:00.

Office hours: My office hours are on Tuesdays from 13:00-15:00 in UA4026.

Your senior lab instructor is George Stamatiou. For any lab related issues please contact him.

Textbooks:
You will be responsible for the material that we cover in class and are required to do readings before class. Note that the pages for required readings are listed under the lectures listed below.

The required text for this class is:

A customized version of Introduction to Genetic Analysis, 11th ed. by Griffiths, Wessler, Carroll and Doebley. This is available through the book store.

You might also find these helpful:

Introduction to Genetic Analysis, 7th ed.; available online at:
http://www.ncbi.nlm.nih.gov/books/NBK21766/

Molecular Biology of the Cell, 4th edition, by B. Alberts et al.; also available online at:
http://www.ncbi.nlm.nih.gov/books/NBK21054/

Notes: Notes for each class will be available through Blackboard. I will post the files after class. These notes are not complete and you should therefore amend these with your own notes based on readings and in class discussions. Class periods will be designed to further explain and help you learn the difficult concepts.

Readings: The readings from your textbook are meant to provide you with additional details that might be missed in class.

Grading: Your mark for this course is out of 100% and the distribution is as follows:

Lab	25%
Problem sets	75%
3 each worth 25%	

Labs: You will be attending a 3 hour lab every other week. You need to pass the lab component to pass the course.

Problem sets: You will be completing three problem sets that will be assigned throughout the term. Two of the problem sets are questions similar to the end of chapter questions in the

textbook and one is based on using a classical genetics simulator (http://cgslab.com). Specific instructions will be provided for each problem set in separate documents. You will have two weeks to complete each problem set. Since you have more than adequate time to complete the problem sets, late submissions will not be accepted.

Please be sure to check Blackboard frequently for updates and changes to class related material. Use the mail feature of Blackboard to communicate with me and with fellow students. Please limit any discussion postings to class related material. I will delete any inappropriate postings.

Missed term work: For policies governing missed term work please refer to the Faculty of Science Academic Policies.

Academic integrity: Students are expected to be familiar with and abide by the University of Ontario Institute of Technology's policy on Academic conduct.

Topics: The topics that I will be covering in the course are outlined below. I will try to keep to this schedule as much as possible. However, please note that the schedule and topics listing is subject to change, but I will notify you of what those changes might be.

Day	Main Topics Covered in Lectures
Jan 12	Mendelian inheritance patterns IGA pp. 31-58
Jan 19	Human pedigree analysis IGA pp. 58-70
Jan 26	Independent assortment IGA pp. 87-108
Feb 2	Linkage analysis IGA pp. 127-148
Feb 9	Gene interaction IGA pp. 215-241 Problem set 1 due at 14:00
Feb 16	Gene interaction
Feb 23	Reading week - no class

Mar 2	Bacterial genetics IGA pp. 173-201
Mar 9	Recombinant DNA IGA pp. 351-377 Problem set 2 due at 14:00
Mar 16	Prokaryotic gene regulation IGA pp. 397-422
Mar 23	Eukaryotic gene regulation IGA pp. 431-465
Mar 30	Good friday - no class Problem set 3 due at 14:00

Course Outline
Developmental Psychology (PSYC 2010U)
UOIT Faculty of Social Science and Humanities

1) Course Details and Important Dates*

Term	Section	Course Type	Day	Time
Fall	002	Lecture	Wednesdays	11:10 am-2:00 pm

Location	CRN #	Classes Start	Classes End	Final Exam Period
Regent Theatre (DTR 100)	43977	September 6	December 5	Dec 7-16

*for other important dates go to: www.uoit.ca >Current Students >Important Dates

- **First set of Launchpad assignments:** Tuesday, October 30 by 11:59pm
- **Midterm Exam:** Wednesday, October 31 at 11:10am
- **Paper:** Friday, November 16, by 11:59pm
- **Second set of Launchpad assignments**: Wednesday, December 5 by 11:59pm
- **Final exam**: Date and time will be set by the Registrar and announced later.

2) Instructor Contact Information

Instructor Name	Office	Phone	Email
Dr. Lindsay Malloy	DTC 622	905-721-8668 ext. 5965	lindsay.malloy@uoit.ca
Office Hours: Mondays, 12pm – 1pm (or by appointment)			
TAs: Lillian Rodriquez-Steen (Lillian.RodriquezSteen@uoit.ca) and Annmarie Khairalla (Annmarie.Khairalla@uoit.ca) TA office hours: By appointment			

Note: Contact the professor or course TAs via email, rather than through Blackboard Messages, to ensure a quicker response. Generally expect a response within 48 hours unless on weekends.

3) Course Description

This course is a comprehensive study of human development across the lifespan from a developmental psychology perspective. The course examines developmental processes and milestones of the individual from conception through late adulthood, with particular emphasis on behavioural and cognitive development. Students will be introduced to the major psychological theories, theorists, and controversies in the field of human development.
Prerequistite: PSYC1000U Introductory Psychology; or PSYC0101/0102; or NURS0420

4) Learning Outcomes

This course will provide students with a comprehensive introduction to the scientific study of human development. Because the field of developmental psychology is very broad, we will not be able to cover ALL relevant topics in one course. A range of topics will be covered and no one topic will be covered in depth. **The primary goal of this course is to introduce you to some representative topics, theories, and research findings in this field.** We will cover several major domains of development - biological, cognitive, language, social, and emotional development. Also, we will examine several contexts in which humans develop (e.g., family, peer). The emphasis will be on understanding the myriad of influences on human development. Continuing controversies and practical implications of research findings will be highlighted throughout the semester.

By the end of this course, students should be able to:

(1) Understand the major developmental themes and principles guiding research in this area
(2) Be able to characterize the major theoretical conceptions of development from birth to adolescence
(3) Learn an overview of the terms, concepts, and key research findings in the field of developmental psychology
(4) Be able to describe developmental changes in youth, including physical, cognitive, social, and emotional changes
(5) Appreciate the significance of early life (infancy, childhood, adolescence) as a period of human development and the role of developmental science in improving people's lives

5) Course Design

This course will be taught primarily in a lecture format. Lectures will include material from the textbook, and additional information will, at times, be introduced by the instructor. As appropriate, videos, articles, and activities may be used to enhance your understanding of the material.

6) Outline of Topics in the Course

Important Note: Chapter numbers refer to the course textbook. The below outline is subject to changes by your professor.

Dates	Topic	Required Reading
Sept 12	Course Requirements An Introduction to Child Development	
Sept 19	An Introduction to Child Development	Chapter 1
Sept 26	Biology and Behavior	Chapter 3
Oct 3	Theories of Cognitive Development	Chapter 4
Oct 10	***NO CLASS***	
Oct 17	Development of Language and Symbol Use	Chapter 6
Oct 24	Theories of Social Development	Chapter 9
Oct 31	MIDTERM EXAM	All material covered thus far
Nov 7	Attachment to Others	Chapter 11, pgs. 424-436

Nov 14	Emotional Development	Chapter 10
Nov 21	Family	Chapter 12
Nov 28	Peers	Chapter 13
Dec 5	Gender	Chapter 15
	FINAL EXAM The date/time will be scheduled by the Registrar and posted later in the semester.	Material covered since the midterm (final is NOT cumulative)

7) Required Texts/Readings

Textbook
How Children Develop, Canadian, 5th Edition by Siegler, Saffran, Eisenberg, DeLoache and Gershoff. **WITH LAUNCHPAD.**

You should be able to purchase the loose leaf book + Launchpad, or the e-book + Launchpad at the UOIT bookstore, or direct from the publishers here: https://store.macmillanlearning.com/ca/product/How-Children-Develop-Canadian-Edition/p/1319059082?searchText=978-1-319-06681-9

Other Materials/Course Website
The course website and outline are available on Blackboard. Important materials (e.g., slides), updates, and articles will be posted on Blackboard throughout the semester. Most importantly, your grades will be posted on the Blackboard course website. It is important to check Blackboard and your UOIT email regularly for updated information.

Log in to Blackboard at uoit.blackboard.com
As a reminder, please do not use the Blackboard messaging function to contact your professor or TAs – use their regular email addresses provided above.

8) Evaluation Method

The evaluation for the course will consist of the following:

- Midterm exam: 30% of your final grade
- Final exam: 30% of your final grade (The final exam is NOT cumulative)
- Term paper: 20% of your final grade
- In-class activities: 10% of your final grade
- Launchpad assignments: 10% of your final grade

In order to keep evaluations fair for all students, grades will NOT be adjusted on an individual student basis, except in cases where a TA or professor error has been made. Extra credit work will NOT be assigned.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

9) Assignments and Tests

EXAMS: 60% of your grade
One Midterm exam and one Final exam will be given. There will be **NO MAKE-UP EXAMINATIONS** except under exceptional circumstances with documentation (see "Missed Coursework, section 14 below). Each exam will count for 30% of your grade. Exams are to encourage close and careful reading of the text/slides and to find out if important concepts are clear to you. Each of these exams will cover certain chapters of the textbook, lecture notes, videos, and activities. That is, the Final exam is NOT cumulative. Please refer to the syllabus for exam dates and the material to be covered in each exam. The exam format will be a combination of multiple choice, true/false, matching, and/or short answer questions. All exams must be taken in class during their scheduled time. The Final exam schedule is set by the registrar and the date and time for this course Final will be posted later in the semester. You will have the entire class period to complete each exam. I will provide a scantron, but you will need to bring a pencil, pen, and eraser. Your exam scores will be posted on the Blackboard course website.

IN-CLASS ACTIVITIES: **10% of your grade**
Three times spread throughout the semester, we will do "pop" in-class activities. You are allowed to miss one of the three, and thus **there are no make-ups for the activities** (see "Missed Coursework", section 14 below). Each of your two highest activities will count for 5% of your grade (10% total). These are designed to get you to think about the material you read and hear about in this course. Also, these activities are intended to serve as a participation component of your grade. They will be graded on a scale of 0-100 based on: (1) the correctness of your answers (when there is a correct answer), (2) your ability to think critically about the activity/exercise, (3) your ability to use the material from class in the activity/exercise, and (4) your effort in the exercise/activity. Your scores will be posted on the Blackboard website.

LAUNCHPAD ASSIGNMENTS: 10% of your grade
There are weekly assignments set up in LaunchPad for each chapter of the textbook you are required to read. Each chapter assignment is worth 1%. There are **no make-ups** on these as you have several weeks to complete the assignments at your own pace.

- In order to receive the 5% for the assignments corresponding to your Midterm you must complete all of the chapter assignments that occur before the Midterm by **Tuesday, October 30 by 11:59pm**.
- In order to receive the 5% for the assignments corresponding to your Final exam you must complete all of the chapter assignments that occur after your Midterm by **Wednesday, Dec 5 by 11:59pm**.

PAPER: 20% of your grade
Your paper must be turned in via our Blackboard course website's Turnitin.com function by **11:59PM on Friday, November 16**. **NO LATE PAPERS WILL BE ACCEPTED.**

The aim of this paper is for you to relate the information learned in class on different aspects of human development (e.g., cognitive, social, emotional). You must choose **ONE** of the following paper options:

1) Take the perspective of a parent writing a journal entry (or "baby book"/scrapbook entry) about your child. Some questions to consider: How is your child behaving? What milestones have they reached? What problems or challenges are they encountering? Are there aspects of their behavior that seem confusing or strange to you? What things does your child enjoy or not enjoy? What are you doing as a parent to ensure healthy development? Are there any major decisions that you have made recently, and why? How might these decisions affect your child's development? What challenges lie ahead? You do not have to answer *all* of these questions, but they are questions to consider as you write your paper.
    a. **Your paper must include the following components:**
        1. The age of the child being described
        2. Descriptions of the child's physical, cognitive, and social development
        3. Descriptions of at least one context/environment that has shaped your child (e.g., school, peers)
        4. Mention of at least one major milestone that your child has achieved
        5. Aspects of your parenting style/decisions that are influencing or have influenced your child's development
2) Design a developmentally-appropriate toy, game, cartoon character, TV show, book or comic book, video game, etc. [If you have something in mind that doesn't fit one of those categories, ask me first]. Pretend that you are a developmental psychology researcher serving as a consultant to a company that makes products for children (e.g., Disney). Use your analytic ability and knowledge of the theories and research discussed in class to make your own original design and pitch it to this company in your paper. This company is interested in **empirically-based designs** so while creativity is valued, it is most critical that your design be consistent with the principles of developmental psychology discussed in this course.
    a. **Your paper must include the following components:**
        1. A description of the toy/game/etc.
        2. The age range for which your toy/game/etc. is appropriate and WHY.
        3. What theories, research findings, and developmental concepts influenced your design?
        4. What types of cognitive, social, or emotional skills does your toy/game/etc. promote?
        5. Why would your toy/game/etc. appeal to children of the age range chosen? Would it appeal to parents or teachers – why or why not?

Regardless of your specific paper choice, you must use and integrate your knowledge of the theories and research discussed in class to write your paper. Although creativity is valued, it is most critical that your paper be consistent with the principles of developmental psychology discussed in this course. You must refer to developmental milestones, theory, and research discussed in class and your textbook when writing your paper.

Your paper must:

- Accurately integrate information from at least 3 chapters covered in class.
- Be **no less than 3 pages long and no more than 4 pages long**

- Be typed, double spaced, 12-point Times New Roman font, with 1" margins on all sides.
- Include a title page with your name and student ID number **(do not put this information with the text of your paper)**.
- Be proofread with the spelling and grammar checked thoroughly.
- NOT BE PLAGIARIZED. According to the American Psychological Association, "If you copy **four or more words in a row** from a source that are the author's original words, you must use quotation marks and cite. When you paraphrase information, you give a citation, but you do not use quotation marks."
- Be submitted via Turnitin.com on our Blackboard course website no later than 11:59pm on **Friday November 16, 2018**.

A paper rubric will be posted on Blackboard. **In general, your paper grade will be based on:**

- Integrating information from at least three chapters of your textbook/slides. Although you do not need to use APA style referencing, you must mention at least one theory/study/concept from the different chapters (e.g., According to Piaget, Suzy did not reach for the rattle because she had not yet developed object permanence. This develops at approximately 8 months of age.)
- Accurate use and application of theory, research, and concepts from class/slides/your textbook, including matching the age of the child with the content described.
- Writing style (clear and concise, organized).
- Following instructions regarding content and formatting.

Once a paper has been submitted, it cannot be returned until it has been graded (i.e., students cannot re-submit a paper even if the due date has not passed). Thus, please double check that the version you submit is the final version of your assignment.

Late policy for papers: Late submissions (i.e., even one minute late) will lose 10% per day, including weekend days. Late papers handed in over 7 days late will receive a grade of 0 and will not be marked. To avoid being late, make sure your paper is submitted via Blackboard well in advance of 11:59 pm on Friday, November 16. NO excuses will be accepted for late submissions. Make sure you plan ahead to avoid any possible technical problems that may arise or any last minute illnesses.

EXPECTATIONS

Attendance and Participation

You are expected to attend class, and readings should be completed **before** the lecture for which they are assigned. **You should not expect to do well if you do not attend class**! There will be material on the exams from lectures, and some of this material will not be in your textbook. Also, I will create exam questions based on the videos and other activities that we do in class, and these activities count for 10% of your final grade. Please remember that class begins promptly at 11:10am. **Lateness is disrespectful and distracting to your fellow classmates and professor.**

Class Etiquette

You are expected to respect the learning environment of the classroom. This includes arriving on time, turning off cell phones, and not talking while a classmate or the instructor is speaking

(**even whispering is very distracting to others**). Human beings think that they are very good at multi-tasking, but research shows that we are decidedly bad at it. Here are just a few bits of science/info on that:
https://www.cnn.com/2015/04/09/health/your-brain-multitasking/index.html
https://www.telegraph.co.uk/women/womens-life/11512469/Multitasking-is-scientifically-impossible-so-give-up-nowMultitask.html
http://business.time.com/2013/04/17/dont-multitask-your-brain-will-thank-you/
http://news.stanford.edu/news/2009/august24/multitask-research-study-082409.html

Thus, resist the urge to text, Tweet, etc. during class. If you *absolutely must* have your cell phone on for emergency reasons (e.g., child care), please make sure that the phone is on vibrate and exit the lecture hall quietly.

Email Etiquette
To practice your formal communication skills, be sure to use the following guidelines for contacting your professors and TAs (not just us) via email.

1. Use the subject line to indicate which course or topic you are emailing about.
2. Always include a salutation (greeting). (e.g., Dear Dr. Malloy).
3. Use proper spelling, grammar, and punctuation. Email should not be treated like a text. Proper sentence structure and formatting will ensure that your message can be clearly understood by the reader.
4. Make sure to sign your email or use a signature. It is important to include your name at the bottom of the message. Depending on your email address, your name might not be evident from your email unless you include it.

HOW TO SUCCEED IN THIS COURSE:

1) **Come to class**. If you don't come to class, you shouldn't expect to do well.
2) **Do the assigned reading**. Do the reading ahead of time – this will help you process the information. Take notes while you read. Highlight things. Write down questions that you have and concepts that you do not understand.
3) **Take notes**. Human beings are not good at passively "absorbing" information. Learning requires rehearsal. Writing information down in your own words will help you learn and give you something to go back to and study later on. I give you most of my Powerpoint slides on Blackboard but they are of little use to you if you do not *actively* try to learn the material on them.
4) **Take notes *on paper if you can***. Research shows that students learn material better when they put their laptops away and take notes the "old fashioned" way…
    a. https://www.npr.org/2016/04/17/474525392/attention-students-put-your-laptops-away
5) **Speak up**. If you don't understand something, say so. Ask questions. Come to our office hours if you need a longer explanation. Don't wait until it's too late to improve your grade. *Be proactive*.
6) **Use Launchpad.** It has many great features that will help you study and learn the material.

10. Students with Disabilities

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite.
Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, learning challenges, as well as students with temporary disabilities (concussion, broken arm/hand/fingers, etc). Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.
Students must register for final exams by the registration deadline, which is typically 3 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

11. Faculty of Social Science and Humanities Statement on Inclusivity

The Faculty of Social Science and Humanities is committed to building a truly inclusive educational community where faculty, students, and staff share the responsibility for promoting the values of fairness, justice, and non-discrimination, and for ensuring myriad voices, faces, and experiences are recognized and represented. We embrace and honour the dignity of individuals and groups, and believe that diversity, in all its complex dimensions, lays the foundation for academic excellence and creative learning. The Faculty is, therefore, dedicated to creating a welcoming and supportive campus culture and to challenging all forms of systemic discrimination experienced by historically

disadvantaged groups, including but not limited to groups marked by race, ethnicity, sex, religion, age, disability, sexuality, gender identity and expression, and socioeconomic status.

12. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

13. Turnitin

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must provide with their assignment at the time of submission to the instructor a signed Turnitin.com Assignment Cover sheet: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

14. Missed Coursework

Missed Midterm

If a student has missed a scheduled in-term exam (i.e., midterm) due to physical or psychological illness, she or he must submit a UOIT Medical Statement, along with supporting documentation, to the FSSH Academic Advising Office within 3 days of the missed exam date. Note: The medical statement form must be signed by the treating physician or licensed practitioner within 24hrs of the missed date or deadline. If a student has missed a scheduled in-term exam (i.e., midterm) due to exceptional circumstances, she or he must submit an Academic Consideration Form, along with supporting documentation, to the FSSH Academic Advising Office within 3 days of the missed exam date. The Academic Advising Office will review the documentation and inform the student of the outcome of his or her request in writing via email. It will be at the course instructor's discretion to determine how the missed in-term exam will be addressed and resolved (e.g., make-ups).

Missed Final Exam

If a student has missed a scheduled final examination due to physical or psychological illness, she or he must apply for a deferral using the Application for Deferred Final Examination within 3 working days of the missed exam date. A UOIT Medical Statement, along with supporting documentation and a $45 examination fee (per exam), must be submitted to the Registrar's Office. If a student has missed a scheduled final examination due to exceptional circumstances, she or he must apply for a deferral using the Application

for Deferred Final Examination within 3 working days of the missed exam date. An Academic Consideration Form, along with supporting documentation, must be submitted to the Registrar's Office. The most recent version of all forms can be found on MyCampus under the 'UOIT Documents' tab or on the website at www.uoit.ca/studentforms.

Late Term Paper

See Section 9 for general term paper late policy. If a student is late submitting the term paper due to physical or psychological illness, she or he must submit a UOIT Medical Statement Form directly to the course instructor via email (lindsay.malloy@uoit.ca) within 3 days of the missed due date. Note: The medical statement form must be signed by the treating physician or licensed practitioner within 24hrs of the missed deadline (11:59 pm on Friday, November 16). If a student is late submitting the term paper due to exceptional circumstances, she or he must submit a UOIT Academic Consideration Form, along with supporting documentation, directly to the course instructor via email (lindsay.malloy@uoit.ca) within 3 days of the missed due date. The course instructor will review the documentation and inform the student of the outcome of their request in writing via email. All late submissions of the term paper will be handled directly by the course instructor for consideration and resolution. It will be at the course instructor's discretion to determine how the missed work will be addressed and resolved (e.g., penalties, re-writes, etc).

Other Late/Missed Coursework
The lowest of your three in-class activities will be dropped. Also, you have several weeks to complete the Launchpad assignments. Thus, there will be no makeups on these.

Religious Observance
If a student is requesting consideration for a religious observance for any in-term exam (i.e., midterm), she or he must submit a UOIT Academic Consideration Form to the FSSH Academic Advising Office 15 working days prior to the exam date. The Academic Advising Office will review the form and inform the student of the outcome of his or her request in writing via email. It will be at the course instructor's discretion to determine how the missed in-term exam will be addressed and resolved (e.g., make-ups).

If a student is requesting consideration for a religious observance for a final exam, she or he must apply for a deferral using the Application for Deferred Final Examination and a UOIT Academic Consideration Form 15 working days prior to the first final examination date. The most recent version of all forms can be found on MyCampus under the 'UOIT Documents' tab or on the website at www.uoit.ca/studentforms.

Academic Advising Office
55 Bond St East Rm 403
E: sshadvising@uoit.ca
Tel.: 905-721-8668 x 3838; Fax: 905-721-3372

14. Final Examinations

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

OTHER POLICIES

Grading Disputes

Students who wish to dispute a grade on an assessment must provide a written explanation of their specific concerns to the TA within one week of receiving that grade. After receiving a written explanation, the TA will review the assessment in its entirety, which may result in the grade increasing or decreasing. Students who are still dissatisfied after receiving their revised grades may have their assessments reviewed by the professor. The professor must be notified within one week of the student receiving the revised grade. Please note that students who do not bring their disputes to the TA's or professor's attention within the timeframes specified will not have the opportunity to have their grades considered for revision.

Absence Policy: What to do if you miss class

I teach class in class – not over email afterward. If you want to know what we covered in class, how far we got on the slides, whether we watched a film, etc., then you need to come to class. If you miss class, check Blackboard to review the slides that you missed, ask a fellow classmate, or come to your professor or TA's office hours for more details if need be.

Lecture Recording Policy

You do NOT have my consent to record lectures/our classes unless this is an official accommodation that you have received.

Faculty of Social Science & Humanities

Introduction to Cognitive Psychology PSYC2060U
Course Outline for Fall 2017-18

Course Time: Tuesdays: 11:10-2:00
Course Location: Regent Theatre

Professor: Dr. Matthew S. Shane
Office: DTC-619, 6th Flr, 2 Simcoe St W (CIBC Building)
Email: matthew.shane@uoit.ca
Office hours: By appointment, by email, or on the course Slack workspace

Major Research Interests: Functional Magnetic Resonance Imaging; The Criminal Brain; Learning and Error Processing; Empathy

****Please do NOT email me through Blackboard. Lots of other ways to get a hold of me, and Blackboard does not notify when an email is waiting. If you need to contact me privately: email me directly. If you have a general question: throw it up on Slack.****

Teaching Assistant: Isabelle Simard, PhD. Candidate
William Denomme, MA Candidate
Office: DTC-629, 6th Flr, 2 Simcoe St W (CIBC Building)
Office hours: By Appointment, by email, or on the course Slack workspace

Course Description

Psychologists and philosophers have long made a distinction between the *brain* (the tangible anatomical mass of cells inside our skull) and the *mind* (the intangible mental processes that the brain somehow produces). This distinction may appear small, but is really very important: while studying the *brain* can help us understand the electrical and chemical reactions that cause neurons to fire, only through studying the mind can we fully understand the specific mental processes that guide our perceptions, thoughts and behaviors. Cognitive Psychology is, in its most general sense, the study of the *mind*. Thus, in this introductory course we will focus predominantly on how specific mental functions operate, from basic sensory processes including vision and hearing, to "higher-order" processes including attention, memory and decision-making. Topics will include how the mind interprets information coming from the eyes, how attention serves to highlight only the most relevant information from the environment, how information is stored in and retrieved from memory, how emotions can influence our rational thought, and how abnormality of the mind can lead to cognitive and emotional dysfunction.

Prerequisites: Introductory Psychology (Minimum grade: D).
If you do not meet this requirement, you must talk to me prior to the 2nd class. Special circumstances will be considered on a case by case basis, but only until the 2nd class.

Learning Objectives

After completing this course, students should have:

1. Developed some expertise in issues of human cognition. Students should understand many of the environmental and biological factors that influence cognitive functioning and performance, as well as the theories about how and why they do so.

2. Gained insight into the questions addressed by cognitive researchers, the methodologies that can be employed to interrogate those questions, and the contexts within which specific methodologies may be useful.

3. Gained hands-on experience with classic experiments in the field of cognitive psychology.

4. Developed skills for summarizing, evaluating, and critiquing research in the primary literature.

Course Website and Slack Channel

Course Website:

The course website is accessible through: https://uoit.blackboard.com/.
The course website will include this syllabus, a list of all required readings and assignments, links to interesting related web content, any scheduling updates discussed in class. Students should consult the website for updates and announcements on a regular basis.

Course Slack Workspace:

To facilitate communication and collaboration, I've also set of a Slack workspace for the course. Slack is a group communication and collaboration platform, which I want to use to help create an online forum where you can ask questions, post thoughts, get in touch with me and the TAs, communicate with other students, study collaboratively, etc. You will all receive an email invite to the workspace, and I would encourage you all to accept the invite and check Slack out. Nothing posted on Slack is mandatory, but I expect it to serve as a helpful resource for all of you.

Required Materials

Course Textbook:

Goldstein, E.B. (2014). *Cognitive Psychology: Connecting Mind, Research and Everyday Experience (4th Ed.).* Wadsworth, Cengage Learning.

CogLab 5 Registration Code.

Both the textbook and the CogLab 5 Registration Code are <u>mandatory</u> materials for the course. A full 30% of your grade is directly attributable to the CogLab assignments, and you will have difficulty passing the course if you do not purchase access to this resource.

Both the book and the *CogLab* registration code come <u>packaged together</u> in the bookstore, and this is the easiest way to ensure you have all required materials. You can also purchase one of the following bundled packs from www.nelsonbrain.com:

HARD COPY

ePack: Cognitive Psychology: Connecting Mind, Research and Everyday Experience, 4th + COGLAB 5: Instant Access

ISBN10: 1-305-51963-9
ISBN13: 978-1-305-51963-3

$210.95

View Details | Add to Cart

E-BOOK

ePack: eBook: Cognitive Psychology: Connecting Mind, Research and Everyday Experience, 4th + COGLAB 5: Instant Access, 4th Edition

ISBN10: 1-305-59024-4
ISBN13: 978-1-305-59024-3

$132.95

View Details | Add to Cart

You may choose to purchase the textbook elsewhere. But I strongly advise matching up the ISBN code from the image above, to ensure you get the right 'package' with the CogLab code. ***Buying the wrong package will not be grounds for an extension on your first CogLab assignments.***

What if you are waiting for your academic funds to come through before you can afford the course materials? The course obviously has to begin on schedule, and progress through the material at an approved pace. However, if you absolutely must, you may purchase the *CogLab 5* registration code <u>separately</u> at www.nelsonbrain.com, and

Can you purchase used copies of the textbook? Sure, if you can find used copies for the 4th edition, feel free. It has been in circulation for 3 years, so it's quite possible used versions exist.

Can I rent an online version of the textbook? Yes, if you wish you may purchase an e-book version of the texts online at www.coursesmart.com. Advantage: the online versions are considerably cheaper. Disadvantage: you only rent the text for the term; while e-texts now allow for online note-taking and highlighting, they still aren't quite the same to study from as a true bound book.

Can you use the 3rd edition of the textbook instead? I must always recommend to students that they use the most recent version of the textbook. Some of the examples used in class will lead

directly from textbook curriculum, and some of the exam questions are likely to come directly from the text. Thus, your chances of getting a high grade in this course will increase considerably if you use the most recent version. That said, could a student 'get by' with the 3rd edition? …in most instances, yes, you could 'get by' with the 3rd edition. I leave it to you to decide how you'd like to proceed.

Can I purchase a used CogLab 5 registration code. **NO.** Unfortunately you MUST purchase a new *CogLab 5* registration code. This is the case regardless of whether you purchase a new version of the text, a used version of the text, an online version of the text, or no text at all. In all cases, you MUST purchase a new *CogLab 5* registration code. Completing the *CogLab* assignments makes up 30% of your mark in this course, and used registration codes will not allow you access to the site.

Attendance: This section seems sort of unnecessary, doesn't it? We all know that attendance is going to be highly tied to your eventual grade in the course. This is true in most courses, but this is particularly true in this class, as I often try to use class time for activities that afford learning that goes beyond reading what's in a textbook. So, while attendance is not mandatory, I would highly recommend that you make every effort to be in class during lectures. If you miss a class, you'll want to obtain notes from a classmate. It is your responsibility to be aware of all material presented in class, including announcement of quizzes or exam dates, of additional readings, of changes to the schedule, etc.

Evaluation

Course evaluations will consist of the following:

Assignment	% of Final Grade
Two in-class tests[1]	20% each
One final exam[2]	30%
CogLab Experiments[3]	10%
Short Research Papers[4] (2-3 pages)	20%

[1] In-class tests will be multiple choice, and will cover material from both lectures and readings. While I do not have a specific formula for testing reading vs. lecture material, you can confidently assume that lecture material will carry considerable weight on tests and exams. These tests will non-cumulative; each will cover only material since the previous test.

[2] The final exam will be multiple choice, and will cover material from both lectures and readings. While I do not have a specific formula for testing reading vs. lecture material, you can confidently assume that lecture material will carry considerable weight on tests and exams. This final exam will be non-cumulative. Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

[3] CogLab Experiments will require that you register at http://coglab.cengage.com (full instructions on subsequent page). Each experiment takes between 10-30 minutes, and can be completed on any computer with web access. These experiments are fun and interactive,

providing a much more hands-on experience with cognitive psychology experiments than can be provided within lectures. Here's how they'll work:

- For each study, the software will keep track of who has completed the study and will tabulate data for each student.
- You need only complete the web experiment; there is nothing you need to turn in to me.
- Each on-time submission is worth .5% on your final grade.
- There are 18 of them all-together, to complete throughout the term, which equals 9% of your final grade. Complete all 18 on time and you'll get a bonus 1%, to equal the full 10%.
- Information learned in these experiments *will* be on tests and exams – so pay attention while you're performing the experiments.
- All experiments must be completed by 7AM on the day they are listed in the course schedule. Submissions after 7AM will NOT be accepted. No exceptions.

[4] This assignment is designed to further your knowledge in the area of some of the specific CogLab experiments while also providing you some direct exposure to modern journal articles in the field of Cognitive Psychology. The assignment is as follows:

You will be required to choose *any three* of the CogLab experiments, and for each experiment write a short (2-3 page) paper describing:

a) The method and rationale of the experiment
b) Your specific results from the experiment (your data)
c) An interpretation of your data, using what you know about the study's rationale (ie. What do your results suggest about your cognitive processing?)

The write-ups will be graded according to the following rubric:

Paper Component	**Marks Awarded**
Description of Study Purpose Why was this particular study undertaken? Why is it important? What were the study hypotheses?	10
Description of Study Methodology How was the study conducted? What were the conditions? What were the dependent/independent variables?	5
Description of Your Own Results How did you perform on the task? Provide and describe your data.	5
Interpretation of Your Results Did your result match hypothesized effects? Why or why not?	10
Implication of the Study What do your results mean about your cognitive processing?	10

e.g. What do they indicate about your memory or perception or attentional processes?	
Further Extrapolation of Results Find 3 additional journal articles related to the topic, and briefly describe them e.g. A slightly different version of the task, or an evaluation of gender differences, or performance of an 'abnormal' group on the task	10
Total	**50**

Consistent with the above rubric, your write-up will need to do more than just summarize the study that you completed. You will also have to connect these findings to the broader literature by locating and referencing three *original journal articles* that describe studies related to the CogLab experiment that you completed. The *CogLab Manual* provides several suggestions for further reading, and you are more than welcome to use those articles as your three. Or you may consult the literature further and discuss any articles that you believe provide additional insight into the cognitive phenomenon focused on in the Coglab experiment.

You must complete *three* of these CogLab write-ups in the course, for a total of 20% of your final grade (they will be worth 6.66% each). Each paper will be due by 7AM one week *following* the week that the CogLab experiment was listed in the course schedule. For example, if you look at the course calendar, you'll see that the *Wason Selection* CogLab is listed as being assigned on Sept 19th. This means that the *Wason Selection* Coglab itself must be performed by 7AM on the 19th, and the *Wason Selection Writeup* would then be due at 7AM *one week later:* at 7AM on the 26th.

Absolutely no late write-ups will be accepted: you only have to do three in the class. So if you're going to submit one late, just do a different one instead.

You will receive detailed feedback on your first CogLab write-up, within two weeks of its submission. With the feedback, you should be able to correct any weaknesses for the second and third assignments. Thus, a good strategy may be to submit the first CogLab write-up early in the term, so that you will have the time to make use of the feedback for write-ups two and three. *If you submit the first Coglab after the 2nd midterm, we cannot guarantee you will receive feedback in time.*

Other Academic Policies

Policy for missed tests:

It is, obviously, imperative that you attend the in-class tests. And so it is strongly recommended that you notify me in advance if you will be unable to attend class on the date of a test. With sufficient preparation, the opportunity to write a make-up exam may be possible. However, leniency will be granted for students only under emergency situations, *and when appropriate documentation is supplied.* If the missed test is due to illness, you must submit a completed UOIT Medical Statement to the Academic Advising Office within 5 business days of the missed exam/deadline. Please note: All UOIT Medical Statement forms must be completed, signed and dated by the treating physician no later than 24 hrs. after the

missed exam/deadline. If the missed work is due to extreme compassionate circumstances (e.g., death in the family, etc.), relevant documentation is required. Please contact the Academic Advising Office for details.

Policy for missed final exam:
If, due to exceptional circumstances, a student has missed the final examination he or she may apply for a deferral using the Application for Deferred Final Examination. Supporting documentation (Medical Statement, etc., as listed above) is also required, and must be submitted to the Academic Advising Office within 5 business days of the missed exam. Further information can be found in section 5.24.1.5 in the Academic Calendar.

Students who are unable to write a final examination when scheduled due to religious obligations may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

Academic Advising Office
55 Bond St East Rm 403
E: sshadvising@uoit.ca
T: 905-721-8668 x 3838
F: 905-721-3372

Policy for late CogLab Experiments:
CogLab experiments must be completed by 7AM on the date indicated in the course schedule. For instance, the CogLab experiment listed on Sept. 12th will be due at 7AM on Sept. 12th. This does not mean that you must wait until 7AM on Sept. 12th to complete the assignment. In fact, you can complete ALL of the CogLab assignments *at any time.* Want to complete them all tomorrow and get them over with? Go for it. Because of this wide-open availability, there will be absolutely no credit given for late assignments. No exceptions.

Policy for late CogLab Write-ups:
CogLab write-ups are due by 7AM the week following the week that the CogLab experiment was due. So for the same CogLab experiment listed on Sept. 12th, the actual experiment will be due at 7AM on Sept. 12th, and the write-up for that assignment will be due at 7AM on Sept. 19th. You only need to complete three write-ups over the course of the entire course. Thus, absolutely no late write-ups will be accepted. No exceptions. If you don't get one submitted in time, no harm done: just do the next one instead.

Classroom Courtesy:
While it is difficult to get completely away from lecture-based curriculum, my goal is to keep the class as interactive as possible. I thus want each student to feel welcome to express his or her views, while showing respect to others. Treat others as you would like to be treated. You can disagree with a student (or with me!) but please do so politely – comment on ideas rather than the person.

Laptops and Cell Phones:
Laptops are, of course, allowed in the classroom, but please limit their use to note-taking. And please put all cells on silent.

Office hours:
It is our goal to provide each student with all of the assistance that s/he needs to succeed in this course. If you are having difficulties in the class, are struggling with any of the material, or are simply curious about cognitive psychology, do not hesitate to visit either Isabella or myself during our office hours. If you absolutely cannot make it to our office hours, please email or phone us to set up another appointment. We will make every effort to meet with you at a mutually convenient time.

Accessibility:
Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services in a timely manner, and provide relevant and recent documentation to verify the effect of their disability and to allow the University to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. [NOTE: Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Academic Integrity:
Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aims and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

COURSE CALENDAR

Date	Topic	Readings	CogLab Experiment
Sept 12th	Introduction to Cognitive Psychology	Chapter 1	
Sept 19th	Cognitive Neuroscience	Chapter 2	Wason Selection
Sept 26th	Perception	Chapter 3	Blind Spot Signal Detection
Oct 3rd	Attention	Chapter 4	Stroop Spatial Cueing Inhibition of Return
Oct 10th	**1st in-class test – 90 minutes**		
Oct 17th	Short-term and Working Memory	Chapter 5	Memory Span Sternberg Search
Oct 24th	Long-term Memory: Structure	Chapter 6	Implicit Learning Serial Position
Oct 31st	Long-term Memory and Everyday Memory	Chapters 7 & 8	Levels of Processing Encoding Specificity
Nov 7th	**2nd in-class test – 90 minutes**		
Nov 14th	Learning and Knowledge	Chapter 9	False Memory Forget-it-all-Along Effect
Nov 21st	Language	Chapter 11	Lexical Decision Categorical Perception – Identification Cetegorical Peception – Discrimination
Nov 28th	Reasoning and Decision Making	Chapter 13	Decision Making Risky Decisions

Instructions for getting started with CogLab

1. Open your Web browser and go to http://coglab.cengage.com.
2. Go to the bottom of the Web page. There should be three text fields and one button. If these are not visible, your Web browser does not have Java enabled or has an out of date version of Java. Go to the CogLab Browser Check page for details.
3. In the top text field, enter the group ID: *2060UFall2017*.
4. In the second text field, enter the access password: *cognition*.
5. In the third text field, enter your registration code. The registration code could be in one of several formats. It may be on a sticker on the inside front cover of your CogLab Student Manual. It may have been bundled with your textbook on a postcard. Or, you may have purchased a registration code electronically (sometimes this is also called an e-Pin). **Do not purchase used CogLab registration codes!** If the registration code has already been used, it will not work for you. Each valid registration code can be used only once. After filling in all the text fields, click on the *Start Registration* button.
6. Your Web browser will connect with the CogLab server to verify your information. If the information is correct, a new window will appear. Make sure that the school name, instructor name, and class name are correct. If they are not, you may have accidentally accessed a different group than your instructor intended. The field marked as 'Your log-in ID:' lists your assigned log-in ID, which you will use to access your CogLab account and complete experiments. **You cannot change this log-in ID and will need to remember it. Write it down.**
7. Enter your first name, last (family) name, a password, and a security question and answer. For the security question and answer, try to pick a topic that will be easy for you to know the answer but would be difficult for anyone else (e.g., the name of your first pet).
8. Click on the *Apply* button. Your Web browser will again connect with the CogLab server to save your data and register your account. If all of your information is valid, your account is ready to go! When your information is saved, your registration code will be marked as being used.
9. When your data is saved, your Web browser will load a new window that lists all the properties of your CogLab account. Especially important is the log-in ID and password. Print or save this Web page for your records. (*Note:* some pop-up blockers will prevent this window from appearing. If you data does not appear, click the link below the text fields to view this page. Go to the CogLab Browser Check page for details.)
10. To start doing experiments, point your Web browser to http://coglab.cengage.com. Select the experiment that you want to perform by clicking on the link. Read the information and instructions carefully. At the bottom of the page are two text fields and two buttons. Enter your log-in ID and password and then click on the *Submit information* button. After your log-in information is verified, the *Start experiment* button can be selected. Click on the *Start experiment* button to open a new window where the experiment will take place. You need to read the instructions before you can complete the experiment!
11. At the end of the experiment, the browser window will load a summary of your data for the experiment. When you see this window, you are finished with the experiment.

If you have any problems, contact technical support at
http://coglab.cengage.com/support/techsupport.html

Welcome to Principles of Pharmacology and Toxicology (BIOL 3020U)

CALENDAR DESCRIPTION: This course will provide an overview of the action and toxicity of drugs that affect the autonomic nervous system, the central nervous system, and cardiovascular function in both normal and pathological conditions. Topics include the distribution, metabolism, and biotransformation of drugs, including the enzymes responsible for the conversion to toxins, pharmacokinetics, the role of receptors in drug action, toxic drug interactions, toxicity testing, toxicological effects of food, food additives, household and industrial products or wastes, factors influencing toxicity, acute and chronic toxicological effects.

Instructor: Professor Sean Forrester
Office: UA 4018
Tel. 2937
Email: Via Blackboard
Consultation times: by appointment

TEACHING ASSISTANT

Micah Callanan
Sarah Abdelmassih

Email: Blackboard

CONTACT HOURS

3 hours total per week (3 hours of lectures weekly)

LECTURES

Mondays	12:40 pm - 2:00 pm	Software and Informatics Resea 2060
Wednesdays	12:40 pm - 2:00 pm	Software and Informatics Resea 2060

EVALUATION:

Quiz 1 **5%**	**October 11** (In class)
Quiz 2 **5%**	**November 8** (In class)
Midterm exam **30 %**	**October 25**, 2017; 12:40-1:40pm SIR2060
Assignment **5%**	**Due Date:TBA**
Writing Assignment **10%**	**Due Date:TBA**
Final exam **45 %**	**Date TBA**

Professor Sean G. Forrester
September, 2017

ASSIGNMENTS

There will be 2 assignments worth a total of 15% of your total mark. One assignment (5%) will be based on the lecture material and material from your text and will be posted on Blackboard when available. The second assignment (10%) will be a short writing assignment on a particular pharmacology topic. Students will be assigned their topic throughout the term. Assignments that are handed in late will be docked 10% per day. Assignments that are more than 2 days late will not be accepted.

Lecture Outline

SECTION	TOPIC	TEXT CHAPTER
Section 1:	Introduction to Pharmacology and Toxicology	*Chapter 1*
Section 2:	How Drugs and Toxins Act-Molecular Aspects	*Chapter 3*
Section 3:	Receptors	*Chapter 3*
Section 4:	Pharmacodynamics and Toxicology Testing	*Chapter 2*
Section 5:	Pharmaco and Toxicokinetics	*Chapters 8-10*
Section 6:	Drugs and Toxins Affecting the Autonomic Nervous System	*Chapters 12-14*
Section 7:	Drugs and Toxins Affecting the Heart	*Chapter 21*
Section 8:	Drugs and Toxins Affecting the Vascular System	*Chapter 22*
Section 9:	Drugs and Toxins Affecting the Respiratory System	*Chapter 27*
Section 10:	Drugs and Toxins Affecting the Central Nervous System	*Chapters 36-38*
Section 11:	Cancer Chemotherapy	*Chapter 55*
Section 12:	Antiparasitic Drugs	*Chapters 53 and 54*
Section 13	Drug Toxicity	*Chapter 57*
Section 14	Drug Dependence	*Chapter 48*
Section 15	Home Toxicology	
Section 16	Introduction to Environmental Toxicology	

Representative Text: Rang HP, Dale MM, Ritter JM, Flower RJ and Henderson G (2015) Pharmacology 8th edition ISBN 9780702053627 (**Note:** the representative text covers the pharmacology material. The toxicology material is from other sources)

Web Resource: The website www.studentconsult.com contains the complete text and figures from your textbook as well as a drug database. I encourage you to use this resource as much as possible. Further information can be found inside the cover page of your text.

Professor Sean G. Forrester
September, 2017

NON-CONTACT HOURS

Students should expect to spend on average about 3 hours per week out of class in reviewing theoretical material and reviewing literature for a pass in the subject.

OBJECTIVES

This is largely a lecture-based course with no laboratory or tutorial component. Students in this course are expected to have a good understanding of biochemistry and physiology. Students will be introduced to the properties of drug and toxin action at the molecular, cellular, organ and organism level. The course will cover these concepts by using examples from mammalian, specifically human, physiological systems. This course will provide students with the fundamental concepts required for more advanced courses in two areas of specialization - pharmaceutical biotechnology and environmental toxicology.

PLANNED STUDENT LEARNING EXPERIENCES

Students will be guided through the subject by structured lectures. The normal modes of teaching will be 3 hours of lectures per week. Students have the roles of active learners and have the responsibility of attending and actively participating in all planned student learning experiences, reading all relevant references pointed out during planned student learning experiences and undertaking such other private study as will benefit their learning towards the objectives of the subject. Although no minimum attendance is required, students must be aware that sessions are available only at the times specified and cannot be repeated.

Student feedback will be obtained anonymously and voluntarily at the end of each semester on the subject content and evaluation processes.

Assignments and Tests

General Information: If you have already written or submitted a Test, Quiz, or other Term Work, you cannot receive consideration for your performance on it "after the fact".
The normal Policy in the Faculty of Science for any missed Term Work is to re-weight the remaining work of the course to account for the missing grade, in accordance with the regulations given below for Term Tests, Assignments, Labs and Tutorials.
There are no Make-up Exams, Tests, Quizzes, or Assignments, but it is sometimes possible to make up missed or tutorials.

Mid-Term Test: If you miss a Science Term Test (e.g., a Mid-Term Test) due to illness or a death in the family, you must obtain the appropriate documentation (UOIT Medical Certificate, Death Certificate), and submit it to the course instructor within 3 days of missing the Test.

If you aware in advance that you cannot write a Test for any reason, you must discuss this with the Instructor of the Course at least 2 days before you are scheduled to write the Test.

Assignments: If you miss a Science Assignment or Term Paper, due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Certificate, Death

Certificate), and submit it to the Course Instructor indicated on the Blackboard site for the Course within 5 working days of missing the work.

If you know in advance that you may not be able to complete an Assignment or other Term Work (e.g. when you become ill before the Assignment deadline), you must discuss this with the Instructor of the Course at least 2 days before the posted deadline. It is your responsibility to check the Blackboard site for your courses to determine which Instructor (or TA) you need to contact. If you are unsure of the information required, please contact the Science Academic Advisor (Email: science.advising@uoit.ca) immediately. Failure to submit the appropriate documentation and contact the correct Instructor by the deadline may result in a zero grade for the assignment.

Students with Disabilities

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite

Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test. Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

Final Examinations

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@uoit.ca

Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

Faculty of Science Policies

Academic polices or the Faculty of Science can be found at
http://science.uoit.ca/undergraduate/current-students/academic-policies.php

Professor Sean G. Forrester
September, 2017

FACULTY OF HEALTH SCIENCES

HLSC 2400U: Introduction to Movement Neuroscience
Course outline for Fall 2017

1. Course Details & Important Dates*

Term	Section	Status	Course Type	Day	Time
F	A	3.0	Lecture	Thursday	5:10 pm – 6:30 pm
				Monday	9:10 am – 10:00 am
				Tuesday	1:10 pm – 2:00 pm 4:10 pm – 5:00 pm
			Tutorials	Wednesday	4:10 pm – 5:00 pm
				Thursday	3:10 pm – 4:00 pm
				Friday	10:10 am – 11:00 am 2:10 pm – 3:00 pm

Location	CRN #	Classes Start	Classes End	Final Exam Period
SIR 2060 UL10 UA3240 UL3 UA3240 UL8 UA3230 UL3 UL4 UL8	43316 43319 41746 41747 41748 42122 42534 43005 44101 44102	September 7, 2017	December 4, 2017	December 6-17, 2017

* for other important dates go to: www.uoit.ca >Current Students >Important Dates
Sept 20th, 2017: Last day to drop courses and receive a 100% tuition fee refund.
Oct 4th, 2017 Last day to withdraw from a course without academic consequences and receive a 50% tuition fee rebate, after this, withdrawals are indicated on transcript with a "W"

October 9th, 2017 Thanksgiving Day, no lecture
October 26th to 29th , 2017 Co-curricular period, no scheduled academic activites
Nov 17th, 2017 Last day to withdraw from fall semester courses
* for other important dates go to: www.uoit.ca >Current Students >Important Dates

Prerequisite(s): HLSC 1201 – Anatomy & Physiology II

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Nicholas Antony	TBD	N/A	Nicholas.Antony@uoit.ca
Office Hours: please email Nicholas.Antony@uoit.ca for appointment.			

Laboratory/Teaching Assistant Name	Office	Phone	Email
Erin Dancey Heather McCracken Antonia Karellas	TBD	N/A	Erin.Dancey@uoit.ca Heather.Mccracken@uoit.net Antonia.Karellas@uoit.net
Office Hours:			

3. Course Description

This course is designed to develop and extend basic concepts of the functional anatomy of the human nervous system into a broader comprehension of the neuroanatomical, neurophysiological, and cognitive-behavioural approaches prevalent within human movement and neuroscience. This is a foundation course that sets out to establish the core principles for Stage 3 comprehension and eventual graduate level study of the Human Motor System.

4. Learning Outcomes

Students who have successfully completed this course will have reliably demonstrated the ability to:

1. Describe the essential functional anatomy of the Brain, CNS, and Peripheral divisions of the nervous system.
2. Discuss the structural and functional principles of the reflex loop as a homeostatic mechanism.
3. Describe information transmission within the reflex loop
4. Discuss and summarize the essential mechanisms in the generation of action potentials.
5. Describe the different types of receptors and their specific functions.
6. Review the structure and physiology of central synapses.
7. Describe in detail the events that occur at the neuromuscular junction.
8. Discuss in detail the principles governing the spinal reflex control of skeletal muscle.

9. Discuss the functional anatomy of the Somatosensory System.

5. Course Design

The following chart is a *guide* to be used for this course. Lectures on the topics listed are followed by a tutorial on the subject area the following week. The purpose of the tutorials is to reinforce information provided in the preceding lecture and to engage students in critical thinking through the use of case studies and problem solving.

The topics listed for each date are subject to change. Dates for quizzes and exams will not change.

Week #	Format	Date	Topic
1	Tutorial Lecture 1	Sept 4-8 Sept 7	No tutorial Course introduction / syllabus / nervous system overview (Chapter 1)
2	Tutorial Lecture 2	Sept 11-15 Sept 14	No tutorial Neuroanatomy (Brain and Spinal Cord)
3	Tutorial Lecture 3	Sept 18-22 Sept 21	Neuroanatomy Physical and electrical properties of cells in the nervous system (Chapter 2)
4	Tutorial and Quiz #1 Lecture 4	Sept 25-29 Sept 28	Physical and electrical properties of cells in the nervous system Synapses and synaptic transmission (Chapter 3)
5	Tutorial Lecture 5	Oct 2-6 Oct 5	Clinical Membrane Physiology Somatosensory System (Chapter 6)
6	Tutorial Lecture and Quiz #2	Oct 9-13 Oct 12	Synaptic Transmission The Motor System (Chapter 10)
7	Tutorial Lecture 6	Oct 16-20 Oct 19	No tutorial Midterm Review
	Tutorial **MIDTERM**	Oct 30 – Nov 3 Nov 2	No Tutorial **MIDTERM**
8	Tutorial Lecture 7	Nov 6-10 Nov 9	Sensory Basal Ganglia, Cerebellum and Movement (Chapter 11)
10	Tutorial and Quiz #3 Lecture 8	Nov 13-17 Nov 16	Sensorimotor Peripheral Nervous System (Chapter 12)
11	Tutorial Lecture 9	Nov 20-24 Nov 23	Parkinson's Disease Spinal Cord and Movement (Chapters 13)
12	Tutorial Lecture and Quiz #4	Nov 27 – Dec 1 Nov 30	No tutorials Exam Review

6. Outline of Topics in the Course

This course is organized using a 'cells to systems' approach to study movement. It is a logical progression from the fundamental physiological processes regulating such things as nerve cell excitability to how the sensorimotor system generates movement.

7. Required Texts/Readings

REQUIRED TEXT – Covering lecture and tutorial content
Lundy-Ekman, Laurie
Neuroscience. Fundamentals of Rehabilitation. 4th ed. Saunders Elsevier
ISBN: 9781455706433

8. Evaluation Method

Active Participation in Tutorials (10%): Students must actively participate in tutorial activities. This includes, but is not limited to, assisting your group in the problem solving process and/or the answering of questions. **Simply attending the tutorials is not sufficient to earn Active Participation marks.**

Quizzes (15%): There are 4 quizzes in the course which will be administered during the specified tutorials. The lowest mark of the 4 quizzes will be dropped and the remaining 3 grades will each be worth 5%, contributing to 15% of the final grade.

Mid-term (35%): Will cover material presented in lectures and tutorials. The format of the exam will be discussed at a later date.

Final Exam (40%): Will cover material presented in lectures and tutorials following the mid-term. The format of the exam will be discussed at a later date.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information regarding grading can be found in Section 5 of the UOIT Academic Calendar.

9. Assignments and Tests

N/A

10. Accessibility

To ensure that disability-related concerns are properly addressed during this curse, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with their instructor as soon as possible. Students who require alternative testing and examination arrangements or other academic accommodations must contact the Centre for Students with Disabilities (B297) as early as possible to ensure that your needs can be met.

11. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education.

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Further information about academic misconduct can be found in the Academic Integrity link on you laptop.

12. Turnitin (NOT applicable)

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must inform their instructor at the time the work is assigned and provide with their assignment a signed Turnitin.com Assignment Cover sheet: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

13. Final Examinations

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

14. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via MyCampus.

15. NOTES:

Policy on Missed IN TERM Academic Work

If, for any reason, a student misses an in class assignment or test (including a midterm test) for a legitimate reason and can provide appropriate documentation within three (3) days, s/he will not be penalized. Legitimate reasons are illness or death in the family and appropriate documentation is an original UOIT Medical Statement signed by your health care provider or a photocopy of a death certificate respectively. Once the documentation has been proven valid it is the responsibility of the student to negotiate alternative arrangements with the course professor and set a new deadline for completion.

If a student misses a test without a legitimate reason or does not provide the proper documentation, s/he will receive a mark of zero.

If a student misses a set of assignment deadlines without a legitimate reasons or does not provide the proper documentation s/he will be penalized 10% per calendar day (Saturday and Sunday are included) and the piece of work will not be accepted after the third day.

If a student cannot complete a piece of academic work for any reason, it MUST be discussed with the course professor at least 2 days BEFORE s/he is scheduled to write, or submit, the piece of work. The course professor will make a decision on a case by case basis.

Policy on Missed Final Examinations

If, for any reason, a student cannot write the final exam on the assigned date, s/he must obtain an application for a Deferred Final Examinations form from the Registrar's Office or the Registrar's website and present it to the Faculty Office.

If a student knows in advance that s/he is unable to write a final exam the student is requires to give three (3) weeks notice to write a deferred exam. Each case will be decided on an individual basis.

If a student misses the exam for medical or compassionate grounds a request for deferral, along with supporting documentation, must be provided to the Faculty within five (5) working days after the scheduled writing of the examination.

The decision on all students' request for a deferral will be sent to their mycampus email address. All deferred examinations will be scheduled no later than the end of the first week of classes in the following semester.

The final exam policy can be found on the UOIT Registrar's Office website.

HEALTH SCIENCES

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

HLSC 3470: Kinesiology I: Anatomy of Human Movement

Course outline for **Fall 2017**

1. Course Details & Important Dates*

Term	Course Type	Day	Time
F	Hybrid	Friday	12:40 pm - 2:00 pm

Location	CRN #	Classes Start	Classes End	Final Exam Period
UA1140	41201	Sept 08, 2016	Dec 05, 2016	Dec 7-18, 2016

* for other important dates go to: www.uoit.ca >Current Students >Important Dates and Deadlines

Labs
Location: **Simcoe Building/J-Wing J115**

	Time	**Instructor**
Tuesday		
CRN 41202	9:10 am to 11:00 am	Rufeyda Cosgun
CRN 41203	11:40 am- 1:30 pm	Brianna Yuill
CRN 41204	2:10 pm to 4:00 pm	Tracey Patrick
CRN 42125	4:40 pm to 6:30 pm	???
Wednesday		
CRN 43094	9:10 am to 11:00 am	Mahboobeh Zabihhosseinian
CRN 43356	11:40 am to 1:30 pm	Mahboobeh Zabihhosseinian
CRN 43358	2:10 pm to 4:00 pm	Mahboobeh Zabihhosseinian

* for other important dates go to: www.uoit.ca >Current Students >Important Dates

- Sept 20, 2017: Last day to drop courses and receive a 100% tuition fee refund.
- Oct 4th , 2017 Last day to withdraw from a course without academic consequences and receive a 50% tuition fee rebate, after this, withdrawals are indicated on transcript with a "W"
- Oct 9th,2017 Thanksgiving day, no classes
- Oct 26-29, 2017 Co-curricular period, no classes
- Nov 17th, 2017 Last day to withdraw from fall semester courses

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Dr. Bernadette Murphy	TBA	N/A	bernadette.murphy@uoit.ca
Office Hours: Please email bernadette.murphy@uoit.ca for appointment.			

Laboratory/Teaching Assistant Name	Office	Email
Rufeyda Cosgun Mahboobeh Hosseinian Tracey Patrick Brianna Yuill	Please email for appointment	rufeyda.cosgun@uoit.net mahboobeh.hosseinian@uoit.net tracey.patrick@uoit.net Brianna.yuill@uoit.net

3. Course Description

Kinesiology I: Anatomy of Human Movement covers the applied anatomy of the musculoskeletal system. It uses a regional approach to develop a sound understanding of regional structures, and their role in producing movement, both individually and synergistically as part of movement patterns and composite movements. It is a fundamental foundation course for Kinesiology II: Biomechanics of the Musculoskeletal System, Motor Control and Learning, Exercise Prescription and Exercise Rehabilitation. The course is a hybrid course which uses a combination of on-line lecture material and quizzes, face to face classroom time for case studies and concept reinforcement and "hands on" laboratories in addition to models and specialized 3-D computer software to aid students in their learning.

4. Learning Outcomes

Students who have successfully completed this course will have reliably demonstrated an ability to:

- Evaluate muscle structure and types of muscle contractions.
- Identify on 3-D models and live models the muscle groups of the limbs, trunk and neck.
- Recognize features and prominences of bones.
- Evaluate and discuss the role of the supporting ligaments of the vertebral column, hip, knee, ankle, shoulder and elbow.
- Describe the origins and insertions of the muscles of the vertebral column, limbs and trunk, and be able to identify these structures on the bony skeleton.
- Discuss and practically demonstrate the actions of vertebral column, trunk and limb muscles.
- Comprehend the components of the peripheral nervous system and discuss the muscles innervated by the main branches of the cervical, brachial, lumbar and lumbosacral plexii.

5. Course Design

The course uses a combination of **on-line lecture material**, face to face classroom time for problem solving and concept reinforcement, and labs with 3D models and computer software. "Dynatomy" is the course software which helps students learn about how muscles attach to bones and demonstrates the actions produced by various muscles. Video clips of a real person demonstrating the various actions are posted on Blackboard so that you can observe the actions of individual muscles performed by a live model. The course has some posted notes on muscle origin insertion charts which you can download, in addition to the course powerpoints, Dynatomy software and textbooks.

There is also a **COMPULSORY lab session**. This weekly session is compulsory because the best way to learn anatomy is in 3D by practicing on the skeleton and each other in lab classes. Your Lab will be checked each week at the end of the class. **You will be tested weekly throughout the year in class via quiz, and by your TA in lab. You will be asked to demonstrate the anatomical location of muscle origins and insertions on the skeletons and well as describing the muscle action.**

Learning Anatomy is like learning a whole new language. The best way to learn is with lots of practice. It is a not a subject that can be crammed at the last minute.

6. Outline of Topics in the Course

Lecture Date & Textbook Chapter	Lecture Topic	Lab Dates and Topics
Friday Sept 8 (Chapter 1-3)	Course Overview Bones and Muscles Review Introduction to Anatomy – classifications, characteristics and types of movement Muscles and Joint Introduction **No in class quiz**	**Sept 12 & Sept 13** Lab 1: Basic Anatomical Terms Review the on-line lectures on anatomical planes, positional terms and basic movement categories Bones – features, shapes and superficial landmarks **Lab Quiz 1 at end of lab**
Friday Sept 15 (Chapter 4)	Shoulder – joint structure, bones and ligaments Scapulothoracic muscles **Shoulder/Muscle and Joint in-class online quiz - 1%**	**Sept 19 & 20** No Lab Quiz Lab 2: Shoulder Lab (One)
Friday Sept 22 (Chapter 4)	Glenohumeral muscles	**Sept 25 & 26**

	Elbow and Forearm – joint structure, bones, ligaments and muscles **Shoulder/Elbow in class online class quiz 1%**	**Lab Quiz 2 at start of lab** Lab 3: Shoulder Lab (Two)
Friday Sept 29 (Chapter 5)	Forearm and Hand – bones Wrist – joint structure, ligaments and muscles Nervous System Upper Limb **Forearm and Wrist in class online quiz - 1%**	**Oct 3 & 4** **Lab Quiz 3 at start of lab** Lab 4: Elbow, Wrist and Hand
Fri Oct 6* (Chapter 6-7) ***Thanksgiving Mon Oct 9**	Peripheral Nervous System (cervical and Upper Limb) – review spinal roots, learn cervical and brachial plexii Plus Upper limb Review **No in class quiz**	**Oct 10 & 11** **Lab Quiz 4 at start of lab** Lab 5: Elbow, Wrist and Hand part 2 finish lab Lab Quiz 5 at end of lab (Open Book-no marks use to prep for practical midterm) **Prac Exam Demo**
Fri Oct 13	**Midterm (Upper limb) -15%** **IN CLASS**	**Oct 17 & 18** Midterm I- Lab Practical -upper limb (15%) **IN YOUR REGULAR LAB SLOT**
Fri Oct 20 (Chapter 6)	Vertebral column- Vertebral column – regional differences in vertebra, ligaments, meninges and intervertebral discs, spinal cord structure, Vertebral column-neck muscles **Vertebral column in class quiz - 1%** **IN CLASS**	**Oct 24 & 25** **NO LAB QUIZ *LAB ATTENDANCE COMPULSORY** **Lab 6** Vertebral column Lab

Fri Oct 27 (Chapter 8)	**Vertebral Column (Thoracic and Lumbar) and pelvis lecture (ON-LINE ONLY)** CO-CURRICULAR PERIOD no in-class lecture **(on-line quiz 1%)**	**Oct 31 & Nov 1** **Lab Quiz 6 at start of lab** Lab 7 Vertebral column Lab
Fri Nov 3	**Vertebral column test (16%) IN CLASS** Lecture : Begin Pelvis – joint structure, bones and ligaments; include gluteal and rotator muscles; *****Listen to hip lecture on-line**	**Nov 7 & 8** Lab 7 Hip Joint 1: bones, ligaments, and hip muscles which do not cross the knee **(Lab completion mark)**
Fri Nov 10 (Chapter 9)	Knee – joint structure, bones and ligaments Knee and hip- muscles Knee - muscles **Knee & Hip online quiz - 1%**	**Nov 14 & 15** Lab quiz 7 at start of lab on hip bones & ligaments) **Lab 8 Hip and Knee muscles**
Fri Nov 17 (Chapter 9)	Ankle – joint structure, bones, ligaments and muscles **Ankle online quiz - 1% in class**	**Nov 21 & 22** **Lab Quiz 8: Hip & Knee** **Lab 9: Ankle Joint** **Lab Quiz 9 (Open Book no marks)**
Fri Nov 24	Peripheral Nervous System (Lumbar and Lower Limb) – review spinal roots, lumbosacral plexii **Lower peripheral nerves in class quiz 1%** Exam review	**Nov 28 & 29** **Lab Practical test 2 (10%) on lower limb** **IN LAB** **SLOT**

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.ca for support. Furthermore, please notify your professor if you are comfortable in doing so. This will enable them to provide any resources and help that they can.

7. Required Texts/Readings

Cael, C. (2011). Functional Anatomy: Musculoskeletal Anatomy, Kinesiology, and Palpation for Manual Therapists. Lippincott, Williams and Wilkins, Baltimore.
2) *Tortora, GJ and Derrickson, B. (2009) Principles of Anatomy and Physiology, 12th edition. John Wiley and Sons, Inc. - Includes textbook, CD ROM and WebCT based resources.*
*or other similar anatomy and physiology introductory text similar to that used in HLSC 1200U.+

Dynatomy software should already be installed on your laptop.

Helpful Textbooks*:*

Neumann, Donald A. (2002) *Kinesiology of the musculoskeletal system : foundations for physical rehabilitation.* St. Louis : Mosby.
Martini, F. H., Timmons, M. J., & McKinley, M. P. (2000). *Human anatomy* (3rd ed.). Upper Saddle River, New Jersey: Prentice-Hall International, Inc.
Palastanga, N., Field, D., & Soames, R. (2002). *Anatomy and human movement: Structure and function* (4th ed.). Oxford: Butterworth-Heinemann.

Referenced Materials

Behnke, R. (2001). *Kinetic Anatomy*. Champaign, Illinois: Human Kinetics.
Gerhardt, J., & Russe, O. (1975). *International SFTR method of measuring and recording joint motion.* Bern, Switzerland: Hans Huber publications.
Luciano, D. S., Vander, A. J., & Sherman, J. H. (1978). *Human function and structure*. Auckland: McGraw-Hill International Book Company.
Martini, F. H., Timmons, M. J., & McKinley, M. P. (2000). *Human anatomy* (3rd ed.). Upper Saddle River, New Jersey: Prentice-Hall International, Inc.
Palastanga, N., Field, D., & Soames, R. (2002). *Anatomy and human movement: Structure and function* (4th ed.). Oxford: Butterworth-Heinemann.
Netter, F. (1995). *Interactive Atlas of Anatomy*
Travell, J. G., & Simons, D. G. (1997). *Myofascial pain and dysfunction: The trigger point manual* (Vol. 2: The lower extremities). Philadelphia.
Warfel, J. H. (1993). *The head, trunk and neck* (6th ed.). Philadelphia: Lea and Febiger.

Additional readings may be assigned or recommended during the course

8. Evaluation Method

Lab exercises, quizzes, written midterms using a combination of written and diagram based multi-choice, questions and written answers, practical lab tests and a final exam.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

9. Assignments and Tests

1) Weekly In-class Quizzes (10%): There will be **on-line quizzes held at the END of the lecture slot every week** (except week one or when there is a midterm running in class). They **will test the on-line lecture for that week** which will be reviewed in class prior to the quiz.

2) Lab Quizzes (10%) These will usually be at the START of each lab and will test material from the previous week's lab.

3) Upper limb practical test-(10%) Upper limb and Basic Anatomy Practical
Format: Be able to identify structures and their function on the skeletons and on pictures e.g. Letter A might be on the medial epicondyle of the humerus, you might be asked to name the bony prominence and/or the name of a muscle originating there
Where: **In LAB**
When: **Oct. 17 & 18 in your regular lab time**

4) MIDTERM 1 (written, in lecture SLOT): (15%) Upper limb
Format: **30 multi-choice, 30 diagram labeling questions and 15 marks of short answer on muscle origins and insertions**
Where: **IN LECTURE**
When: **Friday October 13th.**

5) MIDTERM 2- (16%) Vertebral column
Format: multi-choice, diagram labeling and short answer
Where: **IN LECTURE**
When: **Fri Nov 3**

6) Lower limb practical test-(10%) Upper limb and Basic Anatomy Practical
Format: Be able to identify structures and their function on the skeletons and on dynatomy pictures e.g. Letter A might be on the medial condyle of the femur, you might be asked to name the bony prominence and/or the name of a muscle inserting there
Where: IN LAB
When: Tues Nov 28 and Weds Nov 29 in your regular lab time

7) FINAL EXAM: (30%) Exam on Vertebral column, Hip, Knee, Ankle and Peripheral Nervous system
Format: multi-choice, diagram labeling and short answer
Where: **Exam hall TBA**
When: TBA
The exam will be approximately 50-60% on lower limb, 20% peripheral nervous system and 20-30% vertebral column.

Labs
Lab sessions are designed to complement the lectures and associated readings. **Attendance at all lab sessions is compulsory**. If you are unable to attend a lab, please make alternative arrangements with the lab tutor. To prepare for the lab sessions, please complete the lab worksheet posted on-line before you attend the lab.

Missed quizzes and tests: If you miss any assessment, you require a written medical note which must be submitted to the Faculty of Health Sciences office within 3 days of the missed assessment. Timing of make-up midterms will be arranged by the course instructor upon confirmation by the faculty office.

10. Accessibility

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with the professor as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite. Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.

Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

11. Professional Conduct (if applicable)

[Include faculty statement on professional conduct, if applicable.]

12. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

13. Turnitin (if applicable)

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

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Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

15. Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Health Sciences.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Health Sciences encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the Faculty of Health Sciences Associate Dean Undergraduate Studies.

16. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

BIOL3610 Syllabus
Comparative Zoology
Fall 2017

Course Description

Provides a general knowledge of the biology of both invertebrates and vertebrates. Various concepts related to form, function, ecology and evolution will be emphasized and compared in the lecture material. Diversity within each phylum will be examined and adaptive explanations will be sought for how these organisms have adapted to the environment.

Course Details and Important Dates

Lecture CRN: 40112

Day	Time	Location
Friday	2:10 – 5:00 p.m.	UA2120

First lecture for fall term: Friday September 8, 2017
Last lecture for fall term: Friday December 1, 2017
Final exam period: December 6 to 17, 2017

** For other important dates click here*

Instructor Contact Information

Annette Tavares Tel. (905) 721-8668 ext. 3641
Office: UA3063 Email: via Blackboard only

Office Hours: Mondays 10:00 to 11:30 a.m. and Tuesdays 3:30 to 4:30 p.m. or by appointment any other time (please email via Blackboard for a specific time).

Marking TAs Contact Information

Zahra Mortaji Office: UA4220 Email: via Blackboard only

Office Hours: By consultation (please email via Blackboard email for appointment)

Sarah Abdelmassih Office: UA4220 Email: via Blackboard only

Office Hours: By consultation (please email via Blackboard email for appointment)

Course Design

Students will be guided through the subject by structured lectures, in-class discussions, quizzes and assignments. Assignments will be geared to achieve a deeper understanding of important concepts in zoology. The normal modes of teaching will be three hours of lectures per week delivered once a week. The first 1.0 to 1.5 hours will be dedicated to active learning activities while the last 1.5 hour of lecture will be a traditional lecture session. Students have the roles of active learners and have the responsibility of attending and actively participating in all planned student learning experiences, i.e. lectures, reading all relevant readings, in-class activities and undertaking such other private study as will benefit their learning towards the objectives of the subject. Although no minimum attendance is required, students must be aware that sessions are available only at the times specified and cannot be repeated. This also applies to any in-class activities – you must attend the class to get credit for the activity – no exceptions.

Learning Outcomes

On the successful completion of the course, students will be able to:

- Achieve a deeper understanding of important concepts of invertebrate and vertebrate zoology and biodiversity
- Develop a deeper understanding of phylogeny and taxonomy
- Understand the evolutionary relationships between different animal taxa
- Compare and contrast structure, function and adaptive significance of various features such as, but not limited to, integument, skeleton, reproductive structures, circulatory structures and digestive structures
- Hone written communication skills by researching and writing a term paper that allows a deeper exploration of a specific topic of interest

Required Text/Readings

- **Integrated Principles of Zoology 17th Edition** by C. P. Hickman, L. S. Roberts, S. L. Keen, D. J. Eisenhour, A. Larson and H. l'Anson. McGraw-Hill, New York - available at the campus bookstore (hardcopy, loose-leaf or e-book).

- The 16th edition may also be used.

- Note: there is a copy of the 16th ed. on 3-hour loan at the library. Please give the call number (QL47.2 .H54 2014) when making the request at the circulation desk.

Additional readings may be assigned or recommended during the course and will be posted on Blackboard.

Course Evaluation and Marks Distribution

Midterm Test	20%
(Format: multiple choice, short answer, short essay)	
Online Quizzes (3 x 5%)	15%
Assignments (4 x 5%)	20%
Final Exam: Cumulative/Date TBA	40%
Participation (in-class activities: 1 x 2%; 3 of 4 x 1% each)	5%

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

Test, Quiz and Assignment Due Dates

Midterm Test – October 20, 2017

- *Covers material from Sept.8 to October 6 (i.e. all material covered in lectures from beginning of term up to and including Molluscs*.
- *Format: Multiple choice, short answers, matching, fill in the blanks etc.*

Assignment Due Dates:

- *Assignment information/topics will be available on Blackboard. Announcements will be made when assignments have been posted.*

Assignment 1 – September 22, 2017
Assignment 2 – October 13, 2017
Assignment 3 – November 4, 2017
Assignment 4 – November 17, 2017

On-line Quizzes

- *Quizzes will be available online on Blackboard as indicated below and must be completed by 9:00 p.m. on the date indicated below. Details about readings for the quizzes will be available on Blackboard at the time the quiz is posted.*

	Topic	**Available on:**	**Due by:**
Quiz 1	Micro- and Macroevolution	Friday September 8	Thursday September 14
Quiz 2	Annelids	Monday September 25	Monday October 2
Quiz 3	Hemichordates/Chordates	Monday October 23	Monday October 30

Lecture Topic Outline for Fall 2017

Please note that this schedule is a proposed outline and coverage of material and the specified dates may be subject to change.

Date	Topic	Textbook Chapter
September 8	*Welcome Information, course expectations* Evolution Review; Speciation and Evolutionary Change	Chapter 6
September 15	Porifera Ice Breaker Code Activity	Chapter 12
September 22	Cnidaria and the Ctenophoran Dilemma	Chapter 13
September 29	Platyhelminthes	Chapter 14
October 6	Molluscs	Chapter 16
October 13	An Overview of the Arthropods	Selected sections of Chapters 19-21
October 20	**Midterm Test (first 1.5 hours of class)** Lecture - An Overview of the Echinoderms	Chapter 22 (selected)
October 27	Co-curricular Break – no class	
November 3	The Fishes	Chapter 24
November 10	The Amphibians	Chapter 25
November 17	Amniotes and Non-Avian Reptiles	Chapter 26
November 24	Birds (a.k.a. Avian Reptiles)	Chapter 27
December 1	Mammals	Chapter 28

Faculty of Science Academic Policy Summary

For complete Academic Policy details, please click Academic Policies for the Faculty of Science or see the Academic Policies link in the Important UOIT Links content area on the course Blackboard page.

***Missed Term Tests (Midterms)**:*
If you miss a Science test due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Statement, death certificate), and submit it to the Science Academic Advisor (science.advising@uoit.ca) within **3 business days** of missing the test or assignment.

If you are aware in advance that you cannot write a test for any other reason, you **must** discuss this with the Science Academic Advisor and the instructor of the course at least **2 business days before** you are scheduled to write it. Exceptions to this deadline include Varsity Athletics, Religious Observances, and test-course conflicts. **Failure to submit the appropriate documentation by the correct deadline will result in a zero grade for the test.**

Submission of Assignments:
Preferred submission is as a hardcopy unless otherwise indicated by the instructor or TA. If you submit an assignment by email, it is your responsibility to ensure that the instructor or TA has received that assignment. If you have not received a confirmatory email from the instructor or TA within 24 hours of submitting the assignment, it is your responsibility to follow up by either emailing the assignment again or submitting a hard copy directly to the instructor or TA as soon as possible. You have the option of submitting assignments late but you will incur a late submission penalty of 10% per day (including weekends) deducted from the total mark for that assignment.

If you miss any Science assignment (e.g. weekly assignment, term paper deadline, or quiz) due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Statement, death certificate) and submit it to the course instructor indicated on the Blackboard site for the course within **3 business days of missing the work.**

If you know in advance that you may not be able to complete an assignment or other work due to a legitimate reason, you must contact the course instructor at least 2 business days before the posted deadline. If you are unsure of the information required or of who to contact, please contact the Science Academic Advisor immediately. Note that there are special deadlines for Varsity Athletics and Religious Observances. For these circumstances you must follow the correct deadlines.

Failure to submit the appropriate documentation and contact the correct instructor by the deadline will result in a zero grade for the assignment.

***PLEASE NOTE:** If you have already written or submitted a test, quiz, or other term work, you cannot receive consideration for your performance on it after the fact; regardless of the reason for your poor performance.

When a student has sufficient grounds for special consideration (such as documented illness or death in the family) the normal policy in the Faculty of Science for any missed term work is to re-weigh the remaining work in the course to account for the missing grade, in accordance with the regulations given below for term tests, quizzes, assignments, labs, and tutorials. Students who do not provide sufficient grounds, as determined by the course instructor, will receive a grade of zero for the missed work.

There are no make-up exams, tests, quizzes, or assignments. There is no option to complete or submit any term work once the term has ended and the final exam period has started. Also there will be no option to do alternative work (extra assignments, or other 'special' activities to make-up missed term work or in an attempt to improve your grade.

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.ca for support.

Final Examinations and Final Grades
Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious obligations may make arrangements to write a deferred examination. These students

are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

If you miss or anticipate missing a final exam in a Science course you must obtain the appropriate supporting documentation (UOIT Medical Statement, death certificate) and complete the Application for Deferred Final Examinations.

All forms must then be submitted to the Science Academic Advisor by the deferred examination deadline. The deadlines are as follows:

For missed exams due to illness or other unanticipated reasons the deadline is five calendar days after the date of the scheduled examination (e.g. if the exam was on a

Monday, the deadline would be Saturday of that week - a fax sent on the Saturday and picked-up by the Advisor on Monday would be acceptable).

If you find you are not able to get supporting documentation by the deadline, please submit your Application for Deferred Final Examination by the deadline and discuss other arrangements with the Advisor. If you are not sure whether or not your circumstances warrant special consideration, you should speak to the Academic Advisor immediately. Failure to submit the appropriate documentation by the deadline may result in a zero grade for the exam.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

***Final Examination Deferrals**:*

All deferred Fall and Winter final examinations for Science exams will be written during the week before the first week of classes in the next academic term and students are expected to be prepared to write at that time (e.g. April deferred exams are written during the week before classes begin in May). All deferred Spring and Summer exams will be written the week following the end of the exam period. Students must notify the Academic Advisor on their Application for Deferred Final Examinations of any reason why they may not be able to write at that time. The Science Academic Advisor will contact all students via email within three days of receiving the Application to inform them of the decision and to confirm the time and location of the exam(s) if appropriate.

PLEASE NOTE: Students who have legitimate grounds for missing a test/exam should not write the exam expecting to later decide whether or not the exam will count. If you choose to write an exam under any circumstances the decision is irreversible. If you are concerned about your ability to perform on the exam, you should speak to the Science Academic Advisor about your options in advance of the exam. Please contact the Science Academic Advisor via: science.advising@uoit.ca.

Final Examination Viewing:

Students wishing to view their final exam must submit a written request no later 1 week (7 days) after the release of final grades for that semester, stating why they would like to view the exam. Reasons may include, to calculate the final numeric grade (in cases where it is difficult to infer) or to determine which items of the course material gave you the most difficulty. To request an exam view, please complete the Science Final Exam View Request form and submit it to the course instructor via email. There is no fee associated with viewing a final exam.

Students will have 15 minutes to look over their final exam. Only the use of a calculator is permitted during the exam view appointment. No writing instruments, cell phones or other electronic devices will be permitted. Missed exam view appointments will not be rescheduled.

Please note, this is an opportunity for students to view their answers and see where any mistakes were made. As per UOIT policy (section 5.24.5.1) unless a clerical error has

occurred, instructors may not make changes to the final grade awarded in a course as a result of an exam view. If, after viewing the final exam script, you wish to dispute the final grade awarded, you will need to submit for a Final Grade Appeal through the Registrar's Offices. For more information on Final Grade Appeals, please refer to section 5.11.2 of the UOIT Academic Calendar or contact the Science Advising Office.

***Final grades**:*

Final grades are posted to MyCampus by the Registrar's office (RO) approximately one-and-a-half weeks after the end of the final exam period. Official grades are released by the RO only and your final grades cannot be released by anyone else.

Please do not contact your instructor for this information. Grades will be posted in accordance with the Grading Scale as indicated in Section 5.8 of the UOIT Academic Calendar.

Your final exam grades will not be posted on Blackboard, but you will be able to infer your grade based on your final exam grade and your term work grades. Please note that there are no options to do extra assignments or other activities to make up for unsatisfactory performance in a course.

Student Conduct

Lecture and Laptop Etiquette:

Stay on Task - Stay focused, and stay engaged. Remember, you are in the classroom to learn. Constantly remind yourself why you are here!

Don't Distract Others - Don't distract others with your computer. Research shows that if a flashy image is in an individual's line of sight, no matter how hard they try, their concentration will shift to the flashy, moving object on your computer screen. Be respectful of the fact that others are in lecture to learn. Also don't distract others with excessive talking in class. Your instructor WILL ask you to leave if you are talking excessively during the lecture.

Don't Distract Yourself - Keep non-classroom related communication to a minimum. This includes chat. Chat should not be running during classroom hours. There is no need to check email during class. Check before class begins, during official break (if given) or at the end of class. It is your responsibility to be engaged! Take notes, think about what the lecturer is saying, think of questions to ask to clarify material – be an active learner, not a passive one!

Academic Integrity: Plagiarism and Cheating

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. **Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.**

Students are expected to be familiar with and abide by UOIT's regulations on **Academic Conduct (Section 5.15 of the Academic Calendar)** which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. **A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.**

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

Click here or click on the Academic Integrity icon on your desktop for further information on academic integrity.

Turnitin

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must provide with their assignment at the time of submission to the instructor a signed Turnitin.com Assignment Cover sheet: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services.

Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Freedom of Information and Protection of Privacy Act (FIPPA)

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the

inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at accessandprivacy@uoit.ca.

Religious Observances

It is Faculty of Science policy to provide special consideration for recognized holy days (Interfaith Calendar) which may be observed by our students. Though not all holy days

require students to be absent from school, accommodations may still be necessary in some cases. As a student, it is **your** responsibility to check the dates for all course work and exams on a regular basis and notify the Science Academic Advisor per the options below. Documentation which confirms your faith is required in all cases.

Please note:

1. If the holy day will conflict with scheduled labs and tutorials you must inform the Senior Lab Instructor or tutorial TA of any potential conflicts at least 7 business days before the scheduled meeting time of the lab or tutorial.

2. If the holy day will conflict with the due date for an assignment you must inform the instructor at least 7 days before the due date.

3. If the holy day will conflict with tests or exams you must inform your instructors and the Science Academic Advisor of any potential conflicts at least 7 business days prior to the date of the test/exam. Note that the deadline for final exams is at least three weeks prior to the examination period as per the Final Exams policy below.

Failure to contact the appropriate person by the deadline will result in special consideration not being granted. Note that the dates indicated on the website above are the dates which will be recognized by the Faculty of Science. Should your holy day fall on alternate dates (e.g. those holy days which are based on lunar cycles) you will be required to provide additional proof of the date of your holy day by the deadline as specified above.

UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

Sexual Violence Policy

If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

FACULTY OF HEALTH SCIENCES

HLSC 3410U: Human Motor Control and Learning Course outline for Winter 2017

1. Course Details & Important Dates*

Term	Section	Status	Course Type	Day	Time
F	A	3.0	Lecture	Tuesday	5:10 pm to 6:30 pm
			Labs	Thursday	9:10 am to 11:00 am
			Labs	Thursday	11:10 pm to 1:30 pm
			Labs	Thursday	2:10 pm to 4:00 pm
			Labs Labs Labs	Friday Friday Friday	9:10 am to 11:00 am 11:40 am to 1:30 pm 2:10 pm to 4:00 pm

Location	CRN #	Classes Start	Classes End	Final Exam Period
Lectures: UB UP1500	71033	Jan. 8, 2018	Apr. 9, 2018	Apr. 11-22, 2018
Labs: J115	71034 71219 71760 73256 73257 73258 73938			

Labs: Four labs will span the semester and last for 2 weeks each

Prerequisite(s): HLSC 3470 – KINE I: Anatomy of Human Movement

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Nicholas Antony	TBA		Nicholas.Antony@uoit.ca
Office Hours: TBA Please email Nicholas.Antony@uoit.ca for immediate appointment			

Laboratory/Teaching Assistant Name		Office	Phone	Email
Lab Manager: Teaching Assistants:	Ian Barker Antonia Karellas Brianna Grant Tracey Patrick	UA 3050		Ian.Barker@uoit.ca Antonia.Karellas@uoit.net Brianna.Grant@uoit.ca Tracey.Patrick@uoit.ca
Office Hours: TBA Please email Ian, Antonia, Brianna and Tracey for technical questions relating to the labs				

3. Course Description

This course develops a critical approach to the understanding of human movement. It will expand on the principles of applied neuroscience that were established in HLSC 2400 Introduction to Movement Neuroscience. The course will examine the neurological, physiological, psychological and behavioural principles underlying human motor control and motor learning.

Specific topics covered will include classification and measurement of motor performance, the role of sensory processes, memory and attention. Applications for clinical and coaching professions will be covered, by examining proper delivery of feedback and the structure of practice. It is intended that this course will establish a sound foundation for post-graduate study in clinical disciplines and care interventions used in movement rehabilitation.

4. Learning Outcomes

On the successful completion of the course, students will be able to:

1. The principles and established rules that govern interactions between components of the neural and musculoskeletal systems as they interact to produce movement.
2. The many theoretical approaches that drive motor control and learning research.
3. The relevant properties of the neural, muscular and skeletal systems and how they contribute to control of movement.
4. The contemporary issues and concepts involved in producing coordinated movement.
5. The way in which the motor system delivers the acquisition and retention of movements.
6. The neurophysiologic and behavioural basis of motor skill acquisition.
7. The methods for achieving maximum performance and retention of skills (athletic applications).

5. Course Design

The course will include a 1 hour and 50 minute lecture once per week. There will be six labs spread out over the semester and each student will have already registered for a specific lab time. Attendance is essential to both the lectures and labs, unless you have made a prior arrangement with the course instructor.

6. Outline of Topics in the Course

Week #	Format	Date	Topic
1	Lecture	Jan. 9	Introduction – Classification of Motor Skills (Ch. 1)
	Lab	Jan. 11-12	**NO LAB**
2	Lecture	Jan.16	Measurement of Motor Performance (Ch. 2,3)
	Lab	Jan. 18-19	Reflexes and Reaction Time
3	Lecture	Jan. 23	Neuromotor Basis for Motor Control (Ch. 4)
	Lab	Jan.25-26	Reflexes and Reaction Time Cont.
4	Lecture	Jan. 30	Motor Control and Information Processing (Ch. 5,6)
	Lab	Feb.1-2	Muscle Function
5	Lecture	Feb. 6	Motor Performance and Action Preperation (Ch. 7,8)
	Lab	Feb. 8-9	Muscle Function Cont.
6	Lecture	Feb. 13	Attention and Memory (Ch. 9,10)
	Lab	Feb. 15-16	Electrical Signals
7	Lecture	Feb.27	Midterm Review
	Lab	Feb. 26-Mar. 2	Sensory Illusions Week 1
8	Lecture	Mar. 6	**MIDTERM**
	Lab	Mar. 8-9	Sensory Illusions Week 2
9	Lecture	Mar. 13	Motor Learning (Ch. 11,12,13)
	Lab	Mar. 15-16	***No lab***
10	Lecture	Mar. 20	Instruction and Augmented Feedback (Ch. 14,15)
	Lab	Mar. 22-23	Stroop Test and Perception
11	Lecture	Mar. 27	Practice Conditions (Ch. 16,17)
	Lab	Mar. 28-29	Stroop Test and Perception Cont.
12	Lecture	Apr. 3	Practice Conditions Cont. (Ch. 18,19) + **Final Exam Review**
	Lab	Apr. 5-6	Stroop Test and Perception Cont. (if needed)
13	Lecture	Apr. 10	No Lecture
	Lab	Apr. 9-13	***No lab***

*Tentative outline may be subject to change

LABORATORY COURSE OUTLINE

Learning Outcomes

Students who have successfully completed the laboratory component of this course will have participated in a sequence of experimental exercises and completed component two of the overall course assessment.

The laboratory components are as follows:

Laboratory One – Reflexes and Reaction Time

In this lab, you will investigate your reflexes and reaction times in response to a variety of stimuli and under a variety of conditions. You will examine some simple and complex reflexes from a volunteer, and look at reaction times from a volunteer given harmless visual and sound cues. You will also study the time required for a planned voluntary response to a cue.

Laboratory Two – Muscle Function

In this lab you will explore how muscles work by electrically stimulating the nerves in the forearm to demonstrate recruitment, summation and tetanus; we will also examine some of the properties of muscle fatigue.

Laboratory Three – Electrical Signals in Muscle

In this lab you will explore the electrical activity of skeletal muscle by recording an electromyogram (EMG) from a volunteer. You will examine the EMG of both voluntary and evoked muscle action, and measure nerve conduction velocity.

Laboratory Four - Sensory Illusions

Human sensation is the conscious perception of information from both internal and external environments. It is detected, transmitted and analyzed by the sensory neurons in the somatic nervous system and autonomic nervous system. In this laboratory, you will investigate mechanisms of sensory perception and experiment with techniques that send conflicting information to the central nervous system (CNS).

Laboratory Five: Stroop Test and Perception

This lab is divided into two sections. In part one you will replicate Stroop's 1935 experiment and demonstrate some physiological measurements that may indicate stress. In part two, you will examine the well-known 'size-weight illusion', which concerns the perceived heaviness of two objects that have the same weight but differ in their size

NOTES:

1. **Students are required to attend all labs**, and to conduct themselves in a professional manner. Be prepared to be an active participant (i.e. wear 'appropriate' clothing). Note: work, athletic and other commitments must be planned around the lab schedule.
2. Students must attend their assigned lab group. There is no trading of lab spaces.
3. Students will complete their assigned lab work over the allotted two-week time frame. Every third week a lab report will be handed in at the beginning of the next lab. Lab assignments are worth 25% of the course grade. Completed work must be reviewed and recorded by the lab instructor before the student leaves the lab each week. Students **MUST** attend their assigned lab period to receive their assignment marks. In cases where students have been excused by the instructor **PRIOR TO** the lab for illness, they may hand in a late lab assignment, provided they have a signed medical note. Students who are absent from the lab without prior permission will not be permitted to make up the lab and will forfeit the marks available in that lab. **NO EXCEPTIONS**.
4. Students will record all data collected for each task and analyze when required. You will be required to 'sign out' at the completion of each lab and you must have the lab instructor **evaluate and initial** your lab work at that time. Students who fail to do so will forfeit the marks available in that lab. **NO EXCEPTIONS**.
5. Students with unexplained absences from any lab will not be permitted to complete the lab assignment. If you must miss a lab for health or other serious reasons, call or e-mail the laboratory instructor before the lab.

7. Required Texts/Readings

Richard Magill and David Anderson
Motor Control and Learning: Concepts and Applications
(11th edition)
ISBN 10: 1259823997
ISBN 13: 9781259823992
Additional readings may be assigned or recommended during the course.

8. Evaluation Method

Lab Reports (20%):	5 Lab reports (4% each) = 20% - Students must **actively participate** in lab activities
Mid-term (30%):	Will cover material presented in lectures. Format will be discussed at a later date
Assignments (20%):	4 mini-assignments (5% each) will be posted and completed on blackboard
Final Exam (30%):	Will cover material presented in lectures throughout the course AND on the final 2 labs on Corticospinal Excitability. The exam is **CUMMULATIVE**. The format of the exam will be discussed at a later date (Exam time and date to be scheduled by the Registrar)

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

9. Assignments and Tests

Laboratory Reports:
Lab 1 – Due at start of Muscle Function Lab
Lab 2 – Due at start of Electric Signals in Muscle Lab
Lab 3 – Due at start of Sensory Illusions
Lab 4 – Due at start of Stroop Test and Perception Lab
Lab 5 – Due at last day of lectures

Assignments:
Mini-Assignment 1 – February 18th , 2018 at 11:59pm
Mini-Assignment 2 – February 26th, 2018 at 11:59pm
Mini-Assignment 3 – March 27th, 2018 at 11:59pm
Mini-Assignment 4 – Before final exam - TBA

Mid-Term Exam:
March 6th, 2018

Final Exam:
TBD - Scheduled by Registrar

10. Accessibility

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with the professor as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite. Students taking courses on the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.

Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

11. Professional Conduct (if applicable)

N/A

12. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop.

13. Turnitin (if applicable)

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity

review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must inform their instructor at the time the work is assigned and provide with their assignment a signed Turnitin.com Assignment Cover sheet: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

14. Final Examinations (if applicable)

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

15. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via MyCampus.

16. . NOTES:

Policy on Missed IN TERM Academic Work

If, for any reason, a student misses an in class assignment or test (including a midterm test) for a legitimate reason and can provide appropriate documentation within three (3) days, s/he will not be penalized. Legitimate reasons are illness or death in the family and appropriate documentation is an original UOIT Medical Statement signed by your health care provider or a photocopy of a death certificate respectively. Once the documentation has been proven valid it is the responsibility of the student to negotiate alternative arrangements with the course professor and set a new deadline for completion.

If a student misses a test without a legitimate reason or does not provide the proper documentation, s/he will receive a mark of zero.

If a student misses a set assignment deadline without a legitimate reason or does not provide the proper documentation s/he will be penalized 10% per calendar day (Saturday and Sunday are included) and the piece of work will not be accepted after the third day.

If a student cannot complete a piece of academic work for any reason, it MUST be discussed with the course professor at least 2 days BEFORE s/he is scheduled to write, or submit, the piece of work. The course professor will make a decision on a case by case basis.

Policy on Missed Final Examinations

If, for any reason, a student cannot write the final exam on the assigned date, s/he must obtain an application for a Deferred Final Examinations form from the Registrar's Office or the Registrar's website and present it to the Faculty Office.

If a student knows in advance that s/he is unable to write a final exam the student is required to give three (3) weeks' notice to write a deferred exam. Each case will be decided on an individual basis.

If a student misses the exam for medical or compassionate grounds a request for deferral, along with supporting documentation, must be provided to the Faculty within five (5) working days after the scheduled writing of the examination.

The decision on all students' request for a deferral will be sent to their mycampus email address. All deferred examinations will be scheduled no later than the end of the first week of classes in the following semester.

The final exam policy can be found on the UOIT Registrar's Office website:
http://www.uoit.ca/EN/main2/about/13525/14057/14152/Academic_Policies_and_Procedures/Finalexam.html

IMPORTANT UOIT POLICIES:

Academic Conduct

(University Calendar section 5.15)
Faculty members and students share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness, and mutual respect for the aims and principles of the pursuit of education. Academic misconduct impedes the activities of the University community, and is punishable by appropriate disciplinary action. The University and its members have the responsibility of providing an environment which does not facilitate the inadvertent commission of academic misconduct. Students and faculty should be made aware of the actions which constitute academic misconduct, the procedures for launching and resolving complaints, and the penalties for commission of acts of misconduct.

Academic misconduct

Academic misconduct includes, but is not limited to:

- Unreasonable infringement on the freedom of other members of the academic community (e.g., disrupting classes or examinations, harassing, intimidating, or threatening others).
- Violation of safety regulations in a laboratory or other setting.
- Cheating on examinations, assignments, reports, or other work used to evaluate student performance. Cheating includes copying from another student's work or allowing one's own work to be copied, submitting another person's work as one's own, fabrication of data, consultation with an unauthorized person during an examination, or use of unauthorized aids.
- Impersonating another student or allowing oneself to be impersonated for purposes of taking examinations, or carrying out laboratory or other assignments.
- Plagiarism, which is the act of presenting the ideas, words, or other intellectual property of another as one's own. The use of other people's work must be properly acknowledged and referenced in all written material.
- Obtaining by improper means examination papers, tests, or similar materials; use or distribution of such materials to others.
- Falsifying academic records, including tests and examinations, or submitting false credentials for purpose of gaining admission to a program or course, or for any other purpose.
- Misrepresentation of facts, whether written or oral, which may have an effect on academic evaluation. This includes making fraudulent health claims, obtaining medical or other certificates under false pretenses, or altering certificates for the purposes of misrepresentation.
- Submission of work when a major portion has been previously submitted or is being submitted for another course, without the express permission of all instructors involved.

Faculty members are encouraged to pursue suspected cases of academic honesty with formal charges. Students should, however, review the Academic Honesty policy for themselves at: http://www.uoit.ca/calendar/

Faculty of Social Science & Humanities

Introduction to Abnormal Psychology PSYC2030U
Course Outline for Fall 2017-18

Course Time: Wednesdays: 8:10-11:00
Course Location: Regent Theatre

Professor: Dr. Matthew S. Shane
Office: DTS-619, 6th Flr, 2 Simcoe St W (CIBC Building)
Email: matthew.shane@uoit.ca
Office hours: By appointment, by email, and on the course Slack workspace

Major Research Interests: Functional Magnetic Resonance Imaging; The Criminal Brain; Learning and Error Processing; Empathy

****Please do NOT email me through Blackboard. Lots of other ways to get a hold of me, and Blackboard does not notify when an email is waiting. If you need to contact me privately: email me directly. If you have a general question: throw it up on Slack.****

Teaching Assistant: Laleh Dadgardoust, PhD Candidate; laleh.dadgardoust@uoit.ca
Mark Snow, PhD Candidate; mark.snow@uoit.ca
William Denomme, MA Candidate; William.denomme@uoit.ca
Office hours: By appointment, by email, and on the Slack workspace

Course Description

Abnormal psychology – the study of psychopathological states – has been a primary focus of scientists and clinicians for centuries (millennia, even). And yet, still today we understand *so little* about the etiology and progression of these states. *So little.* To the point where we still struggle to even define what an 'abnormality' is.

In this course, we will explore this concept of abnormality, in general at first, and then by focusing on specific psychopathologies: for example, anxiety, depression, schizophrenia; substance abuse, autism, and sexual-/gender-related abnormalities. For each of these, interactive lessons will follow a similar course: we will begin by defining primary symptoms, will continue by evaluating potential etiological causes, and will conclude by considering current and future treatment options. Don't let this linear progression fool you into thinking everything can be wrapped up neat-and-tidy-like. Far from it. Indeed, to fully understand the nature of these abnormalities, it will at times make sense to pause and consider exactly what 'normal' is; and it will almost always be essential to consider the abnormalities through appropriate historical, social and cultural lenses.

Course content will be presented in an interactive manner, using a combination of lecture, interactive activities, and current video resources. By the end of this course, you should gain a firm understanding of the major diagnostic categories, and the various theoretical lenses through which one can research and treat psychopathology. It is also anticipated that you will gain an appreciation for the complexity of human behavior, and increased compassion for individuals with mental illnesses.

Prerequisites:

Introductory Psychology (Minimum grade: D).

If you do not meet this requirement, you must talk to me prior to the 2nd class. Special circumstances will be considered on a case by case basis, but only until the 2nd class.

Learning Objectives:

After completing this course, students should have:

1. Become exposed to a variety of perspectives on mental illness, including different definitions of exactly what mental illness is, and different methods for how to treat mental illness.

2. Developed some expertise in issues regarding psychiatric disorders and mental health, including issues related to diagnosis, assessment and treatment of various psychiatric disorders.

3. Gained an understanding of many of the environmental and biological factors that influence mental health, and the manner in which they may interact to facilitate both 'normal' and 'abnormal' development.

4. Developed skills for summarizing, evaluating, and critiquing research in the primary literature on clinical/abnormal psychology.

Course Website and Slack Channel

Course Website:

The course website is accessible through: https://uoit.blackboard.com/.
The course website will include this syllabus, a list of all required readings and assignments, links to interesting related web content, any scheduling updates discussed in class. Students should consult the website for updates and announcements on a regular basis.

Course Slack Workspace:

To facilitate communication and collaboration, I've also set of a Slack workspace for the course. Slack is a group communication and collaboration platform, which I want to use to help create an online class forum where you can ask questions, post thoughts, get in touch with me and the TAs, communicate with other students, study collaboratively, etc. You will all receive an email invite to the workspace, and I would encourage you all to accept the invite and check Slack out. Nothing posted on Slack is mandatory, but I expect it to serve as a very helpful resource for all of you.

Required Materials

Course Textbook:

Barlow, D.H., Durand, W.M., Stewart, S.H., & Lalumiere, M.L. (2013). Abnormal Psychology, 4th Edition. Nelson Education.

There is a 5th edition of the textbook that has just come out, but that is not the version we are using in this course. So please make sure you purchase the 4th edition, which remains broadly available. There are also many used copies around.

Can you purchase used copies of the textbook? Sure, if you can find used copies for the 4th edition, feel free. It has been in circulation for 3 years, so it's quite possible used versions exist.

Can I rent an online version of the textbook? Yes, if you wish you may purchase an e-book version of the texts online at www.coursesmart.com. Advantage: the online versions are considerably cheaper. Disadvantage: you only rent the text for the term; while e-texts now allow for online note-taking and highlighting, they still aren't quite the same to study from as a true bound book.

Can you use the 3rd edition of the textbook instead, or a different textbook? All I can say is that this isn't a great idea. Some of the examples used in class will follow directly from the textbook, and some of the exam questions are likely to come directly from the text. Thus, your chances of getting a high grade in this course will increase considerably if you use the most recent version.

Attendance:

This section seems sort of unnecessary, doesn't it? We all know that attendance is going to be highly tied to your eventual grade in the course. So much so that I've included it in the "Required Materials" section of the syllabus.

If you miss a class, you'll want to obtain notes from a classmate. It is your responsibility to be aware of all material presented in class, including announcement of quizzes or exam dates, of additional readings, of changes to the schedule, etc.

Evaluation

Course evaluations will consist of the following:

Assignment	% of Final Grade
Two in-class tests[1]	25%
One final exam[2]	30%
Case study assignment[3]	20%
Total	**100%**

[1] In-class tests will be multiple choice, and will cover material from both lectures and readings. While I do not have a specific formula for testing reading vs. lecture material, you can confidently assume that lecture material will carry considerable weight on tests and exams. These tests will non-cumulative; each will cover only material since the previous test.

[2] The final exam will be multiple choice, and will cover material from both lectures and readings. While I do not have a specific formula for testing reading vs. lecture material, you can confidently assume that lecture material will carry considerable weight on tests and exams. This final exam will be non-cumulative. Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Other Academic Policies

Policy for missed tests:

It is, obviously, imperative that you attend the in-class tests. And so it is strongly recommended that you notify me in advance if you will be unable to attend class on the date of a test. With sufficient preparation, the opportunity to write a make-up exam may be possible. However, leniency will be granted for students only under emergency situations, *and when appropriate documentation is supplied.* If the missed test is due to illness, you must submit a completed UOIT Medical Statement to the Academic Advising Office within 5 business days of the missed exam/deadline. Please note: All UOIT Medical Statement forms must be completed, signed and dated by the treating physician no later than 24 hrs. after the missed exam/deadline. If the missed work is due to extreme compassionate circumstances (e.g., death in the family, etc.), relevant documentation is required. Please contact the Academic Advising Office for details.

Policy for missed final exam:

If, due to exceptional circumstances, a student has missed the final examination he or she may apply for a deferral using the Application for Deferred Final Examination. Supporting documentation (Medical Statement, etc., as listed above) is also required, and must be submitted to the Academic Advising Office within 5 business days of the missed exam. Further information can be found in section 5.24.1.5 in the Academic Calendar.

Students who are unable to write a final examination when scheduled due to religious obligations may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

Academic Advising Office
55 Bond St East Rm 403
E: sshadvising@uoit.ca
T: 905-721-8668 x 3838
F: 905-721-3372

Policy for late assignments:

Papers are due on the last day of class, which should provide everyone with ample preparation time. Thus, barring specific unavoidable circumstances, little leniency will be provided for late assignments (they will be docked 10% for each day that they are late). If you anticipate something preventing you from submitting your paper in time, please let me know as soon as

possible – these circumstances will be handled on a case-by-case basis. After the fact, without medical documentation (covering *the majority of the semester*), little leniency will be provided.

Classroom Courtesy:
While it is difficult to get completely away from lecture-based curriculum, my goal is to keep the class as interactive as possible. I thus want each student to feel welcome to express his or her views, while showing respect to others. Treat others as you would like to be treated. You can disagree with a student (or with me!) but please do so politely – comment on ideas rather than the person.

Laptops and Cell Phones:
Laptops are, of course, allowed in the classroom, but please limit their use to note-taking. And please put all cells on silent.

Office hours:
Office hours are by appointment only, and we will make every effort to find a mutually convenient time to meet. It is our goal to provide each student with all of the assistance that s/he needs to succeed in this course. If you are having difficulties in the class, are struggling with any of the material, or are simply curious about abnormal psychology, do not hesitate to arrange a meeting with any of the TAs or myself. The slack channel is also another fantastic way to get in touch with us very quickly.

Accessibility:
Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services in a timely manner, and provide relevant and recent documentation to verify the effect of their disability and to allow the University to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. [NOTE: Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Academic Integrity:
Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aims and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offences. The regulations also describe the procedures for dealing with allegations, and the

sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

COURSE CALENDAR

Date	Topic	Readings	
Section 1: What is Abnormal?			
Sept 13th	What is Abnormal? And what is Abnormal Psychology?	Chapter 1, pgs 1-9	
Sept 20th	Historical and Contemporary Perspectives on Mental Illness	Chapter 1 pgs. 9-end; Chapter 2	
Sept 27th	An Integrative Model of Mental Health and Mental Illness	Chapter 9	
Oct 4th	Methods for Assessment, Diagnosis and Research	Chapter 4	
Oct 11th	**Midterm 1 – *Begins at 9:00AM***		
Section 2: Anxiety, Depression and Psychosis			
Oct 18th	Anxiety Disorders	Chapter 5	
Oct 25th	Depressive Disorders	Chapter 7	
Nov 1st	Psychotic Disorders Substance Use and Addictions (Guest lecture: William Denomme, MA candidate)	Chapter 13 Chapter 11	
Nov 8th	**Midterm 2 – *Begins at 9:00AM***		***Last day for optional ½ page case study summaries**
Section 3: Personality, Identity and Neurodevelopmental Disorders			
Nov 15th	Personality Disorders	Chapter 12	
Nov 22nd	Developmental Disorders (Guest lecture: Isabelle Simard, MA) Neurocognitive Disorders	Chapter 14; Chapter 15	
Nov 29th	Treatment and Legal Issues	Chapter 16	***Case Studies are due Nov 29th, <u>but will not have late marks deducted as long as they are submitted by Dec. 6th.</u>**

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

FACULTY OF SCIENCE

BIOL3060: Fundamentals of Neuroscience, Winter, 2018

1. Course Details & Important Dates*

Term	Course Type	Day	Time
W	Lecture	Mon	3:40-6:30pm SIRC 3110
	Lab	Mon	8:10-11am / 12:40-3:30pm UB 4085

Location	CRN #	Classes Start	Classes End	Final Exam Period
SIRC 3110	70085	Jan 8	Apr 9	Apr 11-22

* for other important dates go to: www.uoit.ca >Current Students >Important Dates and Deadlines

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Jason Chung - lectures	UAB439	-	jason.chung@uoit.ca
Office Hours: email by appointment only (Do not email via blackboard)			

Lab TA Name	Office	Phone	Email
Sabrina Gallant/Tamara Dzikewicz	-	-	Via Blackboard
Girija Kothari - Lab technician	Office Hours: by appointment.		

3. Course Description

Neuroscience is the scientific study of nervous systems. It includes the study of the nature and functioning of the nervous system at all levels, from the molecules that make up individual nerve cells and the transfer of information from one nerve cell to another, to the complexities of how thoughts, emotions and behaviours are produced.

Neuroscience is at the interface between biology and psychology. It is unique in that it makes use of a variety of methods and investigations from a wide range of traditional disciplines. To understand the nervous system and how it works requires knowledge of anatomy, molecular biology, biochemistry, pathology, physiology, pharmacology, psychology and zoology. Furthermore, as our knowledge of neuroscience increases, it has broad philosophical, social and legal implications.

We will cover the gross, as well as cellular structure and function of the nervous system. We will explore neuronal physiology at the cell and molecular levels in order

to better understand the complex mechanisms of intercellular communication in the nervous system. We will examine the inter-relationships of the various parts of the nervous system; the brain, spinal cord, peripheral nervous system and autonomic nervous system, and begin to understand how the activity of even small groups of neurons can lead to the activity of circuits specialized for all of our sensations, movements, specific goal directed behaviours, and emotions. Neuroplasticity of the brain will be introduced by investigating questions such as, how does the nervous system adapt to changing environments, how does the brain respond to damage, how does the brain change with age or when learning and memory occurs. The mediation of complex functions by the brain such as sleep, emotion, initiation and control of body movement will also be discussed.

The laboratory part of this course will complement the lecture topics by allowing students to interact with and examine neural systems.

4. Learning Outcomes

On the successful completion of the course, students will be able to:

1. Demonstrate an understanding of how the brain underlies all mental processes and is intrinsic to our sense of self.
2. Explain how individual neurons function and connect to form our nervous system.
3. Describe how different regions of the brain perform specific functions
4. Understand how these different brain regions interact in precise ways to allow our body to operate.
5. Relate the functional consequences of impairment or damage to various brain regions.
6. Identify different key brain structures.
7. Prepare a document compiling recent advances in a chosen neuroscience topic.

5. Course Design

The course is comprised of weekly lectures (details in table below) and a bi-weekly laboratory class.

You must pass the laboratory component of the course in order to pass the whole course. Basic dissecting equipment/gloves will be provided, but glasses/safety glasses and lab coats are required. Proper safety procedures will be outlined at the first lab and must be followed in the labs at all times. Details of the lab schedule are shown in the table below and will be outlined during the first week of labs.

6. Outline of Topics in the Course

Wk	Lecture	Topic		Lab	CRN
1	Jan 8	Introduction, History, Evolution		-	-
2	Jan 15	Neurons and Glia, RMP, AP, Synapses, Neurotransmitters		Lab 1 Jan 15	73003 70086
3	Jan 22	The Eye Central Visual System		Jan 22	70087
4	Jan 29	Somatic Sensory System		Lab 2 Jan 29	73003 70086
5	Feb 5	Spinal Control of Movement Brain Control of Movement		Feb 5	70087
6	Feb 12	Midterm Exam		Lab 3 Feb 12	73003 70086
7	Feb 19	READING WEEK		-	-
8	Feb 26	Sex and the Brain Brain Mechanisms of Emotion		Feb 26	70087
9	Mar 5	Brain Rhythms and Sleep		Lab 4 Mar 5	73003 70086
9	Mar 12	Language Attention		Mar 12	70087
11	Mar 19	Wiring the Brain		Lab 5 Mar 19	73003 70086
12	Mar 26	Memory Systems		Mar 26	70087
13	Apr 2	Molecular Memory and Learning		-	-

7. Required Texts/Readings

"Neuroscience: Exploring the Brain" 4rd revised edition by Bear, Connors and Paradiso. ISBN 978-0-7817-7817-6. Obtained from the UOIT Bookstore.
Additional readings may be assigned or recommended during the course.

8. Evaluation Method

Results from the midterm exam, labs, term assignment and a final exam will be used to calculate the final term mark. The timing and weighting of each of these is listed in the next section. Students who fail to complete any of these assessments are required to follow the procedure outlined below.

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

9. Assignments and Tests

Midterm	20%
Assignment	15%
Final Exam	35%
Labs	30%

Term Assignment

Students will be required to write an essay (APA style) based on a specific topic in neuroscience. Students will submit one electronic copy on Blackboard by March 9th 2018. Details are provided in the BIOL 3060 Instructions for Written Assignment document.

Policy on Missed IN TERM Academic Work

If, for any reason, a student misses an in class assignment or test (including a midterm test) for a legitimate reason and can provide appropriate documentation within five (5) days, s/he will not be penalized. Legitimate reasons are illness or death in the family and appropriate documentation is an original UOIT Medical Statement signed by your health care provider or a photocopy of a death certificate respectively. Compassionate reasons for missed work may be considered on a case-by-case basis, and appropriate documentation includes a note from a counselor or clergy. Once the documentation has been verified, the weighting of up to 1 missed assignments or tests may be transferred to the weighting of the final examination, following consultation with the professor.

If a student misses a test without a legitimate reason or does not provide the proper documentation, s/he will receive a mark of zero.

If a student misses a set assignment deadline without a legitimate reason or does not provide the proper documentation s/he will be penalized 10% per calendar day (Saturday and Sunday are included) and the piece of work will not be accepted after the third day.

If a student cannot complete a piece of academic work for any reason, it MUST be discussed with the professor at least 2 days BEFORE s/he is scheduled to write, or submit, the piece of work. The course professor will make decisions on a case by case basis.

10. Accessibility

Accommodating students with disabilities at UOIT is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with the professor as soon as possible. **Students who suspect they have a disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible.** Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

Students taking courses on the North Campus Location can visit Student Accessibility Services in the U5 Building located in the Student Life Suite. Students taking courses on

the Downtown Oshawa Campus Location can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related support and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Mon-Fri. For more information on services provided, you can visit the SAS website at http://uoit.ca/studentaccessibility

Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@uoit.ca

Students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here www.uoit.ca/SASexams. Students must sign up for tests, midterms or quizzes AT LEAST seven (7) days before the date of the test.

Students must register for final exams by the registration deadline, which is typically 2 weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

11. Professional Conduct (if applicable)

Students are expected to be respectful to each other and to their instructor and TAs.

12. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

13. Turnitin (if applicable)

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must provide with their assignment at the time of submission to the instructor a signed Turnitin.com Assignment Cover sheet:
http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

14. Final Examinations (if applicable)

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

15. Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Health Sciences.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Health Sciences encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the Faculty of Health Sciences Associate Dean Undergraduate Studies.

16. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

BIOL3060 Laboratory Guidelines

The objectives of the laboratory component of Biology 3060U are to:

- help you understand the concepts discussed in the lectures by giving practical experience with some of the techniques and procedures used for the study of Neuroscience
- develop technical skills used in modern biology laboratories
- help develop analytical skills required to analyze scientific data and interpret results

Each student will perform a 3-hour laboratory session every other week for a total five labs per term. Please consult the Laboratory Schedule file posted on Blackboard for information on when your labs begin. All laboratory sessions are mandatory.

Lab TA:
Sabrina Gallant and Tamara Dzikewicz
For specific questions regarding your lab assignments, please contact your lab TA, directly. Your lab TA is responsible for helping you understand the concepts taught in the lab and for evaluating your performance in the laboratory. During the labs, ask your TA questions – Your TA is there to help! It is very important that you get to know your lab TA. Keep a record of his/her name and contact information so you can contact him if you need to see them.

outside of lab time. Office hours and contact information for your lab TA will be given during the first lab. If you wish to contact your TA, **please email through the Blackboard Email Message tool only.**

General Information for BIOL 3060 Laboratories:

- You will perform a **3 h laboratory session every other week** for a total five labs per term. All the labs are taking place in UB 4085

Laboratory Format:
The general format for each lab:
- The labs will start with a 10 min quiz, at the beginning of the lab, on the lab you will be performing or on the dissections performed during the previous lab period.
- A brief presentation by your TA explaining what you will be doing during the lab. The TA will also use this introduction period to describe the safety precautions relevant to the lab you are going to perform.
    - Please note that you need to be present for the whole presentation in order to do the lab. If you leave the lab, even for a short time, at any time during the presentation, you will be asked to leave the lab and receive zero (0) for all the assignments associated with the lab.
- A period where you will perform the lab.
- Time to analyze, discuss results, and ask questions about the lab

    - Note: The lab activities have been designed so that students who come prepared to the labs can easily complete all activities. If you do not manage to finish all lab activities, you may not be able to get data from you instructor to complete the corresponding portion of your lab report/assignment and you will therefore receive zero on these portions. In cases where you will be allowed to use data not collected by your group, you will receive penalty marks. The penalty marks will be determined by the lab coordinator.

- Upon entry to each lab, students must sign the **attendance** sheet. If an assignment is due (pre-lab assignment and/or lab report), students must also sign the corresponding **assignment submission column** of the attendance sheet and submit their assignment to their TA directly.

- A quiz will be administered promptly at the beginning of the lab. The quiz will cover the material on the lab you will be performing and/or will test you on the dissections performed during the previous lab.
    - You are expected to **study** and **understand** the material presented in the introduction and protocol sections of each lab as well as review the dissections performed during the previous lab before coming to the lab.
    - The quiz will be “closed” book and time limited (maximum of 20 minutes).
    - Please note that you will not have time to successfully complete the quiz unless you have studied and understood the material prior to coming to the lab.

- **Late arrival to the labs will not be tolerated**

- Students will not be permitted in the lab if they are more than 10 minutes late and will receive zero (0) on all assignments associated with the missed lab.
- Students arriving during the quiz will not receive any extra time to complete the quiz.
- If you arrive late and the lab door is closed, do not knock at the door. Instead go and see the lab coordinator.
- Students in the lab are not allowed to open the door of the lab once the lab door has been closed; you will be asked to leave the lab and receive zero (0) on all assignments associated with the lab if you do so.

- Please talk to your TA if you need to leave the lab even for a short amount of time and for any reason (including bathroom breaks). In case of an emergency, your TA needs to know where you are at all time.

- You will usually **work in pairs** to complete the practical component of the lab but you are **expected to work individually to write up the lab reports/assignments**.

- Even though you collect data in the lab as part of a group, **all work that you submit must be done on your own**.

- **COPYING OR ALLOWING YOUR WORK TO BE COPIED IS AN ACADEMIC MISCONDUCT AND WILL BE SEVERELY PENALIZED.** You will receive zero on your assignment even if a small part of the assignment has been copied and an academic misconduct report will be filed with the Science Academic Advisor.

Laboratory Reports/Assignments:
Because the time spent in the lab is limited, experimental analysis and discussion of the results obtained may have to be completed outside the lab period in the form of a lab report. The lab report will usually be due at the beginning of your next lab session, unless mentioned otherwise in the lab file.

Late submission of your laboratory report will be penalized: 10% of the mark off for every day late including week-ends.

Note that all your assignments must be submitted as a hardcopy. Electronically submitted assignments will not be marked. If an assignment has been electronically submitted with permission (to prevent late penalties), it is the responsibility of the student to submit a paper copy within 24 hours to your TA. Failure to do so will result in late penalties. Also make sure you hand in your late assignment to your TA or to the lab coordinator directly; we will not be responsible for lost assignments that have been pushed under a door or given to another person.

Laboratory Preparation:
Dress Code for Labs:

- Wear trousers/pants. Do not wear shorts/skirts/dresses etc. in the lab. Avoid loose clothing.

- Wear flat-bottom closed shoes with socks that cover your ankles. Do not wear sandals in the lab. **Legs and feet must be completely covered**.

- You must also bring and wear your lab coat and protective eyeware during each lab.

- If you are inappropriately dressed you will not be permitted to perform the lab. You will be asked to leave the lab and will receive zero (0) on all assignments associated with the lab.

- If you do not have a lab coat or safety glasses, you may borrow a lab coat and safety glasses ONCE. We have a very limited number of extra lab coats and safety glasses, so they will be available on the first come, first serve basis. You will only be allowed to use this service once. So if you come for the second time with no lab coat or safety glasses or if the extra lab coats/safety glasses are already being used, you will be ask to leave the lab and you will receive zero (0) on all the assignments associated with the lab.

Lab Materials and Supplies:

- You are responsible for printing the introduction, protocol and lab report files for your labs **prior to** the laboratory period and bring them to the lab. You must also study and understand these materials in preparation for your quizzes. You will be asked to leave the lab and receive zero (0) on all assignments associated with the lab if you come to the lab without your lab handouts printed out.

- It is highly recommended that you print these documents well ahead of the lab as you may not find a working printer just before the lab (and this will not be an acceptable reason for not having the documents printed out).

- Along with the standard note taking supplies, you should bring the following to every lab period:
  - ✓ a waterproof pen (such as "Sharpie")
  - ✓ a pencil/eraser for drawing diagrams
  - ✓ a ruler with a cm and mm scale
  - ✓ a calculator
  - ✓ laptop

Lab Attendance and Procedures for Missed Labs:

- **All laboratory sessions are mandatory**.
  - You are permitted to miss one lab with appropriate documentation. If you miss more than one lab, even with appropriate documentation, your TA will not accept your report and you will receive a mark of zero (0) on all assignments associated with the missed lab. Missed labs will not be rescheduled.
- **If you miss your lab for a valid reason you must submit proof of the reason within 5 working days to the Lab Coordinator - Dr. Jason Chung.**
- Valid reasons for missing a lab are medical reasons or death in the family/family tragedy. Other reasons may be considered on a case by case basis with proper documentation.
- If you miss a lab for medical reasons you must submit a UOIT Medical Statement completed by your doctor – **NOTE**: no other documents from your doctor will be accepted.

- If you miss a Lab due to a family death or family tragedy, a death certificate or other appropriate document must be submitted.
- You will be excused for the missed lab upon receipt of the documentation. Your lab mark will be reweighted on the four other labs to compensate for the missed lab. There are no make-up assignments or make-up labs and you are responsible for learning the missed material on your own.

If you missed a lab for legitimate reason and bring documentation to the lab coordinator, make sure to also submit the lab report that was due at the beginning of your missed lab. Failure to submit your assignment along with your documentation will result in the accumulation of late penalties on your assignment.

Laboratory Evaluation:

The laboratory component of the course is worth 30% of the final mark. You are required to pass the lab with min of 50% in order to pass the course.

- **Each laboratory will be worth 5%**..... 25%
  - Each laboratory session will likely have several assignments associated with it. The assignments may include a pre-lab assignment, quiz, lab report and/or in-class assignment. The breakdown of the mark will be detailed in the handout for each lab which will be posted on Blackboard in advance of the lab.

- **Lab report**…… 5%
  - You will be required to write a full lab report for one of the labs.

Note: Even though you are required to complete the totality of your assignments (perform all the drawings, answer all the questions, performed all the calculations) your lab report may be spot-marked.

Laboratory Safety for BIOL3060 Labs

When working in the laboratory you may use reagents, which are toxic, caustic, flammable, and handle a variety of organisms or preserved organs. The department provides safeguards, as well as competent supervision when working with these materials. In addition you will be provided with education on safety procedures and proper laboratory practices. But ultimately, it is your responsibility to be careful. Carelessness on your part can result in serious injury and/or illness to yourself as well as others. For your own safety and for the safety of those around you, please follow the guidelines mentioned below.

- Wear a lab coat and protective glasses at all times.
- Do not wear contact lenses.
- Wash your hands before and after each lab period.
- While working avoid touching your face. Do not put your pens, pencils, etc. in your mouth.
- Do not mouth-pipette.
- Keep coats, packs, purses etc. in the designated area and off the lab bench. If you store your personal items on the lab bench, you risk contaminating them and carrying the contaminations with you when you leave the lab.
- Do not eat, drink or chew gum in the lab.
- Do not wear sandals or short/skirt etc. in the lab (closed shoes are required; legs and feet must be covered).
- Long hair must be tied back.

- Do not wear mascara (especially during microscopy labs).
- Do not wear rings and hanging jewelry
- Restrain loose clothing.
- You will be handling glassware and scalpel during the labs. Handle those with care. Cuts to your hand are especially dangerous due to the many nerves and tendons in your hands. Report any injuries to your TA.
- Follow instructions for disposal of living cultures, contaminated glass, chemical reagents, etc. Improper disposal of these items could harm the person that handles the wastes and will contaminate the environment.
- Report all spills, no matter how small, to your lab instructor who will then supervise the cleanup.
- Inform the laboratory coordinator of any allergies you have (such as latex or iodine) or any other medical conditions that he/she should be aware of to ensure that you work safely
- Know where the nearest fire exit is and evacuate the building if the fire alarm sounds.

Anyone who is not following the safety guideline mentioned above and given by your TA or who acts recklessly will be ask to leave the lab.

Above all, be careful, use common sense, follow instructions given by your lab instructor, and read the manual before coming to the lab. If you are prepared and organized, you are less likely to have an accident.

FACULTY OF HEALTH SCIENCES

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

HLSC 4414 (CRN 44559): Advanced Topics in Neuro Muscular Physiology – Neuro Pathology and Muscular Pathophysiology
Fall 2017

1. Course Details & Important Dates*

Location	CRN	Classes Start	Classes End	Final Exam Period
Several – See Below	44559	September 11, 2016	December 4, 2016	December 7-18, 2016

Lecture

Time	Days	Where	Date Range	Schedule Type	Instructors
5:10 pm – 8:00 pm	Mon	University Building A UA2120	Sep 07 - Dec 04, 2017	Lecture	Ryan Foley (P)

Tutorial Group 1

Time	Days	Where	Date Range	Schedule Type	Instructors
12:40 pm - 2:00 pm	Weds	Library Portables UL12	Sep 07 - Dec 04, 2017	Tutorial	Heather McCracken (TA)

Tutorial Group 2

Time	Days	Where	Date Range	Schedule Type	Instructors
2:10 pm - 3:30 pm	Weds	Library Portables UL12	Sep 07 - Dec 04, 2017	Tutorial	Antonia Karellas (TA)

* For other important dates go to: www.uoit.ca >Current Students >Important Dates
Sept 20, 2017: Last day to drop courses and receive a 100% tuition fee refund.
Oct 4, 2017: Last day to withdraw from a course without academic consequences and receive a 50% tuition fee rebate, after this, withdrawals are indicated on transcript with a "W"
October 9, 2017 Thanksgiving Day, no lecture
Oct 26-29th Co-curricular period-no lectures
Nov 17th, 2017: Last day to withdraw from fall semester courses, Active Fall Semester courses will be graded by instructors
* For other important dates go to: www.uoit.ca >Current Students >Important Dates

2. Instructor Contact Information

Instructor Name	Office	Phone	Email
Ryan Foley MSc, CSEP-CEP	J117	3567	ryan.foley@uoit.ca
Office Hours: please email ryan.foley@uoit.ca for appointment.			

Laboratory/Teaching Assistants	Office	Phone	Email
Antonia Karellas Heather McCracken	TBD	N/A	
Office Hours: TBD			

3. Course Description

Students who have successfully completed this course will have reliably demonstrated an ability to review-discuss, analyze and critically integrate - prerequisite work in functional neuroscience and neuro and muscular skeletal anatomy and will have evidenced a contextual understanding of normal and functional pathophysiological conditions commonly encountered in the central and peripheral nervous system and the neuro muscular skeletal tissue interface.

4. Learning Outcomes

1) Review the anatomical arrangement and functional physiology of the CNS and neuromuscular components that influence sensory integration and the production of movement, force and direction in motor units and peripheral muscle groups.

2) Describe the normal development of the CNS spinal cord and sensory motor systems. With regard to the developmental and pathophysiological basis of the various neural tube anomalies and the neural and sensory motor - movement deficits associated with these conditions.

3) Describe the basic patterns of biochemical impact effects on neural tissues and the pathophysiological changes associated with Traumatic Brain Injury and discuss the basis of therapeutic interventions to manage the functional deficits in individual case scenarios.

4) discuss the pathophysiology of stroke - paralysis and movement deficits in the CNS motor system and the aphasia's associated with stroke lesions

5) Review the sequence of events of the inflammatory cascade within the CNS related to demyelination related to multiple sclerosis and associated inflammatory conditions.

6) Review the pathophysiological and currency of research themes that defines current understanding of neurodegenerative conditions of the CNS with emphasis on Parkinson's disease, Huntington Disease and Alzheimer's dementia

7) Describe the basic pathophysiology of spinal cord injury, related to patterns of injury, tissue damage significance of segmental levels of insult and pathological impacts on tract topography

8) Discuss the pathophysiology and related mechanisms that characterize disorders of the neuromuscular junction with regard to fatigue spasticity tetany and atrophy.

9) Critically review the evidence relating behavioral and mental states relating the therapeutic effects of exercise in Mental Health conditions (DSMV) depression and schizophrenia

5. Course Design

The following sequence offers the sequence of lectures and tutorial content in a prescribed topic area related to the course learning outcomes. The purpose of tutorials is to reinforce information provided in the associated lecture and to engage students in critical thinking through the use of case studies and problem solving. Attendance at both lectures and tutorials is deemed essential to confirm individual mastery of the course content and case materials.

The following generic outcomes are considered to be the foundation elements of the skill set that students need to demonstrate to confirm competency in their capability to integrate the course content to the actual practice of kinesiology.

1) Interpret and provide informed commentary relating the modern literature on the treatment options for these conditions.
2) Discuss the scope of application and contribution of the various clinical/imaging diagnostic and functional tests used in the case management of these conditions.
3) Critically reflects on the indications and contraindications for the clinical application of exercise therapeutics in these conditions and in the context of the various case scenarios.

The topics listed for each date are subject to change. However the Dates for Assessment Submissions and Examinations will not change and will be held as scheduled in the following course weekly progression.

Week #	Delivery Format	Date	Topic
1	Lecture 1	Monday September 11	Course Introduction / Syllabus / Basic Review of the Anatomy and Functional Divisions of the Nervous System Developmental Neuroanatomy (Brain and Spinal Cord) Developmental and Pathophysiological basis to the various neural tube anomalies
	Tutorial 1	Wednesday September 13	Cells of the nervous system - microanatomy of neuron -action potentials and synapsing.

2	Lecture 2	Monday September 18	The Neuromuscular Junction –Production of Muscle Force and physiology of Motor Units.
	Tutorial 2	Wednesday September 20	The Pathology Model
3	Lecture 3	Monday September 25	**Guest Lecture with Paul Yielder –** Techniques to study the Central Nervous System - Imaging Pathophysiology of Stroke – Tissue effects and the importance of CBF (Cerebral Blood Perfusion)
	Tutorial 3	Wednesday September 27	Paralysis and the Aphasia's in stroke
4	Lecture 4	Monday October 2	Organization of the Motor Systems & voluntary movement
	Tutorial 4	Wednesday October 4	Involuntary movement, central pattern generators and reflex pathways
5	**No Lecture**	**Monday October 9**	**Thanksgiving Day No Lecture**
	Tutorial 5	Wednesday October 11	Meninges and Blood-Brain Barrier
6	Lecture 5	Monday October 16	Traumatic Brain Injury – Patterns of Injury Tissue damage and deficits. Inflammatory cascade in the CNS/PNS
	Tutorial 6	Wednesday October 18	TMS Demo
7	Lecture 6	Monday October 23	Multiples sclerosis, Inflammation of Myelin and degenerative neuropathies
		Submission of Assessment Task 1 In Class – Research Article Short Review (15%)	
	Tutorial 7	Wednesday October 25	Midterm Review
8	Lecture 7	Monday October 30	No Lecture
		Assessment Task 2 In Class – Midterm Test (25%)	
	Tutorial 8	Wednesday November 1	SEPs Demo
9	Lecture 8	Monday November 6	Neurodegenerative Conditions – Pathophysiology of Parkinson Disease and Alzheimer Dementia
	Tutorial 9	Wednesday November 8	Case study comparisons - Huntington and Parkinson's Disease- Movement Disorders.*
10	Lecture 9	Monday November 13	Spinal cord injury and degenerative conditions of the spinal axis
	Tutorial 10	Wednesday November 15	Review of Spinal Cord Tracts and Sensory Motor Integration – Case Review
11	Lecture 10	Monday November 20	Disorders of the neuromuscular junction – conduction disorders- fatigue- spasticity- tetany and atrophy
		Submission of Assessment Task 3 In Class - Problem Based Case Study Review Due (25%)	
	Tutorial 11	Wednesday November 22	Case Studies
12	Lecture 11	Monday November 27	Exercise and Mental Health – Depression, Schizophrenia & BDNF
	Tutorial 12	Wednesday November 29	Exam Review

13	Lecture 12	Monday December 4	Neuromodulators & Exam Review
Semester Exam Period Dec. 7th -18th		**Assessment Task 4 – Final examination (30%) Date and room location to be advised**	

6. **Outline of Topics in the Course**

This course is an advanced honors level course that extends previous foundation work in the basic neurosciences and muscular - skeletal physiology to the contextual application of commonly encountered clinical conditions during the practice of Kinesiology. The sequence of prescribed content is related to principles of rehabilitation and exercise therapeutics and involves both case analysis and the principles of ethical clinical decision making. The case materials also require students to demonstrate the principled application of commonly adopted therapeutic communication techniques:

7. **Required Texts/Readings**

REQUIRED TEXT – Covering Lecture and Tutorial Content from HLSC2400U
Lundy-Ekman, Laurie
Neuroscience. Fundamentals of Rehabilitation.
4th ed. Saunders Elsevier
ISBN: 9781455706433

Suggested Additional Reading and Supportive texts
1).Title - Neuroscience at a Glance
Barker, R.A. Barasi, S.
3rd/4th ed. Publisher Blackwell.
ISBN 978 1 4051 5045 3

2).Title - Advanced Neuromuscular Exercise Physiology
Gardiner – Phillip F
Year 2011
Publisher Human Kinetics ISBN-13:978-0-7360-7467-4 ISBN -10: 7360-7467-8

Additional text that is helpful to extend your background and critical thinking.

3). Title Neurophysiological Basis of Movement (Has clinical problems embedded)
Author Latish Mark L
Year 2007
Publisher Human Kinetics
ISBN 13: 978-0-7360-6367-8 ISBN -10 0.7360 6367 -6

8. **Evaluation and Assessment Model**

Students are expected to complete the following formal evaluation and assessment tasks at the prescribed times

There are four assessments tasks included in the model: The content and requirements of these tasks will be discussed in depth in the introductory course session on **Monday September 11th 2017:**

Evaluation and Assessment Components and Due Dates

Components	Mark	Due Date
Research Article Short Review – 2000 Words	15%	Due Monday October 23th
Mid Semester Test (Covering Lectures 1-2-3-4-5)	25%	Due Monday October 30th
Problem Based Case Study Review	20%	Due Monday November 20th
Multi-choice quiz on TMS and SEPs	5%	
End of Semester Examination (Covering All Lectures)	35 %	Examination Week TBA

Blackboard

Lecture notes/slides posted to the Blackboard Learning system are copyrighted materials and are provided for your personal use for this course only. You are not allowed to distribute them without written permission from Dr. Yielder.
Please note that the course website is NOT set up for you so that you don't have to go to class.
If you wish to master the course materials you are strongly advised to use the required previous course text from **HLSC 2400U: Introduction to Movement Neuroscience** as the basic foundation knowledge:

The text details are as follows:

Title "Neuroscience. Fundamentals of Rehabilitation"
Author - Lundy-Ekman, Laurie
4th ed. Saunders Elsevier
ISBN: 9781455706433

Additional notes and reading materials will be posted on the server and used in class. Some lectures may contain material not covered in previous courses or required textbooks in the kinesiology major and some assigned readings may not be covered in class. If you want to do well in the course, it is imperative that you go through the website prior to class time,

read the required chapters and attend class and the tutorials every week.

9. **Assignments and Tests**

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information regarding grading can be found in Section 5 of the UOIT Academic Calendar.

10. **Accessibility**

To ensure that disability-related concerns are properly addressed during this curse, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with their instructor as soon as possible. Students who require alternative testing and examination arrangements or other academic accommodations must contact the Centre for Students with Disabilities (B297) as early as possible to ensure that your needs can be met.

11. **Academic Integrity**

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education.

Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action. Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5:15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to be copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another students when such collaboration has not be authorized, and other academic offenses. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on you laptop.

12. **Turnitin**

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic

years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must inform their instructor at the time the work is assigned and provide with their assignment a signed Turnitin.com Assignment Cover sheet:
http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

13. **Final Examinations**

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

14. **Course Evaluations**

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via My Campus.

15. **Freedom of Information and Protection of Privacy Act**

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Health Sciences.

As you may know, UOIT is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Health Sciences encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the Faculty of Health Sciences Associate Dean Undergraduate Studies.

16. **Notes:**

Policy on Missed IN TERM Academic Work

If, for any reason, a student misses an in class assignment or test (including a midterm test) for a legitimate reason and can provide appropriate documentation within three (3) days, s/he will not be penalized. Legitimate reasons are illness or death in the family and appropriate documentation is an original UOIT Medical Statement signed by your health care provider or a photocopy of a death certificate respectively. Once the documentation has been proven valid it is the responsibility of the student to negotiate alternative arrangements with the course professor and set a new deadline for completion.

If a student misses a test without a legitimate reason or does not provide the proper documentation, s/he will receive a mark of zero.

If a student misses a set of assignment deadlines without a legitimate reasons or does not provide the proper documentation s/he will be penalized 10% per calendar day (Saturday and Sunday are included) and the piece of work will not be accepted after the third day.
If a student cannot complete a piece of academic work for any reason, it MUST be discussed with the course professor at least 2 days BEFORE s/he is scheduled to write, or submit, the piece of work. The course professor will make a decision on a case by case basis.

Policy on Missed Final Examinations

If, for any reason, a student cannot write the final exam on the assigned date, s/he must obtain an application for a Deferred Final Examinations form from the Registrar's Office or the Registrar's website and present it to the Faculty Office.

If a student knows in advance that s/he is unable to write a final exam the student is requires to give three (3) weeks notice to write a deferred exam. Each case will be decided on an individual basis.

If a student misses the exam for medical or compassionate grounds a request for deferral, along with supporting documentation, must be provided to the Faculty within five (5) working days after the scheduled writing of the examination.

The decision on all students' request for a deferral will be sent to their mycampus email address. All deferred examinations will be scheduled no later than the end of the first week of classes in the following semester.

The final exam policy can be found on the UOIT Registrar's Office website.

Policy on Sexual Violence

UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, UOIT can help. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

If you think you have been subjected to or witnessed sexual violence:

· Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca

· Learn more about your options at: www.uoit.ca/sexualviolence

BIOL4620 Syllabus
Animal Behaviour
Fall 2017

Course Description

This course is designed to provide students with the theoretical background necessary for an understanding of animal behaviour. Students will learn to observe and characterize behaviours and their evolutionary and adaptive significance. Key factors such as genetics, developmental and environmental effects will be studied.

Course Details and Important Dates

Lecture CRN: 43709

Lecture Days	Time	Location
Tuesday	2:10 – 3:30 p.m.	UA2230
Thursday	2:10 – 3:30 p.m.	UA2230

First lecture for fall term: Thursday September 7, 2017
Last lecture for fall term: Thursday November 30, 2017
Final exam period: December 6 to 17, 2017

** For other important dates click here*

Instructor Contact Information

Annette Tavares Office: UA3063 Tel. 905 721-8668 ext 3641
Email: via Blackboard only

Office Hours: Mondays 10:00 to 11:30 a.m. and Tuesdays 3:30 to 4:30 p.m. or by appointment any other time (please email via Blackboard for a specific time).

Marking TA Contact Information

Erin Ussery Office: UA4120 Email: via Blackboard only

Office Hours: By consultation (please email via Blackboard email for appointment)

Course Design

Students will be guided through the subject by structured lectures, in-class discussion and activities/assignments based on assigned readings, a midterm test and final exam. Assignments will be geared to achieve a deeper understanding of important concepts in animal behaviour and the challenges in quantifying and observing behaviour. The normal modes of teaching will be three hours of lectures per week delivered as two 1.5 hour sessions. Five of the lecture sessions will be dedicated to discussion of assigned readings or in-class activities.

Students have the roles of active learners and have the responsibility of attending and actively participating in all planned student learning experiences, i.e. lectures, reading all relevant readings, in-class activities and undertaking such other private study as will benefit their learning towards the objectives of the subject. Although no minimum attendance is required, students must be aware that sessions are available only at the times specified and cannot be repeated. This also applies to any in-class activities – you must attend the class to get credit for the activity – no exceptions.

Learning Outcomes

On the successful completion of the course, students will be able to:

- Achieve a deeper understanding of important concepts of animal behaviour
- Understand the evolutionary and adaptive significance of a variety of different behaviours
- Practice how to make meaningful observations of behaviour and how to quantify behaviours
- Hone verbal and written communication skills reading scientific papers, discussing them in class and then completing a variety of written assignments pertaining to the papers

Course Evaluation and Marks Distribution

Midterm Test (25%)

(Format: multiple choice, short answer and short essay questions)

Assigned reading discussions/assignments (27%)

(3 assignments x 9% each: in-class portion and individual assignment)

In class activity-based assignments (8%)

(2 activities + activity-based assignment each worth 4%: 1% for in-class participation; 3% for assignment)

Final Exam (cumulative) (40%)

(Format: multiple choice, short answer and short essay questions)

Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

Required Texts/Readings

Textbook: Animal Behaviour 10th ed. by John Alcock – available in bookstore

Additional readings will be assigned or recommended during the course and will be posted on Blackboard.

Test and Assignment Dates

Midterm Test – Thursday October 19, 2017
Activity-based assignment 1 – September 21, 2017
Discussion Assignment 1 – October 10, 2017
Activity-based assignment 2 – October 24, 2017
Discussion Assignment 2 – November 7, 2017
Discussion Assignment 3 – November 23, 2017

Lecture Topic Outline for Fall 2017

Please note: *lecture schedule will be followed as closely as possible but may be subject to change slightly.*

Date	Topic
September 7	*Welcome Information, course expectations* *Prep Lecture for Activity 1 – Observing Behaviour*
September 12 September 14	Lecture 1 – Introduction to Animal Behaviour and *In-class Activity 1 – An Exercise in Observation of Behaviour* Lecture 2 – History of the Study of Animal Behaviour and the Evolutionary Approach
September 19 September 21	Lecture 3 – Behavioural Ecology and the Evolution of Altruism Lecture 4 – Altruism (Part 2)
September 26 September 28	*Discussion Topic – Details will be posted on Blackboard* Lecture 5 - The Evolution of Social Behaviour
October 3 October 5	Lecture 6 – The Evolution of Communication (Part 1) Lecture 7 – The Evolution of Communication (Part 2)
October 10 October 12	Lecture 8 – Antipredator Behaviour *In-class Activity 2*

October 17 ***October 19***	Lecture 9 – Foraging Behaviour and Optimal Foraging **Midterm Test (worth 25% - Covers Lectures (1 to 8)**
October 24 *October 26*	*Discussion Topic – Details will be posted on Blackboard* *Fall Co-curricular Break – no lecture*
October 31 November 2	Lecture 10 – Evolution of Reproductive Behaviour (Part 1) Lecture 11 – Evolution of Reproductive Behaviour (Part 2)
November 7 November 9	Lecture 12 – Evolution of Mating Systems Lecture 13 – Evolution of Parental Care
November 14 November 16	*Discussion Topic – Details will be posted on Blackboard* Lecture 14 – Proximate and Ultimate Causes of Behaviour
November 21 November 23	Lecture 15 – The Development of Behaviour Lecture 16 – Evolution, Nervous Systems and Behaviour (Part 1)
November 28 November 30	Lecture 17 – Evolution, Nervous Systems and Behaviour (Part 2) Lecture 18 – How Hormones Organize Behaviour

Faculty of Science Academic Policy Summary

For complete Academic Policy details, please click Academic Policies for the Faculty of Science or see the Academic Policies link in the Important UOIT Links content area on the course Blackboard page.

***Missed Term Tests (Midterms)**:*
If you miss a Science test due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Certificate, death certificate), and submit it to the Science Academic Advisor (science.advising@uoit.ca) within **5 business days** of missing the test or assignment.

If you are aware in advance that you cannot write a test for any other reason, you **must** discuss this with the Science Academic Advisor and the instructor of the course at least **2 business days before** you are scheduled to write it. Exceptions to this deadline include Varsity Athletics, Religious Observances, and test-course conflicts. **Failure to submit the appropriate documentation by the correct deadline will result in a zero grade for the test.**

Submission of Assignments:

Preferred submission is as a hardcopy unless otherwise indicated by the instructor or TA. If you submit an assignment by email, it is your responsibility to ensure that the instructor or TA has received that assignment. If you have not received a confirmatory email from the instructor or TA within 24 hours of submitting the assignment, it is your responsibility to follow up by either emailing the assignment again or submitting a hard copy directly to the instructor or TA as soon as possible. You have the option of submitting assignments late but you will incur a late submission penalty of 10% per day (including weekends) deducted from the total mark for that assignment.

If you miss any Science assignment (e.g. weekly assignment, term paper deadline, or quiz) due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Certificate, death certificate) and submit it to the course instructor indicated on the WebCT site for the course within **5 business days of missing the work.**

If you know in advance that you may not be able to complete an assignment or other work due to a legitimate reason, you must contact the course instructor at least 2 business days before the posted deadline. If you are unsure of the information required or of who to contact, please contact the Science Academic Advisor immediately. Note that there are special deadlines for Varsity Athletics and Religious Observances. For these circumstances you must follow the correct deadlines.

Failure to submit the appropriate documentation and contact the correct instructor by the deadline will result in a zero grade for the assignment.

***PLEASE NOTE:** If you have already written or submitted a test, quiz, or other term work, you cannot receive consideration for your performance on it after the fact; regardless of the reason for your poor performance.

When a student has sufficient grounds for special consideration (such as documented illness or death in the family) the normal policy in the Faculty of Science for any missed term work is to re-weigh the remaining work in the course to account for the missing grade, in accordance with the regulations given below for term tests, quizzes, assignments, labs, and tutorials. Students who do not provide sufficient grounds, as determined by the course instructor, will receive a grade of zero for the missed work.

There are no make-up exams, tests, quizzes, or assignments. There is no option to complete or submit any term work once the term has ended and the final exam period has started. Also there will be no option to do alternative work (extra assignments, or other 'special' activities to make-up missed term work or in an attempt to improve your grade.

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@uoit.ca for support.

Final Examinations and Final Grades
Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious obligations may make arrangements to write a deferred examination. These students

are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

If you miss or anticipate missing a final exam in a Science course you must obtain the appropriate supporting documentation (UOIT Medical Certificate, death certificate) and complete the Application for Deferred Final Examinations.

All forms must then be submitted to the Science Academic Advisor by the deferred examination deadline. The deadlines are as follows:

For missed exams due to illness or other unanticipated reasons the deadline is five calendar days after the date of the scheduled examination (e.g. if the exam was on a Monday, the deadline would be Saturday of that week - a fax sent on the Saturday and picked-up by the Advisor on Monday would be acceptable).

If you find you are not able to get supporting documentation by the deadline, please submit your Application for Deferred Final Examination by the deadline and discuss other arrangements with the Advisor. If you are not sure whether or not your circumstances warrant special consideration, you should speak to the Academic Advisor immediately. Failure to submit the appropriate documentation by the deadline may result in a zero grade for the exam.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

***Final Examination Deferrals**:*
All deferred Fall and Winter final examinations for Science exams will be written during the week before the first week of classes in the next academic term and students are expected to be prepared to write at that time (e.g. April deferred exams are written during the week before classes begin in May). All deferred Spring and Summer exams

will be written the week following the end of the exam period. Students must notify the Academic Advisor on their Application for Deferred Final Examinations of any reason why they may not be able to write at that time. The Science Academic Advisor will contact all students via email within three days of receiving the Application to inform them of the decision and to confirm the time and location of the exam(s) if appropriate.

PLEASE NOTE: Students who have legitimate grounds for missing a test/exam should not write the exam expecting to later decide whether or not the exam will count. If you choose to write an exam under any circumstances the decision is irreversible. If you are concerned about your ability to perform on the exam, you should speak to the Science Academic Advisor about your options in advance of the exam. Please contact the Science Academic Advisor via: science.advising@uoit.ca.

Final Examination Viewing:

Students wishing to view their final exam must submit a written request no later 1 week (7 days) after the release of final grades for that semester, stating why they would like to view the exam. Reasons may include, to calculate the final numeric grade (in cases where it is difficult to infer) or to determine which items of the course material gave you the most difficulty. To request an exam view, please complete the Science Final Exam View Request form and submit it to the course instructor via email. There is no fee associated with viewing a final exam.

Students will have 15 minutes to look over their final exam. Only the use of a calculator is permitted during the exam view appointment. No writing instruments, cell phones or other electronic devices will be permitted. Missed exam view appointments will not be rescheduled.

Please note, this is an opportunity for students to view their answers and see where any mistakes were made. As per UOIT policy (section 5.24.5.1) unless a clerical error has occurred, instructors may not make changes to the final grade awarded in a course as a result of an exam view. If, after viewing the final exam script, you wish to dispute the final grade awarded, you will need to submit for a Final Grade Appeal through the Registrar's Offices. For more information on Final Grade Appeals, please refer to section 5.11.2 of the UOIT Academic Calendar or contact the Science Advising Office.

***Final grades**:*

Final grades are posted to MyCampus by the Registrar's office (RO) approximately one-and-a-half weeks after the end of the final exam period. Official grades are released by the RO only and your final grades cannot be released by anyone else.

Please do not contact your instructor for this information. Grades will be posted in accordance with the Grading Scale as indicated in Section 5.8 of the UOIT Academic Calendar.

Your final exam grades will not be posted on Blackboard, but you will be able to infer your grade based on your final exam grade and your term work grades. Please note that there are no options to do extra assignments or other activities to make up for unsatisfactory performance in a course.

Student Conduct

Lecture and Laptop Etiquette:

Stay on Task - Stay focused, and stay engaged. Remember, you are in the classroom to learn. Constantly remind yourself why you are here!

Don't Distract Others - Don't distract others with your computer. Research shows that if a flashy image is in an individual's line of sight, no matter how hard they try, their concentration will shift to the flashy, moving object on your computer screen. Be respectful of the fact that others are in lecture to learn. Also don't distract others with excessive talking in class. Your instructor WILL ask you to leave if you are talking excessively during the lecture.

Don't Distract Yourself - Keep non-classroom related communication to a minimum. This includes chat. Chat should not be running during classroom hours. There is no need to check email during class. Check before class begins, during official break (if given) or at the end of class. It is your responsibility to be engaged! Take notes, think about what the lecturer is saying, think of questions to ask to clarify material – be an active learner, not a passive one!

Academic Integrity: Plagiarism and Cheating

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. **Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.**

Students are expected to be familiar with and abide by UOIT's regulations on **Academic Conduct (Section 5.15 of the Academic Calendar)** which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. **A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.**

Further information about academic misconduct can be found in the Academic Integrity link on your laptop. Extra support services are available to all UOIT students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found in the Academic Calendar (Section 8).

Click here or click on the Academic Integrity icon on your desktop for further information on academic integrity.

Turnitin

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must provide with their assignment at the time of submission to the instructor a signed Turnitin.com Assignment Cover sheet:
http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through Student Accessibility Services.

Requests must be made in a timely manner, and students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity

and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

Freedom of Information and Protection of Privacy Act (FIPPA)

The following is an important notice regarding the process for submitting course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.

As you may know, UOIT is governed by the *Freedom of Information and Protection of Privacy Act* ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that UOIT not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the

inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at accessandprivacy@uoit.ca.

Religious Observances

It is Faculty of Science policy to provide special consideration for recognized holy days (Interfaith Calendar) which may be observed by our students. Though not all holy days

require students to be absent from school, accommodations may still be necessary in some cases. As a student, it is **your** responsibility to check the dates for all course work and exams on a regular basis and notify the Science Academic Advisor per the options below. Documentation which confirms your faith is required in all cases.

Please note:

1. If the holy day will conflict with scheduled labs and tutorials you must inform the Senior Lab Instructor or tutorial TA of any potential conflicts at least 7 business days before the scheduled meeting time of the lab or tutorial.

2. If the holy day will conflict with the due date for an assignment you must inform the instructor at least 7 days before the due date.

3. If the holy day will conflict with tests or exams you must inform your instructors and the Science Academic Advisor of any potential conflicts at least 7 business days prior to the date of the test/exam. Note that the deadline for final exams is at least three weeks prior to the examination period as per the Final Exams policy below.

Failure to contact the appropriate person by the deadline will result in special consideration not being granted. Note that the dates indicated on the website above are the dates which will be recognized by the Faculty of Science. Should your holy day fall on alternate dates (e.g. those holy days which are based on lunar cycles) you will be required to provide additional proof of the date of your holy day by the deadline as specified above.

UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

Sexual Violence Policy

If you think you have been subjected to or witnessed sexual violence:

- Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Blackboard, Weekly News and signage around the campus.

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY
FACULTY OF SCIENCE

BIOL 4080 - BIOETHICS Course Syllabus for Winter 2018

COURSE DESCRIPTION

Introduction to bioethical methods and theory to guide discussion of bioethical issues related to the various disciplines in biology including the environment and moral relationships between humans and the rest of the world. Students will discuss bioethical issues from a historical, sociological, and philosophical perspective, with a consideration of how religious beliefs, political ideology, and the law influence positions.

Prerequisite: Registration in year four of a Biological Science program or the Science and Technology specialization of the Communication program.

COURSE PERSONNEL

COURSE INSTRUCTOR: **Mary Olaveson**

Office: UA-3061 **Phone:** 905-721-8668 ext. 2979 **Email:** use Blackboard email only

Office Hours: Tuesday and Thursday (11:30 a.m. to 1 p.m.)

Open-door Policy: students are welcome to drop-in if office door is open or arrange an appointment (through Blackboard email)
*(check the folder entitled "**BIOL4080 Instructor Contact Information**" on Blackboard for the most updated contact information and office hours for the instructor)*

COURSE MARKING TAS: **Lindsey Hill, Michael Jeffrey** and **Sarah MacKay**

COURSE COMMUNICATION

All information needed for this course will be posted on Blackboard. Please refer to the course syllabus (posted on Blackboard in the folder entitled "**BIOL4080 Syllabus**") for all information regarding this course and the answers to your questions about the format of the course and any procedures needed for completing the requirements of this course. Contact the Instructor or TAs about questions or concerns only after checking the Syllabus for answers first.

Please use the **BIOL4080 Email Messages** tool on Blackboard to contact the Instructor and TAs when you have questions about course material. The Instructor will try to answer emails through Blackboard email within 2 business days but please be patient during the busier times during the term. Do not pose questions to your Instructor or TA through the Discussion tool (when available). Also try to avoid mass emails to the entire class when contacting the Instructor or TAs. Please do not contact the Instructor or TA through their UOIT emails or other email accounts – use Blackboard email only! General information for the course will be posted through "**BIOL4080 Announcements**" and due dates for online quizzes and assignments will be indicated in the "**BIOL4080 Calendar**".

COURSE CONTENT

- lectures (3 hour lecture per week) – involving interactive activities, participation and discussion
- short opinion reports (3) exploring approached to ethical problems (at 2 to 3 week intervals)
- evidence-based ethical arguments (2) on topics from two branches of bioethics - (1) human ethical issues and (2) animal / environmental ethical issues
- a journal based on ethical issues that arise during the term with personal reflection
- a term test (format for term test is multiple-choice questions/short answer only)
- no final exam (journal reflection will be treated as substitute for final exam)

REQUIRED TEXTBOOK

There is **no required textbook** for this course. Instead required readings will be posted on Blackboard throughout the course (as appropriate); refer to the folder entitled "**BIOL4080 Assigned Readings**". Also supplemental readings and relevant websites will be made available throughout the term to help with assignments, discussions and essays (see folder entitled "**BIOL4080 Useful Resources for Bioethics**").

ADDITIONAL RESOURCES

All resources for this course will be made available on the BIOL4080 website on Blackboard throughout the term. Lecture slides related materials will be available in the folder entitled "**BIOL4080 Lecture Content**". The variety of activities (e.g. opinion reports) will be assigned throughout the term; instructions will be posted in the folder entitled "**BIOL4080 Reports**". The instructions for the two evidence-based essays will be posted in the folder entitled "**BIOL4080 Argument Essays**". The instructions for the journal and reflection exercise which will be a "term-long" assignment will be posted in the folder entitled "**BIOL4080 Journal**". Information for the term test will be posted on Blackboard (in the folder entitled: "**BIOL4080 Test Information**"). All assignment, essay and term test marks will be made available in the **BIOL 4080 Grades** folder on Blackboard; the **mark for the journal will not be posted until after final grades are released**.

Additional information for students and useful links to policies and services can be found on Blackboard (in the folder entitled: "**Important UOIT Links**").

EVALUATION IN BIOL 4080 – Winter 2018

Students will be evaluated in this course according to the following marks breakdown:

- **Term Test** (Monday March 5, 2018) **25%**
- **In-Class Participation Activities** (presented randomly in class without warning) **10%**
- **Opinion Reports** (3 short reports assigned throughout term – each worth 5%) **15%**
- **Argument Essays** (2 Evidence-based Ethical Arguments) **35%**
  - Human Issues (due Thursday February 15, 2018) - 15%
  - Environmental Issues (due Thursday March 22, 2018) - 20%
- **Journal** (summary/reflection on current ethical issues) (due Thursday April 5, 2018) **15%**

PLANNED STUDENT LEARNING EXPERIENCES

Objectives

This course provides students with an introduction to the discipline of Bioethics and the complex issues it considers. The main purpose of this course is to explore some ethical issues arising in modern biology (especially within the sub-fields of biology for which UOIT has specialized programs of study - pharmaceutical biotechnology, forensics, and environmental toxicology). Students in the Biology programs at UOIT are learning to be scientists but they need to appreciate the ethical issues within their discipline. In this course, students will be introduced to critical reading and critical thinking skills that will allow them to improve their abilities to formulate their informed opinions and write and evaluate arguments supported by factual evidence derived from scientific sources. Lectures are designed to expose students to important concepts that will allow them to develop an ethical approach to their academic studies, to their research to other professional activities undertaken in future. The in-class activities and participation activities are designed to allow students to reflect on their personal views, and to become aware of many of the ethical issues in many fields of modern biology. The concepts of critical thinking and argument development will be explored in this course and students will build these skills through the preparation of short reports on a variety of bioethical topics. Then students will bring all of these skills together in the writing of evidence-based essays that use critical thinking to present rational ethical arguments on a issues in three areas of biology: human health, animal welfare and environmental science.

Outcomes

On the successful completion of the course, students will be able to:

1. appreciate some of the influences on their worldview, belief system and ethical views;
2. describe the links between philosophy and science (especially biology) throughout history;
3. explain the characteristics of the scientific method that lead to scientific discovery;
4. differentiate among several key philosophical theories that play a role in ethical decisions;
5. distinguish among three categories of bioethics that move through the biological hierarchy from humans to animals to the environment;
6. apply ethical theories to biological problems to see the consequences of each approach;
7. show an understanding of the necessity for critical thinking in formulating bioethical arguments;
8. relate key scientific facts/evidence in defence of one's moral position (opinion) on a number of different bioethical issues;
9. present an ethical argument on a bioethical issue using critical thinking skills with conclusions supported by substantiated factual premises;
10. take the critical thinking skills and ethical approaches for use in their own research or other professional activities.

Expectations

It is important that **students at university are "active learners"** who are fully engaged in getting the most out of their courses. Students are responsible for attending lectures, actively participating in the random in-class activities, taking their own notes, reading the recommended references, accessing all assigned resources and undertaking private study. Students are expected to complete the opinion reports and evidence-based essays assigned throughout the Winter 2018 term. Each student is expected to complete five opinion-based reports and a major essay. By using an "active learning strategy", students will learn more effectively and will get the most benefit from this course.

I expect students to be willing to ask questions and to respect the questions and opinions of other students in the class. Remember I will be exploring Bioethics along with you and discovering

new things as well. Therefore students can expect that I do not have all of the answers; in fact **in Bioethics, there are no right or wrong answers to most issues** to be considered. Bioethics uses a variety of established techniques (e.g. critical thinking, logical argumentation, etc.) to allow the examination of potential issues and to formulate evidence-based arguments that supports a particular opinion or conclusion. The goal is to develop a strong argument based on facts that allows for a final ethical decision to be made. Debate results when there are proponents with good arguments on both sides of an issue, or when issues impact different levels of concern (e.g. humans vs other organisms or the environment). Respect for the opinions and the viewpoints of everyone in the course is crucial for students to feel comfortable and to get the most benefit from this course.

I expect that if you are working on the course material effectively, you will have questions that I cannot answer or have never thought about before, so then we can find the answers together. I am here in the **role of an instructor to "*facilitate your learning*"** and in doing so we can all learn together. Despite all the hard work we face over the next thirteen weeks, I hope that in the end, we can all look back and see that we also had some fun along the way!!!

COURSE FORMAT

There are three components in this course:

(1) **Lecture Component** involves one 3-hour lecture per week and term test; no final exam.

(2) **Assignment Component** will supplement the activities provided in the lectures by giving students the opportunity to write opinion reports and argument essays using the writing style of an ethical argument. There will also be a reflective journal exercise throughout the term to give students a chance to think about the many ethical issues arising from the new discoveries and application from modern biology.

(3) **Participation Component** will give students the chance to get engaged in the course material and to become comfortable with contributing ideas and opinions to the class.

(1) LECTURE COMPONENT

Lecture slides will be posted on Blackboard in the **"BIOL4080 Lecture Content"** folder. Often however **the slides will not be posted before lecture; instead students are expected to attend lecture prepared to explore / discuss various topics.** Relevant lecture slides will be posted after the lecture and will be available for study purposes before the term test. All lecture material (either presented in lectures or posted for the lectures, e.g. background papers, peer-reviewed papers, review papers, videos, and websites) are 'testable'. Supplemental resources may also be posted for interest; these resources will be indicated and will not be testable.

Lecture Schedule

LECTURE SECTION	DAY	TIME	ROOM LOCATION
CRN 70049	**Monday**	11:10 a.m. to 2:00 p.m.	**Simcoe Building J-102**

Lecture Topics

All lecture material (either presented in lectures or posted for the lectures) and relevant sections of the textbook are 'testable' on the midterm test or final exam. A tentative list of topics is provided below as a guide to the topics to be covered in this course; this list is tentative and may change throughout the course as necessary. NOTE: Any adjustments will be taken into account when designing the term test.

- Introduction to bioethics
- Exploration of worldview and belief systems
- Developing critical thinking skills
- Evaluating experts / evaluating websites
- Review of the scientific method
- Writing and critiquing scientific papers
- Formulating and evaluating ethical arguments
- Summary of the history of science (especially biology)
- Summary of the history of philosophy and bioethics
- Review of major philosophical theories used in ethical assessments
- Examination of various categories of bioethics (human / animal / environment)
- Exploration of various bioethical issues considered in each category
- Consideration of examples of ethical misconduct in science (especially biology)
- Identification of various potential ethical issues in biology in the future

Lecture Behaviour and Study Tips

- Lectures will be delivered as Powerpoint presentations and will be posted on Blackboard; **often lecture slides will not be posted in advance as it is important for students to explore ideas before seeing the lecture material.** However, do not make the mistake of thinking that lectures require little or no effort by way of note-taking. Most important details are delivered verbally.
- Students are strongly encouraged to attend lectures and take their own notes and to participate in class activities to gain the most benefit.
- Review your notes frequently! Do not leave your studying to the last minute!
- Make use of any other suggested resources to review and test yourself.
- **Respect your fellow classmates and professors** by not talking or making excessive noise during lectures; this will improve your learning experience and that of your classmates.
- During lectures refrain from using mobile phones (it is advisable to turn them off), gaming software, social networking programs or any other materials unrelated to the course material.
- Use resources provided at the Student Learning Center (formerly Academic Success Center) to help with academic issues you encounter in your courses.
- Contact the instructor for clarification of course material and answers to your questions.

Laptop Etiquette

- **Respect your Fellow Classmates and Professors** by not talking or making excessive noise during lectures. During lectures refrain from using mobile phones (it is advisable to turn them off), gaming software, social networking programs or any other materials unrelated to the course.
- **Stay on Task -** Stay focused, and stay engaged. Remember you are in the classroom to learn.
- **Do not Distract Others** – Do not distract others with your computer. Also don't distract others with excessive talking in class. Be respectful of the fact that others are in lecture to learn.
- **Do not Distract Yourself -** Keep non-classroom related communication (e.g. chat, email, etc.) to a minimum. It is your responsibility to be engaged! Take notes, think about what the lecturer is saying, think of questions to ask for clarification – be an active learner, not a passive one!

For more information on lecture behavior and laptop etiquette, click here.

Term Test in BIOL 4080 (worth 25% of your final mark)

There will be one **term test scheduled in-class on Monday March 5, 2018**. The test will cover all lecture material, required readings, video and web-based resources used in the course and indicated as testable and assignment topics posted up to and including Monday February 26, 2018). The format will be a mixture of multiple-choice and short-answer questions. Additional details will be posted in the folder entitled: "**BIOL 4080 Test Information**" on Blackboard closer to the test.

(2) ASSIGNMENT COMPONENT (worth 65% of your final mark)

The Assignments must be completed on your own time outside of class time (as homework) and submitted for marking through the Assignment Dropbox on Blackboard (and Turnitin) as instructed.

(i) Opinion Reports (3 reports worth 5% each for a total of 15% of final mark)

A variety of resources will be used as a basis for these reports which are designed to help students develop their critical thinking skills for evaluating sources of evidence and their abilities to formulate effective evidence-based arguments. These reports will be assigned throughout the term with the instructions provided in the folder entitled "**BIOL4080 Reports**" on Blackboard.

(ii) Argument Essays (2 evidence-based essays in bioethics worth a total of 35% of final mark)

Students will use their skills in critical reading and critical thinking to present evidence-based arguments for two issues in bioethics. The format outlined in the instructions posted in the folder entitled "**BIOL4080 Argument Essays**" on Blackboard must be followed. Submission to Turnitin (see Note below) will be required for both essays. The due dates are :

1. Evidence-based Argument on a Human/Medical Issue (due February 15, 2018)
2. Evidence-based Argument on an Animal Welfare/Environmental Issue (due March 22, 2018)

(iii) Journal with Reflection (collection / summary of ethical issues worth 15% of final mark)

Students are asked to collect a variety of media reports on current bioethical issues throughout the term. Each media report should be summarized by describing the issues and the basis of the debate. Then students are asked to reflect on these issues and briefly write a critical reflection of these issues and how they have impacted their own views of issues in biology and the future of this science. The instructions for this journal and reflection exercise will be provided in the folder entitled "**BIOL4080 Journal**" on Blackboard.

- These **journal with reflection must be submitted to the Instructor as a hardcopy** as instructed by the deadline (Thursday April 5, 2018). The **journal with reflection must also be submitted to Turnitin** following the instructions provided.

(3) PARTICIPATION COMPONENT (worth 10% of your final mark)

There are two ways that students can gain credit for class participation during this course. To do so requires regular attendance and a willingness to be engaged in the course content and to share ideas with the class and instructor.

(i) In-Class Participation Activities (worth 10% of the final mark)

An unspecified number of participation activities will be used randomly and without warning throughout the lectures in this course. These activities are designed to engage students in the course material, to help students understand important concepts and to help the instructor assess if students are mastering the lecture material presented. These activities will be used to 'reward' students who regularly attend and participate in the lectures. Please **do not ask if participation activities are scheduled** - they are not!!

These participation activities will be scattered throughout the course lectures. While most participation activities will take place during the lectures and will require attendance in the lecture, there will be some participation activities that can be completed (at least in part) as homework and submitted through Blackboard email/assignment dropbox without attending the lecture. These activities will be marked and the total will represent 10% of the final mark in the course.

(ii) In-class Exercises (no marks assigned for these exercises):

An unspecified number of short in-class exercises will be used throughout the lectures in this course to demonstrate key concepts or practice various critical thinking techniques. There are no marks assigned for these exercises.

IMPORTANT NOTE REGARDING MISSED COURSE TERM WORK

All term work (reports, essays, participation activities, term test, etc.) **must be completed and submitted by the last day of classes** (Monday April 9, 2018). **All issues regarding term work must be brought to the attention of the Instructor on or before the last day of classes** (Monday April 9, 2018). Ideally all term issues can be dealt with prior to the final exam period.

NOTE: There is no option to complete or submit any term work once the term has ended and the final exam period has started. Also there will be no option to do alternative work (e.g. extra assignments, or other 'special' activities) to make-up missed term work.

(1) Opinion-based Reports

If you miss the submission deadline for any of the 3 opinion reports, your report will be assessed a late penalty (10% per day including weekends). **No special consideration for extenuating circumstances will be given in this course without verifiable documentation.**

(2) Journal with Reflection

If you miss the submission deadline for the journal with reflection (Thursday April 5, 2018), your assignment will be assessed a late penalty (10% per day including weekends) until the last day of classes (Monday April 9, 2018). **No special consideration for extenuating circumstances will be given in this course without verifiable documentation.**

(3) Arguments Essays

Under normal circumstances, extensions to essay due dates will not be granted. If a student misses the submission deadline for an essay, **a late penalty of 10% per day** (including weekends) **will be assessed**. If students anticipate having issues in meeting the stated deadlines, they should

discuss the situation with the Instructor as soon as possible and well in advance of the deadline. Students will need to provide verifiable documentation to the Instructor for any consideration. Legitimate reasons are illness or death in the family, and appropriate documentation is a note from a doctor (using the UOIT Medical Note) or a photocopy of a death certificate, respectively. Any other issues must be documented and discussed with the Instructor. **No special consideration for extenuating circumstances will be given in this course without verifiable documentation.**

NOTE: The essays must be submitted to Turnitin; failure to do so will result in a mark or zero (0) for the assignment(s) involved. The submission time on Turnitin will be taken as the official submission time - late penalties will be applied if the submission made after the deadline**. The file submission to Turnitin must be identical to the electronic copy submitted through the Blackboard or the hardcopy submitted to the Instructor.**

(4) Term Test (scheduled in-class on Monday March 5, 2018)

If you miss the term test for a legitimate reason and can provide appropriate documentation, you will be given the option to write it on an alternative date determined by the instructor. A tentative date has been set as Monday March 12, 2018 – time and location to be determined as necessary. NOTE: the **term test must be written before the last day of classes** since there is no final exam for re-weightng the value of a missed midterm, as is usual in Faculty of Science courses. There is no option to re-weight the value of a test to another form of assessment (e.g. essays, participation activities).

Legitimate reasons are illness or death in the family, and appropriate documentation is a UOIT Medical Statement completed by your doctor or a photocopy of a death certificate, respectively. Contact the Instructor and Faculty of Science Academic Advisors as soon as possible by email at science.advising@uoit.ca. You must **submit your documentation within 3 business days of the missed test date**. If you miss a test without a legitimate reason or do not (cannot) provide the any suitable documentation, you will receive a mark of zero (0) for the term test. If you cannot write term test for any other reason, it **MUST** be discussed with the instructor as soon as possible and at least 7 days **BEFORE** the scheduled test date. The instructor will make a decision on a case-by-case basis.

IMPORTANT NOTE REGARDING FINAL EXAM AND FINAL GRADE

(1) Final Exam

There will be **no final exam scheduled in BIOL 4080 in the Winter 2018 term**. The journal assignment will be treated like a final exam with the marks not released to the students through Blackboard until after the final grades have been released through the Registrar's Office.

(2) Final Grades

The final grades will be released to students through MyCampus at the end of term after marks review and submission by course instructors. Note the grades are final and are not subject to discussion or negotiation with the instructor. If students have concerns, they have the option to view their final exam and/or to appeal their final grade. There are established university-wide procedures that must be followed in such cases. Always consult the Registrar's Office for information on how to deal with your concerns. Check this link to the Registrar's Office.

NOTE: There are no options for students to do extra assignments or other activities to make up for unsatisfactory performance in a course after final grades are submitted.

Important Dates and Academic Policies at UOIT

- Additional information for students and useful links to academic policies and services at UOIT can be found on Blackboard (in the folder entitled: "**Important UOIT Links**").

Important Academic Dates for 2017-2018

- Always check the Important UOIT Academic Dates for Undergraduates to avoid missing university deadlines throughout the semester. Refer to the UOIT Academic Calendar for 2017/2018 for university policies and program and courses descriptions and requirements**.**

Faculty of Science Policies

- Key Faculty of Science policies:
  - If you have already written or submitted a test, assignment, or any other term work, you cannot receive consideration for your performance on it "after the fact".
  - There are no make-up exams, tests or assignments. The normal Policy for missed term work is to re-weight the remaining work of the course to account for the missing grade. Normally the re-weighting will be applied to the final exam in the course.
- For more complete details of academic policies for the Faculty of Science, please refer to the link to Academic Policies on the Faculty of Science website.

Learning Considerations at UOIT

- Students with diverse learning styles and needs are welcome in this course. If you have a disability or health consideration (e.g. hearing, learning, medical, physical, psychiatric or visual disability) that may require accommodations, please feel free to approach the instructors in this course and/or the Student Accessibility Services, which support accessible and equal education.
- Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code by seeking completing a request through Student Accessibility Services; requests must be made in a timely manner. Students must provide relevant and recent documentation to verify the effect of their disability and to allow the university to determine appropriate accommodations.
- Decisions made in accordance with the Ontario Human Rights Code will be consistent with and supportive of the essential requirements of courses / programs, and provided so the dignity of students with disabilities are respected while encouraging integration and equality of opportunity.

Academic Integrity (Plagiarism, Cheating)

- Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship which is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by disciplinary action.
- Students are expected to be familiar with and abide by UOIT's Regulations on Academic Conduct which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from UOIT. Being unfamiliar with the regulations on academic conduct is not a defense against its application.

- Specifically **students should seek credit only for their own individual work** (e.g. their own ideas and efforts). Always paraphrase the work of others (never copy word to word) and always give proper acknowledgement using appropriate citations within the text of the submitted work. A reference list for all sources of information cited in the body of the written work must be included in a standard format at the end of the submitted work. If a report fails to identify the student's own contribution clearly, it will be considered inadequate. This may result in the work being awarded a mark of zero (0%) or more severe academic sanctions. **Copying the work of another student, instructor, TA or copying a previously published work** (e.g. books, journals, newspapers, textbooks, websites, etc.) **and submitting this material as your own work** (for assignments, laboratory work, presentations, etc.) **is considered plagiarism**. This type of academic misconduct will not be tolerated. Students who cheat in this manner will receive a mark of zero for the submitted work involved (even if only a small portion of the work has been plagiarized) and a minor academic misconduct document will be filed with Academic Advising. Note that you will not receive any warning; you will be penalized at the very first offence). However, depending on the severity of the plagiarism or if plagiarism has already occurred in this or any other courses taken at UOIT, additional significant academic penalties may be imposed. You can learn more by consulting the link to Academic Integrity.
- Cheating during midterm tests and final exams is a serious academic offence and students will be penalized according to the Regulations on Academic Conduct.
- REMEMBER that academic offences can carry significant academic consequences. You should refer to the UOIT Academic Calendar for 2017/2018 for further details.

Use of Turnitin at UOIT

- UOIT is committed to the fundamental values of preserving academic integrity so UOIT faculty members reserve the right to use electronic means to detect and help prevent plagiarism.
- Students agree that by taking this course assignments may be subject to submission for textual similarity review by Turnitin.com where submitted assignments will be included in the Turnitin restricted access database for five academic years solely for the purpose of detecting plagiarism.
- The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the UOIT Turnitin.com website.
- Students who do not wish to have their work submitted to Turnitin.com must provide a special assignment cover sheet with their assignment at the time of submission to the instructor. A signed Turnitin.com Assignment Cover sheet can be obtained at the following link: http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf.

Additional Information and Important UOIT Links

- Additional information for students and useful links to general UOIT information at UOIT can be found on Blackboard (in the folder entitled: "**Important UOIT Links**").

Religious Observances

- Special consideration is provided for recognized holy days, which may be observed by our students (refer to http://www.interfaith-calendar.org/2018.htm).
- Though not all holy days require students to be absent from school, accommodations can be considered in those cases when students are required to be absent.
- **It is your responsibility to check due dates for all course work and tests or exams** and to inform your instructors or Science Academic Advising Office well in advance of any potential conflicts between religious observances and coursework at least 3 weeks prior to the deadline.
- Failure to do so may result in any consideration being denied. Documentation may be required.

Prevention of Sexual Violence

- UOIT is committed to the prevention of sexual violence in all is forms. For any UOIT student who has experienced Sexual Violence, **UOIT can help**. UOIT will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.
- If you think you have been subjected to or witnessed sexual violence:
    - Reach out to a Support Worker, who are specially trained individuals authorized to receive confidential disclosures about incidents of sexual violence.
    - Support Workers can offer help and resolutions options which can include safety plans, accommodations, mental health support, and more.
- To make an appointment with a Support Worker call 905-721-3392 or email supportworker@uoit.ca
- Learn more about your options at: www.uoit.ca/sexualviolence

Freedom of Information and Protection of Privacy Act (FIPPA)

- UOIT is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA") which provides a mechanism for requesting records held by the university.
- FIPPA requires that UOIT not disclose personal information of its students without their consent.
- It has important implications for the submission of course assignments, quizzes and other evaluative material in your courses in the Faculty of Science.
- FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of Science encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that UOIT will interpret this as an implied consent to the disclosure of your personal information in the normal course of returning graded materials to students.
- If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact the UOIT Chief Privacy Officer at: accessandprivacy@uoit.ca.

Neuropharmacology (BIOL 4820; CRN 73769) WINTER 2018

Wed 11:10 am – 2:00 pm, UA1240

Prerequisites: BIOL 3020 (Prin. Pharm & Tox.) and BIOL 3060 (Fund. Neurosci.)

Instructor: Dr. Jason Chung
Office: UAB 439
Office Hour: By appointment (On campus Mon-Thurs)

Email: Please contact Jason Chung, jason.chung@uoit.ca, with concerns pertaining to lecture material only. For exams, presentations and other course related questions please contact Sarah Abdelmassih.

Teaching Assistant: Sarah Abdelmassih, contact via Blackboard. Office hours by appointment.

Course Description:

This course will provide students with an overview of the principles of neuropharmacology, the study of drug actions on the nervous system. Topics covered in this course will include: cellular communication, signal transduction, drug action, neural systems and disorders.

Course Objectives:

To provide an introductory understanding of:
- nervous system function, neural communication, synaptic transmission
- drug actions, including amino acids, neuropeptides, and atypical neurotransmitters
- neural systems and disorders, including pain, sleep, cognitive function, schizophrenia and bipolar disorder
- how to communicate scientific concepts via written work and oral presentation

Required Text: *Molecular Neuropharmacology: A Foundation for Clinical Neuroscience*. 3rd *edition*. Eric J. Nestler, Steven E. Hyman, David M. Holtzman, Robert C. Malenka. McGraw Hill Education.

Grading and Evaluation:

Midterm I	25% (in class, Jan 31)
Midterm II	25% (in class, Mar 7)
Written assignment	10% (Due Fri Mar 2nd, by 11:59pm)
Video Presentation	10% (Due Fri Mar 30th, by 11:59pm)
Final	30% (TBA)

Exams

** No make-up exams will be given in this course. If you missed a midterm exam, proper documentation must be provided to the Faculty of Science in order to have your final exam re-weighed to include the missed midterm portion.

Any problems with the grading of examinations must be brought to the attention of the grader within **5 business days of return of the exam. Examinations written in pencil or erasable ink will **not** be eligible for re-grading or grade change. Questions regarding concepts and course material will always be entertained.

Please be on time for examinations. You will not be permitted to write midterm examinations if you arrive after written examinations have been submitted, nor will you be provided with extra time. Be sure to bring your valid student ID cards to all examinations. You will not be permitted to write the exams without a valid student ID card.

Written assignment (10%) Students will be assigned a topic pertaining to neuropharmacology. Each student is expected to write a single-spaced, 700 word document (including in-text references, max. 1.5 pages) based on the topic they are assigned. The assignment will be evaluated based on the guidelines provided in "BIOL 4820 Instructions for written assignment".

Video Presentation (10%) Students will create a video, narrating powerpoint slides of the topic they were given for the written assignment (above). Videos will be approx. 5-7min in length (approx. 5-10 slides). For more detail on presentation format and evaluation criteria, please refer to the document "BIOL 4820 Video Presentation Instructions". The video must be emailed to Sarah Abdelmassih by the due date. Late submissions will be penalized 10% per day.

Academic Honesty and Integrity: Plagiarism and cheating are serious offences and will be severely penalized. Plagiarism/cheating on course work will result in a zero for the submission. Students are encouraged to review posted policies. Academic policies can be found at the following website: http://www.uoit.ca/EN/academicintegrityfaculty/ & via desktop link. (Academic Conduct Policy: Section 5.15 in the Academic Calendar.) Students are encouraged to review these posted policies. **Do not cheat yourself out of an education!!**

By submitting work in this course for a grade, you acknowledge that you have read and understood the Academic Conduct Policy and understand what constitutes plagiarism/cheating. Furthermore, by submitting work for a grade in this course you pledge that all work submitted is your own.

It is expected that all students will conduct themselves in a professional manner and maintain the highest standards of academic honesty.

Final Exam View Requests: If you wish to view your final exam, submit a hard copy of the final examination review request form to the Faculty of Science office within 5 business days of the release of final course grades.

Course Outline and Tentative Lecture Schedule:

The schedule presented in this syllabus is tentative and is subject to change.

Lecture	Date	Lecture Topic	
1	Jan. 10	Basic principles of Neuropharmacology	Ch. 1
2	Jan. 17	Cellular Basis of communication	Ch. 2
3	Jan. 24	Synaptic Transmission	Ch. 3
4	Jan. 31	**Midterm 1 – in class** Release of written assignment	Ch. 1-3
5	Feb. 7	Signal Transduction in the brain	Ch. 4
6	Feb. 14	Excitatory and inhibitory amino acids	Ch. 5
7	Feb. 21	**Term Break – no class**	
8	Feb. 28	Monoamines, Acetylcholine and Orexin Written assignment due Friday March 2nd by 11:59pm	Ch. 6
9	Mar. 7	**Midterm 2 – in class**	Ch. 4-6
10	Mar. 14	Atypical Neurotransmitters	Ch. 8
11	Mar. 21	Neural and Neuroendocrine Control	Ch. 10
12	Mar. 28	Reinforcement and Addictive Disorders Presentation video due Friday March 30 by 11:59pm	Ch. 16
13	Apr. 4	Study period, no class	Ch. 18 Ch. 20

Appendix F: Faculty CVs

Jason Chung

93 Virginia Ave, Toronto, Ontario, Canada M4C2T1
(647) 718-2214
jason.chung@uoit.ca

Summary

Academic associate and accomplished scientist with 15 years of experience within academia, the pharmaceutical industry and undergraduate lecturing. Areas of specialization include animal and human physiology, obesity, metabolic disease and inflammation.

Relevant Lecture and Teaching Experience

Lecturer: BIOL 3060 Fundamentals of Neuroscience 2014- present
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 4820 Neuropharmacology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 4040 Applied Molecular Biology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 4050 Advanced Topics in Pharmaceutical Biotechnology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 1000 Foundations in Bioscience
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 1020 Introduction to Organismal Biology and Ecology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 1841 Essentials of Biology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 3032 Advanced Microbiology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL 3660 Ecology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL2830 Microbiology for Health Science (Hybrid-online)
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL2010 Introductory Physiology
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIOL4070 Advanced Biochemistry
Faculty of Science, University of Ontario Institute of Technology (UOIT)

Lecturer: BIO270/271 Animal Physiology I&II
Dept. of Cell and Systems Biology, University of Toronto

Lecturer: PSL301 Human Physiology
Dept. of Physiology, University of Toronto

Guest lecturer: NFS486H1S Obesity: Metabolic and Clinical Aspects
Dr. Debbie Gurfinkel, Dept. of Nutritional Sciences, University of Toronto
Lecture topics: protein pathways of obesity, inflammation, biological markers of type 2 diabetes.
Creation of exam questions

Guest lecturer: KPE467H Cellular Muscle Biology
Dr. Marius Locke, Faculty of Kinesiology and Physical Education
Lecture topics: the cellular stress response, unfolded proteins, endoplasmic reticulum stress, molecular chaperones, inflammation

Guest lecturer: KPE328H1 Exercise, Health and Nutrition
Dr. Daniel Moore, Faculty of Kinesiology and Physical Education
Lecture topics: Nutrient metabolism, protein pathways in fat and muscle, benefits of exercise in maintenance of glucose regulation.
Creation of exam questions

Guest Speaker: Canadian Nutrition Society University Seminar Series – Ryerson University
Presentation topic: The fundamentals of insulin signalling, obesity and type 2 diabetes

Guest Speaker: **Golden Key International Honour Society, Canadian Regional Summit**
Presentation topic: Scientific research and career development in academia vs. industry

BIOL2043 and BIOL2044 Tutorial Leader and Laboratory Demonstrator 2004-07
Dr. Richard Guy, School of Medical Sciences, RMIT University
*Supervised tutorial lessons and laboratory sessions for undergraduate medical science students.
*Course topics include human physiology, biology and gross anatomy (total group size 100 students)

RMIT University Volleyball Instructor
Dr. Bernard Holland, School of Medical Sciences, Division of Exercise Sciences
*Designed and executed lessons involving skill acquisition and coaching practice in the sport of volleyball (total group size 60 students)

Relevant Research and Employment Experience

Postdoctoral Research Fellow, University Health Network, Division of Cellular and Molecular Biology, Toronto General Hospital 2012-present
Supervisor: Dr. Daniel Winer, M.D., Assistant Professor of Laboratory Medicine, University of Toronto

*Examined the role of immune dysfunction, inflammation and metabolic disease.
*Investigated the effect of small molecule drug treatment on immune cells, cytokine production, lipid accumulation and insulin resistance.

Senior Scientist, Pfizer Inc., Cambridge, MA., Oligonucleotide Therapeutics Unit, Dept. of Biology 2010-11

Supervisor: Dr. Romesh Subramanian, Senior Principal Scientist

*Determined metabolic profile of mouse transgenic cholesterol models.
*Examined insulin and glucose tolerance, fuel consumption, hepatic steatosis and insulin signaling following nucleotide based therapy.
*Performed *in vivo* PK/PD studies using locked nucleic acids (LNA) with multiple routes of administration.
*Assessed triglyceride accumulation and insulin-mediated signaling pathways (multiplex ELISA) in liver and skeletal muscle.
*Collaborated with colleagues in matrix team format, performed hydrodynamic injection of plasmids in mice
*Designed and wrote Animal Use Protocols (AUP) for IACUC approval of metabolic studies.
*Guidance of internship student with tissue homogenization and preparation.

Postdoctoral Research Fellow, Children's Hospital Boston, Division of Endocrinology, Harvard Medical School 2008-10

Principal Investigator: Dr. Umut Ozcan, M.D., Assistant Professor of Pediatrics, Harvard Medical School

*Examined the pharmacodynamic role of anti-obesity drugs in ameliorating endoplasmic reticulum stress, leptin resistance and type 2 diabetes.
*Optimization of drug dosing and duration of treatment using *in vivo* delivery of chemical chaperones and small-molecular weight compounds in C57Bl/6, *ob/ob*, *db/db* and DIO mice.
*Designed and executed *in vitro* tissue culture experiments, including time-dose dependent treatment of cells.
*Analysis of metabolic signaling pathways using western blot, qPCR, ELISA and various *in vitro* assays.
*Examined the effect of these compounds on appetite suppression, body composition and the unfolded protein response.
*Communicated with multiple commercial companies with regards to compound ordering and optimization.
*Collaborated with internal departments and external scientists to expedite efficiency of experiments.
*Inducted new employees with regards to animal care protocols.
*Supervised intern medical students with daily lab practice.

Ph.D., RMIT University, School of Medical Sciences 2003-07

Thesis title: The biological role of heat shock protein 72 in preventing obesity-induced insulin resistance

Principal Investigator: Dr. Mark A. Febbraio, Professor of Cell Biology, Baker Heart and Diabetes Institute

*Completed experiments using $HSP72^{+/+}$ transgenic mice, thermal induction via heat stress and chemical induction via drug administration.
Aim: To examine whether the expression of protein chaperones could prevent inflammation, obesity and insulin resistance
*Planned and organized duration of heat treatment, composition of high-fat diet, assessment of insulin resistance and optimization of tissue extraction in WT and $HSP72^{+/+}$ mice.
*Performed *in vitro* tissue culture in C2C12 myotubes and RAW 264.7 to examine heat and insulin mediated protein expression
*Examined interactions between various pathways including IRS1-Akt-GLUT 4, HSF1-HSP72, JNK1/2, TNFα and NFκβ
*Collaborated with international scientists and composed a manuscript resulting in a peer reviewed publication in *The Proceedings of the National Academy of Science, USA (PNAS)*.
*Mentored new team members in standard operating procedures for experiments requiring approval by animal welfare committee.

Research Associate, Cellular and Molecular Metabolism Laboratory, 2007
Baker Heart and Diabetes Institute
*Collaborated with senior scientists and animal care staff in establishing a metabolic facility for assessment of diabetic parameters in rodents.
*Taught surgical and *in vivo* techniques to research staff, including jugular vein catheterization, radioactive glucose and insulin infusions via euglycemic-hyperinsulinemic clamps and organ extraction in mice.

Academic Publications

Luck H, Tsai S, **Chung J**, Clemente-Casares X, Ghazarian M, Revelo XS, Lei H, Luk CT, Shi SY, Surenda A, Copeland JK, Ahn J, Prescott D, Rasmussen BA, Chng MH, Engleman EG, Girardin SE, Lam TK, Croitoru K, Dunn S, Philpott DJ, Guttman DS, Woo M, Winer S, Winer DA. Regulation of obesity-related insulin resistance with gut anti-inflammatory agents. ***Cell Metabolism (2015)***, 21(4): 527-42.

Henstridge DC, Bruce CR, Drew BG, Tory K, Kolonics A, Estevez E, **Chung J**, Watson N, Gardner T, Lee-Young RS, Connor T, Watt MJ, Carpenter K, Hargreaves M, McGee SL, Hevener AL, Febbraio MA. Activating HSP72 in rodent skeletal muscle increases mitochondrial number and oxidative capacity and decreases insulin resistance. ***Diabetes (2014),*** 63(6): 1881-94.

Zhou Y, Lee J, Reno CM, Sun C, Park SW, **Chung J**, Lee J, Fisher SJ, White MF, Biddinger SB, Ozcan U. Regulation of glucose homeostasis through XBP-1-Fox01 interaction. ***Nature Medicine (2011)***, 17(4): 356-65.

Park S, Zhou Y, Lee J, Lu A, Sun C, **Chung J**, Ueki K, Ozcan U. The regulatory subunits of PI3K, P85α and P85β, interact with XBP1 and increase its nuclear translocation. ***Nature Medicine* (2010)**, 16(4): 374-6.

Ozcan L, Ergin AS, Lu A, **Chung J**, Sarkar S, Nie D, Myers Jr MG, Ozcan U. Endoplasmic reticulum stress plays a central role in development of leptin resistance. ***Cell Metabolism* (2009)**, 9(1): 35-51.

Chung J, Nguyen AK, Henstridge D, Holmes AG, Chan MHS, Mesa JL, Lancaster GI, Southgate RJ, Bruce C, Duffy SJ, Horvath I, Mestril R, Watt MJ, Hooper PL, Kingwell BA, Vigh L, Hevener A, Febbraio M. HSP72 protects against obesity-induced insulin resistance. ***Proceedings of the National Academy of Science, USA (2008)****, 105(5): 1739-44 (peer reviewed).*

Holmes AG, Mesa JL, Neill BA, **Chung J**, Carey AL, Steinberg GR, Kemp BE, Southgate RJ, Lancaster GI, Bruce CR, Watt MJ, Febbraio MA. Prolonged interleukin-6 administration enhances glucose tolerance and increases skeletal muscle PPARα and UCP2 expression in rats. ***Journal of Endocrinology (2008)****, 198(2): 367-74.*

Febbraio MA, Mesa JL, **Chung J**, Steensberg A, Keller C, Nielsen HB, Krustrup P, Ott P, Secher NH, Pedersen BK**.** Glucose ingestion attenuates the exercise-induced increase in circulating heat shock protein 72 and heat shock protein 60 in humans*.* ***Cell Stress and Chaperones* (2004)**, *9(4):390-6*

Education

Ph.D., Anatomy and Physiology, Royal Melbourne Institute of Technology (RMIT), 2003-08
School of Medical Science, Melbourne, Australia
Thesis specialization: The role of heat shock protein 72 (HSP72) in preventing obesity-induced insulin resistance

BPHE Bachelor of Physical Education and Health, University of Toronto, Faculty of Physical Education and Health, Toronto, Canada 1997-01
Relevant courses: Biology, physiology, independent research course (graduate level) – apoptosis, neuroendocrine function, biomechanics, anatomy

Research course, Defence Research and Development Canada (DRDC) 2002-02
Supervisor: Dr. Shawn Rhind, Assistant Professor of Physiology, University of Toronto.
*Examined the effects of exercise on apoptosis and heat shock protein induction in humans.
*Performed apoptosis assays and flow cytometry to examine immune cells in human blood.
*Collaborated with scientists from Canadian Defence Department in recruiting human subjects.

Research course, **University of Toronto** 2001-02
Supervisor: Dr. Gretchen Kerr, Associate Dean of Physical Education and Health
*Critique of literature and thesis composition examining the central nervous system, immune function and psychosocial stress.

Research course, **University of Toronto** 2001-02
Supervisor: Dr. Douglas Richards, Assistant Professor, University of Toronto
*Recruited human subjects and performed muscle contraction protocol using Biodex Isokinetic Analysis system.

Laboratory Volunteer (summer) 1999
Supervisor: Dr. Carol Rodgers, Adjunct Professor, University of Toronto
*Basic rat necropsy and completion of animal care and safety training

Conference Proceedings, Abstracts and Posters

Keystone Symposia, Type 2 Diabetes and Insulin Resistance 2005, 2009, 2011
Poster Presentation (Vancouver, 2005 and Banff, 2009), Canada

Australian Diabetes Society (ADS) Annual Scientific Meeting 2007
Young Investigators Competition, Oral Presentation, Christchurch, New Zealand

Exercise and Muscle Metabolism Meeting 2007
Poster Presentation, University of Melbourne, Melbourne, Australia

Awards/Scholarships

Australian Diabetes Society Young Investigators Award: awarded for outstanding performance and presentation of research material and innovation. 2007

Academic All-Canadian (University of Toronto Excellence T-holder Association): awarded for excellence in academic and athletic achievement at the varsity level 2002

University of Toronto Bronze T award: awarded for leadership and sportsmanship at the varsity level 1999

Hager/Hull/Miller Scholarship Award: for excellence in academic and athletic achievement 1997

References

Dr. Chris Garside, University of Toronto, Dept. of Cell and Systems Biology. (416) 978-7780.
chris.garside@utoronto.ca

Dr. Sean Forrester, University of Ontario Institute of Technology, Faculty of Science. (905) 721-8668 ext. 2937.
sean.forrester@uoit.ca

Sean Geritt Forrester, Ph.D

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sean.forrester@uoit.ca

EDUCATION

PhD- Molecular Parasitology (1997-2002) Institute of Parasitology, McGill University, Quebec, Canada.
Advisors: Drs. Robin N. Beech and Roger K. Prichard

MSc- Biology/Parasitology (1995-97) Lakehead University, Ontario, Canada.
Advisor: Dr. Murray Lankester

BSc- Biology (1991-95) Cape Breton University, Nova Scotia, Canada.

APPOINTMENTS

Associate Dean, Faculty of Science (2018-current)
University of Ontario Institute of Technology

Director (Biological Sciences) (2012-2018)
University of Ontario Institute of Technology

Appraisal Committee (Council of Ontario Universities) (2013-2016)

Associate Dean of Graduate Studies (2009-2011)
University of Ontario Institute of Technology

Director (Applied Bioscience Graduate Program) (2007-2009)
University of Ontario Institute of Technology

Associate Professor (2009-current)
Faculty of Science, University of Ontario Institute of Technology

Assistant Professor (2004-2009)
Faculty of Science, University of Ontario Institute of Technology

Adjunct Professor (2006-present)
Institute of Parasitology, McGill University

RESEARCH GRANTS AWARDED

1. Zoetis Research and Development Grant (2018-2021)	$78,000
2. NSERC Discovery Grant (2015-2020):	$120,000
2. NSERC Discovery Grant (2005-2010):	$176,500
3. CFI Leaders Opportunity Fund (2006)	$76,258
4. NSERC Research Tool and Instruments (Co-applicant) (2006):	$45,000
5. NSERC Discovery Grant (2010-2015):	$135,000
6. NSERC Research Tool and Instruments (Co-applicant) (2010):	$40,510
7. CHPI New Initiatives (Co-applicant) (2011):	$60,000

OTHER GRANTS AWARDED

SYNAPSE CIHR/STIHR Youth Mentorship Initiative: 2007-2008. "UOIT's Science Research for Health Day". PI: J.M. Green-Johnson. Co-applicants: W. Smith, **S. Forrester**, H. Jones-Taggart, E. Vogel and O. Sanchez. ($15,000)

Teaching Innovation Fund "Creation of Online Modules for First Year Biology". 2013. PI: **S Forrester**. Co-applicants: S Bardin, G Stamatiou; A Tavares; M Olaveson ($8000)

FELLOWSHIPS, AWARDS AND HONOURS

Research Excellence Nomination (Early Stage Researcher) **UOIT (2013)**
NSERC Post-Doctoral Fellowship ($80,000) (declined) **(2004)**
T.W.M Cameron Award for excellence in Parasitology, **McGill University (2003)**
Dean's Honours List, **McGill University (2003)**
Standard Life Dissertation Award (declined) ($6,000), **McGill University (2002)**
McGill Major Fellowship ($15,000) **(2000)**
Murray Fallis Award/Best Parasitology Paper, **Canadian Society of Zoologists (2000)**
Meritorious Student Paper Award, **American Society of Parasitologists (2000)**
Helen Battle Award for Overall Best Poster, **Canadian Society of Zoologists (1999)**
Poster Award, Parasitology Section, **Canadian Society of Zoologists (1999)**
NSERC Postgraduate Scholarship ($38,400) **(1998-2000)**
McGill Major Fellowship ($15,000) (declined) **(1998)**
Best Student Paper Award, **American Society of Parasitologists (1998)**
Murray Fallis Award/Best Parasitology Paper, **Canadian Society of Zoologists (1997)**

PROGRAM DEVELOPMENT

1) Lead Program Co-developer, MSc in Applied Bioscience. Submitted to the Ontario Council of Graduate Studies, April 2006.

2) Lead Program Developer. PhD in Applied Bioscience. Submitted to the Ontario Council on Graduate Studies, September 2008.

3) Lead Program Developer. BSc Honors Degree. Integrative Neurobiology. March 2011

PROGRAM APPRASIAL

External Examiner Master of Health Science Program (UOIT) (2016)
Undergraduate Program Review Committee (Biological Science UOIT) (2016)
Undergraduate Program Review Committee (Biological Science UOIT) (2007)
Undergraduate Program Review (UPR) (Bachelor of Commerce UOIT) (2008)

GRADUATE STUDENTS (COMPLETED)

Josh Foster (MSc 2016)
Thesis Title: Examination of intramolecular interactions between residues of the cys-loop GABA receptor Hco-UNC-49 from *Haemonchus contortus*
Current Position: Technician at Dynacare

Ariel Kwaka (MSc, 2014)
Thesis Title: Investigation into the role of binding loop E on the function of the nematode cys-loop GABA receptor
Current Position: Teaching Assistant

Mark Kaji (MSc, 2012)
Thesis Title: Molecular characterization of agonists that bind to the nematode GABA receptor
Current position: PhD Student McGill University

Vijay Rao (PhD, 2010)
Thesis Title: Characterization of novel ligand-gated chloride channel subunits from *Haemonchus contortus*
Current position: Research Associate (Montreal Neurological Institute)

Michael Accardi (MSc, 2010)
Thesis Title: Molecular characterization of the binding site of nematode GABAA receptors
Current position: Research Scientist in Safety Pharmacology, Study Director (CiToxLAB)

David Brown (MSc, 2010)
Thesis Title: The pharmacological characterization of Hco-UNC-49, a GABA-gated chloride channel from the parasitic nematode *Haemonchus contortus*
Current position: PhD student (University of Toronto)

Salma Siddiqui (MSc, 2009)
Thesis Title: Molecular characterization of GABA receptor subunits from *Haemonchus contortus*
Current position: Virology Manufacturing Processing Technician at Microbix Biosystems Inc.

REFEREED CONTRIBUTIONS

Invited book chapter

Forrester SG and Pearce EJ (2006) Immunobiology of Schistosomes. *In*: Parasitic Flatworms: Molecular Biology, Biochemistry, Immunology and Physiology. Eds AG Maule and NJ Marks. CAB International

Articles (* indicates student)

27. Josh Foster*, Everett Cochrane*, Mohammad Hassan Khatami, Sarah A. Habibi*, Hendrick de Haan, Sean G. Forrester (2018) A mutational and molecular dynamics study of the cys-loop GABA receptor Hco-UNC-49 from Haemonchus contortus: Agonist recognition in the nematode GABA receptor family Int J Parasitol Drugs Drug Resist (in press)

26. Habibi SA*, Callanan M*, Forrester SG (2018) Molecular and pharmacological characterization of an acetylcholine-gated chloride channel (ACC-2) from the parasitic nematode Haemonchus contortus. Int J Parasitol Drugs Drug Resist. doi: 10.1016/j.ijpddr.2018.09.004

25. Kwaka A*, Khatami MH, Foster J*, Cochrane E*, Habibi SA*, de Haan HW, Forrester SG (2018) Molecular characterization of binding loop E in the nematode cys-loop GABA receptor. Mol Pharmacol doi: 10.1124/mol.118.112821.

24. Abdelmassih SA, Cochrane E, Forrester SG (2017) Evaluating the longevity of surgically extracted Xenopus laevis oocytes for the study of nematode ligand-gated ion channels. Invert Neurosci 18(1):1

23. **Forrester SG**, Foster J*, Robert S*, Salim L*, Desaulniers JP. (2017) Efficient synthesis of the GABA(A) receptor agonist trans-4-aminocrotonic acid (TACA). Bioorg Med Chem Lett. 15;27(18):4512-4513. doi: 10.1016/j.bmcl.2017.07.050.

22. Duguet TB*, Charvet CL, **Forrester SG**, Wever CM, Dent JA, Neveu C, Beech RN (2016) Recent Duplication and Functional Divergence in Parasitic Nematode Levamisole-Sensitive Acetylcholine Receptors. PLoS Negl Trop Dis. 14;10(7):e0004826

21. Kaji MD*, Kwaka A*, Callanan MK*, Nusrat H*, Desaulniers JP, **Forrester SG** (2015) A molecular characterization of the agonist binding site of a nematode cys-loop GABA receptor. *Br J Pharmacol* 172(15):3737-47

20. Beech RN, Callanan M*, Dawe B* and **Forrester SG** (2013) Characterization of cys-loop receptor genes involved in inhibitory amine neurotransmission in parasitic and free living nematodes. *Parasitology International* 62(6):599-605

19. Siddiqui SZ*, Accardi MV*, Brown DR* and **Forrester SG** (2012) Hco-LGC-38 is novel nematode cys-loop GABA receptor subunit. *Molecular and Biochemical Parasitology* 185(2):137-44

18. Accardi MV*, Beech RN and **Forrester SG** (2012) Nematode cys-loop GABA receptors: biological function, pharmacology and sites of action of anthelmintics. *Invertebrate Neuroscience* **12**:3-12

17. Brown DR*, Siddiqui SZ* and **Forrester SG** (2012) Pharmacological characterization of the *Haemonchus contortus* GABA-gated chloride channel, Hco-UNC-49: a potential target for macrocyclic lactone anthelmintics and a receptor for piperazine. *Veterinary Parasitology* **185**: 201-209

16. Accardi MV* and **Forrester SG** (2011) The *Haemonchus contortus* UNC-49B Subunit Possesses the Residues Required for GABA Sensitivity in Homomeric and Heteromeric Channels. *Molecular and Biochemical Parasitology* 178(1-2):15-22.

15. Rao VT*, **Forrester SG**, Keller K and Prichard RK (2011) Localization of serotonin and dopamine in *Haemonchus contortus. International Journal of Parasitology* **41**: 249-254.

14. Rao V*, Accardi M*, Siddiqui SZ*, Beech, RN, Prichard RK and **Forrester SG** (2010) Characterization of a novel tyramine-gated chloride channel from *Haemonchus contortus. Molecular and Biochemical Parasitology* 173(2):64-8.

13. Siddiqui SZ*, Brown DR*, Rao VTS*, **Forrester SG** (2010) An UNC-49 GABA receptor subunit from the parasitic nematode *Haemonchus contortus* is associated with enhanced GABA sensitivity in nematode heteromeric channels. *Journal of Neurochemistry* **113**,1113-1122

12. Beech RN, Levitt N*, Cambos M*, Zhou S* and **Forrester SG** (2010) Association of ion-channel genotype and macrocyclic lactone sensitivity traits in *Haemonchus contortus. Molecular and Biochemical Parasitology* **171**, 74-80

11. Rao V*, Siddiqui SZ*, Prichard RK and **Forrester SG** (2009) A dopamine-gated ion channel (HcGGR3) from *Haemonchus contortus* is expressed in the cervical papillae and is associated with macrocyclic lactone resistance. *Molecular and Biochemical Parasitology* 166: 54-61.

10. **Forrester SG** and Siddiqui SZ* (2008) A novel member of the ligand-gated chloride channel gene family from *Hemonchus contortus*. *Parasitology* **135**: 539-545

9. **Forrester SG,** Warfel PW and Pearce EJ (2004) Tegument expression of a novel type II receptor serine/threonine kinase in *Schistosoma mansoni*. *Molecular and Biochemical Parasitology* **136**: 149-156

8. **Forrester SG,** Beech RN and Prichard RK (2004) Agonist enhancement of macrocyclic lactone activity at a glutamate-gated chloride channel subunit from *Haemonchus contortus*. *Biochemical Pharmacology* **67**: 1019-1024

7. Prichard RK, **Forrester SG**, Njue A, Feng X, Liu J and Beech RN (2003). Receptor mechanisms of antiparasitics. *Veterinary Pharmacology and Therapeutics* **26 (supp)**: 29-31

6. **Forrester SG,** Prichard RK, Dent JA and Beech RN (2003) *Haemonchus contortus*: HcGluCla expressed in *Xenopus* oocytes forms a glutamate-gated ion channel that is activated by ibotenate and the anti-parasitic drug ivermectin. *Molecular and Biochemical Parasitology* **129**(1):115-121

5. **Forrester SG,** Prichard RK and Beech RN (2002) A glutamate-gated chloride channel subunit from *Haemonchus contortus:* expression in a mammalian cell line, ligand-binding and modulation of anthelmintic binding by glutamate. *Biochemical Pharmacology* **63**(6):1061-8

4. **Forrester SG**, Hamdan FF, Prichard RK and Beech RN (1999) Cloning, sequencing, and developmental expression levels of a novel glutamate-gated chloride channel homologue in the parasitic nematode *Haemonchus contortus. Biochemical and Biophysical Research Communications* **254**: 529-534

3. **Forrester SG** and Lankester MW (1998) Over-winter survival of first-stage larvae of *Parelaphostrongylus tenuis* (Nematoda: Protostrongylidae). *Canadian Journal of Zoology* **76**: 704-710

2. **Forrester SG** and Lankester MW (1997) Extracting *Protostrongylus* spp. larvae from bighorn sheep feces. *Journal of Wildlife Diseases* **33**: 868-872

1. **Forrester SG** and Lankester MW (1997) Extracting protostrongylid nematode larvae from ungulate feces. *Journal of Wildlife Diseases* **33**: 511-516

NATIONAL CENTER FOR BIOTECHNOLOGY INFORMATION (GENBANK) SUBMISSIONS

Callanan M and **Forrester SG** (2013) Isolation of an acetylcholine-gated chloride channel gene (ACC1) from *Haemonchus contortus* (GenBank Submission)

Callanan M and **Forrester SG** (2013) Isolation of an acetylcholine-gated chloride channel gene (ACC2) from *Haemonchus contortus* (GenBank Submission)

Callanan M and **Forrester SG** (2013) Isolation of an acetylcholine-gated chloride channel gene (ACC4) from *Haemonchus contortus* (GenBank Submission)

Andrusiak K and **Forrester SG** (2010) Isolation and characterization of *cat-1*gene orthologue from *Haemonchus contortus* (GenBank Accession number JN092129)

Rao V, Beech R, Prichard RK and **Forrester SG** (2009) *Haeco_lgc-55*: Putative ligand-gated chloride channel (GenBank Accession number **FJ817373**)

Siddiqui,S.Z. and **Forrester,S.G** (2008) Isolation of a GABA receptor subunit gene (HcUnc49B) from *Haemonchus contortus* (GenBank Accession number **EU049602**)

Beech,R.N., Rao,V., Lian,J., Nabhan,J. and **Forrester,S.G** (2008) Ligand-Gated Ion-Channels of *Haemonchus contortus* (GenBank Accession number **EU879912**)

Brown,D.R. and **Forrester,S.G (**2007) A putative GABA-gated chloride channel subunit gene (RDL-like) from *Haemonchus contortus* (GenBank Accession number **EU251077**)

Siddiqui,S.Z. and **Forrester,S.G** (2007) Isolation of a GABA receptor subunit gene (HcUnc49c) from *Haemonchus contortus* (GenBank Accession number **EU049602**)

Rao V, Prichard R and **Forrester S (**2007) *Haemonchus contortus* GABA/glycine receptor subunit-3 (HcGGR-3) (GenBank Accession number **EF202570**)

Forrester S.G. (2007) A novel ligand-gated ion channel from *Haemonchus contortus* (GenBank Accession number **EF619540**)

Forrester S.G., Warfel,P.W. and Pearce,E.J. (2004) *Schistosoma mansoni* type II serine/threonine kinase mRNA, complete cds, alternatively spliced (GenBank Accession number **AY550912**)

Forrester S.G, Prichard,R.K. and Beech,R.N.(1999) Glutamate-gated chloride channel subunit allele associated with ivermectin susceptibility in *Haemonchus contortus* (GenBank Accession number **AF119792**)

Forrester S.G, Prichard,R.K. and Beech,R.N.(1999)Glutamate-gated chloride channel subunit allele associated with ivermectin resistance in *Haemonchus contortus* (GenBank Accession number **AF119791**)

Forrester S.G, Prichard,R.K. and Beech,R.N.(1998) *Haemonchus contortus* putative glutamate-gated chloride channel alpha subunit mRNA, complete cds (GenBank Accession number **AF076682**)

CONFERENCE PRESENTATIONS

Duguet TB, Charvet C, **Forrester S**, Wever C, Dent J, Neveu C, Beech R. (2015) Levamisole receptors in *Haemonchus contortus*: the impact of gene duplication. Molecular and Cellular Biology of Helminth IX, Hydra, Greece

Duguet TB, Charvet C, **Forrester** S, Wever C, Dent J, Neveu C, Beech R. (2015) Functional diversification of levamisole receptors in the trichostrongylid nematode *Haemonchus contortus*. 25th International Conference of the World Association for the Advancement of Veterinary Parasitology, Liverpool, United Kingdom

Kaji M, Kwaka A, Song J, Nusrat H, Grenade N, Desaulniers JP and **Forrester SG** (2014) A molecular characterization of the agonist binding site of a nematode cys-loop GABA receptor, Le Studium Institute for Advanced Studies Conference, France, Tours

Kaji M, Kwaka A,Song J, Nusrat H, Grenade N, Desaulniers JP and **Forrester SG** (2014) Chemical biology approach to the study of nematode cys-loop GABA receptors as nematocidal drug targets", Quebec Molecular Parasitology Symposium, Canada, Quebec, Montreal

Duguet R, Charvet C, Wever C, **Forrester S**, Dent J, Neveu C, Beech R (2014) Functional diversification of levamisole receptors in the trichostrongylid nematode *Haemonchus contortus*.", Anthelmintics: From Discovery to Resistance, United States, California, San Francisco

Thomas Duguet, Claude Charvet, **Sean G. Forrester**, Claudia M. Wever, Joseph A. Dent, Cédric Neveu, Robin N. Beech (2013) Functional diversification of levamisole receptors in the trichostrongylid nematode *Haemonchus contortus.* British Society of Parasitology. Bristol UK

Accardi M, Siddiqui S, Brown DR and **Forrester SG** (2011) Cys-loop GABA receptors in Haemonchus contortus: structural and pharmacological analysis. Symposium on Membrane Ion channels in Helminth Parasites, Resistance and Sites of Action for Anthelmintics, Philadelphia, PA

Callanan M, Kwaka A and **Forrester SG** (2011) Acetylcholine-gated chloride channel (ACC) genes in *Haemonchus contortus*. Symposium on Membrane Ion channels in Helminth Parasites, Resistance and Sites of Action for Anthelmintics, Philadelphia, PA

Rao VT, Accardi M, Siddiqui S, Beech R, Prichard R and **Forrester SG** (2010) Characterization of a novel tyramine-gated chloride channel from *Haemonchus contortus*. International Congress of Parasitology, Melbourne, Australia

Rao V, Siddiqui S, Prichard RK and **Forrester SG** (2009) HcGGR3: A dopamine-gated ion channel subunit in *Haemonchus contortus*. World Association for the Advancement of Veterinary Parasitology. Calgary AB, Canada

Siddiqui S and **Forrester SG** (2009) Isolation and electrophysiological characterization of two GABA receptor subunits from the parasitic nematode *Haemonchus contortus*. World Association for the Advancement of Veterinary Parasitology. Calgary AB, Canada

Rao V, Siddiqui S, Prichard RK and **Forrester SG** (2009) Characterisation of a novel dopamine-gated chloride channel (DGCC) subunit in *Haemonchus contortus*: Possible involvement in ivermectin resistance. Australian Society for Parasitology (ASP), Sydney, Australia

Rao V, Siddiqui S, Prichard R, and Forrester SG (2009) Dopamine as a neurotransmitter in *Haemonchus contortus*

9th Annual Quebec Molecular Parasitology Symposium, Montreal Quebec

Cooper W, Masotti A, Wagar L, Champagne C, Buckley N, **Forrester S** and Green-Johnson J (2009) Effects of growth phase and substrate on immunomodulatory activity of lactobacilli.
Annual Meeting of the American Association of Immunologists, Seattle WA

Rao V, Siddiqui S, Prichard RK and **Forrester SG** (2009) HcGGR3: Characterization of a novel ligand-gated ion channel from *Haemonchus contortus*. British Society of Parasitology, Edinburgh, UK

Rao V, Prichard RK and **Forrester** SG (2008) Cloning and characterization of a novel ligand-gated chloride channel in *Haemonchus contortus,* 8th Annual Quebec Molecular Parasitology Symposium, Montreal Quebec

Siddiqui S, Brown D and **Forrester SG** (2008) Identification of RDL-like GABA receptor subunit genes in *Haemonchus contortus*. 8th Annual Quebec Molecular Parasitology Symposium, Montreal Quebec

Rao V, Prichard RK and **Forrester SG** (2007) Cloning and characterization of a novel ligand-gated chloride channel gene in *Haemonchus contortus.* Canadian Society of Zoologists, Montreal, Quebec

Siddiqui S, Dosani N and **Forrester SG** (2007) Identification of GABA receptor subunit genes in *Haemonchus contortus*. Canadian Society of Zoologists, Montreal, Quebec

Forrester SG, Warfel PW and Pearce EJ (2005) Tegumental expression of a novel type II receptor serine/threonine kinase in *Schistosoma mansoni*. 5th Annual Quebec Parasitology Symposium, Montreal Quebec

Forrester SG, Beech RN and Prichard RK (2002) Genetic and biochemical characterization of a glutamate-gated chloride channel from *Haemonchus contortus*. Annual Meeting of the American Society of Parasitologists, Vancouver, BC

Beech RN, **Forrester SG** and Prichard RK (2001) Ion channels and anthelmintics in parasitic nematodes. Annual Meeting of the Canadian Society of Zoologists, Sudbury, ON

Forrester SG, Prichard RK and Beech RN (2000) Glutamate modulates ivermectin binding to a glutamate-gated chloride channel subunit from *Haemonchus contortus*. Annual Meeting of the American Society of Parasitologists, San Juan, Puerto Rico

Forrester SG, Prichard RK and Beech RN (2000) Glutamate modulates ivermectin binding to a glutamate-gated chloride channel subunit from *Haemonchus contortus*. Annual Meeting of the Canadian Society of Zoologists, St. Andrews, NB

Forrester SG, Blackhall WJ, Hamdan FF, Prichard RK and Beech RN (1999) A PCR based test for macrocyclic lactone resistance and characterization of an ivermectin receptor subunit from *Haemonchus contortus*. Annual Meeting of the World Association for the Advancement of Veterinary Parasitology, Copenhagen, Denmark

Forrester SG, Hamdan FF, Prichard RK and Beech RN (1999) Cloning and expression of a novel glutamate-gated chloride channel from the parasitic nematode *Haemonchus contortus*. Annual Meeting of the Canadian Society of Zoologists, Ottawa, ON

Forrester SG, Blackhall WJ, Prichard RK and Beech RN (1998) *Haemonchus contortus*: Selection at a glutamate-gated chloride channel gene and a potential genetic marker for ivermectin resistance. Annual Meeting of the American Society of Parasitologists, Kona, Hawaii

Forrester SG and Lankester MW (1997) Over-winter survivorship of first-stage larvae of *Parelaphostrongylus tenuis.* Annual Meeting of the Canadian Society of Zoologists, London, ON

Forrester SG (1995) Analysis of *Parelaphostrongylus tenuis* in white-tailed deer in Cape Breton. Atlantic Universities Undergraduate Biology Conference, Cornerbrook, NFLD

MEDIA INTERVIEWS AND ARTICLES

June 29, 2006:	Interview with Durham Radio and Rogers Television on CFI Award
July 6, 2006:	Telephone Interview with Metroland Media on CFI Award
July 11, 2006:	On-camera interview with Metroland Media on CFI Award
July 16, 2006:	Article in "This Week" on CFI and research program
July 27, 2006:	On-camera interview with Rogers Television on the use of technology in teaching at UOIT

COMMUNITY LECTURES

1 "Parasites and Parasitic Diseases" Science Research for Health Day 2008
2 "Life's Hitchhikers" Science Rendezvous 2009
3 "Blood Suckers and Brain worms: an odd fascination with parasites" Science Rendezvous 2013

FACULTY OF SOCIAL SCIENCE AND HUMANITIES
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LEIGH HARKINS

ACADEMIC QUALIFICATIONS

2004-2008 **University of Birmingham** Birmingham, UK

Ph.D.

- Forensic Psychology
- Conducted research regarding risk, need, responsivity, and process issues within sex offender treatment with particular attention to the role of group composition, within treatment change and psychopathy

2002- 2004 **OISE/ University of Toronto** Toronto, Canada

M.A.

- Counselling Psychology for Psychology Specialists
- Completed a 500 hour practicum with the Correctional Service of Canada conducting research and counselling federal offenders
- M.A. thesis was a sexual offender treatment outcome study and an examination of change within treatment on a number of measures

1996 - 2000 **University of Toronto** Mississauga, Canada

Honors B.Sc. (with Distinction)

- Psychology (Specialist), Forensic Science (Major), Biology (Minor)
- Completed an undergraduate thesis on Perfectionism and Distress using structural equation modelling
- Completed a Mentorship in Forensic Science in the Law and Mental Health Program at the Centre for Addiction and Mental Health

PROFESSIONAL MEMBERSHIPS

- Association for the Treatment of Sexual Abusers (ATSA)
- 2008-2013: Forensic Psychologist with the British Psychological Society, Registered Psychologist with the Health Professions Council

PROFESSIONAL EXPERIENCE

Academic Posts

- 2016-Present: University of Ontario Institute of Technology Associate Professor

- 2013-2016: University of Ontario Institute of Technology Assistant Professor
- 2008-2013: University of Birmingham Lecturer
- 2007-2008: University of Birmingham School Instructor
- 2004-2007: University of Birmingham School of Psychology Teaching Assistant

Committee Membership

- 2017- Present: UOIT Graduate Studies Committee
- 2014-Present: UOIT Faculty Leadership Committee
- 2015- Present: UOIT Forensic Psychology Graduate Committee
- 2016-2018: External member of Ontario Shores Centre for Mental Health Forensic Psychology Research Committee
- 2016-2017: UOIT Faculty Recruitment Committee
- 2015-2016: UOIT Teaching Assistant Committee
- 2013-2016: UOIT Research Ethics Board Member
- 2013- 2015: UOIT Faculty of Social Science and Humanities Graduate Committee
- 2011-2012: Chair, University of Birmingham School of Psychology Ethics Committee
- 2010-2012: University of Birmingham School of Psychology Teaching and Learning Committee
- 2009-2012: National Organisation for the Treatment of Abusers (NOTA), Research Committee Member
- 2009-2010: University of Birmingham Life and Health Sciences Ethical Review Committee
- 2008-2009: University of Birmingham School of Psychology Ethics Committee Member
- 2003-2006: Student Member of the Association for the Treatment of Sexual Abusers (ATSA) Research Committee

Other Professional Experience

- Visiting Scholar Appointment, Victoria University of Wellington, NZ
- Examiner for 3 PhDs, 8 Foren.Psy.D. and 4 M.A./ M.Sc. theses

- 2016-Present: Editorial Board for Psychology, Crime and Law
- 2011-Present: Collaborator of the Good Lives Model on www.goodlivesmodel.com.
- 2010- Present: Editorial Board for Journal of Sexual Aggression
- 2009 (February)-2009 (April): Positive Alternatives to Crime and Exclusion Ltd. Research Associate, gang violence research project on behalf of London Metropolitan Police and Ministry of Justice conducting interviews with gang members in prison.
- 2008 (June)-2008 (August): Associate of Forensic Psychology Practice, Ltd., undertaking assessment of dynamic risk and report preparation for sex offenders in prison.
- 2005-Present: Journal reviewer for Child Abuse Review, International Journal of Offender Therapy and Comparative Criminology, Sexual Abuse: A Journal of Research and Treatment, Criminology and Public Policy, Psychology, Crime and Law, and Legal and Criminological Psychology.
- 2000-2004: Research Analyst in the Law and Mental Health Program at the Centre for Addiction and Mental Health, Toronto, ON.

Training

- 2010-12: Postgraduate Certificate in Learning and Teaching in Higher Education; Fellow of the Higher Education Academy, UK.
- 2009: Trained in the use of N-Vivo qualitative analysis software
- 2008: Stable and Acute 2007 Dynamic Risk Assessment
- 2008: Structured Risk Assessment
- 2006: Historical and Clinical Risk (HCR)-20 Assessment
- 2004: Psychopathy Checklist- Youth Version

Summary of Clinical/ Practice Experience

- Co-facilitation of sex offender treatment groups with Correctional Service of Canada and the Law and Mental Health Program at the Centre for Addiction and Mental Health
- Counselling work with men who had committed sexual offences, violent nonsexual offences, and those with addiction problems, as well as work with a female offender who had committed a violent offence
- Assessment of dynamic risk in sex offenders

TEACHING EXPERIENCE

Teaching Commitments

- 2017-Present: University of Ontario Institute of Technology Graduate Program Director of Forensic Psychology
- 2016-2017: University of Ontario Institute of Technology Undergraduate Director of Forensic Psychology
- 2014-2015: University of Ontario Institute of Technology (Acting) Director of Forensic Psychology
- 2011 to 2013: Course Director Masters in Criminological Psychology
- 2011-2013: Forensic Specialist Lead for the MSci in Psychology and Psychological Practice
- 2008-2013: Course organizer for Introduction to Forensic Psychology undergraduate module
- 2004-2013: Course tutor for Doctorate in Forensic Psychology Practice and MSc in Criminological Psychology

Other Teaching Experience

- 2005, 2006, 2007 Guest Lecturer for Clinical Psychology Doctoral Course, University of Warwick/ Coventry University, on Risk Assessment and Treatment with Sexual Offenders

Supervisory Experience

- 2018-Present: MSc in Forensic Psychology supervision of Kristina Shatokhina
- 2017-Present: MSc in Forensic Psychology supervision of Alisia Palermo
- 2015 to Present: PhD in Forensic Psychology supervision of Laleh Dadgardoust
- 2015 to Present: PhD in Forensic Psychology supervision of Carisa Collins
- 2015 to 2016: MA Criminology supervision of Mersedeh Jahanzadeh
- 2010-2015: PhD supervision of Stephanie Kewley, part-time student. The role of religiosity in desistance from sex offending.
- 2009-2015: PhD co-supervision of Jenny Tew, part time student. Investigating parallels in OASys and PCL-R risk assessment
- 2011-2014: PhD supervision of Juliane Kloess, full-time student, Exploration of the processes involved in online offending.
- 2010-2014: PhD co-supervision of Zoe Stephenson, full-time student. Effective sequencing of offender interventions.

- 2010- 2014: PhD co-supervision of Teresa da Silva, full-time student. Group sexual aggression.
- 2009-2013: PhD co-supervision of Ross Bartels, full-time student. The cognitive processes underlying deviant sexual fantasy.
- 2009-2011: ForenPsyD supervision of Poppy Cullen. An Investigation into Personality Typologies of Adolescent Sexual Offenders
- 2008-2010: ForenPsyD supervision of Eleanor Haddock. Investigating gang involvement in young people.
- 2013-2014: MA Criminology Committee member for Alyx Ivany
- 2004-2013: Primary supervisor of 25+ MSc students and 3 ForenPsyD regarding the development and implementation of research projects.
- Facilitation of Reflective Practice groups for Forensic Doctorate students

AWARDS/ GRANTS RECEIVED

- Harkins, L. (2018). Use of technology in facilitating online aggression in dating and intimate relationships. UOIT Office of Research Services/Social Sciences and Humanities Research Council of Canada (Small Research Grant. $8146.14.
- Shariff, S. (Director)….Harkins, L. (Co-investigator).(2016). IMPACTS: Collaborations to address sexual violence on campus. : Social Sciences and Humanities Research Council of Canada Partnership Grant Number: 895-2016-1026. $ $2,499,525.00
- Harkins, L & Holmes, M. (2015). Investigation of sex offender's socio-affective deficits using novel assessment approaches. UOIT Office of Research Services/Social Sciences and Humanities Research Council of Canada (Small Research Grant. $3,771.
- Bilby, C., Caulfield, L, Parkes, R., & Harkins, L. (2012). Enrichment activities? Arts and creativity in criminal justice systems Seminar Series. Economic and Social Research Council, UK. £17, 372
- Dixon, L., Harkins, L., Larkin, M, & Christian, J. (2012). Understanding the sexual experiences and beliefs of British urban street gang youth to inform preventative practice. National Organisation for the Treatment of Abuser. £4,919.
- Harkins, L., Beech, A.R., & Sawyer, S. (2011). The role of group process factors in group member satisfaction and successful completion of sex offender treatment: A multinational examination. National Organisation for the Treatment of Abuser. £5,000.
- Bartels, R., Harkins, L., & Beech, A.R. (2010). The Assessment of Deviant Sexual Interests and Fantasies using the Sorting Paired Features Task, Go/No-Go Task, and Lexical Decision Task. National Organisation for the Treatment of Abuser. £5,184.
- Harkins, L., Woodhams, J., Hamilton-Giachritsis, C., & Dixon, L. (2010). Developing professional skills for forensic psychology graduates using workplace simulations. Higher Education Academy Psychology Network Miniproject. £6000.

- Harkins, L. (2010). The impact of sex offender denial on treatment and sexual recidivism University of Birmingham School of Psychology Research Start-up funds. £1870.
- Woodhams, J., & Harkins, L. (2010). Effective Interventions with Offenders. Ministry of Justice PhD studentship. £24,000
- Beech, A.R., & Harkins, L. (2008). Evaluation of the Good Lives component of the Northumbria (Probation) Sex Offender Treatment Programme. Ministry of Justice. £19953.
- Beech, A.R., & Harkins, L. (2007). Evaluation of Geese Theatre's Reconnect Programme. Geese Theatre Company. £8744.
- Beech, A.R. & Harkins, L. (2007).). Evaluation of West Midlands Probation Service's Sex Offender Treatment Programme. Report prepared for the West Midlands Probation Service. West Midlands Probation Service. £6000.
- Harkins, L. (2007). Factors influencing the Therapeutic Climate of Sexual Offender Group Treatment and their Relationship to Treatment Progress. Association for the Treatment of Sexual Abusers Student Investigator Grant. $10,850.
- 2004-2007. University of Birmingham School of Psychology Post-Graduate Studentship
- 2003-2004. OISE/ UT Adult Education, Community Development, and Counseling Psychology Departmental Scholarship

JOURNAL ARTICLES

Published

Stephenson, Z., Woodhams, J. & Harkins, L. (in press). The sequencing of interventions with offenders: The views of offender managers and supervisors. *Journal of Forensic Practice.*

Bartels, R.M., Harkins, L., Harrison, S.C., Beard, N., & Beech, A.R. (in press). The effect of bilateral eye-movements versus no eye-movements on sexual fantasies. *Journal of Behavior Therapy and Experimental Psychiatry*

Da Silva, T. Woodhams, J. & Harkins, L. (2018). 'An adventure that went wrong": Reasons given by convicted perpetrators of multiple perpetrator sexual offending for their involvement in the offense. *Archives of Sexual Behaviour, 47*, 443–456.

Loney, D.M. & Harkins, L. (2018). Examining the good lives model and antisocial behavior. *Psychology, Crime & Law, 24*, 38-51.

Stephenson, Z. Woodhams, J. & Harkins, L. (2017). The sequencing and delivery of interventions: Views of imprisoned for public protection (IPP) prisoners in the UK. *Journal of Forensic Psychology: Research and Practice, 17*, 275-294

Bartels, R.M., Harkins, L., & Beech, A.R. (2017). The influence of fantasy proneness, dissociation, and vividness of mental imagery on male's aggressive sexual fantasies. *Journal of Interpersonal Violence,* Advance Online Publication, 1-24.

Bartels, R.M., Beech, A.R., Harkins, L. & Thornton, D. (2017). Assessing sexual interest in children using the Go/No-Go Association Test. *Sexual Abuse: A Journal of Research and Treatment,* Advance Online Publication.

Kewley, S., Larkins, M., Harkins, L., & Beech, A.R (2017). Restoring identity: The use of religion as a mechanism to transition between an identity of sexual offending to a non-offending identity. *Criminal Justice and Behavior, 17*, 79-96.

Watson, S, Harkins, L, & Palmer, M. (2016). The experience of deniers on a community sex offender group programme. *Journal of Forensic Psychology Practice, 16*. 374-392.

Kewley, S., Beech, A.R., & Harkins, L. (2015). Examining the role of faith community groups with sex offenders: A systematic review. *Aggression and Violent Behavior, 25*, 142-149.

Da Silva, T., Woodhams, J., & Harkins, L. (2015). Multiple perpetrator rape: A critical review of existing explanatory theories. *Aggression and Violent Behavior, 25,* 150-158.

Kewley, S., Beech, A., Harkins, L., & Bonsall, H. (2015). Effective risk management planning for those convicted of sexual offending. *Journal of Aggression, Conflict, and Peace Research, 7*, 237-257.

Niebieszczanski, R. Harkins, L., Judson, J., Smith, K., & Dixon, L. (2015). The role of moral disengagement in street gang offending. *Psychology, Crime, and Law, 21*, 589-605

Jones, E., Harkins, L., & Beech, A.R (2015). The development of a new risk model: The Threat Matrix. *Legal and Criminological Psychology, 20*, 165-175.

Tew, J., Harkins, L., & Dixon, L. (2015). Assessing the validity of the Self Report Psychopathy Scale in a UK offender population. *Journal of Forensic Psychiatry and Psychology, 26,* 166-184.

Harkins, L., Howard, P., Barnett, G., Wakeling, H., & Miles, C. (2015). Relationships between denial, risk, and recidivism in sexual offenders. *Archives of Sexual Behaviour, 44,* 157-166.

Da Silva, T., Woodhams, J. & Harkins, L. (2014). Heterogeneity within multiple perpetrator rapes: A national comparison of lone, duo and 3+ perpetrator rapes. *Sexual Abuse: A Journal of Research and Treatment, 26*, 503-522.

Kloess, J.A., Beech, A.R., & Harkins, L. (2014). Online Child Sexual Exploitation: Prevalence, Process, Offender Characteristics. *Trauma, Violence and Abuse, 15*, 126-139.

Harkins, L., Beech, A.R., & Thornton, D. (2013). The influence of risk and psychopathy on the therapeutic climate in sex offender treatment. *Sexual Abuse: A Journal of Research and Treatment, 25*, 103-122.

Harkins, L., Flak, V. E., & Beech, A.R., & Woodhams, J. (2012). Evaluation of a community-based sex offender treatment program using a Good Lives Model approach. *Sexual Abuse: A Journal of Research and Treatment, 24*, 519-543.

Beech, A.R., & Harkins, L. (2012). DSM-IV Paraphilias: Descriptions, demographics and treatment interventions. *Aggression and Violent Behavior, 17,* 527-539.

Tew, J., Dixon, L., Harkins, L, & Bennett, A. (2012). An investigation into changes in anger and aggression in participants of Chromis: a programme for violent offenders with high levels of psychopathic traits. *Criminal Behaviour and Mental Health, 22*, 191-201

Brown, S.J., Harkins, L, & Beech, A.R. (2012). General and victim specific empathy: Associations with actuarial risk, treatment outcome and sexual recidivism. *Sexual Abuse: A Journal of Research and Treatment, 24*, 411-430.

Woodhams, J., Cooke, C., Harkins, L. & da Silva, T. (2011). Leadership in multiple perpetrator rape. *Journal of Interpersonal Violence, 27*, 728-752.

Abracen, J., Looman, J., Ferguson, M., Harkins, L., Mailloux, D., & Serin, R. (2011). Recidivism among treated sexual offenders and comparison subjects: Recent outcome data from the Regional Treatment Centre (Ontario) High Intensity Sex Offender Treatment Program. *Journal of Sexual Aggression, 17*, 142-152.

Harkins, L, Pritchard, C., Haskayne, D., Watson, A., & Beech, A.R. (2011). Evaluation of Geese Theatre's Reconnect program: Addressing resettlement issues in prison. *International Journal of Offender Therapy and Comparative Criminology, 55*, 546-566.

Harkins, L., Beech, A.R., & Goodwill, A.M. (2010). Examining the influence of denial, motivation, and risk in sexual offenders. *Sexual Abuse: A Journal of Research and Treatment, 22*, 78-94.

Harkins, L. & Dixon, L. (2010). Sexual offending in groups: An examination. *Aggression and Violent Behavior, 15*, 87-99.

Langton, C.M., Barbaree, H.E., Harkins, L., Peacock, E.J., Arenovich, T. (2008). Further investigation of findings reported for the MnSOST-R. *Journal of Interpersonal Violence, 23*, 1363-1379.

Langton, C.M., Barbaree, H.E., Harkins, L., Arenovich, T., McNamee, J., Peacock, E.J., et al. (2008). Denial and minimization among sex offenders: Post-treatment presentation association with sexual recidivism. *Criminal Justice and Behavior, 35*, 69-98.

Harkins, L., & Beech, A.R. (2008). Examining the impact of mixing child molesters and rapists in group-based cognitive behavioral treatment for sexual offenders. *International Journal of Offender Therapy and Comparative Criminology, 52*, 31-45.

Harkins, L., & Beech, A.R. (2007). A review of the factors that can influence the effectiveness of sexual offender treatment: Risk, need, responsivity, and process issues. *Aggression and Violent Behavior, 12*, 616-627.

Langton, C. M., Barbaree, H. E., Hansen, K. T., Harkins, L., & Peacock, E. J. (2007). Reliability and validity of the Static-2002 among adult sex

offenders with reference to treatment status. *Criminal Justice and Behavior, 34*, 616-640.

Harkins, L. & Beech, A.R. (2007). Measurement of the effectiveness of sex offender treatment. *Aggression and Violent Behavior, 12*, 36-44.

Langton, C. M., Barbaree, H. E., Seto, M. C., Peacock, E. J., Harkins, L., & Hansen, K. T. (2007). Actuarial assessment of risk for reoffense among adult sex offenders: Evaluating the predictive accuracy of the Static-2002 and five other instruments. *Criminal Justice and Behavior, 34*, 37-59.

Langton, C. M., Barbaree, H. E., Harkins, L., & Peacock, E. J. (2006). Sex offenders' response to treatment and its association with recidivism as a function of psychopathy. *Sexual Abuse. A Journal of Research and Treatment, 18*, 99-120.

BOOKS AND BOOK CHAPTERS

Harkins, L. (In press). Essay 'No single path but persistence and guidance can get you there'. In C.R. Bartol & A.M. Bartol (Eds). Introduction to forensic psychology (5th Ed). Thousand Oaks: Sage

Harkins, L. (In press). Sexual offenders: Treatment outcome research. In R.D. Morgan (Ed.). *The Sage encyclopedia of criminal psychology*. Thousand Oaks: Sage.

Collins, C., Harkins, L. & Dadgardoust, L. (2019). Assessing the therapeutic needs of sexual offenders. In J.L. Ireland, C. Ireland, & P. Birch (Eds.), *Violent and sexual offenders: Assessment, treatment, and managemen*t (2nd Ed.). UK: Willan.

Kewley, S., Harkins, L., Beech, A.R., & Larkin, M. (2018). Incarcerated child sexual offenders and the reinvention of self through religious and spiritual affiliation. In K. R. Kerley (Ed.) *Finding Freedom in Confinement: The Role of Religion in Prison Life.* Santa Barbara: ABC-CLIO, LLC.

Harkins, L, Ware, J. & Mann, R. (2017). Intervention with dangerous offenders. In G. Davies & A.R. Beech (Eds.), *Forensic psychology: Crime, justice, law, interventions* (3rd ed.). Chichester: Wiley.

Bartels, R.M., Beech, A.R., & Harkins, L. (2017). Rape. In B.K. Puri & I. Treasaden (Eds.) *Forensic Psychiatry*. London: Hodder Arnold (Health Sciences).

Wilcox, D.T., Garrett, T, & Harkins, L. (Eds.). (2015). *Sex offender treatment: A case study approach to issues and interventions*. Wiley-Blackwell.

Wilcox, D.T., Garrett, T., & Harkins, L (2015). The continuing need for individualised interventions with sex offenders. In D.T. Wilcox, T. Garrett, & L. Harkins (Eds.), *Sex offender treatment: A case study approach to issues and interventions.* Wiley-Blackwell.

Ware, J & Harkins, L. (2015). Addressing denial. In D.T. Wilcox, T. Garrett, & L. Harkins (Eds.), *Sex offender treatment: A case study approach to issues and interventions.* Wiley-Blackwell.

Harkins, L., Garrett, T., & Wilcox, D.T., (2015). Conclusions: Reflections and formulations. In D.T. Wilcox, T. Garrett, & L. Harkins (Eds.), *Sex offender treatment: A case study approach to issues and interventions*. Wiley-Blackwell.

DaSilva, T., Woodhams, J. & Harkins, L. (2013). Multiple perpetrator rape: An international phenomenon. In M. Horvath & J. Woodhams (Eds.) *Handbook on the study of multiple perpetrator rape* (p.10-36). Oxford: Routledge.

Tew, J., Harkins, L. & Dixon, L. (2013). What works in reducing violent reoffending in psychopathic offenders. In L. Craig, L. Dixon, & T. Gannon (Eds.). *What works in offender rehabilitation: An evidence based approach to assessment and treatment* (p.129-141). Chichester: Wiley-Blackwell.

Harkins, L. & Dixon, L. (2013). A multi-factorial approach to understanding multiple perpetrator sexual offending. In T. Gannon & J. Wood (Eds.) *Crime and crime reduction: The importance of group processes* (p.75-95). New York: Routledge.

Harkins, L. & Beech, A.R. (2012). Paraphilias and sexual offending. In P. Sturmey & M. Hersen (Eds.), *Handbook of evidence-based practice in clinical psychology* (p. 437-458). Chichester: Wiley.

Harkins, L., Ware, J., & Mann, R (2012). Treating dangerous offenders. In G. Davies & A.R. Beech (Eds.) *Forensic Psychology* (349-368), 2nd Ed. Chicester: Wiley

Harkins, L. & Thomas-Peter, B. (2010). Treatment of sex offenders. In J. Brown, J. & E. Campbell, E. (Eds.), *Cambridge handbook of forensic psychology* (p.434-440). Cambridge: Cambridge University Press.

Craig, L.E., Beech, A.R., & Harkins, L. (2009). The predictive accuracy of risk factors and frameworks. In A. R. Beech, L.E. Craig, & K.D. Browne (Eds.), *Assessment and treatment of sex offenders* (p. 53-75). Chichester: Wiley.

Harkins, L., & Beech, A.R. (2009). Assessing therapeutic needs for sex offenders. In J.L.Ireland, C. Ireland, & P. Birch (Eds.), *Violent and sexual offenders: Assessment, treatment, and managemen*t (p.97-131). UK: Willan.

REPORTS

Harkins, L., Abracen, J., Looman, J., & Maillet, G. (2011). *Within-treatment change on dynamic predictors of sexual offense recidivism*. Correctional Service of Canada Research Report No. R-240

Harkins, L., Haskayne, D., Watson, A., Beech, A.R., & Sweeney, C. (2009). *Evaluation of Geese Theatre's Inside Talk Programme*. Report prepared for the Geese Theatre Company.

Harkins, L., Flak, V.E., & Beech, A.R.. (2008). *Evaluation of the N-SGOP Better Lives Programme*. Report prepared for the Ministry of Justice.

Harkins, L., Flak, V.E., & Beech, A.R.. (2007). *Evaluation of West Midlands Probation Service's Sex Offender Treatment Programme*. Report prepared for the West Midlands Probation Service.

PRESENTATIONS

Conference Organisation

Harkins, L & Craig, L. (2012, October). *New Directions in Sex Offender Practice*, University of Birmingham, Birmingham, UK.

Harkins, L & Craig, L. (2011, October). *New Directions in Sex Offender Practice*, University of Birmingham, Birmingham, UK.

Conference Invited Symposia

Harkins, L. (2010, June). *Examining Sex Offender Denial: Implications for Assessment and Treatment.* British Psychological Society Division of Forensic Psychology Annual Conference, Canterbury, Kent, UK.

Conference Invited talks

Harkins, L., Flak, V., Beech, A.R., & Woodhams, J. (2011, June). *Evaluating and Implementing a Good Lives Approach to the Treatment of Sexual Abusers.* Stockholm Criminology Symposium, Stockholm, Sweden.

Harkins, L. & Dixon, L. (2011). *What do we know about multiple perpetrator sex offending?* British Psychological Society Seminar Series on Multiple Perpetrator Rape, University of Birmingham, Birmingham, UK.
Harkins, L. (2011, November). *The Good Lives Model.* Criminal Sanctions Agency Seminar, Helsinki, Finland.

Invited Workshops

Dixon, L., & Harkins, L. (2010, March). *Risk assessment and gang sexploitation: What does psychology have to say?* Presented at Gangology, UK: How to reclaim the streets, Birmingham, UK.

Thornton, D. & Harkins, L. (2008, September). *Implications of denial for assessment and treatment*. Paper presented at the 18th Annual Conference of the National Organisation for the Treatment of Abusers, Cardiff, Wales.

Conference Symposia Organiser and Chair

Harkins, L. (2014, October). *Factors influencing multiple perpetrating sexual offending.* Annual Conference of the Association for the Treatment of Sexual Abusers, San Diego, US.

Harkins, L. (2011, November). *Indirect approaches in assessing factors related to sexual offending.* Annual Conference of the Association for the Treatment of Sexual Abusers, Toronto, Canada.

Harkins, L. & Woodhams, J. (2011, September). *Advancing our understanding of multiple perpetrator sex offending.* Annual Conference for the National Organisation for the Treatment of Abusers, Brighton, UK.

Harkins, L., & Beech, A.R. (2008, October). *Examining the role of psychopathy in sex offender treatment.* Presented at the 27th Annual Conference of the Association for the Treatment of Sexual Abusers, Atlanta, Georgia, USA.

Invited Departmental Talks

Harkins, L (2017, November). *Understanding multiple perpetrator sexual violence.* Invited Department Talk, University of Victoria, Wellington, New Zealand.

Harkins, L (2011, September). *Evaluation of a Good Lives Model approach.* Opening of Centre of Research and Education in Forensic Psychology, University of Kent, Canterbury, Kent.

Harkins, L (2010). *Examining the role of denial in sexual recidivism*. Coventry University.

Harkins, L. (2010). *Examining the role of denial in sexual recidivism*. University of Kent.

Conference Individual Papers

Palermo, A. M. & Harkins, L. (August, 2018). *Campus sexual violence: Examining students' understanding of consent and rape proclivity.* Paper presented at the International Association for the Treatment of Sexual Offenders (IATSO) conference, Vilnius, Lithuania.

Collins, C. M., & Harkins, L. (2017). *Examining users of online sexual interest in children support organizations.* Poster presented at the Association for the Treatment of Sexual Abusers Conference. Kansas City, MI.

Loney, D.M., Harkins, L., & Zidenberg, A. (2017, October). *A questionnaire based measure of good lives model goods: Test-retest reliability.* Poster presented to the 36th Annual Research and Treatment Conference for the Associations for the Treatment of Sexual Abusers, Kansas City, Missouri, USA.

Collins, C. Harkins, L., & O' Ciardha, C. (March 2017). *Offense-avoidance strategies used by minor-attracted person.* Annual conference of American Psychology-Law Society, Portland, OR.

Zidenberg, A.M., Harkins, L., & Newton, C. (2017, January). *Tipping the scales: Student and community judgments of weight in sexual coercion scenarios.* Poster presented at the 2017 SPSP Convention, San Antonio, Texas.

Dadgardoust, L, Heasman, A., & Harkins, L. (November, 2016). Denial, level of risk, and program participation among men with sexual offences. Annual Conference for the Association for the Treatment of Sexual Abusers, Orlando, FL.

Loney, D.M., Harkins, L., & Zidenberg, A. (November, 2016). Validating the Measure of Life Priorities: A questionnaire based measure of Good Lives Model Goods. Annual Conference for the Association for the Treatment of Sexual Abusers, Orlando, FL.

Harkins, L. & Brown, V. (November, 2016). *Rape supportive cognitions and proclivity towards multiple perpetrator sex offending.* Annual Conference for the Association for the Treatment of Sexual Abusers, Orlando, FL.

Loney, D.M & Harkins, L. (2016, March). *An examination of the relationship between Good Lives Model goods and antisocial behaviours*. Annual conference of American Psychology-Law Society, Atlanta, GA.

Dadgardoust, L, & Harkins, L. (2016, March). *Treatment responsivity of victim age polymorphic sex offenders.* Annual conference of American Psychology-Law Society, Atlanta, GA.

Harkins, L. Yapp, D., Farrukh, M., O Ciardha, C & Alleyne, E. (2015, October). *The relationship between rape supportive cognitions and a proclivity towards multiple perpetrator sex offending.* Annual Conference for the Association for the Treatment of Sexual Abusers, Montreal, QC.

Loney, D.M & Harkins, L. (2015, August). *Examining the relationships between life priorities and offending.* Annual Conference for the American Psychological Association, Toronto, ON.

Zidenberg, A.M. & Harkins, L (2015, August). *Peer influence on perceptions of sexual coercion*. Poster presented at Annual Meeting of International Association of Sex Research, Toronto, ON.

Harkins, L., Dixon, L., Hutson, C., Deroux, K., King, M., & Ostridge, L. (2014). *Peer influence on perceptions of sexual coercion.* Annual Conference of the Association for the Treatment of Sexual Abusers, San Diego, US.

Harkins, L., Howard, P., Barnett, G., & Wakeling, H. (2011, November). *Relationships between denial, risk, and recidivism in sexual offenders*. Annual Conference of the Association for the Treatment of Sexual Abusers, Toronto, Canada.

Harkins, L., Dixon, L. & Lenjesson, M. (2011, September). *Multiple perpetrator sexual offenses: Comparison of pair and group offenses*. National Organisation for the Treatment of Abusers, Brighton, UK.

Harkins, L., Flak, V., & Beech, A.R. (2010, October). *Evaluation of a community-based treatment programme using a Good Lives approach.* Paper presented at the 29th Annual Conference of the Association for the Treatment of Sexual Abusers, Phoenix, Arizona, USA.

Harkins, L., Thornton, D, & Beech, A.R. (2009, October). *The use dynamic risk domains assessed using psychometric measures, to revise relative risk assessments using Static 2002 and Risk Matrix 2000*. Paper presented at the 28th Annual Conference of the Association for the Treatment of Sexual Abusers, Dallas, Texas, USA.

Harkins, L., Beech, A.R., & Goodwill, A.M. (2009, June). *The Influence of Actuarial Risk and Denial on Sexual Recidivism*. International Academy of Law and Mental Health Annual Conference. New York, New York, USA.

Harkins, L., Beech, A.R., & Goodwill, A.G. (2008, August). *The influence of denial and actuarial risk on sexual recidivism.* Paper presented at the 10th Bi-Annual Conference of the International Association for the Treatment of Sexual Offenders, Cape Town, South Africa.

Harkins, L., Beech, A.R., & Goodwill, A.G. (2007, November). *The influence of denial and actuarial risk on sexual recidivism.* Paper presented at the 26th Annual Conference of the Association for the Treatment of Sexual Abusers, San Diego, California.

Harkins, L., Beech, A.R., & Oliver, C. (2007, July). *Identification of sexual and violent motivations in rapists: Implications for treatment.* Paper presented at the 3rd Annual Conference of the International Congress of Psychology and Law, Adelaide, South Australia.

Looman, J., Abracen, J., & Harkins, L. (2005, July). *Assessment of in-treatment change with sexual offenders.* Paper presented at the 17th Annual Conference of the World Congress of Sexology, Montreal, Quebec.

Looman, J., Abracen, J., & Harkins, L. (2004, October). *Relapse Prevention Evaluation Test: Data from the Regional Treatment Center Sex Offender Treatment Program (RTCSOTP).* Paper presented at the 23Rd Annual Conference of the Association for the Treatment of Sexual Abusers, Albuquerque, New Mexico

Abracen, J., Looman, J., Mailloux, D., Harkins, L., Serin, R., & Malcolm, P.B. (2003, October). *Recidivism among treated and matched comparison subjects.* Paper presented at the 22nd Annual Conference of the Association for the Treatment of Sexual Abusers, St. Louis Missouri.

Langton, C.M., Barbaree, H.E., & Harkins, L. (2003, October). *Failure to complete sexual offender treatment and sexual recidivism: Do actuarial risk or psychopathy account for the association?* Paper presented at the 22nd Annual Conference of the Association for the Treatment of Sexual Abusers, St. Louis Missouri.

Lecce, S., Blankstein, K.R., Pavri, S., Harkins, L., Winkworth, G., Halsall, J., & Williams, M. (2003, August). *UTM Longitudinal study of adjustment and academic performance.* Paper presented at the 111th Annual Conference of the American Psychological Association, Toronto Ontario.

Langton, C.M., Harkins, L., Peacock, E., & Barbaree, H.E. (2003, August). *Core dimensions underlying risk assessment instruments for sex offenders.* Paper presented at the 111th Annual Conference of the American Psychological Association, Toronto Ontario.

Harkins, L., Langton, C.M., Peacock, E., & Barbaree, H.E. (2003, August). *Predictive Validity of Risk Assessment Instruments with Sexual Offenders.* Paper presented at the 111th Annual Conference of the American Psychological Association, Toronto Ontario.

Harkins, L., Blankstein, K.R., Jalali, D., Krawczyk, B., & Wheeler, H. (2003, August). *Self-critical perfectionism: Analysis of mediation and scale development.* Paper presented at the 111th Annual Conference of the American Psychological Association, Toronto Ontario.

Langton, C.M., Barbaree, H.E., Harkins, L., Seto, M.C., & Peacock, E. (2003, June). *Does treatment-related information and PCL-R score add to the accuracy of an actuarial*

assessment of risk for sexual recidivism? Paper presented at the 64thAnnual Conference of the Canadian Psychological Association, Hamilton Ontario.

Langton, C.M., Barbaree, H.E., Harkins, L., Seto, M.C., & Peacock, E. (2002, October). *Evaluating the predictive validity of seven risk assessment instruments for sex offenders*. Paper presented at the 21st Annual Conference of the Association for the Treatment of Sexual Abusers, Montreal Quebec.

Langton, C.M., Barbaree, H.E., Seto, M.C., Harkins, L., & Peacock, E. (2002, October). *How should we interpret behavior in treatment*. Paper presented at the 21st Annual Conference of the Association for the Treatment of Sexual Abusers, Montreal Quebec.

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GENERAL INFORMATION

EDUCATION & CERTIFICATIONS

July 2017	**American Board of Forensic Entomology**	Davis, California USA
(M-ABFE)	Board Certified Forensic Entomologist http://www.forensicentomologist.org/	
2001-2008	**University of Derby**	Derby, England
(Doctor of Philosophy)	Completed Ph.D. thesis in Forensic Entomology with the Derbyshire Constabulary. Thesis title: **Olfactory stimuli associated with the different stages of vertebrate decomposition and their role in the attraction of the blowfly *Calliphora vomitoria* (Diptera: Calliphoridae) to carcasses.** Supervised by: Dr. Karim Vahed (University of Derby) and Dr. Martin Hall (The Natural History Museum, London).	
2004-2005	**Forensic Access**	Oxfordshire, England
(Certificates)	Completed training in the following requirements for Forensic Scientists at LGC Forensics (formerly Forensic Alliance Ltd.): Blood Semen and Other Body Fluids Trace Evidence and Recovery Hairs and Fibres Expert Witness Training	
22-27 July 2002	**University of Cologne**	Cologne, Germany
(Certificate)	Participated in a Forensic Entomology course given by Dr. Mark Benecke. Practical work included study of the succession of insects on decomposing cadavers. Emphasis was placed on crime scene collection techniques and insect identification (adult and immature stages).	

2000-2001 (Masters of Science) **University of Strathclyde** Glasgow, Scotland

Masters of Science degree in Forensic Science in the fall of 2001.

A five-month molecular biology placement was undertaken in the biology section of the **Laboratoire de Police Scientifique** in Lyon, France.

Thesis title: **A Study of Extraction Methods, Chelex® and QIAamp®, Using SGM Plus™ and Identifiler™ PCR Kits**. Supervised by: Dr. Anne Paleologue (Laboratoire de Police Scientifique).

1997 (summer) (Certificate) **Mercyhurst College** Erie, Pennsylvania USA

Forensic Anthropology field course, taught by Dr. Dennis Dirkmaat of Mercyhurst College and special agent Michael J. Hochrein of the Federal Bureau of Investigation (FBI). Forensic Entomology Module taught by Dr. Neil Haskell.

1993–1998 (BSc – Honours) **Saint Mary's University** Halifax, NS Canada

Bachelor of Science degree with Honours in Biology in May 1998.

Thesis title: **Forensic Entomology – A Study of Carrion Insects in the Halifax Nova Scotia Region**. Supervised by: Dr. Doug Strongman (Saint Mary's University) and Dr. Gail Anderson (Simon Fraser University).

EMPLOYMENT HISTORY

July 2009 - Present *Program Director (2011-present) & Associate Professor (2014)* Oshawa, ON Canada

Faculty of Science – Forensic Science

University of Ontario Institute of Technology (UOIT)

- Administrator for the Forensic Science program and program accreditation (FEPAC)
- Co-ordinate Teaching Assistants, Senior Lecturers, and Adjunct Faculty
- Instructor: Criminalistics I, Criminalistics II, Forensic Biology, Forensic Entomology , and Advanced Topics in Forensic Bioscience (graduate course)
- Conduct research in forensic entomology and chemical ecology
- Supervise graduate and undergraduate students
- Outreach activities with local law enforcement and the community

2012 – Present *Forensic Entomology Instructor* Aylmer, ON Canada

Ontario Police College (OPC)

- Instructor for the following courses: Death Investigation, Homicide Investigation, and Recovery of Human Remains

2004 – Present *Forensic Entomology Consultant* Canada & England

Law Enforcement Agencies & Ministry of Natural Resources

- Analysis of entomological evidence and provide entomology report.

1998-2004 *Forensic Entomology Assistant* Canada & England

Saint Mary's University, Forensic Alliance Ltd., & University of Derby

- Assisted in forensic entomology casework independently and under the supervision of thesis supervisors

Jan 2012 - Present *Adjunct Faculty* Peterborough, ON Canada

Environmental and Life Sciences (ENLS) graduate program

Trent University

- Serving on two MSc graduate committees
- Ongoing collaborations in Forensic Science research

Sep 2008 – June 2009 *Senior Laboratory Instructor – Forensic Science* Oshawa, ON Canada

Faculty of Science – Forensic Science

University of Ontario Institute of Technology (UOIT)

- Lecturer: Crime Scene Science, Introductory Forensic Science
- Write the laboratory portion of all forensic science courses, including Crime Scene Science, Criminalistics I & II, Forensic Biology, Forensic Chemistry, Interdisciplinary Topics in Forensic Science, and Introductory Forensic Science (tutorials)
- Responsible for the technicians and teaching assistants & supervision of final year thesis students
- Outreach and running the Crime Scene Camp

March – June 2008 *Substitute Teacher* Bathurst, NB – Canada

École Secondaire Népisiguit

- Teaching subjects including Natural Sciences, Biology, French, English, Physics, Chemistry, and Mathematics

Dec. 2006 – Sept. 2007 *TenPrint (Fingerprint) Clerk* Ripley, England

Derbyshire Constabulary HQ

- Responsible for confirming the identity of arrestees by means of fingerprints (TenPrint form) using the National Automated Fingerprint Identification System (NAFIS) and comparing details previously registered on the Police National Computer (PNC)
- Correspondence with Police Officers and Forensic Intelligence Analysts to put forward suspects against specific crimes

Oct.-Dec. 2006 *Lecturer for Forensic Entomology* Derby, England

University of Derby

- Lecture focusing on forensic entomology
- Discussions of criminal cases relevant to the course

Sept. 2004 – May 2006 *Forensic Entomology Practitioner & Biology Examiner* Abingdon, England

LGC Forensics (Formerly: Forensic Alliance Ltd)

- Report as expert on entomology cases
- Attend crime scenes and post mortems to collect entomological evidence, as well as participate in case conferences
- Examine clothing, weapons and other items for biological trace evidence
- Provide training for the police and other scientists
- Write procedures for entomological collections and write documents to attain ISO 17025 accreditation, as well as write and revise Quality Assurance documents

November 2002 *Forensic Science Demonstrator* Derby, England

University of Derby

- Sessions focusing on performing and understanding presumptive tests.

Jan. - March 2002 *Ecology Part-Time Lecturer* Derby, England

University of Derby

- Conducted weekly tutorials.

Oct. - Dec.2001 *Genetics & Evolution Part-Time Lecturer* Derby, England

University of Derby

- Conducted weekly tutorials.

2001-2003 *Sessional Lecturer for Forensic Science* Derby, England

University of Derby

- Lectures focusing on presumptive tests & DNA analysis
- Conducted a practical exercises and weekly tutorials

May - Oct. 2001 *DNA Technician – Forensic Biology Section* Lyon, France

Laboratoire de Police Scientifique

- Fully processed legal cases including sexual assaults, gang rapes, and armed robbery cases
- Once the samples were collected, further processing included: different methods of DNA extraction depending on the sample type, quantification, amplification, capillary electrophoresis, analysis of the results, and making a detailed report of findings to the lab supervisor

1998-2000 *Research Assistant* Halifax, NS Canada

Saint Mary's University

- Responsible for genetic and molecular analysis of wild leek
- Co-ordinator of two environmental conferences at Saint Mary's University
- Responsible for hiring and training new staff

RESEARCH

CURRENT RESEARCH INTERESTS

My present research includes forensic entomology and integrated pest management. In both cases, volatiles organic compounds (VOCs) associated with decomposing carcases, or livestock, are analysed using coupled gas chromatography and electroantennogram detection (GC-EAG) in order to isolate behaviour modifying compounds (semiochemicals) and determine their effects on the insects.

RESEARCH COLLABORATIONS - CURRENT

Environment Canada and UOIT Math Program

Title: Low atmosphere climate modeling for forensic investigations – predicting the temperature of decomposing remains.

Environment Canada, UOIT Math Program, UOIT Faculty of Engineering and Applied Science

Title: Weather and Environmental UAV Development to Support CANSOFCOM Activities.

University of Technology, Sydney and Australian Facility for Taphonomic Experimental Research (AFTER)

Title: Comparison of volatile organic compounds from human and pig remains including the isolation of EAG-active compounds of blowflies.

USDA-ARS and University of Nebraska- Lincoln

Title: Volatile semiochemical attractants and repellents in stable fly agroecosystem.

Texas A&M University, University of Dayton, and USDA-ARS

Title 1: Development and validation of standard operating procedures for measuring microbial populations for estimating a postmortem interval

Title 2: Elucidating signalling between flies and bacteria to increase food safety and to control biofilm formation

Title 3: Multicellular interkingdom signalling

Title 4: Development and validation of standard operating procedures for measuring microbial populations for estimating a postmortem interval

Title 5: Interactions of land use change, filth flies and pathogens in disease emergence

Royal Canadian Mounted Police (RCMP) and Yukon College

Title: The examination of crime scenes involving human remains in the Canadian North

SCHOLARY AND PROFESSIONAL WORK

PUBLICATIONS

- Comstock, J.L., LeBlanc, H.N. & Forbes, S.L. (2016) Analysis of decomposition fluid collected from carcasses decomposing in the presence and absence of insects, Chapter 18 pp 275-296, *in* H Kars & L. van den Eijkel (eds.) **Soil in Criminal and Environmental Forensics**. Springer.
- Stefanuto, P.-H., Perrault, K.A., Saddler, S., Pesesse, R., LeBlanc, H.N., Forbes, S.L. & Focant, J.-F. (2015) GC x GC TOFMS and supervised multivariate approaches to study human cadaveric decomposition olfactive signatures. ***Analytical and Bioanalytical Chemistry.*** doi:10.1007/s00216-015-8683-5
- Wallace, J.R., Byrd, J.H., LeBlanc, H.N., & Cervenka, V. (2015) Global perspectives and challenges in North America. Chapter 18 pp *tbd*, *in* J.K. Tomberlin & M.E. Benbow (eds.) **International Dimensions and Frontiers in Forensic Entomology**. Taylor & Francis.
- Comstock, J.L., Desaulniers, J.P., LeBlanc, H.N. & Forbes, S.L. (2014) New decomposition stages to describe scenarios involving the partial and complete exclusion of insects. ***Canadian Society of Forensic Science Journal.*** 48(1): 1-19
- LeBlanc, H.N. (2014) Réalisation des prélèvements à la scène, Chapter 7 pp 91-104, *in* D. Charabidzé & M. Gosselin (eds.) **Insectes, cadavre & scène de crime - Principes et applications de l'entomologie médico-légale**. De Boeck.
- Comstock, J.L., LeBlanc, H.N. & Forbes, S.L. (2013) Analysis of decomposition fluid collected from carcasses decomposing in the presence and absence of insects. **Soil Forensics** (through **European Association of Forensic Science**). Springer.
- Bygarski K. & LeBlanc H.N. (2013) Decomposition and arthropod succession in Whitehorse, Yukon Territory, Canada. ***Journal of Forensic Sciences***. 58(2): 413-418.
- LeBlanc, H.N. & Logan, J.G. (2010) Exploiting insect olfaction in forensic entomology, Chapter 11 pp 205-221, *in* J. Amendt, M. C.P. Campobasso, L. Goff & M. Grassberger (eds.) **Current Concepts in Forensic Entomology**. Springer.
- Charabidze D., Bourel B., Hedouin V., Gosset D., LeBlanc H.N. (2008) Effects of individual length and temperature on the moving speed of *Protophormia terraenovae* larvae (Robineau-Desvoidy) (Diptera Calliphoridae). ***Journal of insect physiology***. 54(3): 529-533.
- Pont, A.C..; Lole, M.; LeBlanc, H.N.; Cole, J.H. (2007) The American black dump fly, *Hydrotaea aenescens* (Wiedemann, 1830) (Diptera: Muscidae), in Britain and Ireland. ***Dipterists Digest***. 14(1): 23-29.
- Amendt, J.; Campobasso, C.; Gaudry, E.; Reiter, C.; LeBlanc, H.N. & Hall, M. (2007). Best practice in forensic entomology – standards and guidelines. ***International Journal of Legal Medicine***. 121: 90-104.
- LeBlanc, H.N. & Strongman, D.B. (2002). Carrion Insects Associated with Small Pig Carcasses During Fall in Nova Scotia. ***Canadian Society of Forensic Science Journal***. 35(3): 145-152.

PAPERS PRESENTED (2009-PRESENT)

(Students trained under my mentorship are **bolded**)
(* = presenting author)

- **Ly, J**.* & LeBlanc, H.N. (2017) Electrophysiological response of *Phormia regina* to cadaveric pig volatile organic compounds. **International Association of Forensic Science (IAFS) Tri-Annual Meeting**, Toronto ON. September 24,
- **Calla, L.***, Bohun, C.S., & LeBlanc, H.N. (2017) Beyond 48 hours! **UOIT Student Research Showcase 2017**. Oshawa ON. September 23, 2017 ***Science Award Winner***
- LeBlanc, H.N.* & **Ly, J**. (2017) Electrophysiological response of *Phormia regina* (Dipeta: Calliphoridae) to cadaveric pig volatile organic compounds. **North American Forensic Entomology Association (NAFEA)**, Davis, California USA. July 11
- **Kolodij, S**.* & LeBlanc, H.N. (2016) Electrophysiological responses of *Chrysomya rufifacies* (Diptera: Calliphoridae) to active volatile organic compounds released by human decomposition **International Congress of Entomology**, Orlando USA. September 27.
- LeBlanc, H.N.*, **Buetter, A., Robinson, K.** & Forbes, S.L. (2016) Evaluation of decomposition and insect colonization of pig (*sus scrofa*) cadavers inside a vehicle. **American Academy of Forensic Science (AAFS)**. Las Vegas, USA. February 26.
- **Comstock, J.L.**, LeBlanc, H.N.*, Forbes, S.L. & Desaulniers, J.P. (2015) New decomposition stages to describe carcass decomposing in the partial or complete absence of insects. **European Association of Forensic Entomology (EAFE).** Huddersfield, UK. May 7.
- **Comstock, J.L**.*, LeBlanc, H.N. & Forbes, S.L. (2012) New decomposition stages to describe carcasses decomposing in the partial or complete absence of insects**. University of Ontario Institute of Technology Graduate Student Research Conference.** Oshawa, Ontario. April 30
- LeBlanc, H.N.* (2012) Olfactory stimuli associated with decomposing vertebrates and their role in the attraction of the blowfly, *Calliphora vomitoria*. **Entomological Society of America: 60th Annual Meeting**. Member Symposium: Microbe-insect interactions in decomposition and disease ecology. Knoxville, Tennessee. November 11-14
- **Comstock, J.L**.*, Forbes, S.L. & LeBlanc, H.N. (2012) Analysis of decomposition fluid collected from carcasses decomposing in the presence and absence of insects**. European Association of Forensic Sciences (EAFS) conference.** The Hague, Netherlands. August 23
- **Comstock, J.L**.*, Forbes, S.L. & LeBlanc, H.N. (2012) New decomposition stages to describe carcasses decomposing in the partial or complete absence of insects**. UOIT Second Annual Graduate Student Research Conference.** Oshawa, Ontario, Canada. May 18.
- LeBlanc, H.N.*, Forbes S.L., **Buetter, A**., & Perrault, K. (2011) Study of Insect Colonisation Delay in a Closed Vehicle Environment. **North American Forensic Entomology Association (NAFEA)** College Station, Texas, USA. July 22
- **Bygarski, K**.* & LeBlanc, H.N. (2011) Decomposition Study and Arthropod Succession in Whitehorse, Yukon Territory, Canada**. North American Forensic Entomology Association (NAFEA)** College Station, Texas, USA. July 21
- **Perrault, K**.*, Hulse-Smith, L. & LeBlanc, H.N. (2011) A comparison of DNA collection techniques used in forensic casework**. UOIT Second Annual Graduate Student Research Conference.** Oshawa, Ontario, Canada. May 20.

- **Bygarski, K**.* & LeBlanc, H.N. (2011) Decomposition Study and Arthropod Succession in Whitehorse, Yukon Territory, Canada**. UOIT Second Annual Graduate Student Research Conference.** Oshawa, Ontario, Canada. May 18.
- Forbes S.L*. LeBlanc, H.N., Perrault, K. & **Buetter, A**. (2011) Decomposition in a Closed Vehicle Environment in Southern Ontario. **American Academy of Forensic Sciences**. Chicago, Illinois, USA. February 25. (poster)
- LeBlanc, H.N.*, Forbes S.L., **Buetter, A**., & Perrault, K. (2010) Study of Insect Colonisation Delay in a Closed Vehicle Environment. **Canadian Society of Forensic Science – 57th Annual Conference.** Toronto, Ontario, Canada. Dec 2.
- **Bygarski, K**.* & LeBlanc, H.N. (2010) Preliminary Decomposition Study and Arthropod Succession in Whitehorse, Yukon Territory, Canada**. Canadian Society of Forensic Science – 57th Annual Conference.** Toronto, Ontario, Canada. Dec 2.
- LeBlanc, H.N.* (2010). Olfactory stimuli response from blowflies to volatiles released from decomposing vertebrate carcasses. **Athens Institute for Education and Research: 3rd Annual International Symposium on Agricultural Research**. Athens, Greece. July 15-18.
- Benbow, M.E.*, Lewis, A., Tomberlin, J.K.., Crippen, T., LeBlanc, H.N. (2010) The influence of microbial succession on insect communities of swine carcasses: implications for potential pathogen dispersal from large animal feeding operations. **Athens Institute for Education and Research: 3rd Annual International Symposium on Agricultural Research**. Athens, Greece. July 15-18.
- **Bygarski, K**.* & LeBlanc, H.N. (2010) The Effects of Clothing on Decomposition and Insect Succession in a Southern Ontario Region. **2010 Toronto Police Forensic Identification Training Conference**, Toronto, Ontario, Canada March 19.
- LeBlanc, H.N.* (2009). Olfactory stimuli associated with the different stages of decomposition and their role in the attraction of the blowflies to the carcass. **North American Association of Forensic Entomology Meeting (NAFEA)**. Miami, USA. July 17.
- LeBlanc, H.N.* (2009). Olfactory stimuli associated with decomposing vertebrates and their role in the attraction of the blowfly, *Calliphora vomitoria*. **European Association for Forensic Entomology Meeting (EAFE)**. Uppsala, Sweden. June 11.
- LeBlanc, H.N.* & Pickles, S.F. (2005). Living in Squalor: When Men and Myiasis Meet. **European Association for Forensic Entomology (EAFE)** Meeting. Lausanne, Switzerland. April 25.
- LeBlanc, H.N.* & Pickles, S.F. (2005). Forensic Entomology: How insects can help you. As part of a Forensic Entomology training course for the **Yorkshire Police**. March 23-24.
- LeBlanc, H.N.* (2004). An Analysis of Chemicals Associated with Decomposition as well as an Electrophysiological Study of Blowfly *Calliphora vomitoria* to Understand its Attraction to Decomposing Bodies. **European Association for Forensic Entomology Meeting (EAFE)**. London, England. March 28.
- LeBlanc, H.N.* (2003). A Study of the Insect Activity and Odours Associated with Decomposing Corpses to Help Estimate Time Since Death. **European Association for Forensic Entomology (EAFE)** Meeting. Frankfurt, Germany. April 3.
- LeBlanc, H.N.* (2002). The Value of Insect Activity in Estimating the Time of Death of Human Corpses in the United Kingdom – An Interpretation of Results Gathered So Far. **International Association of Forensic Science Conference (IAFS)**. Montpellier, France. September 5.

- LeBlanc, H.N.* (1998). Forensic Entomology - A Study of Carrion Insects in the Halifax, Nova Scotia Region. **Saint Mary's University**. April 10.
- LeBlanc, H.N.* (1998). Forensic Entomology - A study of carrion insects in the Halifax, Nova Scotia region. **Atlantic University Undergraduate Biology Conference (AUUBC)**. Halifax,. March 7.
- LeBlanc, H.N.* (1998). A new method of testing for thiosalts and how to reduce the amount of pollution in the lakes and rivers surrounding Brunswick Mine. **Noranda Analytical Chemistry Conference (NACC)**. Bathurst, N.B. June 15.

INVITED SPEAKER/LECTURES

- The role of forensic entomology in civil and criminal cases. **Ontario Coroners Association**, 2017 OCA Annual Spring Conference, Niagara-on-the-Lake, Ontario, Canada. May 6th, 2017
- The role of volatile organic compounds and their role in Forensic Entomology. **University of Toronto Mississauga**, Mississauga, Ontario, Canada. March 24th, 2015
- The role of volatile organic compounds and their role in Forensic Entomology. **University of Toronto**, Toronto, Ontario, Canada. October 17, 2013
- Olfactory stimuli associated with decomposing vertebrates and their role in the attraction of the blowflies. **University of Nebraska-Lincoln**, Lincoln, Nebraska, U.S.A. November 6, 2012
- Electroantennogram Detection Techniques Applied to Forensic Entomology Research. **Trent University**, Peterborough, Ontario, Canada. February 16, 2011
- Chemical Ecology and its Potential Applications in Forensic Science. **University of Dayton**, Dayton, Ohio, USA. November 18, 2010
- Innovative tools in Forensic Biology. **Centennial College.** Toronto, Ontario, Canada. April 17, 2009

INVITED SEMINARS/WORKSHOPS

- Techniques in Forensic Entomology **University of Toronto Mississauga**. Mississauga, Ontario. August 23, 2016
- Workshop: Using forensic entomology in civil and criminal cases. **Intellnet Conference**, Toronto, Ontario. June 08, 2016
- Main Speaker: The analysis of volatiles released from decomposing carcasses and their effect on blowflies. **International Conference on Criminalistics**, Ecole National de Police du Quebec, Nicolet, Quebec, Canada. September 12, 2013
- Workshop: Field methods in Forensic Entomology. **International Conference on Criminalistics**, Ecole National de Police du Quebec, Nicolet, Quebec, Canada. September 10, 2013
- Olfactory stimuli associated with decomposing vertebrates and their role in the attraction of blowflies. **Entomological Society of America (ESA)**. Member Symposium: Microbe-insect interactions in decomposition and disease ecology. Knoxville, Tennessee, USA. November 13, 2012

- Forensic Entomology: Crime Scene Protocols. Course offered to the **Ontario Provincial Police (OPP)** and **the Durham Regional Police Service (DRPS) Ident Group**. Belleville, Ontario. June 21, 2011
- Popular techniques in forensic bioscience. **5th Annual National Bioscience Educator's Conference**, Toronto, ON. March 8, 2011
- Ecology of Carrion Insects. **North American Forensic Entomology Association meeting**. Session Moderator & judge for Best Graduate Student Presentation. July 8, 2010.
- Applications of forensic entomology, **2010 Toronto Police Forensic Identification Training Conference**, Toronto, Ontario, Canada March 19, 2010.
- Entomologie Médico-Légale. **Senior Ident Course for the Royal Canadian Mounted Police (RCMP).** Ottawa, Ontario, Canada. June 17-19, 2009.
- Chemical Ecology, **Texas A & M University**, Microbe-Insect Working Group, College Station, Texas, U.S.A., September 9, 2009
- Odours associated with decomposition and their role in determining time since death. **University of Derby – Biological Sciences Research Group**. Derby, England. October 18, 2006.
- The Use of Forensic Entomology in the Legal System. **Bathurst City Police & the Royal Canadian Mounted Police (RCMP).** Bathurst, New Brunswick, Canada. February 3, 2006.
- A Bug's Life of Crime. **British Association of Forensic Odontologists (BAFO) Meeting**. Birmingham, England. Nov 7, 2003.
- The Importance of Forensic Entomology. As part of a Forensic Entomology training course to the **Derbyshire Constabulary**, Ripley, England**.** June 10-13th, 2003.
- A Bugs Life of Crime – The Use of Forensic Entomology in the Legal System. **Rothamsted Research**. Harpenden. England. February 17, 2003.
- Forensic Entomology – A Brief Overview. **University of Oxford**. Oxford. England. November 21, 2002.

TEACHING ACTIVITIES

UNDERGRADUATE COURSES TAUGHT

- FSCI 1010U Introductory Forensic Science
- FSCI 2010U Crime Scene Science
- FSCI 2020U Essentials of Crime Scene Science
- FSCI 3010U Criminalistics I
- FSCI 3030U Criminalistics II
- FSCI 3120U Forensic Biology
- FSCI 4430U Directed Studies
- FSCI 4410U & 4420U Thesis Course

- FSCI 4020U Interdisciplinary Tropics in Forensic Science - Forensic Entomology section only (3 lectures and 3 labs)

GRADUATE COURSES TAUGHT

- APBS 6400G Advanced Topics in Forensic Bioscience

SUPERVISION OF HIGHLY QUALIFIED PERSONEL (HQP) (2009 – PRESERNT)

Graduate Students (Supervised)

- Angela Skopyk (PhD in Applied Bioscience) Sept 2015 - present
  Using electroantennography to determine the effects of decomposition volatile organic compounds on fly succession
- Alycia Saddler (MSc in Applied Bioscience) Sept 2013 - present
  Development of integrated pest management techniques of livestock facilities using electroantennogram detection techniques
- Stephanie Kolodij (MSc in Applied Bioscience) Sept 2013 – Dec 2015
  Electophysiological responses of Chrysomya rufifacies (Diptera: Calliphoridae) to active volatile organic compounds released by human decomposition
- Jenna Comstock (PhD in Applied Bioscience, UOIT) Oct 2011- July 2014
  Elucidation of the lipid degradation process during decomposition in the presence and absence of insects
  Co-supervisor: Prof Shari Forbes (University of Technology, Sydney, Australia)
- Michael Lucci (MSc in Applied Bioscience) May 2011- July 2012
  Determination of repellence of catnip oil and fatty acid blends on Stomoxys calcitrans for use in integrated pest management on dairy farms
- Katherine Bygarski (MSc in Applied Bioscience) May 2010- Aug 2012
  Arthropod Succession in Whitehorse, Yukon Territory and Compared Development of Protophormia terraenovae (R.-D.) from Beringia and the Great Lakes Region
- Sabrina Edwards (MSc Forensic Biology, University at Albany) May 2010 – Jan 2012
  A comparison of insect succession on decomposing cadavers in the Unites States of America and Canada
  Co-supervisor: Dr. John Nelson (University at Albany, State University of New York)

Graduate Student Supervisory (Research) Committee

- Sarah MacKay (PhD in Applied Bioscience, UOIT) Jan 2016 – Present
  Non-agricultural sources of nutrients and their impact on water quality and benthic foodwebs in Lake Simcoe Tributaries
- Donald Bourne (MSc Environmental and Life Sciences, Trent University) Jan 2012 – present
  Enhancing post-mortem interval estimates: refinements of technical, morphological, and species considerations within forensic entomology
- Dawn Cohen (MSc in Applied Bioscience, UOIT) Sept 2015 – Aug 2017

Assessing the use of DNA expert evidence, by justice system participants, in Ontario criminal courts

- Gage Comeau (MSc in Applied Bioscience, UOIT) Jan 2014 – Aug 2016
  Water Quality Hotspots and their Relationship to Algal Communities along Rural-Urban Gradients in Lake Ontario Tributaries
- Vanessa Nicholls (MSc Environmental and Life Sciences, Trent University) Sept 2010 – Nov 2012
  Taxonomy and ecology of blow flies (Diptera: Calliphoridae) across spatial scales: implications for forensic entomology in Canada
- Mark Kaji (MSc in Applied Bioscience, UOIT) Sept 2010 – Sept 2012
  Examination of the role of subunit composition in Haemonchus contortus GABA-gated chloride channels for the sensitivity of agonists and allosteric modulators

External Examiner

- Jean-Philippe Michaud (PhD en Science de la vie, Université de Moncton) Dec 2017, Supervisor : Dr. Gaetan Moreau
  Performance empirique des modèles théoriques de succession en milieu hétérotrophe
- Micah Callanan (MSC in Applied Bioscience, UOIT) Sept 2017, Supervisor: Dr. Sean Forester
  Isolation and partial characterization of three acetylcholine-gated chloride channels in Haemonchus contortus
- Sonja Stadler (PhD in Applied Bioscience, UOIT) March 2013, Supervisor: Dr. Shari Forbes
  Analysis of volatile organic compounds produced by the decomposition of pig carcasses and human remains
- Ian Baker (Masters in Health Science) May 2011, Supervisor: Dr. Bernadette Murphy
  Alterations in neck muscle performance and proprioception with fatigue, altered posture and recurrent neck pain
- Nicole De Almeida (MSc in Material Science) April 2010, Supervisor: Dr. Brad Easton
  Synthesis and characterisation of purely sulphonated polysiloxane and composite membranes for high temperature fuel cells

Defence Chair (UOIT)

- Kyle Dobby (MSc in Applied Bioscience, UOIT) August 2015
  Examining Effects of Milk Ferment Components on Endothelial Cell Signaling in Pro-Inflammatory Pathways

Undergraduate Honours Students

- Mirai Gendi, 2017-2018
  The effect of age on the sensitivity of EAG response of female Phormia regina (Diptera: Calliphoridae) to volatile organic compounds
- Julie Ly, 2016-2017
  Electrophysiological response of Phormia regina (Diptera: Calliphoridae) to Sus scrofa cadaveric volatile organic compounds
- Daniyel Pelletier, 2015-2016

Investigation of decomposition and the analysis of temperature data at different elevations, for use in criminal investigations

- Synthia Wou, 2013-2014

  The effects of fire on presumptive and confirmatory testing of biological fluids

- Benjamin Lee, 2013-2014

  The effect of acetaminophen on the development of Lucilia sericata (Diptera: Calliphoridae)

- Emily Rolko, 2013-2014

  The isolation of EAG active compounds associated with cadaver decomposition using Lucilia sericata (Diptera: Calliphoridae)

- Farah Ali, 2012-2013

  Biometrics: The application of lip print analysis for identification

- Hafsa Ahmed, 2012-2013

  Effects of constant versus fluctuating temperatures on the development of forensically relevant blowfly, Lucilia sericata (Diptera: Calliphoridae)

- Mannix Chan (Co-supervised), 2012-2013

  Analysis of Volatile Organic Compounds from Skeletal Remains (Sus. Scrofa domesticus) Using Thermal Desorption Gas-Chromatography

- Tharnie Vallikanthan (Co-supervised), 2012-2013

  Forensic Toxicology: An evaluation of ethanol beverage equivalence in obese human subjects

- Christina Adams (Co-supervised), 2012-2013

  The use of the Phadebas® Press test as a method of identifying expirated bloodstains

- Heather Veisbergs (Co-supervised), 2012-2013

  The deposition of rehydrated blood on footwear and gloves onto various secondary surfaces

- Kelsie Burnley (Co-supervised), 2012-2013

  Forensic Toxicology: Evaluation of breath alcohol concentration from last drink to elimination phase

- Jessica Head, 2011-2012

  Decomposition patterns of a concealed body

- Amanda Wong, 2010-2011

  The application of AFIX Tracker v.5.7 software on forensic lip print analysis

- Katelynn Perrault, 2010-2011

  A comparison of DNA collection techniques used in forensic casework

- Giovanni Marchese, 2010-2011

  The distribution of gunshot residue in open environments; a study of ejected cartridge case distribution; the comparison of cycling marks between fired cartridge cases and live rounds

- Katherine Bygarski, 2009-2010

  The effects of clothing on decomposition and insect succession in southern Ontario region

  Sara Garrard, 2008-2009

  A study on the effect of acetaminophen on the developmental rate of Phormia regina (Diptera: Calliphoridae)

- Nirojan Kandiah, 2008-2009

  Lip Print Collection and Comparison through enhancement with Black Fingerprint Powder

Student Research Internships

- Ivy Haw (University Works), May 2018 – present
- Julia Ivancic (University Works), September 2017 – April 2018
- Leanna Calla (NSERC USRA – co-supervisor Dr. Sean Bohun), Summer 2017
- Panteha Babelmorad (NSERC USRA & University Works), April 2016 – present
- Nicole Crawford (University Works), April 2015 – April 2017
- Sarah Toebes (UOIT STAR award winner), Summer 2015
- Jessica Lam (University Works), 2012-2014
- Kellyann Robinson (UOIT STAR award winner), Summer 2011
- Alicia Buetter (University Works), 2010-2011
- Alicia Buetter (UOIT STAR award winner), Summer 2010
  Top Poster Award Winner of the Student Research Showcase (19 August 2010)
- Sabrina Edwards (MSc at University at Albany), Summer 2010
- Katherine Bygarski (NSERC USRA – shared with Dr. Shari Forbes), Summer 2009

SERVICE AND ADMINISTRATION

UNIVERSITY COMMITEE PARTICIPATION

- Faculty Representative, Undergraduate Research Award Committee, 2010 – ongoing
- Recruitment Committee, 2015 – ongoing
- Curriculum Committee, 2011 – ongoing
- APBS Graduate Program Committee, 2011 – ongoing
- Science Lab Safety Committee, 2013 – ongoing
- Co-Chair, Forensic Science Advisory Committee, 2008 – ongoing
- Co-organiser of Forensic Science Research Day, 2009 – ongoing
- Director, Forensic Science Education Programs Accreditation Commission (FEPAC) Committee, 2010 – ongoing
- UOIT Academic Appeals Committee, 2010 – ongoing
- Science Lab Safety Committee, 2010 – ongoing
- Science Faculty Council, 2008 – ongoing
- Program Advisory Committee, Fleming College, Biotechnology Advanced – School of Health and Wellness, 2013 – ongoing
- Dean of Science Search Committee (elected position), 2013 - 2014
- Research Board, 2011 - 2013
- Forensic Psychology (Faculty of Social Science and Humanities) Hiring Committee, 2012-2013
- Forensic Science Tenure Track Faculty Hiring Committee, 2012-2013
- Forensic Science Technician Hiring Committee, 2011-2012

- Undergraduate Program Review (UPR) for Forensic Science, 2010-2011
- Science Appeals Committee, 2009-2011
- Two Year Secondment Hiring Committee, 2010-2011
- Crime Scene Camp Coordinator Hiring Committee, 2010-2011
- SLI Maternity Leave Hiring Committee, 2010-2011
- Student Scholarship Awards Selection Hiring Committee, 2009-2010
- Science Rendezvous Committee, 2009 & 2010

PROFESSIONAL MEMBERSHIPS

- American Academy of Forensic Sciences (AAFS), 2013 – ongoing
- Canadian Society of Forensic Science (CSFS), 2008 – ongoing
- Entomological Society of America (ESA), 2009 – ongoing
- North American Forensic Entomology Association (NAFEA), 2008 – ongoing
- Committee member of NAFEA Fundraising and Merchandising Committee, 2010 – ongoing
- Canadian Identification Society (CIS), 2010 – ongoing
- European Association of Forensic Entomology (EAFE), 2003 – ongoing
- American Board of Forensic Entomology (ABFE), 2017 – ongoing

EDITORIAL POSITIONS

Guest Editor for:
- Pure and Applied Geophysics
  Special issue: Forensic Meteorology: Observations and Models

Reviewer for:
- International Journal of Legal Medicine
- Journal of Medical Entomology
- Forensic Science International
- Medical and Veterinary Entomology
- Journal of Economic Entomology
- Experimental and Applied Acarology
- Canadian Society of Forensic Science
- Physiological Entomology
- Insects

Translator for:
- Canadian Society of Forensic Science

PROFESSIONAL SERVICE

- Consultant in Forensic Entomology, 2008-present
- Trent University, Program review, 2017
- Reviewer for Natural Sciences & Engineering Research Council (NSERC)
- Publication Committee Member for the *Canadian Society of Forensic Science Journal*
- Provide training in Forensic Entomology Crime Scene Protocols offered to law enforcement agencies such as the Royal Canadian Mounted Police (RCMP), the Ontario Provincial Police (OPP), and the Durham Regional Police Service (DRPS), 2010-present
- Canada Wide Science Fair Judge, May 18-19, 2010
- Board member of the European Association for Forensic Entomology (EAFE), 2004-2007

  http://new.eafe.org

  http://new.eafe.org/student_page.htm

  - Elected position
  - Assist in the organisation of yearly conferences
  - Assist the board in matters concerning the association and forensic entomology in Europe
  - Conducted seminars in both official languages of the EAFE, French and English

ACADEMIC CV

A. GENERAL INFORMATION

NAME: Bernadette Murphy

CURRENT POSITION: Professor
Associate Dean Research and Graduate Studies
Faculty of Health Sciences

CONTACT DETAILS: Faculty of Health Sciences
University of Ontario Institute of Technology
2000 Simcoe St North,
Oshawa, Ontario.
L1H 7K4
Phone: (905) 721-8668 ext 2778
email: Bernadette.Murphy@uoit.ca
Fax: (905) 721-3179

EDUCATIONAL QUALIFICATIONS: [Tertiary only]

1998 University of Auckland, PhD, Physiology
1992 University of Auckland, MSc (First Class Honours), Physiology
1989 Canadian Memorial Chiropractic College, DC, Doctor of Chiropractic
1985 Queen's University, BA, Life Sciences

PREVIOUS APPOINTMENTS:
2010-2016 Professor and Head of Kinesiology
2013, 2016 Director of Health Sciences
2007-2010 Associate Professor and Head of Kinesiology, University of Ontario Institute of Technology
2003-2007 Programme Director for MSc (Exercise Rehabilitation), University of Auckland
2002-2007 Senior Lecturer, Department of Sport and Exercise Science, University of Auckland
1999-2002 Lecturer, Department of Sport and Exercise Science, University of Auckland
1995-1998 NZCA School of Chiropractic, Research Director and Anatomy Coordinator
1994-NZCA School of Chiropractic, Lecturer, Anatomy
1991-1992 Unitec Faculty of Health Science-Lecturer, Anatomy and Physiology

PROFESSIONAL REGISTRATION
Board Registered New Zealand College of Chiropractors 1989-present
College of Chiropractors of Ontario 2009-present

CLINICAL EXPERIENCE
Pt Chevalier Chiropractic clinic, Auckland New Zealand 1989-2007
Campus Health and Wellness Centre, Oshawa Ontario 2009-2017

SIGNIFICANT DISTINCTIONS / AWARDS:

2017 Award for Best Paper submission, WFC/ACC joint meeting, Washington, DC.
2015 First Prize, Best Original Paper, World Federation of Chiropractic Biannual meeting
2015 Section Co Chair-Kinesiology- Natural Sciences and Engineering Research Council of Canada
2014 Senior Research Excellence Award UOIT
2013, 2014 Awarded Earl Homewood CMCC Professorship for significant contributions to research over several years
2012-2014 Committee member NSERC Biological Systems and Functions Peer Evaluation committee
2010 Ontario Chiropractic Association Award for most significant contributions to Research
2010 Promoted to Full Professor at the University of Ontario Institute of Technology
2010 PhD student receives best Doctoral thesis award (5 out 246 submissions in 2009 at University of Auckland)
2009 CAA Biannual Policy Forum and Scientific Symposium, Melbourne Australia 1st prize
2009 ACC Research Agenda Conference best original paper-basic science
2009 ACC Research Agenda Conference best original paper-clinical science
2009 PhD student named to Dean's Honours List and nominated for Best Doctoral Thesis Award
2009 PhD student granted Royal Society of New Zealand Rutherford Post-Doctoral fellowship
2008 ACC Research Agenda Conference 1st prize award, Basic Science Category
2007 WFC 9th Biennial Congress Award Winning Paper (3rd Prize), Basic Science category
2007 Selected to "Women in Leadership" Programme at the University of Auckland, a training programme for advanced and general staff women who have demonstrated leadership potential and exceptional performance in their roles
2007 Outstanding contribution to the chiropractic literature award by Chiropractic Journal of Australia
2006 Awarded $35,000 from the University of Auckland Researcher's Strategic Initiative Fund for "The role of exercise in promoting neural function in people with depression".
2004 New Zealand Chiropractor of the Year for Contributions to Research
2002 Awarded $100,000 Vice Chancellor's Early Career Research Award (University of Auckland)
2002 Granted Tenure and promoted to Senior Lecturer at the University of Auckland
2001 Awarded a $5000 University of Auckland Teaching Improvement Grant
1995 First Prize ($7500 US), Open Research Section, WFC Congress (jointly with Noel Dawson)
1993-1996 FCER Research fellowship $30,000 USD
1990 New Zealand Physiological Society's Young Investigator's Award for presentation "The Effects of Sacroiliac Joint Manipulation on the Hoffmann Reflex"
1989 Co-recipient of 1989 Spinal Research Foundation (Canada) student award for Excellence in Research
1989 Recipient of Walter T. Sturdy Memorial Award for highest combined academic standing over 4 years-CMCC
1986, 1988, 1989 Recipient of J.M. Wallace awards for highest academic standing CMCC
1982 Awarded Tricolour entrance scholarship from Queen's University
1982 Senior Science Prize for Year 13 Chemistry, Biology and Physics-Cardinal Newman SS, Scarborough, ON
1978-1982 Highest Academic standing in each year of study at Cardinal Newman SS, Scarborough, ON

PROFESSIONAL AFFILIATIONS AND ACTIVITIES:

Service

- External reviewer, Natural Sciences and Engineering Research Council of Canada 2013-2014, 2016-2018
- External reviewer, Open Programme, Netherlands Organisation for Scientific Research (NWO), Earth and Life sciences division
- Member of the national "Accreditation Standards and Policies Committee of the Federation of Canadian Chiropractic" (3 hours per month); one full day every six months

- External Reviewer for Tenure-Memorial University of Newfoundland, Canada 2017
- External Reviewer for Tenure-University of Queensland, Brisbane, Australia 2017
- External Reviewer for Promotion and Tenure-University of Alberta 2016
- External Reviewer for Promotion to Full Professor, UBC 2016
- External Reviewer for Tenure and Promotion to Associate Professor- Memorial University, Newfoundland 2016
- External reviewer Promotion to Associate Professor, Queens University, Kingston, Canada 2014
- Evaluation Committee Member Natural Sciences and Engineering Research Council of Canada (NSERC)-appointed 2011-2015
- The Council of Kinesiology of Ontario (CKO)-University Liaison Committee 2013-2017
- Canadian Council of University Kinesiology Administrators (CCUPEKA) 2009-2017
- Tenure and Promotion Committee member UOIT 2010-2014
- Research Committee Member for "Australian Spinal Research Foundation" since 1990
- Member of Editorial Board for ISRN Rehabilitation 2010-2013
- Reviewing editor for "Frontiers in Psychology"
- Editorial Board Member "Journal of Neuroscience and Biomedical Engineering since 2016
- Editorial Board Member "Brain Sciences" since 2016
- Member of Editorial Board for the Journal of the Canadian Chiropractic Association since 2009
- Editorial Board Member Journal of Manipulative and Physiological Therapeutics since 2016

- Grant Referee for Australian National Health & Medical Research Council 2005
- Departmental Postgraduate Committee Chair 2006, 2007
- Departmental Undergraduate Committee Chair 2005
- Undergraduate committee member 2003-2005
- Departmental Advisor for University of Auckland Human Subjects Ethics Committee 2001-2006
- External Moderator-New Zealand School of Chiropractic 2004-2006
- External Moderator - Physiotherapy Board - Auckland University of Technology 1999-2002
- Research Advisor - New Zealand Chiropractors Association 2001-2006
- New Zealand Qualifications Authority - Panelist for Major Change Documentation for NZ School of Chiropractic 2001
- Canadian Board Registered Chiropractor since 2009
- New Zealand Registered Chiropractor 1989-2015

2016 Invited Guest Editor: for Special Issue of Brain Sciences on Motor Control and Brain Plasticity (submissions due by September 2016)

Ad Hoc Article Reviewer

Journal	years
Applied Physiology, Nutrition and Metabolism	2017, 2018
The Australian and New Zealand Journal of Obstetrics and Gynecology"	2005
BMC Neuroscience" 2014	2014
Behavioural Brain Research 2015	2015
BMC Geriatrics", 2011	2011
BMC Geriatrics 2013	2013
BMC Musculoskeletal Disorders" 2009, 2014	2009-2014
BMC Medical Imaging	2016-17
BMC Neuroscience 2014	2014

Clinical Neurophysiology	2006
Evidence Based Complementary and Alternative Medicine	2015
European Journal of Applied Physiology" 2014	2014
Experimental Brain Research 2005-2014	2014
Experimental Brain Research 2014	2014, 2017
Frontiers in Psychology (Movement Science and Sport Psychology)	2015-2018
Frontiers in Human Neuroscience	2015-2017
Gait & Posture" 2014	2014-2017
Human Brain Mapping	2016
Human Movement Science	2017
International Journal of Family Medicine	2014
ISRN Rehabilitation" 2011, 2012, 2013	2011, 2012-2013
Journal of Back and Musculoskeletal Rehabilitation"	2012-2017
Journal of Electromyography and Kinesiology"	2011-2018
Journal of Manipulative and Physiological Therapeutics"	2009-2018
Journal of Motor Behaviour"	2014-2015
Journal of Neuroengineering and Rehabilitation	2015-2017
Journal of Neurological Sciences	2016-2017
Journal of Neurophysiology	2009, 2014, 2015
Journal of Neuroscience Methods	2016-17
Journal of Physiology	2015, 2018
Journal of Visualized Experiments	2015
Journal of the Canadian Chiropractic Association	2013, 2016, 2017
Manual Therapy	2015
Muscle & Nerve	2012
Neuroimage	2010, 2015
Neuroscience	2018
Neuroscience and Biomedical Engineering	2015, 2016, 2017
Neuroscience Letters	2014, 2015
Pain	2011
Physiological Reports	2017
PloS ONE	2014-2017
Reviews in the Neurosciences	2016
Scandinavian Journal of Medicine and Science in Sports	2014
The Neuroscientist	2017
World Journal of Biological Psychiatry	2016

Memberships

- Member of Canadian Council of Physical Education and Kinesiology Administrators 2009 to 2017
- Canadian Chiropractic Research Consortium 2008 to present
- Society for Neuroscience since 2005-present
- Australian Neuroscience Society 2005-2007
- Australian Association of Neurologists-Associate Member 2003-2007

- New Zealand Chiropractors' Association member 1989-2007
- New Zealand Physiological Society 1990-2007
- New Zealand Pain Society 1990-2007
- Ontario Chiropractor's Association 2008-present
- Canadian Chiropractor's Association 2008-present

External Theses examined
PhD thesis:

1. PhD Thesis: Cognitive control, conflict monitoring, and aerobic exercise, University of Waterloo, April 2018
2. PhD Thesis: The ipsilateral silent period as a measure of transcallosal inhibition: an investigation of individual and methodological factors influencing interhemispheric inhibition between motor cortices, University of Ottawa, Canada, 2016
3. PhD thesis: Premotor and prefrontal contributions to modulating upper limb somatosensory input into non-primary motor areas, Waterloo, Canada, 2015
4. PhD thesis (internal External) Dynamic Square Patterns in Two Dimensional Neural Fields, UOIT, Canada, 2015.
5. PhD thesis. The effect of manual therapy on hamstring injury prevention in Australian Rules football, Macquarie University, Australia, 2011.
6. PhD thesis "The Influence of Neck Muscle Spindles in Control of Limb Motoneurone Excitability". RMIT, Melbourne, Australia, 2010.

External Examiner PhD Candidacy Exam
1. Monash University March 2016
2. Deakin University April 2016
3. FSSH, UOIT, May 2017
4. FSc, UOIT, November 2017

MSc Theses

1. MSc Thesis The effects of Chiropractic spinal manipulation on the H reflex and muscle strength in children with spastic diplegic cerebral palsy: a feasibility study, AUT University, March 2018
2. MSc Thesis "Chiropractic Intervention and the Control of Eye Movement in Children with Attention Deficit Hyperactivity Disorder: A Pilot Study: AUT University, July, 2017.
3. MSc Thesis "How do we let players play and keep them safe? The Issue of Problematic reporting beliefs in the Prevention of Concussion Injury. Trent University, Canada, 2017.
4. MSc Thesis: "Phase- and workload-dependent changes in corticospinal excitability to the biceps and triceps brachii during arm cycling". Memorial University, Canada, 2017.
5. Trent University "Practicing and Rewarding Task-Relevant Motor Variability to Optimize Motor Performance" July 2017
6. MSc thesis: Evaluating Social and Cognitive Effects of Video Games using Electroencephalography, Faculty of Business and IT, UOIT, 2014.
7. MHSc thesis, Pilates can decrease chronic low back pain and related functional disability, Unitec, Auckland, New Zealand 2011.
8. MSc thesis, CBPsp: Complex Business Processes for Stream Processing, UOIT Faculty of Business and Information Technology, 2011.
9. MHSc thesis, Predictors of functional improvement in people with chronic low back pain following a graded programme of movement control exercises, Unitec, Auckland, 2010

10. MSc thesis “Investigation into the effects of hip muscle training upon predictors of low back pain in an asymptomatic population”, University of Auckland, March 2010
11. MSc thesis “Molecular characterization of GABA receptor subunits from the parasitic nematode Haemonchus Contortus”, UOIT Faculty of Science, 2010.
12. Manual cervical traction reduces alpha-motoneuron excitability in normal subjects. MHSc, AUT University, Auckland, New Zealand
13. Changes in alpha-motoneuron excitability with positions that tension neural tissue. MHSc, AUT University, Auckland, New Zealand
14. The effects of acupuncture on alpha-motoneurone excitability. MHSc, AUT University, Auckland, New Zealand
15. The effect of innocuous somatic stimulation on autonomic regulation of the heart and cardiovascular function in the awake human. MHSc,RMIT University, Melbourne, Australia

B. RESEARCH

(i) CURRENT RESEARCH INTERESTS

Summary Statement:

My PhD is in Human Neurophysiology. The overall theme of my research is understanding how altering afferent input from the spine and limbs affects sensorimotor integration and motor control. I am also interested in understanding how the human central nervous system adapts in conditions such as chronic musculoskeletal pain and depression, and understanding the role of physical interventions such as spinal manipulation and exercise in aiding the re-establishment of meaningful neural connections. In order to measure altered neural function in humans, I have acquired skills in a number of non-invasive techniques which can be used to measure changes in neural processing and function in humans. This includes nerve stimulation, somatosensory evoked potential techniques (SEPs) to measure processing of sensory input by the brain, electromyography to measure electrical activity in muscles, and transcranial magnetic stimulation (TMS), which is a technique used to investigate the output of the human motor cortex. Recently I have also begun to use magnetic resonance imaging (MRI) to measure changes in muscle function and functional MRI to investigate changes in brain function with exercise.

My **research plan** is to continue to investigate altered sensorimotor integration in response to motor training using both SEPs and TMS in laboratory based studies and how spinal manipulation can influence sensorimotor integration in neck pain patients.

Research Funding

2018	PI $80,000	The Impact of Chiropractic on Brain Function	Australian Spinal Research Foundation
2017	PI $161,000 (Co-investigator, P. Yielder)	Eye-Link II Tracking and EEgo MyLab Systems to study multi-sensory integration	Canada Foundation for Innovation John Evans Leader's Fund and Ontario Ministry of Research and Innovation
2016 (5 years)	PI $205,000 PI-sole investigator	Effects of altered input from the neck on upper limb sensorimotor integration	Natural Sciences and Engineering Council
Sept 2014-Aug 2016	$106,000 (Co-Investigator, PI-H. Haavik, other CoIs: Niazi, Lelic, Drewes, Yielder	The effects of a single session of chiropractic care on brain source connectivity	Australian Spinal Research Foundation and Hamblin Trust
2014-2015	$78,300 PI (coInvestigators: Holmes,UOIT and Haavik=NZCC)	The effect of chiropractic care on sensorimotor integration and its relationship to neck and upper limb function	Australian Spinal Research Foundation
2013-2015 (2 years)	$199,900 Co PI with Steven Passmore from UofM;co-investigators Hogue, Kapralos, McLellan from UOIT; Howarth, Mior and Grondin from CMCC	Serious games to decrease injury in the fire service by training safer lifting techniques and decision making skills: development and piloting	Manitoba Worker's Compensation Board
20011 (1 year)	$29,978.00: Co-investigator with A. Hogue PI and coPIs Kapralos, McLellan from UOIT; Triano, Mior and Grondin from CMCC	"Development of a Serious Game to Promote Safer Lifting Techniques in the Fire Service"	Workplace Safety & Insurance Board-Ontario
2011 (5 years)	$92,886 CoInvestigator Moustafa El-Gindy PI and Marc Rosen CoI	Canadian Driver-Truck-Road Interaction Simulator	Canada Foundation for Innovation Leader's Opportunity Fund
2011 (5 years)	$92,886 CoInvestigator Moustafa El-Gindy PI and Marc Rosen CoI	Canadian Driver-Truck-Road Interaction Simulator	Ontario Ministry of Research and Innovation

2011 (5 years)	PI $135,000 PI-sole investigator	The effect of altering afferent input from the spine and limbs on sensorimotor integration	Natural Sciences and Engineering Council
2011 (2 years)	$80,000 PI with co-investigator H. Haavik	The effect of chiropractic care on cerebellar function	Australian Spinal Research Foundation
2010 (5 years)	$49,000 PI-sole investigator	The effect of altering afferent input from the spine and limbs on central sensorimotor integration	Canada Foundation for Innovation
2010 (5 years)	$49,000 PI-sole investigator	The effect of altering afferent input from the spine and limbs on central sensorimotor integration	Ministry of Research and Innovation-Ontario Research Fund
2010 (1 year)	$25,000 PI-sole investigator	The effect of altering afferent input from the spine and limbs on central sensorimotor integration	Natural Sciences and Engineering Council
2009 (1 year)	$20,000 PI-sole investigator	The effect of altering afferent input from the spine and limbs on central sensorimotor integration	Natural Sciences and Engineering Council
2008 (3 years)	$45,550 AUS Co-investigator Jointly with H. Haavik Taylor	Chiropractic care and Sensorimotor Integration	Australian Spinal Research Foundation Foundation
2008 (3 years)	$39,315 AUS Co-investigator Jointly with H. Haavik Taylor & K. Holt	Sensorimotor Integration and falls in elderly	Australian Spinal Research Foundation Foundation
2007 (3 years)	$37,000 PI-H. Haavik Taylor and J. Kruger, co-investigators	The effects of lumbopelvic adjustments on the function of the pelvic floor muscles	Australian Spinal Research Foundation Foundation
2007	$2000 PI-Travel grant	International Brain Research Organization World Congress Travel Grant	Auckland Medical Research Foundation
2007	$35,000 PI	The effect of exercise on cortisol levels and neural function	University of Auckland- Reseacher's Strategic Support Initiative Awards
2005	$42,283 PI PI- P. Marshall-co-investigator	Rehabilitation and Neck Pain	Australian Spinal Research Foundation
2005	$12,000 Sole investigator	Pelvic Floor Function in Elite Female Athletes imaged using magnetic resonance imaging and 3-D ultrasound	University of Auckland Staff Research Fund
2005	$2000 PI-travel grant	Travel grant to Movement Dysfunction conference in Edinburgh	Auckland Medical Research Foundation
2005	$2000 PI-travel grant	Travel grant to Movement Dysfunction conference in Edinburgh	Foundation for Chiropractic Education and Research

2003	$16,997 PI-sole investigator	The development of a sensitive technique to measure changes in neural processing of somatosensory input	Foundation for Chiropractic Education and Research
2003	$34,884 PI	The effect of altered peripheral inputs on central neural plasticity	Australian Spinal Research Foundation
2003	$3500 PI	Sacroiliac joint manipulation and neuromuscular control	New Zealand Chiropractors' Association
2003	$1500 PI	Sacroiliac joint manipulation and neuromuscular control	Hamblin Chiropractic Research Fund Trust
2003	$2000 PI-travel grant	Travel grant to AAEM meeting	Maurice and Phyllis Paykel Trust
2003	$1500 PI travel grant	Travel grant to AAEM meeting	Auckland Medical Research Foundation
2003	$12,500 PI	Neuroscience	UoA Staff Research Fund
2002	$100,000 PI	Vice Chancellors Early Career Research Award	University of Auckland
2002	$16,000 PI	Changes in neural processing and muscle activation patterns after exercise	UoA Staff Research Fund

C. SCHOLARLY AND PROFESSIONAL WORK

B. RESEARCH

7. **Refereed publications** (list published work or work accepted for publication in chronological order).

i. Articles in refereed journals

*NOTE: * indicate contributors who were graduate students at the time of data acquisition

1. Gourgouvelis, J.*, Yielder, P., Clarke, S., Behbahani, H.*, **Murphy, B.** (2018) You can't fix what isn't broken: eight weeks of exercise do not substantially change cognitive function and biochemical markers in young and healthy adults *PeerJ* 6:e4675. doi:10.7717/peerj.4675
2. Baarbé, J.*, Yielder, P., Haavik, H., Holmes, M. **Murphy, B.** (2018) Subclinical recurrent neck pain and its treatment impacts motor training-induced plasticity of the cerebellum and motor cortex PLOS ONE https://doi.org/10.1371/journal.pone.0193413
3. Gourgouvelis, J.*, Yielder, P., Clarke, S., Behbahani, H.*, **Murphy, B.** (2018) Exercise Leads to Better Clinical Outcomes in Those Receiving Medication Plus Cognitive Behavioral Therapy for Major Depressive Disorder *Frontiers in Psychiatry* Mar 6;9:37. doi:10.3389/fpsyt.2018.00037.. *eCollection 2018.*
4. Andrew, D*. Yielder, P., Haavik, H. **Murphy, B.** (2018) The effects of subclinical neck pain on sensorimotor integration following a complex motor pursuit task. *Experimental Brain Research.* 236 (1)1–11.

5. Farid, B.*, Yielder, P., Holmes, M., Haavik, H., **Murphy, B**. (2018) Subclinical neck pain leads to altered multi-sensory integration at baseline and four week follow-up relative to healthy controls. *Journal of Manipulative and Physiological Therapeutics. Volume 41, Issue 2, Pages 81–91*
6. Gourgouvelis, J.*, Yielder, P., **Murphy, B.**, (2017) Exercise Promotes Neuroplasticity in Both Healthy and Depressed Brains: An fMRI Pilot Study. *Neural Plasticity* Article ID 8305287, 13 pages https://doi.org/10.1155/2017/8305287
7. Holland, L.*, **Murphy, B.,** Lee, T.*, Passmore, S., Yielder, P. (2017) Differences in corticomotor excitability between hemispheres following performance of a novel motor training task. *Neuroscience and Biomedical Engineering* Volume 5, pp. 116-125(10)
8. Williams-Bell, F.W, Aisbett, B., Murphy, B.A., Larsen, B. (2017) The effects of simulated wildland firefighting tasks on core temperature and cognitive function under very hot conditions. *Frontiers in Physiology.* 8: 815. 2017 Oct 24. doi: 10.3389/fphys.2017.00815
9. Zabihhosseinian, M.*, Holmes, M., Howarth, S., Ferguson, B.*, **Murphy, B.** (2017) Neck muscle fatigue differentially alters scapular and humeral kinematics during humeral elevation in subclinical neck pain participants versus healthy controls. *Journal of Electromyography and Kinesiology.* 33: 73-82.
10. Dancey, E.*, Murphy, B., Andrew, D.*, Yielder, P. (2016) The interactive effect of acute pain and motor learning on sensorimotor integration and motor learning outcomes. *Journal of Neurophysiology.* **Vol.** 116 (5), 2210-2220 **DOI:** 10.1152/jn.00337.2016
11. Dancey,E.* Murphy, B.A., Andrew, D.*, Yielder, P.(2016). The effect of local versus remote experimental pain on motor learning and sensorimotor integration using a complex typing task. *Pain* 157(8):1682-1695
12. Holt, K. R.*, H. Haavik, A. C. L. Lee, B. Murphy and C. R. Elley (2016) Effectiveness of Chiropractic Care to Improve Sensorimotor Function Associated With Falls Risk in Older People: A Randomized Controlled Trial." *Journal of Manipulative and Physiological Therapeutics*. 39(4), 267-268.
13. Haavik, H., Murphy, B., Kruger, J. (2016) Effect of Spinal Manipulation on Pelvic Floor Functional Changes in Pregnant and non-pregnant women: a preliminary study. *Journal of Manipulative and Physiological Therapeutics.* 39(5) 339–347.
14. Lelic, D., I. K. Niazi, K. Holt, M. Jochumsen*, K. Dremstrup, P. Yielder, B. Murphy, A. M. Drewes and H. Haavik. (2016) Manipulation of dysfunctional spinal joints affects sensorimotor integration in the pre-fontal cortex: a brain source localization study. *Neural Plasticity.* Article ID 3704964, http://dx.doi.org/10.1155/2016/3704964
15. Forman, D. A., J. Baarbé, J*. Daligadu, B*. Murphy and M. W. Holmes (2016). The effects of upper limb posture and a sub-maximal gripping task on corticospinal excitability to muscles of the forearm. *Journal of Electromyography and Kinesiology* 27: 95-101.
16. Baarbé J*, Holmes MWR, Murphy HE*, Haavik H, **Murphy BA**. (2016) Subclinical neck pain impairs the ability to perform a mental rotation task: A four week longitudinal study with a healthy control group comparison. Accepted, *Journal of Manipulative and Physiological Therapeutics*. 39 (1)23–30.
17. Zabihhosseinian, M.*, Holmes, M., **Murphy, B.** (2015) Alteration in upper limb proprioception with altered afferent input due to neck fatigue. *Experimental Brain Research*; 233(5):1663-75.

18. Zabihhosseinian, M.*, Holmes, M., Ferguson, B*. **Murphy, B.** (2015) Neck Muscle Fatigue Alters the Cervical Flexion Relaxation Ratio in Sub-Clinical Neck Pain Patients. *Clinical Biomechanics.* Jun;30(5):397-404. doi: 10.1016/j.clinbiomech.2015.03.020. [Epub ahead of print]
19. Andrew, D.*, Yielder, P. **Murphy, B**. (2015) Do pursuit movement tasks lead to differential changes in early somatosensory evoked potentials related to motor learning in comparison to typing tasks?. 113(4) 1156-1164. http://www.physiology.org/doi/10.1152/jn.00713.2014
20. Holland, L*, **Murphy, B.,** Passmore, S. Yielder, P., (2015) Time course of corticospinal excitability changes following a novel motor training task. *Journal of Neuroscience Letters* 591,:81 -85.
21. Andrew, D.*, Yielder, P., Haavik, H. Dancey, E*. **Murphy, B.** (2015) Somatosensory evoked potentials show plastic changes following a novel motor training task with the thumb. *Clinical Neurophysiology* 126, (3) 575–580.
22. Passmore, S.R.*, Bosse, J.*, **Murphy B.,** Lee, T.D. (2014). The impact and specificity of nerve perturbation on novel vibrotactile sensory letter learning. *Somatosensory and Motor Research.* 31(4)167-77. Doi. 10.3109/08990220.2014.90883
23. Marchand, A.*., Cantin, V, Murphy, B., Stern, P., Descarreaux, M. (2014) Is performance in goal oriented head movements altered in patients with tension type headache? *BMC Musculoskeletal Disorders* 2014, 15:179 doi:10.1186/1471-2474-15-179
24. Dancey, E.*, **Murphy, B.,** Srbely, J. Yielder, P. (2014) The effect of experimental pain on motor training performance and sensorimotor integration. *Experimental Brain Research* 232, (9) 2879-2889
25. Willams-Bell, M.*, Kapralos, B., Hogue, A, **Murphy, B,** Weckman, B. (2014) Using serious games and virtual simulation for training in the fire service: a review; *Fire Technology*. DOI: 10.1007/s10694-014-0398-1
26. Passmore, S.R.* , **Murphy, B.,** Lee, T.D. (2014) The origin and application of somatosensory evoked potentials as a neurophysiological technique to investigate neuroplasticity. *Journal of the Canadian Chiropractic Association* 58(2)170-182.
27. Baarbé. J.*, Yielder, P., Behbahani, H.*, Daligadu, J.*, Haavik, H., **Murphy, B.** (2014) A Novel Protocol to Investigate Motor Training-Induced Plasticity and Sensorimotor Integration in the Cerebellum and Motor Cortex. *Journal of Neurophysiology.* 111(4):715-21.
28. Haavik, H., Murphy, B. (2013) Selective changes in cerebellar-cortical processing following motor training" *Experimental Brain Research.*231(4)397-403.
29. Daligadu, J*., Haavik, H. Yielder, P. Baarbé. J*,_ **Murphy, B.** (2013) Alterations in cortical and cerebellar motor processing in subclinical neck pain patients following spinal manipulation *Journal of manipulative and physiological therapeutics* 36:527 -537.
30. Daligadu, J.*, **Murphy, B.,** Brown, J.*, Rae, B.*, Yielder, P. (2013) TMS Stimulus-Response Asymmetry in Left and Right Handed Individuals, *Experimental Brain Research. 224(3): 411-16.* doi: 10.1007/s00221-012-3320-4
31. Haavik, H. **Murphy, B.A.** (2012) The role of spinal manipulation in addressing disordered sensorimotor integration and altered motor control, *Journal of Electromyography and Kinesiology;* 22:768–776; http://dx.doi.org/10.1016/j.jelekin.2012.02.012
32. Haavik Taylor, H. **Murphy, B.A.** (2011) Subclinical neck pain and the effects of cervical manipulation on elbow joint position sense. *Journal of Manipulative and Physiological Therapeutics,* 34:88-97
33. Fairhall, S., Magnusson, J., Sharma, S*. **Murphy, B**. (2010) Memory related dysregulation of hippocampal function in major depressive disorder. *Biological Psychology* 85(3):499-503.
34. Kruger, J.A.*, Heap, S.A., **Murphy, B.A.,** Dietz, H.P. (2010) How best to measure the levator hiatus: Evidence for the non-Euclidean nature of the 'plane of minimal dimensions'*Ultrasound in Obstetrics & Gynecology* 36(6):755-8.

35. Haavik Taylor H, Holt KR, **Murphy B.** (2010). Chiropractors' Association of Australia Scientific Symposium 2009 first prize award winning paper: Exploring the neuro-modulatory effects of the vertebral subluxation and chiropractic care. *Chiropractic Journal of Australia*, 40(1): 37-44.
36. Haavik Taylor H*. **Murphy, B.A.**, (2010) The effects of spinal manipulation on central integration of dual somatosensory input observed following motor training: A crossover study. *Journal of Manipulative and Physiological Therapeutics* 33(4): 271-262.
37. **Murphy, B.A.,** Marshall, P.W., Haavik Taylor, H. (2010) The Cervical Flexion-Relaxation Ratio: Reproducibility and Comparison between chronic neck pain patients and controls. *Spine.* 15 35 (24)- 2103-2108. doi: 10.1097/BRS.0b013e3181cbc7d8=
38. Marshall, P.W.*, **Murphy, B.A.** (2010) Delayed abdominal muscle onsets and self-report measures of pain and disability in chronic low back pain *Journal of Electromyography and Kinesiology*. 20(5):833-839 Epub ahead of print *doi:10.1016/j.jelekin.2009.09.005*
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In revision

1. Larabie, C.*, **Murphy, B.,** Holmes, M. (2018) Muscle Activity, Timing and Head Kinematics Differ Between Male and Female Ice Hockey Players During Sudden Head Perturbations. *Journal of Applied Biomechanics*

In preparation

2. Baarbé, J.*, **Murphy, B.,** Haavik, H., Holmes, M. Recurrent neck pain impacts performance and upper extremity kinematics
3. Williams-Bell, M*., O'Brien, S.*, Hogue, A., Kapralos, B., McLellan, T., Passmore, S.R., McLellan, T.M., **Murphy, B.** The use of serious game technology to assess cognitive function in firefighters during exercise-induced heat stress
4. Williams-Bell, F.M.*, Buren, S., Passmore, S.R., **Murphy, B.A**. Influence of low level exercise on the within and between session reliability of the CANTAB cognitive assessment battery
5. Dancey, E.*, Yielder, P. **Murphy, B.,** The effect of local, remote and contralateral tonic pain on motor learning and sensorimotor integration using a motor tracing
6. Dancey, E.*, Yielder, P. **Murphy, B.,** The effect of tonic pain and motor learning on corticospinal excitability.

Articles in refereed conference proceedings (underline indicates student authors)

C1. O'Brien, S.*, Yielder, P., Andrew. D*., **Murphy, B**. Neurophysiological and behavioural outcomes within the proximal upper limb muscles in response to novel motor skill acquisition. Exercise Neuroscience Group Biannual meeting, June 15-16, 2017, University of Guelph, Guelph, Ontario, Canada. P.30.

C2. Gilley, R.*, **Murphy, B,** Andrew, D.* Yielder, P. Novel motor training leads to increased accuracy and differential changes in somatosensory evoked potential peak amplitude for the non-dominant hand relative to the dominant hand. Exercise Neuroscience Group Biannual meeting, June 15-16, 2017, University of Guelph, Guelph, Ontario, Canada. P.17.

C3. Sieffien, W, Scott, J., Murphy, B. Does Motor Training Create Different Effects on Cerebellar Excitability between Dominant and Non-Dominant Hands? Exercise Neuroscience Group Biannual meeting, June 15-16, 2017, University of Guelph, Guelph, Ontario, Canada. P.35.

C4. Gourgouvelis, J.*, Yielder, P., Behbahani, H.*, **Murphy, B.** The synergistic effects of exercise in combination with other antidepressant therapies. American College of Sports Medicine (ACSM) Annual Conference, Denver, Colorado, May 2017, Medicine & Science in Sports & Exercise 49:471 DOI. 10.1249/01.mss.0000518181.45240.e1

C5. Gourgouvelis, J.*, Yielder, P., Behbahani, H.*, **Murphy, B.** The effects of an eight week exercise intervention on brain activity in depressed and non depressed individuals: An fMRI pilot study. American College of Sports Medicine (ACSM) Annual Conference, Denver, Colorado, May 2017, Medicine & Science in Sports & Exercise 49(5S):308, MAY 2017. DOI: 10.1249/01.mss.0000517708.69665.5f, Issn Print: 0195-9131 Publication Date: 2017/05/01

C6. MacIntosh, Lindsey Dogra, S., Yielder, P., Murphy, B. Factors affecting the impact of general elective courses which includes physical activity on post-secondary student mental health. University of Ontario Institute of Techology Futures Forum: The future of community mental health and wellness. May 10, 2017

C7. Dancey, E.*, Yielder, P, **Murphy, B.** The effect of tonic pain and motor learning on corticospinal excitability. Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, and annual meeting May 2 to May 5, 2017 (poster)

C8. Gilley, R.*, **Murphy, B,** Andrew, D.* Yielder, P. Increased accuracy and differential changes in early somatosensory evoked potentials in response to novel motor training for the non-dominant hand relative to the dominant hand. Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, and annual meeting May 2 to May 5, 2017 (poster)

C9. O'Brien, S.*, Yielder, P., Andrew. D*., **Murphy, B**. Comparing neurophysiological and behavioural outcomes between distal and proximal upper limb muscles in response to novel motor skill acquisition. . Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, and annual meeting May 2 to May 5, 2017 (poster).

C10. Zabihhosseinian, M*, Holmes, M.W. R, **Murphy, B.** Neck Muscle Fatigue Affects Performance of a Tracing Task Performed Using Shoulder Rotation. Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, and annual meeting May 2 to May 5, 2017 (poster)

C11. Baarbé, J.*, **Murphy, B.,** Haavik, H., Holmes, M. Spinal manipulation for mild recurrent neck pain influences upper limb biomechanics: A four-week randomized controlled trial. Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, and annual meeting May 2 to May 5, 2017 (poster)

C12. Farid, B.*, Yielder, P., Holmes, M., Haavik, H., **Murphy, B**. Subclinical neck pain leads to altered multi-sensory integration at baseline and four week follow-up relative to healthy controls. World Federation of Chiropractic Biennial Congress, Washington, USA, March 13-18th, 2017 (Oral)-Award winning paper.

C13. Gilley, R*, Baarbé, J.* Yielder, P., Holmes, M., Haavik, H., **Murphy, B.** Subclinical Neck Pain Affects Motor Skill Acquisition and Transfer as Compared to a Healthy Control Group. World Federation of Chiropractic Biennial Congress, Washington, USA, March 13-18th, 2017 (Oral)

C14. Gourgouvelis, J.* Yielder, P. Behbahani, H., **Murphy, B.** The effects of exercise in combination with other conventional antidepressant therapies in treating individuals suffering with Major Depressive Disorder. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Chicago, USA. July 5-8, 2016 (poster)

C15. Dancey, E.*, **Murphy, B.,** Andrew, D.*, Yielder, P. The effect of acute pain and motor learning and sensorimotor integration and accuracy using a motor tracing task. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Chicago, USA. July 5-8, 2016 (poster)

C16. M. Williams-Bell* S. Buren*, S. R. Passmore, **B.A. Murphy** Reliability of the CANTAB cognitive assessment battery over short duration repeated measurements. International Society

of Electromyography and Kinesiology (ISEK) Biannual Meeting, Chicago, USA. July 5-8, 2016 (poster)

C17. Zabihhosseinian, M., Holmes, M., Howarth, S., Ferguson, B.* **Murphy, B.** Impact of neck muscle fatigue on scapulohumeral kinematics in subclinical neck pain pain vs asymptomatic controls. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Chicago, USA. July 5-8, 2016 (poster)

C18. Williams-Bell, M*., O'Brien, S.*, Hogue, A., Kapralos, B., McLellan, T., Passmore, S.R., McLellan, T.M., **Murphy, B.** The effects of exercise-induced heat stress on cognitive function assessed using serious game technology. American College of Sports Medicine (ACSM) Annual Conference, Boston, MA, May, 2016 (thematic poster presentation)

C19. Baarbé, J.*, Yielder, P., Haavik, H., Holmes, M., **Murphy, B.** (Accepted) Subclinical neck pain impairs the cerebellar response to motor training which is normalized following treatment with spinal manipulation. "Action & Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016.

C20. Baarbé, J.*, **Murphy, B.,** Haavik, H., Holmes, M. Subclinical Neck Pain Alters Upper Limb Kinematics during Dart Throwing. . "Action & Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016.

C21. Dancey,E.* **Murphy, B.,** Yielder, P The Effect of Local, Remote, and Contralateral Tonic Pain on Motor Learning and Sensorimotor Integration using a Motor Tracing. "Action & Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016.

C22. Gourgouvelis, J.*, Yielder, P., Behbahani, H.*, **Murphy, B.** The effects of exercise on cognitive function in people suffering with Major Depressive Disorder. "Action & Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016 (oral presentation).

C23. Gourgouvelis, J.*, Yielder, P., **Murphy, B.** Evidence of impaired cognitive function in individuals suffering with Major Depressive Disorder despite treatment with antidepressant medication. Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016; poster 38).

C24. Williams-Bell, F.M.*, S.M. Buren*, Passmore, S.R., **Murphy, B.** Influence of low level level exercise on the within and between session rReliability of the CANTAB cognitive assessment battery. "Action & Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016.

C25. Williams-Bell, F.M.*, Passmore, S.R., McLellan, T.M., & **Murphy, B.A.** Is cognitive function impaired while working in a climate chamber at 30°C in firefighters? ACSM 62nd Annual Meeting, 6th World Congress on Exercise is Medicine® and World Congress on the Basic Science of Exercise Fatigue, San Diego, USA (poster) May 2015 - Volume 47 - Supplement 1 5S, Medicine and Science in Sports and Exercise, 2015.

C26. Baarbé, J., **Murphy, B.** Haavik, H., Holmes, M. Upper Limb Kinematics Differ between subclinical neck pain and healthy participants during a dart throwing task. Proceedings of the 13th World Federation of Chiropractic Biennial Congress, Athens, Greece, May 13-16th, 2015.

C27. Baarbé, J., Holmes, M., Murphy, H., Haavik, H., **Murphy, B.** Neck pain participants show impaired ability to perform a mental rotation task in a four week longitudinal study as compared to healthy controls. Proceedings of the 13th World Federation of Chiropractic Biennial Congress, Athens, Greece, May 13-16th, 2015 (Oral)

C28. Baarbé, J., Yielder, P., Haavik, H., Holmes, M., Debison-Larabie, C., **Murphy, B.** Enhanced cerebellar disinhibition when cervical manipulation precedes motor learning in individuals with subclinical neck pain. Proceedings of the 13th World Federation of Chiropractic Biennial Congress, Athens, Greece, May 13-16th, 2015. (Poster)

C29. Lelic, D., Khan Niazi, I., Holt, K., Jochumsen, M.*, Dremstrup, K., Yielder, P., **Murphy, B.,** Drewes, A., Haavik, H., Manipulation of dysfunctional spinal joints affects sensorimotor integration in the pre-fontal cortex: A brain source localization study, Proceedings of the 13th World Federation of Chiropractic Biennial Congress, Athens, Greece, May 13-16th, 2015 (poster).

C30. Wyger, R.*, Srbely, J.Z., **Murphy, B.** The impact of therapeutic ultrasound on central sensitization and the electrophysiological characteristics of somatosensory evoked potentials in healthy young adults. Ontario Biomechanics Conference, March 2015.

C31. Baarbé, J.*, Holmes, M., Murphy, H., Haavik, H., **Murphy, B.** Low Grade Neck Pain Interferes with the Ability to Perform a Mental Rotation Task. Sensorimotor Control Meeting, Brisbane, Australia, Feb 20-21, 2015, page 26

C32. Gourgouvelis, J.*, **Murphy, B,** Yielder, P. Mechanisms by which Exercise Promotes Hippocampal Function in People with Depression. Advancing Recovery Research-Patients, partnerships and peers-Ontario Shores Research Day Feb 24, 2015.

C33. Williams-Bell, F.M.*, McLellan, T.M., **Murphy, B.A.** Is cognitive function impaired while working in 35°C and wearing Personal Protective Ensemble and Self-Contained Breathing Apparatus in fire fighters? (2015). Conference Proceedings. Canadian Society for Exercise Physiology (CSEP), St. Johns, Canada, Oct 23, 2014 *Oral Presentation-Graduate Student Award Finalist)

C34. **Murphy, B.** Haavik, H. Invited speaker at a Special Symposium on "The potential role of spinal manipulation in neuro-rehabilitation", International Conference on Neurorehabilitation, Aalborg, Denmark, June 24-26, 2014

C35. Shafiq, H., McGregor, C., Murphy, B., 2014 "The Impact of Cervical Manipulation on Heart Rate Variability", *36th Annual International Conference of the IEEE EMBS*, Chicago, USA, 2014, pp 3406-3409. August 26-30. Chicago, USA.

C36. Zabihhosseinian, M., Holmes, M., **Murphy, B.** Alteration in upper limb proprioception following neck muscle fatigue. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Rome, Italy, July 15-18, 2014 (oral presentation)

C37. Forman, D., Baarbé, J., **Murphy, B,** Holmes, H. The Effects of Upper Limb Elevation Angle and Plane on Motor Cortex Activation of the Forearm Muscles. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Rome, Italy, July 15-18, 2014 (oral presentation)

C38. Behbahani H., Yielder P., Gourgouvelis J.C., **Murphy B.A.** Changes in corticomotor plasticity induced by ten weeks of exercise in sedentary young adults. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Rome, Italy, July 15-18, 2014 (poster)

C39. Holland L, Baarbé J, **Murphy B,** and Yielder P. Patterns of inhibition and facilitation between dominant and non-dominant hemispheres of both right and left-handed individuals.

Society for Neuroscience 43th Annual Meeting, San Diego, California, United States of America, November 9-13, 2013, 171.01/RR16

C40. Baarbé J, Debison-Larabie C, Haavik H, Yielder P, and **Murphy B.** Differences in effects of cerebellar inhibition following motor learning in subclinical neck pain patients. *Society for Neuroscience 43th Annual Meeting,* San Diego, California, United States of America, November 9-13, 2013, 748.09/VV14

C41. Behbahani, H., Yielder, P., Gourgouvelis, J., **Murphy, B.** Plasticity changes in motor cortex induced by cardiovascular and musculoskeletal exercise prescription in sedentary young adults. Proceedings of the Canadian Society for Exercise Physiology Annual General Meeting: Extreme Human Physiology: From Pathology to Performance. Toronto, October 16-19, 2013, page 1024 http://www.nrcresearchpress.com/doi/pdfplus/10.1139/apnm-2013-0299

C42. Andrew, D., Haavik, H. Yielder, P., **Murphy, B.** The effect of a thumb motor training task on median nerve sensory processing. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July 13-16, 2013, Abstract #164.

C43. Baarbé, J., Daligadu, J., Behbahani, H., Haavik, H., Yielder, P., **Murphy, B.** The effects of motor learning on the cerebellum and motor cortex. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July 13-16, 2013, Abstract #169.

C44. Dancey, E., Srbely, J., **Murphy, B.,** Yielder, P. The effect of experimental pain on motor training performance and sensorimotor integration. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July 13-16, 2013, Abstract #165.

C45. Holland, L, Baarbé, J., **Murphy, B,** Yielder, P. Asymmetry in inhibition and facilitation between dominant and non-dominant hemispheres in right-handed individuals. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July 13-16, 2013, Abstract #171.

C46. Barker, I., Yielder, P., Haavik, H, Murphy, B. The Effect of 12 Weeks of Manipulative Care on the Cervical Flexion Relaxation Response: A Pilot Study. Proceedings of the 12th World Federation of Chiropractic Biennial Congress, Durban, South Africa, April 10-13, 2013, p. 165.

C47. Bossé, Passmore, S., Yielder, P., Haavik, H., Murphy, B. The effect of spinal manipulation on sensorimotor integration and cortical effects of motor training in a cohort of participants with subclinical neck pain. Proceedings of the 12th World Federation of Chiropractic Biennial Congress, Durban, South Africa, April 10-13, 2013, p. 170.

C48. Daligadu, J., Yielder, P., Baarbé, J., Haavik, H., Murphy, B. Alterations in Cortical and Cerebellar Motor Processing in Neck Pain Patients Following Chiropractic Manipulation. Proceedings of the 12th World Federation of Chiropractic Biennial Congress, Durban, South Africa, April 10-13, 2013, p. 142.

C49. Daligadu, J., Yielder, P., Behbahani, H. Holland, L., Murphy, B. "The feasibility of using cerebellar stimulus response curves to investigate changes in excitability of cerebellar projections to primary motor cortex" International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Brisbane, Australia, July 17-21, 2012 (poster)

C50. Barker, I., Yielder, P., Murphy, B. "The effects of neck muscle fatigue on the cervical flexion relaxation response and on cervical joint position sense". International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Brisbane, Australia, July 17-21, 2012 (accepted for platform presentation).

C51. Daligadu, J., Yielder, P., Murphy, B. "TMS Stimulus-Response Asymmetry in Left and Right Handed Individuals" Exercise Neuroscience Group biannual meeting. June 16th and 17th, 2011, Wilfrid Laurier University campus. Waterloo, Canada.

C52. Bossé, J., Passmore, S., Murphy, B.A, "The effects of induced ulnar nerve paresthesia on somatosensory evoked potentials" Exercise Neuroscience Group biannual meeting. June 16th and 17th, 2011, Wilfrid Laurier University campus. Waterloo, Canada.

C53. **Murphy, B.A.,** Passmore, S. Bossé, J., Haavik Taylor, H. Lee, T., The effects of ulnar nerve paresthesia on sensorimotor integration, Society for Neuroscience, San Diego, USA November 13-17, 2010. 2010-S-15862-SfN

C54. Yielder, P, Daligadu, J. Brown, J., **Murphy, B.** TMS stimulus response recruitment curve asymmetry in left handed individuals Society for Neuroscience, San Diego, USA, November 13-17, 2010 2010-S-17646-SfN

C55. Goldie, J. McGregor, C. **Murphy, B.** Determining Levels of Arousal using Electrocardiography: A study of HRV during Transcranial Magnetic Stimulation. 32nd Annual International Conference of the IEEE EMBS, Buenos Aires, Argentina, August 31 - September 4, 2010

C56. **Murphy, B,** Yielder, P., Bossé, J., Daligadu, J, Haavik Taylor, H. "Motor training changes processing of early cerebellar and cortical somatosensory evoked potentials" The XVIII International Conference of the Society of Electrophysiology and Kinesiology (ISEK), Aalborg, Denmark, June 16-19, 2010. SS608.

C57. Haavik Taylor, H,. Mrachacz,Kersting, N., **Murphy, B,** "Selective changes of intracortical facilitation and inhibition following repetitive voluntary movement." The XVIII International Conference of the Society of Electrophysiology and Kinesiology (ISEK), Aalborg, Denmark, June 16-19, 2010. SS609.

C58. Passmore, S, **Murphy, B,** Bossé, J., Lee, T. "Nerve parathesia affects transfer of a vibrotactile Morse code letter acquisition task to motor performance" The XVIII International Conference of the Society of Electrophysiology and Kinesiology (ISEK), Aalborg, Denmark, June 16-19, 2010. SS611.

C59. Haavik Taylor H, **Murphy B.A.,** Joint dysfunction as a form of altered afferent input: part I: Sensory processing changes following spinal manipulation. The XVIII International Conference of the Society of Electrophysiology and Kinesiology (ISEK), Aalborg, Denmark, June 16-19, 2010. SS612.

C60. **Murphy B.A.,** Haavik Taylor H, Joint dysfunction as a form of altered afferent input: part II: changes in motor control following spinal manipulation and exercise. The XVIII International Conference of the Society of Electrophysiology and Kinesiology (ISEK), Aalborg, Denmark, June 16-19, 2010. SS613.

C61. Passmore, S, **Murphy, B,** Lee, T. "The impact of ulnar nerve paresthesia during practice performance of a vibrotactile Morse Code letter acquisition task". From ACC RAC Las Vegas, USA March 17-19, 2010 published in The Journal of Chiropractic Education, Vol. 24, No. 1, Platform presentation 109, 2010

C62. Haavik Taylor H, **Murphy B.A.,** Cervical Adjustments Improve Elbow Joint Position Sense. From ACC RAC Las Vegas, USA March 17-19, 2010 published in The Journal of Chiropractic Education, Vol. 24, No. 1, Platform presentation 114, 2010

C63. Haavik Taylor H, Holt, K., **Murphy B.A.,** Exploring the neuromodulatory effects of the vertebral subluxation and chiropractic care. The Chiropractors Association of Australia (CAA) Policy Forum and Scientific Symposium November 2009, (1st prize paper)

C64. Kruger, J., Heap, SW., **Murphy, BA.,** Dietz, HP. *Evidence of the non-Euclidean nature of the plane of minimal dimensions.* In International continence Society 39th Annual Meeting. September 29th –October 5th 2009. San Francisco.(ORAL POSTER)

C65. Marshall, P.W., Mannion, J. **Murphy, B.A**. Do Mechanical or Behavioral Measures Best Explain hamstring extensibility in low back patients. World Federation of Chiropractic's 10th Biennial Congress in Montreal, Canada, April 30-May 2, 2009.

C66. Passmore, S.R., **Murphy, B.A.** Gray, D., Lee, T.D. The effect of ulnar nerve parasthesia on sensorimotor synchronization: a quantifiable outcome. World Federation of Chiropractic's 10th Biennial Congress in Montreal, Canada, April 30-May 2, 2009.

C67. **Murphy B.A.,** Marshall, P.W. and Haavik Taylor H. The effect of spinal manipulation on exercise rehabilitation neuromuscular outcome measures for patients with chronic neck pain: a pilot study. ACC Research Agenda Conference, Las Vegas, USA, March.12-14 2009, JCA 23(1):p83 (1st prize clinical science).

C68. Haavik Taylor H, **Murphy B.A.,** Spinal Manipulation alters central integration of dual somatosensory input observed following motor training, ACC Research Agenda Conference, Las Vegas, USA, March.12-14, 2009; JCA 23(1):p83 (1st prize basic science).

C69. Haavik Taylor, H. and **Murphy B**. Selective changes in cerebellar-cortical processing following motor training. Australian Neuroscience Society 29th Annual Meeting in Canberra, Australia, 27 – 30 January, 2009.

C70. Marshall, P., **Murphy, B.A.,** Haavik Taylor H (2008)Increased Intracortical facilitation following fatiguing closed chain kinetic exercise. Washington, DC: Society for Neuroscience, November, 2008. Prog No: 380.8.

C71. Kruger, J., **Murphy, B.,** Dietz, HP., Nielsen, P. Pelvic floor muscle compliance in elite nulliparous athletes. in *38th Annual meeting of the International Continence Society* 2008. Cairo, Egypt. October 20-24, 2008.

C72. **Murphy, B,** Haavik-Taylor, H. (2008). Selective changes of intracortical facilitation and inhibition following repetitive voluntary movement. Transcranial Magnetic Stimulation and Neuroimaging in Cognition and Behavior, Montréal, Canada, September 25-26, p. 35.

C73. Haavik Taylor H and **Murphy B.** (2008). Altered Central Integration of Dual Somatosensory Input Following Cervical Spine Manipulation. Association of Chiropractic Colleges Research Agenda Conference, Meeting in Washington DC, USA, March. Abstract published in The Journal of Chiropractic Education, 22 (1): p.79. (first prize winning presentation)

C74. Kruger, J.A. Dietz, H.P., Heap, S.W., **Murphy, B.A.** Anatomy and Biomechanics of the pelvic floor muscles: a comparative study using magnetic resonance imaging (MRI) and 3D ultrasound. 6th Interdisciplinary World Congress on Low Back and Pelvic Pain. November 7-10, 2007. p. 386-387. (* award winning poster in Diagnostics category)

C75. Marshall, P., **Murphy, B.** Neuromuscular changes following exercise and treatment for chronic low back pain. 6th Interdisciplinary World Congress on Low Back and Pelvic Pain. November 7-10, 2007. Barcelona, Spain. p.175 (*invited to deliver on plenary platform from original research submissions)

C76. Marshall, P., **Murphy, B.** The relationship between self report measures and physical performance measures in chronic low back pain. 6th Interdisciplinary World Congress on Low Back and Pelvic Pain. November 7-10, 2007. p.442

C77. Marshall, P., **Murphy, B.** Changes in self-report and physical measurements following exercise rehabilitation for chronic non specific low back pain. 6th Interdisciplinary World Congress on Low Back and Pelvic Pain. November 7-10, 2007. p. 527.

C78. **Murphy B,** Marshall P, Govorko D and Taylor H. (2007). The cervical flexion relaxation ratio, differences between neck patients and controls and changes with exercise. IBRO World Congress of

Neuroscience Motor Control Satellite Meeting in Darwin, Northern Territory, Australia, 18-21 July 2007, p. 101.

C79. Haavik Taylor H and **Murphy B.** (2007). Selective changes in intracortical facilitation and inhibition following repetitive voluntary movement. IBRO World Congress of Neuroscience Motor Control Satellite Meeting in Darwin, Northern Territory, Australia, 18-21 July 2007, p. 87.

C80. Haavik Taylor H and **Murphy B.** (2007). Altered sensorimotor integration with cervical spine manipulation. IBRO World Congress of Neuroscience in Melbourne, Australia, 12-17 July 2007, p. 88.

C81. Kruger, J.A. Dietz, H.P., Heap, S.W., **Murphy, B.A.** Comparative Study of Pelvic Floor function in Nulliparous Women using 3/4D Ultrasound and Magnetic Resonance Imaging. International Urogynecologist's Association (IUGA) 2007 Annual General Meeting. Cancun, Mexico; 12th-16th June 2007

C82. Haavik Taylor H and **Murphy B.** (2007). Altered sensorimotor integration with cervical spine manipulation. World Federation of Chiropractic's 9th Biennial Congress in Vilamoura, Portugal May 17-19, p. 227. (third prize winning paper)

C83. **Murphy B,** Marshall P, Haavik Taylor H, Govorko D, Palmer S (2007). The cervical flexion-relaxation ratio: Reproducibility and Comparison between Chronic neck pain patients and controls. World Federation of Chiropractic's 9th Biennial Congress in Vilamoura, Portugal May 17-19, p. 187.

C84. Haavik Taylor H and **Murphy B.** (2007). Transient modulation of intracortical inhibition following spinal manipulation. World Federation of Chiropractic's 9th Biennial Congress in Vilamoura, Portugal May 17-19, p. 228.

C85. Kruger, J., Dietz, P. **Murphy, B.** A comparison on of pelvic floor function in nulliparous Elite athletes and nulliparous controls. International Continence Society Meeting, Nov 27-30, 2006; Christchurch, New Zealand.

C86. **Murphy, B.A,** Marshall, P.W.M. Changes in the flexion relaxation response following exercise by individuals with chronic specific and non-specific low back pain. New Zealand Sports Medicine and Science Conference, November 16-18 2006; Wellington, New Zealand. p.70.

C87. Marshall, P.W.M., **Murphy, B.A,** Changes in Self-rated disability following combined treatment and Exercise for chronic low back pain patients. New Zealand Sports Medicine and Science Conference, November 16-18 2006; Wellington, New Zealand. p.64

C88. Taylor, H.H., **Murphy, B.A**. The effect of cervical spine manipulation on the ability to integrate somatosensory input following repetitive movements. Proceedings of the Australian Neuroscience Society Annual Meeting, Sydney, 31 Jan-3 Feb 2006, p.28.

C89. Taylor, H.H., **Murphy, B.A.** (2005) The effects of repetitive muscle activity on central integration of dual somatosensory input. Program Number: 41.12. Washington, DC: Society for Neuroscience, 2005. Online

C90. Mrachacz-Kersting N, Tasker, L, **Murphy BA,** Sinkjaer T (2005) Lower limb motor cortex excitability changes following paired associative stimulation. Program Number 41.11: Washington, DC: Society for Neuroscience, 2005. Online.

C91. Marshall, P.W.M., **Murphy, B.A.** The association between fatigability and flexion relaxation in patients with chronic low back pain. 2nd International Conference on Movement Dysfunction: Pain and Performance: Evidence and Effect, Edinburgh, September 2005. p. O31

C92. **Murphy, B.,** Haavik-Taylor, H. The effects of repetitive muscle activity on central integration of somatosensory input. 2nd International Conference on Movement Dysfunction: Pain and Performance: Evidence and Effect, Edinburgh, September 2005. p. P40.

C93. **Murphy, B.,** Marshall, P. The effect of sacroiliac joint manipulation on feedforward activation times of the deep abdominal musculature. 8th Biennial Congress of the World Federation of Chiropractic, Sydney, June, 2005. p. 182.

C94. Haavik, Taylor, H., **Murphy, B.** Cervical Spine Manipulation Alters Sensorimotor Integration: A combined somatosensory and motor evoked potential study. 8th Biennial Congress of the World Federation of Chiropractic, Sydney, 2005. p. 248.

C95. **Murphy, B.A.,** Carrick-Ranson, G. Transient and Longer-Term Changes in the Flexion-Relaxation Phenomenon Following Spinal Manipulation in Subjects with Non-Specific Low Back Pain: A pilot Study. 5th interdisciplinary World Congress on Low back & Pelvic Pain, Melbourne, November 2004. p.387.

C96. Kruger, J.A., **Murphy, B.A.** Pelvic Floor Alterations in Elite Athletes: Implications for labour and delivery. 5th interdisciplinary World Congress on Low back & Pelvic Pain, Melbourne, November 2004. p.384.

C97. Marshall, P., **Murphy, B.** Neuromuscular adapations to exercise rehabilitation for patients with low back pain. 5th interdisciplinary World Congress on Low back & Pelvic Pain, Melbourne, November 2004. p.256

C98. **Murphy, B.A.,** Haavik-Taylor, H Cervical spine manipulation alters central integration of dual somatosensory input following repetitive thumb abduction Abstracts from the 2nd Annual Adelaide Centre for Spinal Research Symposium, August 2004.

C99. **Murphy, B.A.,** Marshall, P. (2003) The effect of sacroiliac joint manipulation on subjects demonstrating a delayed feedforward response of the ventro-lateral abdominal muscles, in "Abstracts of the 27th International Congress of Clinical Neurophysiology and the 50th Annual Scientific meeting of the American Association of Electrodiagnostic Medicine". p. S172. Muscle and Nerve, Supplement 12

C100. **Murphy, B.A.,** Haavik-Taylor, H., Philip, F. (2003) Transient and reversible cortical and subcortical changes in the sensorimotor system following cervical spine manipulation: a pilot study. *Abstracts from Progress in Motor Control IV: Motor Control and Learning over the Life Span.* Caen, France. p.133

C101. Kelly, D.D., **Murphy, B.A.,** Backhouse, D.P[3]. (1999). The use of a mental reaction time paradigm to measure the effects of upper cervical adjustments on cortical processing: a pilot study. WFC World Congress, Auckland, New Zealand,

C102. **Murphy, B.A.,** Dawson, N.J. [2], (1995). A signal detection theory approach to the study of muscular sensation in overuse syndromes. *Abstracts*, International Federation of Physical Medicine and Rehabilitation 12th World Congress, Sydney, Australia, P35, p91.

C103. **Murphy, B.A.,** Dawson, N.J. [2], Irwin, J[2]. (1995). The assessment of intramuscular discrimination using signal detection theory. *Abstract.* Chiropractic Centennial Foundation, Washington, p. 246.

C104. **Murphy, B.A.,** Dawson, N.J. [2], Irwin, J.R. [2] (1994). A signal detection theory approach to the study of muscular sensation in over use syndromes. *Abstr. Neural and Neuromuscular Aspects of Muscle Fatigue*, Satellite Symposium of the 24th Annual Meeting of the Society for Neuroscience, Miami, Florida, USA, B22 p40.

C105. **Murphy, B.A.,** Dawson, N.J. [2], Slack, J.R. [2] (1991). Possible mechanisms of the effect of sacroiliac joint manipulation on Hoffmann reflex excitability. *Proc Physiol Soc NZ.* 11: 34.

C106. **Murphy, B.A.,** Dawson, N.J. [2], Slack, J.R. [2] (1991). Central neural effects of sacroiliac joint manipulation. *Abstracts of the Regional Meeting of the International Union of Physiological Sciences*, Prague, PK23.

C107. **Murphy, B.A.,** Dawson, N.J. [2], Slack, J.R. [2] (1990). The effect of sacroiliac joint manipulation on the Hoffmann reflex. *Proc Physiol Soc NZ.* 10: 3.

ii. Books

White, M. and Murphy, B.A. (1999) *The Forever Plan: A common sense approach to staying fitter, younger and healthier*. Hodder Moa Beckett, Auckland.

iii.Book chapters
N/A
iv.Books edited

8. Non-Refereed Publications (list as in 7 above).

9. **Manuscripts/publications, etc. in preparation and submitted to publishers but not yet accepted.**

10. Papers presented at meetings and symposia.

Murphy, Bernadette, "Chiropractic and Neural Plasticity". Workshop delivered at Thrive Conference of the Ontario Chiropractic Association, Toronto, ON, Dec. 3, 2017

Murphy, Bernadette. "Motor Learning and Brain Plasticity: Implications for Chiropractic". WFC/ACC Education Conference. Oct 19-22, 2017. Montreal, PQ, Canada.

Murphy, Bernadette. "The role of spinal manipulation in modulating neuroplasticity" Invited speaker at Special Symposium SS2.2: The potential role of spinal manipulation in neuro-rehabilitation; International Conference on Neurorehabilitation. Aalborg, Denmark, June 24-26, 2014.

Murphy, Bernadette. Workshop leader, "CIHR Grant Development Workshop"; Presented at CCRF Research Symposium "Closing the Research-Practice Gap in Neuromusculoskeletal Health, Injury and Disease" Toronto, Canada, September 27-28, 2013.

Murphy, Bernadette, "Presenter and panelist, "The 5 year plan – measurable outcomes of chiropractic research in Canada, Presented at CCRF Research Symposium "Closing the Research-Practice Gap in Neuromusculoskeletal Health, Injury and Disease" Toronto, Canada, September 27-28, 2013.

Gourgouvelis, Joanne, Murphy, B, Yielder, P. "Train your brain-The role of exercise in promoting hippocampal activation and improving memory in people with depression" Durham Region Mental Health "Hope Health and Humour Symposium: Saturday May 5, 2012

Murphy, B.A. "Approaches to measuring altered neural processing"; Presented at CIHR/CCRF Research Symposium "A transdisciplinary approach to neuromusculoskeletal health, injury and disease: collaborative engagement in chiropractic research." Toronto, Canada, September 23-24, 2011.

Murphy, B.A. Sensorimotor integration and Collaborative Chiropractic Research. Presented at "Workshop to advance the Canadian Chiropractic Research Agenda", sponsored by Canadian Institutes of Health Research (CIHR) Meetings,Planning and Dissemination Grant: Musculoskeletal Health and Arthritis and the Canadian Chiropractic Research Foundation, Montreal, Canada, Oct 1-2, 2009.

11. Invited Lectures (keynote lectures and addresses should be noted)

Murphy, Bernadette. "Neuroplastic changes in Sensorimotor Integration in response to recurrent neck pain and neck fatigue" Guest speaker Café Cinq (Consortium d'imagerie en neurosciences et santé mentale de Québec (CINQ) and Center for Interdisciplinary Research in Rehabilitation and Social Integration (CIRRIS).) Laval University, Quebec City, QC Canada, April 2018

Murphy, Bernadette. Invited speaker "Effects of altered sensory input from the neck on brain plasticity and motor control", New Zealand College of Chiropractic, February 2018.

Murphy, Bernadette. "Effects of altered sensory input from the neck on brain plasticity and motor control", Guest lecture, Canadian Memorial Chiropractic College, Thursday October 12, 2017

Murphy, Bernadette "Effect of altered neck sensory inputs on brain plasticity accompanying motor skill acquisition". Health, Leisure and Human Performance Research Institute. University of Manitoba, Winnipeg, MN, Canada. March 24. 2017.

Murphy, Bernadette. "Effects of altered sensory input from the neck on brain plasticity and motor control", Manitoba Chiropractor's Association. Winnipeg, MN, Canada. March 23, 2017

Murphy, Bernadette. "Effect of neck pain and fatigue on brain plasticity and upper limb function" Deakin University, School of Medicine Research Seminar Series, Geelong, Australia, Feb 24, 2017.

Murphy, B. Shaping Technology so it doesn't shape us. Institute of Electrical and Electronics Engineers (IEEE) and the Systems, Man, and Cybernetics Society (SMC). Deakin University, Geelong, Australia. August 16, 2016.

Murphy, B. Harnessing Interactive Technology to Enhance Human Health and Performance. Invited speaker and Panelist at Game On: Entrepreneurship in Digital Media and Interactive Technology, International Economic Forum of the Americas. July 8, 2015 Toronto Canada. http://forum-americas.org/toronto/2015/game-onentrepreneurship.

Murphy, Bernadette, "Maladaptive neuroplasticity due to altered sensory input from the neck and the potential role of chiropractic in addressing it". Waterloo Regional Chiropractic Society, April 8, 2015.

Murphy, Bernadette. "Understanding how to Shape Technology so it Doesn't Shape Us" Research Excellence Series UOIT March 24, 2015

Murphy, Bernadette, "The Effect of Altered Sensory Input from the neck on upper limb Sensorimotor Integration", Invited lecture, McMaster University Kinesiology Seminar Series, Jan 8, 2015.

Murphy Bernadette, "Pain and the Brain: The Role of Spinal Manipulation in Sensorimotor Integration" invited lecture, CMCC Spring Conference: Advancements in Pain Mechanisms & Management May 3 and 4, 2014

Murphy, Bernadette, "The Strain is in the Brain: Translating Basic Science Research on Pain and Spinal Manipulation into Language Patients can Understand" Workshop, CMCC Spring Post-Graduate Conference, May 3 and 4, 2014.

Murphy, B.A. "I just hit my elbow and bit my tongue so something is not right with my neck-understanding how neck problems can lead to disordered sensorimotor integration" Visiting scholar presentation-Canadian Memorial Chiropractic College, April 4, 2014.

Murphy, B.A. "Neurophysiological Effects of Spinal Manipulation". Invited lecture, School of Human Kinetics and Recreation, Memorial University, Newfoundland. July 2013.

Murphy, B.A. "The strain is in the brain: the role of chiropractic in modulating central neural plasticity" Presented to CMCC student research symposia, January 2011.

Murphy, B.A. "The strain is in the Brain: Evidence for altered central processing." Presented at Canadian Memorial Chiropractic College Research Symposium: Annual Advancements in Chiropractic, October 24, 2009.

Murphy, B.A. Marshall, P.W., McKee, A. Trunk and ankle stability measures in subjects with functional ankle instability, Invited Presentation, University of Aalborg Seminar: Biomechanical Perspectives on Muscle-Powered Overground Propulsion, Aalborg, Denmark, March 11, 2009.

Murphy, B.A. 'Neuromuscular alterations associated with back pain: implications for exercise rehabilitation, Keynote Address', *Movement Analysis*, *Auckland*, *3-5 February*, 2005

Marshall, P.W.M. ,Murphy, B.A. 'An Evidence Based Approach to Exercise Rehabilitation', *Rehabilitation Forum of New Zealand Sports Medicine and Science Conference*, *Queenstown*, *3-5 November*, 2005

Marshall, P.W.M. ,Murphy, B.A. 'Cardiac Contraindications to Exercise Rehabilitation', *Rehabilitation Forum of New Zealand Sports Medicine and Science Conference*, *Queenstown*, *November* 2005

Murphy, B.A. (1996). The relevance of current concepts of neural plasticity and processing to understanding the physiological basis of chiropractic. In: FCER: First International Workshop to develop a chiropractic research agenda. FCER, Bournemouth.

Media

Kinesiology Research May Help Cut On-the-Job Injuries: Better understanding of mind-body connection improves workplace design Featured on the NSERC dashboard **http://www.nserc-crsng.gc.ca/db-tb/index-eng.asp?province=0&category=5**

10. Editorial positions for scholarly journals

Editorial Board Journal of the Canadian Chiropractic Association and ISRN Rehabilitation

Patents:

United States Provisional Application No. 62/241,838 SYSTEM AND METHOD FOR OBJECTIVE PHYSIOLOGICAL CONDITION DETERMINATION IN A SUBJECT USING SOMATOSENSORY EVOKED POTENTIALS; Filed: October 15, 2015
Applicant: University of Guelph

D. TEACHING ACTIVITIES (past 5 years)

Teaching Grants

UOIT $8000 Teaching Improvement grant "Development of video clips for on-line Kinesiology teaching delivery" awarded April 2013

By its very nature, kinesiology is a visual and kinesthetic subject where actions, tests and procedures are demonstrated by instructors delivering live lectures. This makes transitioning to on-line and hybrid delivery challenging. This project aims to: 1) develop a number of narrated video clips demonstrating common movements and procedures in kinesiology that could be made available to kinesiology instructors when creating on-line lecture material. 2) Create additional course-specific video clips to enable two specific courses Anatomy of Human movement and Principles of Fitness & Exercise Prescription to be ready for hybrid delivery by September 2014. Most of the work is being done from May to August 2013 for implementation in 2013/14 and beyond.

UOIT $7500 Teaching Improvement grant "Teaching Practical Skills to Kinesiology Students using e-Learning Resources"

Grantees: Dr. Kevin Power, Dr. Meghann Lloyd, Dr. Bernadette Murphy, Dr. Paul Yielder and Kinesiology Lab Specialist, Mr. Ian Barker

The goal of the teaching improvement grant was to provide students with e-learning resources to enhance their understanding of the current, best-practice, evidence-based, fitness and health evaluation procedures used by Kinesiologists in the field. In the labs, students have to master various testing procedures to assess an individual's musculoskeletal and cardio-respiratory health and fitness levels. The tests themselves range from straight forward to very complex and require hands-on usage and multiple 'viewings' to fully comprehend the complexities of the procedures. I worked with Matt Follett to create video clips to aid students in learning to run the Bruce Protocol ECG stress test in HLSC 4412U. Students found the videos to be a helpful learning aid. We also instituted weekly ECG interpretation cases in the labs which the students also reported were very helpful.

Major Curriculum Additions and Changes

2017-18: in my role as Associate Dean Research and Graduate Studies, I lead the development of a PhD in Health Sciences with an expected start date of September 2019. This involved extensive consultation with faculty and external stakeholders. Advances in the ability to acquire, access, analyze, and store health data have occurred at an exponential rate over the past 10 to 15 years. This rapid increase has created a myriad of issues that need to be addressed by qualified and knowledgeable experts. As such, it is critical that those graduating with a Ph.D. in Health Sciences have broad interdisciplinary knowledge of data and technology issues in health to complement the knowledge, skills, and depth of expertise required in their specific field of study. To meet these broadening demands, the proposed Ph.D. program will provide its graduates with a breadth of interdisciplinary knowledge surrounding advances in the way that we acquire and use health data, as well as the technical, ethical, social and policy implications of these advances; this will complement the development of field specific expertise.

2017-18: in my role as Associate Dean Research and Graduate Studies, I co-lead the development of a MSc in Nursing with an expected start date of May 2020, which is conjoint with Trent university. The external reviews were very positive for this proposal, which required management of a complex process of facilitation and consultation with external stakeholders and two different educational institutions.

2017-18: Lead the development of creation of Field specific learning outcomes in Community, Public and Population Health, Kinesiology and Health Informatics for the MHSc program, and wrote the eighteen month follow-up response to the MHSc external review

2016-17: , in my role as Associate Dean Research and Graduate Studies, I lead a major curriculum change to implement changes recommended in the graduate program review conducted in 2015-16. This included an extensive consultative process with graduate faculty and the graduate program committee and resulted in a revised core graduate course, HLSC 5010G, which is now entitled "Research Approaches in Health Sciences. This course has also been moved the first semester and the graduate statistics course has been moved to the Winter semester based on feedback from Faculty and Students.

In the fall of 2016, I designed a new course **HLSC 2702 – Quantitative Reasoning for Kinesiology.** This course replaces PHY 1812U Physics for the Health Sciences

Rationale: It became apparent that kinesiology students are reaching the upper years of the program lacking key skills in quantitative reasoning that is relevant to kinesiology. This impacted their ability to succeed in courses such as Biomechanics and Exercise Physiology. The purpose of this course is to provide students foundational knowledge in kinesiology and concepts from physics and mathematics that they need to succeed in the kinesiology program. It replaces PHY 1810U Physics for the Health Sciences. Only about 1/3 of the material in PHY 1810U is needed to prepare students to take Biomechanics and this material will be incorporated into the new Quantitative Reasoning for Kinesiology course. The new course is expected to improve student retention and progression through the kinesiology program.

Minor program Adjustment: In fall 2016, I prepared the Minor program Change documentation to implement changes recommended in the April 2016 CITG report to improve the Fitness and Health Promotion Bridge Pathway to Kinesiology.

Major program Adjustment: In fall 2016, I prepared the Major program change documentation to create the Kinesiology Major without specialization within the Bachelor of Health Science, known colloquially as the "General" pathway. This was to create greater flexibility within the kinesiology program so that students can pursue minors in other faculties such as Science, Business and Information Technology and Social Science and Humanities. For example, students interested in becoming teachers, may want a minor in science as a second teachable, whereas other students want to pursue management courses to prepare for a career in Sport Management. A recent review of College to University Pathways in Kinesiology also found that a number of students wanted more room for electives, which they see as an important part of the university experience. The creation of a "generalist" pathway addressed these issues.

Major Program Change: In December 2016, I prepared the program Change documentation to implement a new bridge pathway for Occupational Assistant/Physical Therapy Assistant (OTA/PTA) into the Kinesiology program.

2011-12: I wrote and prepared a **Programme Modification Proposal for the BHSc** Comprehensive specialization. This involved several months of work including: 1) meetings with current and past students and faculty to identify issues with the current BHSc 2) meetings with current faculty to brainstorm ideas for new directions 3) surveying BHSc programmes, public health agency websites and research in Canada and Australia to determine emerging educational and occupational trends in the health area. From this process the decision to create a Public Health Specialization meeting the 36 core competencies of the Public Health Agency of Canada as well as a Human Health Sciences stream emerged. This is documented in a major programme modification proposal brief entitled "Bachelor of Health Sciences (Honours) – Revision of comprehensive degree specialization and introduction of new human health science degree specialization".

- **2011-** Lead a team to write a **proposal for a new Rehabilitation stream in kinesiology** which was approved as part of an articulation agreement with the Canadian Memorial Chiropractic College (CMCC), which will enable UOIT Kinesiology students to complete their BHSc Honours and DC in 7 years instead of 8. The agreement also means that UOIT students will have access to cadaver dissection facilities at CMCC and an opportunity to write CMCC Advanced Standing Exams in Anatomy.
- **In 2010,** I wrote a successful **proposal for a new MHSc field in Kinesiology** which received OGS approval in December 2010.
- **2009-**I wrote a **proposal for a new specialization in Kinesiology** which was approved at faculty and university level. The courses in the specialization were designed to meet future CCUPEKA accreditation needs while ensuring students had exposure to the necessary course content to meet the majority of learning outcomes for the core competencies established by the College of Kineisologists.

Undergraduate

2011-12-Contributed to the development of HLSC 4473U– Practical Human Anatomy I; Neck, Head and Spine and HLSC 4474U – Practical Human Anatomy II: Upper and Lower Limbs This course introduces the student to the gross, and developmental structure of the human body and explores the functional relationships between these structures. In particular, the structure and function of the neuromuscular and skeletal systems as well as that of the joints are emphasized. Learners also determine the clinical significance of structures being studied at embryonic and gross anatomical levels. This course focuses on the neck, head, and spine. Learning methods in this course include lecture, laboratory and online learning components. Numerous clinical cases are used to demonstrate the interrelationships between the structure and function in health and disease. In addition, this course incorporates anatomical changes and processes that occur during embryonic development, growth and maturation to adulthood.

These courses are the anatomy courses that are part of the CMCC Rehabilitation Stream. I organized workshops with UOIT teaching and learning and I have been working with the sessional instructor to ensure that these courses build on HLSC 3470 and meet the needs of UOIT students as well as fulfilling future CMCC requirements for cross crediting.

2011-2014 Developed and co-ordinated Kinesiology Internship The purpose of this course is to provide the student with practical experience in the kinesiology field. Examples of Internships might be in fitness centres, hospitals, or working with sports teams working as a strength and conditioning coach. Students may do a single semester (3 credits) or continue in HLSC 4491U – Kinesiology Internship II. Students will complete a minimum 100 hours in their placement position each semester and be required to write a comprehensive report on the kinesiology knowledge that they utilized from their undergraduate courses in contributing to the internship placement, and how the placement helped them to integrate that knowledge for their own learning. Because of the various experiences and goals that each student has, the specific learning objectives will be determined by each student, the site supervisor and the practicum coordinator. The generation of these learning objectives will be part of the internship deliverables.

2011-2014 Developed Athletic Therapy Internship The purpose of this course is to provide the student with practical experience in the athletic therapy field. Students will be provided with advanced first aid and athletic therapy training before being placed with a varsity team as a student therapist. Students must do a double semester placement for this choice (6 credits). Students will complete a minimum 100 hours per semester in their placement position and be required to write a comprehensive report on the kinesiology knowledge that they utilized from their undergraduate courses in contributing to the internship placement, and how the placement helped them to integrate that knowledge for their own learning.

2008-2016 Fall semester **Co-ordinated, developed and taught Kinesiology I: Musculoskeletal Anatomy** This course tailored a musculoskeletal anatomy course to the UOIT Kinesiology environment. It required the purchase of new student software (dynatomy) and skeletons. The course was a combination of lectures and labs which received top teaching evaluations at UOIT.

2010-2013 Developed, Co-ordinated and Taught Exercise Rehabilitation I
The general objective of Exercise Rehabilitation II is for students to become proficient in graded exercise testing and exercise prescription for clients with complex cardiovascular, respiratory and metabolic conditions such as diabetes, and obesity. The course combines didactic lectures and practical sessions on foundation material and progresses to in depth case study presentations.

2009-2011 Developed, Co-ordinated and taught Exercise Rehabilitation II
Exercise Rehabilitation I focuses on the role of exercise in a multi-component approach to rehabilitation. The risks and benefits of exercise, particularly with respect to sedentary individuals and/or those with medical considerations as well as the evidence for the role of exercise as a primary or adjunctive intervention for rehabilitation are considered. The course covers the psychology and physiology of chronic pain including the role of cognitive behavioural therapy, selection and assessment of appropriate rating scales and evaluation procedures and assessment of risk factors for exercise. The second part of the course integrates this information, along with relevant pathophysiology and exercise physiology using case study presentations of clients with complex neural and musculoskeletal conditions.

2009 Developed, co-ordinated, and taught Exercise Prescription and Principles of Fitness
This course introduces the risks and benefits of exercise, exercise policy and safety, physical fitness testing, and guidelines for exercise test administration. The basic principles of safe exercise prescription, for both cardiorespiratory and neuromuscular training, are introduced. The

course combines both lecture and laboratory/tutorial format so that students are exposed to the most commonly used equipment for both exercise testing and prescription. It is a fundamental foundation course for Exercise Rehabilitation courses offered in the fourth year.

2009 Developed, Co-ordinated and taught Kinesiology II: Musculoskeletal Biomechanics
Musculoskeletal Biomechanics covers the core principles of biomechanics of the musculoskeletal system. The first part introduces the basic principles of measurement and analysis in biomechanics, e.g. kinetics and kinematics. The properties of the different tissues types involved in the production of human movement including bone, cartilage, muscle, tendon, ligaments and peripheral nerves. It looks at composite movements and systems, and describes techniques utilized in the biomechanical assessment of posture, balance, and gait. The course uses a combination of didactic classroom lecturing, web-based tutorials and "hands on" face to face tutorials to illustrate complex concepts.

2008 Co-ordinated and taught Statistics and Critical Appraisal This course offers an introduction to critical appraisal skills in assessing evidence presented in health science, with a focus on real-life relevance. The application of statistical methods to the study of research questions will be explored in terms of both descriptive and inferential statistics. Topics to be included are: randomized experiments and observational studies, measurements, frequency distribution, measures of central tendency and variability, correlation and regression, sample survey, probability, confidence intervals construction and hypothesis testing.

1999-2007 **Co-ordinated, developed and taught 103 Human Anatomy,**
The aim of this course is to develop an understanding of the structure and function of the major components of the musculoskeletal and peripheral nervous systems. The course uses a combination of didactic classroom lecturing, cadaver prosections, and "hands on" lab tutorials in addition to models and computer software. It has received top student evaluations during my tenure. In 2001, I received a Teaching Improvement Grant from the University of Auckland's competitive grant to develop a series of anatomy video clips for students to use to facilitate the teaching of this course.

1999-2002 **Co-ordinated, developed and taught 104 Functional Human Anatomy**
This course covers static and dynamic posture and balance, flexibility, strength and power, body composition, proportionality, and qualitative analysis of locomotion. The course has both a lab and lecture component which I developed during my time as course co-ordinator.

2005-2007 **Developed and taught BS3 601 Visceral Physiology**
As part of my role as external academic mentor to the New Zealand Chiropractic School, I assisted them in their pursuit of accreditation with the New Zealand Qualifications Authority, by developing and teaching a second year visceral physiology course. The course content included an overview of the gross anatomy of the cardiovascular, respiratory and renal systems; Respiratory physiology including lung mechanics, gas transfer and transport, and respiratory regulation; Cardiovascular physiology including heart mechanics and excitation, and vascular system, regulation; and Renal physiology including kidney function, water and electrolyte balance, and pH regulation. I am currently assisting them in the purchase of laboratory equipment for Human Physiology. The course received excellent student evaluations.

Post-graduate
2012 and 2013 **Developed and Taught "Studies in Kinesiology"** This course requires students to research and present orally a thorough overview of the current state of knowledge on a particular topic related to Kinesiology. The students learn to identify key gaps in knowledge. This seminar addresses

how advances in the related area of research will benefit society. The course includes an overview of statistics and research design relevant to the discipline, article critique and literature review presentations and written assignments, as well as a weekly journal club.

2010-2013 **Developed, Co-ordinated and Taught Neuroscience in Rehabilitation Kinesiology**
Chronic neuromuscular disorders are an important community health issues. Altered patterns of sensorimotor integration are a common feature of many chronic neural and neuromuscular disorders, ranging from chronic low back pain to Parkinson's disease. Addressing this disordered integration is the focus of many modern rehabilitative approaches. This course will review the "neuroanatomy" relevant to sensorimotor integration and motor control. It will discuss evidence for altered sensorimotor integration, the techniques used to measure it and review some of the current literature on how it may be altered by different rehabilitation strategies.

2004-2007: **Academic Director of MSc Exercise Rehabilitation programme**
This involved establishing 3 new courses Sportsci 710 and 701 and 791, a Post-graduate Dissertation in Exercise Rehabilitation. I also established an Exercise Rehabilitation Clinic which provides an evidence-based practice environment for post-graduate students to gain practical experience in the discipline.

2004-2007: **Co-ordinator of Sportsci 710 Exercise Rehabilitation Theory Course**
This course focuses on the role of exercise in a multi-component approach to rehabilitation. Risks and benefits of exercise, particularly with respect to sedentary individuals and/or those with medical considerations as well as the evidence for the role of exercise as a primary or adjunctive intervention for rehabilitation are considered. The course covers the psychology and physiology of chronic pain including the role of cognitive behavioural therapy, selection and assessment of appropriate rating scales and evaluation procedures and assessment of risk factors for exercise. The second part of the course integrates this information using case study presentations for clients with complex metabolic, neural and musculoskeletal conditions.

2004-2007: **Co-ordinator of Sportsci 791 A and B Dissertation in Exercise Rehabilitation**
This dissertation course involves learning the practical and academic skills to follow a model of evidence based practice in the Exercise Rehabilitation Clinic. The course requires 240 practical hours as well as in depth case study dissertation. Time spent acquiring competency in working with clients in exercise testing, programe design, exercise supervision and report writing. Students need to demonstrate practical and theoretical competence before working unsupervised. Topics include Ethics and privacy considerations, EMG and its clinical applications, Aerobic fitness testing, Biodex isokinetic testing, use and scoring of self-report questionnaires, basic low back, neck, upper and lower limb rehabilitation programmes. 80% of the student's grade comes from an in depth case study dissertation where a single client is written up as a research report including literature review of presenting conditions, results of pre and post fitness testing, and evidence for the selected exercise approach.

2006: **Co-ordinator of Sportsci 701 Age and Human Performance Course (become Sportsci 712 Advanced Exercise Prescription)**
This course applies post-graduate scientific interpretation of physical testing results for the prescription of accurate and progressive exercise programmes for people with co-exiting health problems including disease and injury. This will involve advanced application of the principles of exercise prescription in combination with scientific evidence for specific exercise modalities. The course reviews the American College of Sports Medicine guidelines for exercise prescription and progression and their scientific evidence as well as baseline history taking, rationale, contraindications, privacy issues. The modalities used to assess fitness will be reviewed as will the interpretation of test results and how to use them to monitor and evaluate exercise programmes and provide safe programmes based on quantitative testing and evidence based guidelines.

2001-2003: **Co-ordinator Sportsci 705-Seminar in Sportscience**,
This course is a Basic Post-graduate Research Methods paper including research design, basic statistics, and critical analysis of the literature. The course culminates in a written research proposal suitable to submit for grant funding or for an MSc thesis. During my tenure I revamped the course to give a closer alignment between the course content and outcomes and to provide more cohesiveness between the different course components.

2002-2003 **Joint co-ordinator Physiol 705 Sensory Physiology**
This course emphasized Human neurophysiology, in particular the contribution that alterations in somatosensory input make to motor control and sensory plasticity. The paper was taught jointly with Noel Dawson from the Physiology department. The main themes were pain physiology, muscle physiology and neural plasticity.

Post-graduate Research supervision
Theses and Dissertations
***except where indicated I was the principal supervisor for all listed theses and dissertations**

PhD Theses

1. 2015/9 - 2019/8 PhD Supervisor Mahboobeh Zabihhosseinian "Effects of neck fatigue on upper limb sensorimotor integration" (NSERC Doctoral Scholarship)
2. 2015/9 - 2019/8 PhD Supervisor Davis Forman (In Progress) The effects of upper extremity posture and loading demands on forearm muscle excitability (Canada Graduate Scholarship)
3. 2012-2017 PhD thesis co-supervisor Joanne Gourgouvelis "Effects of aerobic exercise on neural function"* Co-supervisor
4. 2012-2017 PhD thesis supervisor Erin Dancey "The effects of increased and decreased afferent input on motor skill acquisition and cortical plasticity
5. 2011-2015 PhD supervisor-Michael Williams-Bell "The use of serious games to measure and improve the effect of thermal strain on cognitive decision making" (Canada Graduate Scholarship)
6. 2008-2012 PhD Co-supervisor Steven Passmore "Ulnar nerve paresthesia and sensori-motor performance" Jointly with Professor Tim Lee from McMaster University
7. 2004-2009 PhD supervisor, Jenny Kruger "Pelvic Floor Function in Elite Nulliparous Athletes"
8. 2003-2007 PhD supervisor Heidi Taylor "The role of altered afferent input in sensorimotor integration"
9. 2003-2007 PhD supervisor, Paul Marshall "Exercise Rehabilitation for non-specific low back pain"

PhD Advisor

10. 2010-2014 PhD Advisor Kelly Holt "Effect of chiropractic care on markers of sensorimotor integration and falls in the elderly"

Masters Theses

1. 2017-2019 MHSc Supervisor Tracey Patrick "Changes in sensorimotor integration accompanying forward head posture"
2. 2017-2019 MHSc Co-supervisor Brianna Grant "EEG changes in immersive environments with and without haptic feedback"

3. 2017-2019 MHSc Co-supervisor Matthew Russell "Impact of Neck Fatigue on shoulder proprioception"
4. 2016-2018 MHSc Supervisor Antonia Karellas "EEG changes accompanying multisensory integration in individuals with chronic alterations in neck sensory input"
5. 2016-2018 MHSc Co-supervisor Heather McCracken "EEG changes with Altered Multimodal Integration in individuals with and without ADHD"
6. 2015-2017 MHSc Supervisor Sinead O'Brien "Neck Fatigue and Cerebellar Function"
7. 2015-17 MHSc Co-supervisor Ryan Gilley "Influence of hand dominance on motor training induced plasticity"
8. 2014-2016 MHSc Supervisor-Bassim Farid "Effects of altered sensory input from the neck on multimodal integration"
9. 2014-2016 MHSc Co-supervisor Hasan Shafiq "A signal processing approach to understanding differences in sensorimotor integration"
10. 2014-2016 MHSc supervisor Lindsey Thomas "The impact of a general education elective including physical activity in a college student population".
11. 2013-2015 MHSc Co-supervisor Chad Debison-Larabie "Differences in neck muscle volume and activation time between male and female varsity hockey players"
12. 2013-2015 MHSc Supervisor-Patricia Riley-"Analyzing the Reliability and Validity of the Sway Balance™ System for the Assessment of Postural Sway"
13. 2013-2016 MHSc Supervisor-Jessica Salt-Factors contributing to concussion underreporting in varsity athletes (part-time)
14. 2013-2015 MHSc Supervisor-Julianne Baarbé, "Influence of altered afferent input from the neck on cerebellar integration"
15. 2012-2014 MSc thesis supervisor Hushyar Behbahani "Effects of aerobic exercise on cortical plasticity measures"
16. 2012-14 MSc thesis supervisor Danielle Andrews "The Effects of Motor Task Complexity on Sensorimotor Integration: Implications for Healthy and Subclinical Populations"
17. 2012-14 MSc thesis supervisor Mahboobeh Zabihhosseinian "Alteration in Neck Neuromuscular Responses and Upper Limb Proprioception in Response to Neck Muscle Fatigue"
18. 2012-2014 MHSc thesis co-supervisor Luc Holland "Rapid Modulation of cortical excitability changes following a complex novel tracing task"
19. 2012-2013 MSc thesis supervisor Amita Raj "Spinal and cortical excitability changes during rhythmic upper limb contractions"
20. 2010-2012 MSc thesis supervisor Jessica Bossé "The effect of motor training on sensorimotor integration"
21. 2010-2012 MSc thesis supervisor Julian Daligadu "The role of the cerebellum in changes in corticomotor output observed following motor training"
22. 2010-2012 MSc thesis co-supervisor Erin Dancey "The effect of experimental pain on sensorimotor integration and cortico-motor output"
23. 2010-2012 MSc thesis co-supervisor Joanne Gourgouvelis "The role of exercise in promoting hippocampal activation and improving memory"
24. 2009-2011 MSc thesis supervisor Diana Gray "Effects of neck pain on upper limb sensorimotor integration"
25. 2009-2011 MSc thesis supervisor Ian Barker "Alterations in neck muscle performance and proprioception with fatigue, altered posture and recurrent neck pain"

26. 2007/08 MSc supervisor for Jamie Mannion "Functional Characteristics of the Hamstring Muscles in Low Back Pain" (co-supervisor Dr. P. Marshall)
27. 2007/08 MSc supervisor for Mandy McKee "The relationship between trunk stability measures and ankle stability measures" (co-supervisor Dr. P. Marshall)
28. 2007/08 MSc supervisor for Danielle Woods "Changes in cortisol profile with depression and exercise: A pilot study"
29. 2006 MSc supervisor for Donna Govorko "The effect of spinal manipulation on the efficacy of a rehabilitation protocol for patients with chronic neck pain"
30. 2006-2007 MSc supervisor for Janiece Clark "The role of addressing impaired neuromuscular activation in rehabilitation of chronic ankle joint instability"
31. 2004 MSc (Ergonomics) Co-supervisor Heather Widdrington "The effect of repetitive typing on neural processing from the forearm musculature"
32. 2002-2003 MSc supervisor Jenny Kruger, "Childbirth in the female athlete: Pelvic floor musculature-Implications for labour and delivery"
33. 2000-2001 MSc Thesis supervisor, JoAnne Knight "Re-organisation of the Motor Cortex as a Result of Altered Afferent Input"

Masters and Honours Dissertations

1. 2014-2017 MHSc Project Supervisor Katie Woodcock A kinematic and kinetic analysis of neck movement during baseball pitching
2. 2004 Biomedical Engineering Honours Project Co-supervisor (with C. Unsworth) for Jean Devlin "Acquisition and Analysis of Respiratory Muscle Activity during Oral and Nasal Breathing"
3. 2003, BSc Honours Dissertation Graeme Carrick-Ranson "Transient and longer-term changes in the flexion-relaxation phenomenon following spinal manipulation in subjects with non-specific low back pain"
4. 2006 MSc advisor for Louise Foley "The role of exercise in promoting neural function in people with depression" (Louise won a Commonwealth Scholarship from the Canadian Government and is now doing her MSc thesis at the University of Western Ontario with Dr. Harry Prapavessis
5. 2006 Biomedical Honours Engineering Honours Project Co-supervisor (with P. Nielsen) for Mark Finch "Measuring Limb Stiffness"
6. 2002: Post-graduate Dissertation supervisor, Paul Marshall, "The development of a method to evaluate the neuromuscular response of the abdominal muscles to rapid limb movement"
7. 2002: Post-graduate Dissertation supervisor, Heidi Taylor, "The effects of cervical spine manipulation on median nerve somatosensory processing and corticomotor output to the abductor pollicis brevis muscle"
8. 1999 Kelly Mathers-BSc Honours Dissertation "Effects on SEPs elicited by Median Nerve Stimulation Following Ischemic and Repetitive Movement Interventions: a Methodological and Physiological Study"

Undergraduate Research Supervision (4th year practicum projects UOIT)

1. 2018 Megan McLeod Multisensory integration differences in individuals with recurrent neck pain

2. 2018 Rufeyda Cosgun Neurophysiological results from proximal upper limb muscles in response to motor skill acquisition and neck muscle fatigue
3. 2018 Ushani Ambalavanar Changes in brain Plasticity and Sensorimotor integration when motor learning takes place following neck muscle fatigue
4. 2018 Janea John Differences in Multisensory Processing Among Adults With and Without ADHD
5. 2017 Andrew Stoddart "Effects of neck fatigue on upper limb performance"
6. 2017 Jessica Scott "Motor learning effects on cerebellar response
7. 2017 Weam Sieffien "Laterality differences in cerebellar output in response to motor training"
8. 2017 Ryan Johnson "EEG reflecting alterations in sensorimotor integration"
9. 2016 Gurkaran Toor Impact of neck muscle fatigue on corticomotor excitability
10. 2016 Antonia Karallas Impact of altered neck postures on upper limb sensorimotor integration
11. 2016 Erin Thompson Impact of altered neck postures on upper limb motor performance
12. 2016 Shayla Muir Impact of neck muscle fatigue on multi-sensory integration
13. 2016 Alyssa Furfaro-argier Impact of altered neck postures on multi-sensory integration
14. 2016 Annie St Marseille Impact of Altered neck postures on upper limb proprioception
15. 2016 Steven Genis Effects of Motor Training on Cerebellar Excitability Between Dominant and Non-dominant Hands
16. 2015 Natalie Atwood "Effects of chronic alterations in neck sensorimotor input on upper limb proprioception"
17. 2015 Menelek Luke "Effects of chronic alterations in neck sensorimotor input on visuomotor processing"
18. 2015 Ryan Gilley "Chronic alterations in neck sensorimotor input impairs performance on a dart throwing task"
19. 2014 Bassim Farid- "Temporal Integration of Multisensory Input in individuals with altered sensory input from the neck
20. 2014 Hasan Shafiq "The Effect of Novel Thumb Tracing Task on Sensorimotor Integration"
21. 2014 Joseph Guirguis "Assessing Elbow Joint Kinematics Using a Dart-Throwing Task in Subjects With Neck Pain and Healthy Controls" (co-supervisor)
22. 2014 Angela Dares "Elbow Joint Position Sense Accuracy in Patients with Sub-Clinical Neck Pain vs Healthy Controls"
23. 2014 Ellen Smith-"Development of a protocol to enable volume estimation of the sternocleidomastoid muscle from MRI (co-supervisor)
24. 2013 Lucien Henderson (jointly with M. Holmes) "Validity of Kinect as compared to 3D investigator for measuring correct lifting posture"
25. 2013 Hera Khayyam "Effects of a ten week exercise intervention on fitness and depression scores in depressed individuals" (jointly with P.Yielder)
26. 2012-2013 Julianne Baarbé "Cerebellar effects of motor sequence learning" co-supervisor
27. 2012-2013 Rachel Goldrub "Effects of altered cervical spine input on cortical inhibition and facilitation to distal hand muscles"
28. 2012-2013 Chad Debison-Larabie "Effects of altered cervical spine input on cerebellar cortical pathway excitability"
29. 2012-2014 Davis Forman "Spinal and Cortical excitability changes during tonic upper limb contractions"
30. 2011-12 Hushyar Behbahani "Cerebellar Effects of Posterior Fossa Stimulation on Cortical Output through Transcranial Magnetic Stimulation in Man"

31. 2011-12 John Primeau “Does repetitive motor training influence somatosensory evoked potentials, including those related to cerebellar pathways, in individuals with occasional neck pain and stiffness”
32. 2010-2011 Erica McCann “Does the experimental induced sensation of "pins and needles" interfere with the ability of the brain to learn new sensory information”
33. 2010-2011 Sergey Kudryavtsev “Protocol Development for Measuring Effects of Altered Neck Posture on Elbow Joint Position Sense”
34. 2009 – 2010 Babajide, Busari “Optimizing intracortical inhibition Protocols to study laterality effects”
35. 2009 – 2010 Emma Pott “Effects of repetitive movement on sensorimotor integration
36. 2009 – 2010 Jessica Bossé “SEPs, ulnar nerve paresthesia and sensorimotor integration”
37. 2009 – 2010 Jose Chica Murillo “Effects of non-specific paresthesia on sensory learning”
38. 2009 – 2010 Julian Daligadu “Reproducibility of intracortical facilitation curves”
39. 2009-2010 Richard Cisneros “Enhancing reliability of intracortical facilitation protocols”
40. 2009 Beheshta Moshref “Effects of paresthesia on Motor learning”
41. 2009 Priya Raveenthiramoorthy “The Effects of Paresthesia on Motor Learning”
42. 2008 – 2009 Amanda Irwin “Effects of repetitive thumb movement on cerebellar SEPs
43. 2008 – 2009 Diana Gray “Effects of ulnar nerve stimulation on motor performance”
44. 2008 – 2009 Mallory Ryan “Effects of ulnar nerve stimulation 4th year student on corticomotor output”

UOIT Summer Research students

2018 Victoria Berkers NSERC URSA “The effect of changing neck sensory input on brain plasticity”
2017 Weam Sieffen NSERC URSA “Relationship between sensory and motor measures of altered cerebellar processing”
2014 Shawna Buren CIHR summer scholarship “Validation of an integrated SCBA Gas Analysis Firefighter Facemask”
2013 Julianne Baarbé CIHR summer scholarship “Cerebellar effects in subclinical neck pain”
2012 Danielle Andrews CIHR summer scholarships “The effect of repetitive activity on motor learning and sensory processing”
2010 Jessica Bosse NSERC studentship “The effect of paresthesia on somatosensory processing”
2009 Julian Daligadu “Effect of Arousal level on intracortical facilitation curves”
2009 Yi Quan “Reproducibility of intracortical facilitation curves”
2009 Jessica Bosse (Star award) “Developing a dual SEPs protocol to investigate sensorimotor integration”
2009 Diana Gray “Developing a dual SEPs protocol to investigate sensorimotor integration”
2008 Jessica Bosse “Repetitive Typing Effects on Cerebellar Evoked Potentials”
2008 Julian Daligadu “Repetitive Typing Effects on Cerebellar Evoked Potentials”

Post-graduate Dissertations in Exercise Rehabilitation

2006 Jamie Mannion “Exercise Rehabilitation for the reconstructed anterior cruciate ligament, patellofemoral pain syndrome and functional ankle instability”
2006 Oliver Coffey “Patella instability leading to an acute bone bruise in an elite female squash player”
2006 Lisa Tasker “A multidisciplinary approach to the management of fibromyalgia and chronic low back pain”
2006 Danielle Woods “Exercise Rehabilitation in Chronic neck and shoulder pain”
2006 Charlotte Porter “An Exercise Intervention for Lateral knee pain, iliotibial band syndrome”

2006 Mandy McKee "New Zealand Ultimate Frisbee: Strength, conditioning and injury prevention"
2005 Janiece Clark "An exercise intervention for Parkinson's Disease"
2005 Graeme Sequeira "Exercise Rehabilitation for Chronic Lower Back Pain"
2005 Donna Govorko "An exercise intervention for Fibromyalgia, occupational overuse syndrome, chronic neck pain with consideration for associated cardiovascular risk factors"

Supervision for Sportsci 702, Project In Sport and Exercise Science
2006 Jamie Mannion "The reproducibility and effect of joint angle on muscle response of ankle perturbations"
2005 Louise Foley "The effect of an 8 week exercise program on depression intensity, self-efficacy and cortisol secretion in a clinically depressed individual and an examination of the salivary cortisol method"
2005 Janiece Clark "Ankle instability and muscle activation"
2002 Paul Sowman "The potential role of Somatosensory evoked potentials in providing an objective marker for pain processing"
2001 Paul Marshall, "The functional activity of the transversus abdominus muscle: A review of the literature and development of a reliable protocol to assess function during trunk movement and pilot data collection"
2000 Jenny Kruger, "Increase in Abdominal Muscle Tone in Elite Female Athletes: Implications for Childbirth"
2000 Kylie Walker, "Abnormal Muscle Activation Patterns and the Development of Chronic Compartment Syndrome in the Anterior Compartment of the Lower Leg
2000 Heidi Taylor, Project "Rapid Reversible Changes to Multiple Levels of the Somatosensory System following Transient Deafferentation of the Radial Nerve in Humans: A somatosensory evoked potential study"
1999 JoAnne Knight, "Investigation into transversus abdominus muscle activity and stabilization of the lumbar spine"
1999 Cathy Stinear, "Recording and Analysis of Median Nerve Somatosensory Evoked Potentials: A technical evaluation

E. SERVICE AND ADMINISTRATIVE POSITIONS (past 5 years; indicate period of service, role [i.e., Chair, Voting Member], Group/Organization/Committee name)

14. (i) University Service

Internal to Faculty

- Chair-Graduate Program Committee 2016-2018
- Associate Dean Research and Graduate Studies 2016-2018
- Search Committee "Tier One Canada Research Chair in Health Care Simulation"
- Lead-Proposal Development for PhD in Health Sciences 2017-18
- Co-lead Proposal Development for an MScN in Nursing 2017-18
- Search Committee "Psychomotor Learning and Psychology of Physical Activity" core faculty position 2014 Chair-Dr. Holly Jones-Taggart
- UOIT CMCC Work Disability Prevention Masters Planning Committee 2013-14
- Assessment Team Chair-BHSc Review Committee 2013-14
- Search Committee Clinical Exercise Physiology core faculty position 2013
- Search Committee Healthy Aging Core faculty position 2013
- Director of Health Sciences 2011-2012
- Search Committee Chair-Kinesiology Lab Specialist position 2011
- Search Committee Member-Canada Research Chair, 2011-12 Chair: Dr. Ellen Vogel, Dean, Faculty of Health Sciences
- Foundation Kinesiology Programme Head 2008 to 2016
- Graduate Studies Advisory Committee Member, Faculty of Health Science 2008-11

- Dean Search Committee for new Dean for Faculty of Health Science 2009
- Member of Internal Reading Committee (Research) for tenure review for 3 staff members from Faculty of Health Science 2009
- Member of review committee for applications for Kinesiology positions 2008-10
- Faculty of Health Sciences Misconduct Committee 2008-09
- Faculty of Health Sciences BHSc Programme Committee 2008-10
- Faculty of Health Sciences Curriculum Review Committee 2008-09
- Faculty of Health Sciences Faculty Council 2008-11
- Departmental Postgraduate Committee Chair Auckland 2006, 2007
- Departmental Undergraduate Committee Chair Auckland 2005
- Departmental Undergraduate committee member Auckland 2003-2005
- Departmental Advisor for University of Auckland Human Subjects Ethics Committee 2001-2006

b) External to Faculty:

•Graduate support budget working group 2018
•OGS/CGS University Selection Committee 2017, 2018
•Graduate Appeal Committee Feb 2018
•UOIT Research Board 2016-2018
•Graduate Studies Committee 2017, 2018
Graduate Program Directors Committee 2017, 2018
•2016-2018 Tenure and Promotion Appeal Committee member
•Third year review committee-FBIT-October 2015
•Invited Table Host for Royal Canadian Institute for the Advancement of Science Annual Dinner April 24, 2014
• External core faculty representative Faculty of Engineering CRC Search Committee 2013-2014 Chair-Tarlochan Sidhu Dean
• Search Committee-FBIT-Tenure stream appointment in Organizational Behavior-Committee Chair-Pamela Ritchie- Dean 2014
•Search Committee-FBIT-Tenure stream appointment in Gaming and Enterpreneurship-Committee Chair-Pamela Ritchie-FBIT Dean 2-13
•UOIT-Trent Round Table on Kinesiology 2013
•2012 External appointee Faculty of Engineering Canada Research Chair Appointments committee
•2012 University Capacity Committee
•2011-2014 Tenure and Promotion Committee Provost's appointee Chair-UOIT Provost;
•2011-12 External core faculty representative Faculty of Social Science Dean Reappointment committee-Chair-Richard Marceau-Provost;
•2011 External reviewer for 3rd year review Faculty of Business and Information Technology -Chair-Pamela Ritchie Dean of FBIT;
•2011 External reviewer for two 3rd year reviews Faculty of Science-Chair-Deborah Saucier-Dean of Science
•2012 Search Committee-FBIT-Tenure stream appointment in Gaming and Enterpreneurship-Committee Chair-Pamela Ritchie-FBIT Dean
•2011 Committee member to review Tier II CRC renewal application -Chair-Michael Owen
•2011 Committee to review and short list UOIT applications to Canada Foundation for Innovation (CFI) Leading Edge and New Initiatives Funds (LEF/NIF) Competition. Chair Michael Owen
•2011 Member of 3rd review committees Faculty of Business and IT (2 candidates), Science (2 candidates, Health Sciences (2 candidates) 2011
•2012 Non-academic Discipline committee-Chair Shahid Alvi
•2009-2014 UOIT representative on Canadian Council of Physical Education and Kinesiology Administrators (CCUPEKA)
•UOIT Tenure Review Committee Member 2009, 2010

•Member of Internal Reading Committee (Research) for tenure review for staff member in Faculty of Science 2009

(ii) Professional Service (include major consultancies)

•ACCREDITATION STANDARDS AND POLICIES COMMITTEE, Federation of Canadian Chiropractic-External members advising on standards and levels 2017-2018
The Council of Kinesiology of Ontario (CKO)-University Liaison Committee
•Canadian Council of Kinesiology Administrator's (CCUPEKA)
•Member of CCUPEKA Accreditation Committee 2017-18

(iii) Clinical Service

In March and June 2009, I sat and passed Canadian Chiropractic Examining Board Examinations which are required to register and practice in the province of Ontario; this is a necessary step to being able to include chiropractic manipulation in some of the research that I conduct on the neural mechanisms of physical interventions. In 2011 I began 4-6 hours per week of practice in the Campus Health and Wellness Centre as a requirement of maintaining my professional registration.

Non-Academic Tertiary Awards relevant to Kinesiology

1999 Inducted into Queen's University Track and Field Hall of Fame in recognition of outstanding contribution through leadership, performance or coaching
1985 Women's Cross Country Team Captain-Queen's University
1985 Awarded Athletic Letter from Queen's University for Cross Country and Track and Field
1985 OUAA Gold Medalist 3000 metres
1985 CIAU Bronze Medalist 3000 metres

Curriculum Vitae: Matthew S. Shane, Ph.D.

Updated Oct 1, 2018

A. BIOGRAPHICAL INFORMATION

A1. PERSONAL

Home Address:
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M6C 3A7
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Work phone: (905) 721-5698
Work email: matthew.shane@uoit.ca

B. EDUCATION:

B1. DEGREES EARNED

Degree	Year	Institution
B.A. (Psychology)	1997	University of Western Ontario
M.A. (Psychology)	2000	University of Toronto
Ph.D. (Experimental Psychology)	2004	University of Toronto
Post-doctoral work (Forensic Psychology)	2005	University of Wisconsin - Madison
Post-doctoral work (Translational Neuroscience)	2006	Olin Neuropsychiatric Research Center

Master's Thesis title: *Juror's Use of Hearsay Testimony in a Criminal Trial.*
Supervisor: Jonathan Freedman, Ph.D.

Doctoral Thesis title: *Differential Allocation of Processing Resources toward Positive and Negative Feedback and Experiential Learning.*
Supervisor: Jordan B. Peterson, Ph.D.

B2. ACADEMIC AWARDS

Dean's Honor List, University of Western Ontario	1994-1997	
University of Toronto Fellowship	1999-2004	$85,000
University of Toronto Thesis Award	2004	$ 4,000
Category 1 ranking of doctoral dissertation – University of Toronto	2004	

C. PROFESSIONAL EXPERIENCE

2017-present: *ASSISTANT DEAN OF INTERDISCIPLINARY RESEARCH AND PROGRAM DEVELOPMENT*
Social Science and Humanities, University of Ontario Institute of Technology, Oshawa, ON

- Developed application for new BA/BSc programs in General Psychology
- Contributed to development of new application for Interdisciplinary Neuroscience
- Supervised the initiation and management of the FSSH social media accounts
- Began development of a *Website Overhaul Committee*, to create improved content across the FSSH and its programs

- Serve as liaison between faculties, to bolster interdisciplinary cooperation in research and teaching

2017-present: *ASSOCIATE PROFESSOR, FORENSIC PSYCHOLOGY*
Social Science and Humanities, University of Ontario Institute of Technology, Oshawa, ON
- Tenure-track faculty position with full teaching responsibilities (2:2 load)
- Director of the Clinical Affective Neuroscience Laboratory (CANlab) at UOIT, which incorporates cognitive and neuroimaging measures towards the study of antisocial behavior
- Supervising UOIT students at undergraduate, graduate (as external) and post-doctoral levels
- Service includes coordinator of the Psych participant pool and mentor to sessional lecturers

2013-2017: *ASSISTANT PROFESSOR, FORENSIC PSYCHOLOGY*
Social Science and Humanities, University of Ontario Institute of Technology, Oshawa, ON
- Tenure-track faculty position with full teaching responsibilities (2:2 load)
- Director of the Clinical Affective Neuroscience Laboratory (CANlab) at UOIT, which incorporates cognitive and neuroimaging measures towards the study of antisocial behavior
- Supervising UOIT students at undergraduate, graduate (as external) and post-doctoral levels
- Service includes coordinator of the Psych participant pool and mentor to sessional lecturers

2007-present: *ASSISTANT PROFESSOR OF TRANSLATIONAL NEUROSCIENCE*
The Mind Research Network, Albuquerque, NM
- Continues to serve as PI on an NIH R01 project focused on utilizing multimodal neuroimaging measures (EEG/fMRI) to elucidate the integrity of neural metrics of error-monitoring in cocaine abusers
- Recently completed three additional NIH-funded R21 projects

2006-2007: *POST-DOCTORAL FELLOW*
Olin Neuropsychiatry Research Center, Hartford, CT
- Learned MRI technique and analysis
- Analyzed data; contributed to research dissemination and publication

D. SCHOLARLY AND PROFESSIONAL WORK

D1. CURRENT RESEARCH FUNDING (n = 2, totaling ~$140,565)

SSHRC Insight Development Grant (PI: Shane, MS) ***$72,915***
The contribution of perspective taking and empathy to the accurate identification of another's emotional state. 2015-2018

IIF (co-PI: Eastwood, J., Shane, MS, Paterson, J.) ***$68,370***
Impact of Interview Training and Personality Characteristics on Investigative Interviewing Performance 2018-2019

D2. PAST RESEARCH FUNDING (n = 11, totaling ~$4,481,850)

SSHRC Insight Development Grant (PI: Arbuckle, NL; Role: Co-investigator/Mentor) ***$73,572***
Using fMRI to investigate intentional control of empathic concern 2015-2018

R01. National Institute of Drug Abuse, NIDA; (PI: Shane, M.S.) ***$US 1,885,000***
Error Monitoring and Error Awareness in Cocaine-dependent Individuals 2010-2017

R21. National Institute of Mental Health, NIMH (PI: Shane, M.S.) ***$472,274***
Emotional Reactivity and Voluntary Emotional Control in Psychopathic Individuals 09*/01/10-13*

R21. National Institute of Drug Abuse, NIDA (MPIs: Shane, MS, Kiehl, KA, Posse, S) ***$669,951***
Using real-time fMRI to Facilitate Neuromodulation to Drug- and Nondrug-Cues in Adolescent Abusers *08/01/10-13*

R21. National Institute of Drug Abuse, NIDA (MPIs: Shane, MS, Kiehl, KA, Posse, S) ***$469,333***
Using real-time fMRI to Modulate Neural Response to Drug- and Non-drug Cues *10/01/09-12*

The Mind Research Network/Department of Energy (PI: Shane, M.S.) ***$96,450***
Emotional Reactivity and Emotional Control in Psychopathic Inmates *04/01/08-09*

National Science and Engineering Research Council (PI: Peterson) ***$125,000***
Automatic and Controlled Aspects of Attentional Control to Threat *08/2001-08/2006*
Honorable Mention

I/START R03. National Institute of Drug Abuse, NIDA (PI: Shane, M.S.) ***$246,892***
Error Monitoring and Error Awareness in Incarcerated Cocaine-dependent Individuals *04/15/04-10*

The Mind Research Network/Department of Energy (PI: Shane, M.S.) $***50,000***
Voluntary Control of Error Processing in Healthy Individuals *01/01/10-11*

R01. National Institute of Drug Abuse, NIDA (PI: Kiehl, K.A; my role: 30% effort Co-I.) ***$3,756,893***
Action Monitoring and Dopaminergic Genes in Substance Abusers *08/15/10-11*

Ministry of Training, Colleges, and Universities (PI: Forth, A.; my role: Co-I) ***$75,000***
Online Course in Forensic Psychology 2015-2016

UOIT SSHRC Small Research Grant (PI: Shane, M.S.) ***~$4,300***
The influence of target personality on the ability to identify another's emotional state. 2015-2016

D4. MANUSCRIPTS AND PRESENTATIONS

D4a. Peer-reviewed Manuscripts (n = 21; total citation count: 1537; h-index: 14)

***** Denotes student author

1. Denomme, W.J., Simard, I., & **Shane, M.S.** (2018). Neuroimaging metrics of drug and food processing in cocaine-dependence, as a function of psychopathic traits and substance use severity. *Frontiers in Human Neuroscience*, *12*, 350. **Citation count: NA**

2. **Shane, M.S.** & *Groat, L. (2018). Psychopathic individuals show capacity to increase neural reactivity to emotional cues: All you have to do is ask. *Social, Cognitive and Affective Neuroscience, XX, XX-XX.* **Citation count: NA**

3. Claus, E., & **Shane, M.S.** (2018). Reduced dACC response following presentation of negative feedback differentiates stimulant abusers from nonabusers and is associated with abstinence twelve months later. *Neuroimage: Clinical, 20,* 16-23. **Citation count: 2**

4. Maraj, A., Martin, M., **Shane, M.S.,** Mohammad, N. (submitted). On the relationship between personality traits and password security. *Paper submitted to the 2018 Conference on Human Factors in Computing Systems.*

5. *Arbuckle, N.L., & **Shane, M.S.** (2016). Up-regulation of neural indicators of empathy in offenders. *Social Neuroscience, X, XX-XX.* doi: 10.1080/17470919.2016.1179669. **Citation count: 4**

6. **Shane, M.S.,** & *Weywadt, C.R. (2014). Voluntary modulation of anterior cingulate response to negative feedback. *PLoS One, 9,* 1-10. **Citation count: 1**

7. *Cope, L., **Shane, M.S.,** Segall, J., Stevens, M., Pearlson, G., & Kiehl, K.A., (2012). Examining the effect of psychopathic traits on gray matter volume in a community substance abuse sample. *Psychiatric Research: Neuroimaging,* 91-100. **Citation count: 34**

8. Posse, S., Ackley, E., Mutihac, R., Rick, J., **Shane, M.S.,** Murray-Krezan, C., et al. (2012). Enhancement of temporal resolution and BOLD sensitivity in real-time fMRI using multi-slab echo-volumar imaging. *NeuroImage*, *61,* 115-130. **Citation count: 53**

9. Harenski, C.L., Harenski, K.A., **Shane, M.S.,** & Kiehl, K.A. (2012). Neural development of mentalizing in moral judgment from adolescence to adulthood. *Developmental Cognitive Neuroscience*, *2,* 162-173. **Citation count: 28**

10. Mayer, A.R., Teshiba, T.M., Franco, A.R., Ling, J., **Shane, M.S.,** Stephen, J.M, & Jung, R.E. (2012). Modeling conflict and error in the medial frontal cortex. *Human Brain Mapping*, *33,* 2843-2855. **Citation count: 32**

11. DeYoung, C.G., Hirsch, J.B., **Shane, M.S.,** Papademetris, X., Rajeevan, N., & Gray, J.R. (2010). Testing Predictions from Personality Neuroscience: Brain Structure and the Big Five. *Psychological Science*, *21*, 820–828. **Citation count: 637**
    New York Times article on this study: http://www.nytimes.com/2010/06/29/science/29obbrain.html?_r=0

12. Harenski, C., Harenski, KA, **Shane, M.S.,** Kiehl, K.A. (2010). Aberrant neural processing of moral violations in criminal psychopaths. *Journal of Abnormal Psychology, 119,* 863-874. **Citation count: 189**

13. Harenski, C., Antonenko, O., **Shane, M.S.,** & Kiehl, K.A. (2010). A functional imaging investigation of moral deliberation and moral intuition. *NeuroImage, 49,* 2707-2716. **Citation count: 60**

14. **Shane, M.S.,** Stevens, M., Harenski, C.L. & Kiehl, K.A. (2009). Double dissociation between perspective-taking and empathic-concern as predictors of hemodynamic response to another's mistakes. *Social, Cognitive and Affective Neuroscience, 4,* 111-118. **Citation count: 20**

15. Luu, P., **Shane, M.S.,** Pratt, N., & Tucker, D. (2009). Corticolimbic mechanisms in the control of trial and error learning. *Brain Research, 1287,* 100-113. **Citation count: 44**

16. Harenski, C.L., Antonenko, O., **Shane, M.S.,** Kiehl, K.A. (2008) Gender differences in neural mechanisms underlying moral sensitivity. *Social, Cognitive, and Affective Neuroscience, 3,* 313-321. **Citation count: 96**

17. **Shane, M.S.,** Stevens, M., Harenski, C.L. & Kiehl, K.A. (2008). Neural correlates of the processing of another's mistakes: A possible underpinning for social and observational learning. *NeuroImage, 42,* 450-459. **Citation count: 64**

18. **Shane, M.S.,** & Peterson, J.B. (2007). An evaluation of early and late stage attentional processing of positive and negative stimuli in dysphoria. *Cognition and Emotion, 21*, 789-815. **Citation count: 59**

19. **Shane, M.S.,** & Kiehl, K.A. (2007). Psychopathy as a measure of offender risk: An important component of a comprehensive risk assessment battery. *Offender Substance Abuse Report, 4,* 1-12. **Citation count: NA**

20. **Shane, M.S.,** & Peterson, J.B. (2004). Self-induced memory distortions and the allocation of processing resources at encoding and retrieval. *Cognition and Emotion*, *18*, 533-558. **Citation count: 18**

21. **Shane, M.S.,** & Peterson, J.B. (2004). Defensive copers show a deficit in passive avoidance learning on Newman's go/no-go task: Implications for self-deception and socialization. *Journal of Personality, 72*, 939-966. **Citation count: 31**

D3b. Articles Under Review (n = 3)

1. **Shane, M.S.** & *Groat, L. (revise and resubmit). Psychopathic Individuals Show Capacity to Increase Neural Reactivity to Emotional Cues. *Submitted to Social, Cognitive and Affective Neuroscience (Impact Factor: 3.937)*

2. *Denomme, W.J., & *Simard, I., & **Shane, M.S.** (submitted). Neuroimaging metrics of drug and food processing in cocaine-dependence, as a function of psychopathic traits and substance use severity. *Submitted to Frontiers: Human Neuroscience (Impact Factor: 3.209)*

3. Maraj, A., Martin, M.V., **Shane, M.S.,** & Mannan, M. (submitted. What does your personality say about your password? *Submitted to the New Security Paradigms Workshop (equivalent of journal articles in Computer Science)*

D3c. Book Chapters (n =2)

1. **Shane, M.S.,** & Kiehl, K.A. (2007). Psychopathy as an Important Component of a Comprehensive Risk Assessment Battery. In K. Knight and D. Farabee (Eds.). *Treating Addicted Offenders: A Continuum of Effective Practices.* NJ: Civic Research Institute.

2. Peterson, J.B., & **Shane, M.S.** (2004). The functional neuroanatomy and psychopharmacology of predatory and defensive aggression. J. McCord (Ed.). *Different Perspectives on the Criminal and Criminal Behavior.* 149-174.

D5. SELECTED PRESENTATIONS AND SYMPOSIA

D5a. Selected Talks and symposia

1. *Groat, L.L., & **Shane, M.S.** (2018). Empathic accuracy and empathy: are people motivated by group membership? Poster to be presented at the 2018 Annual Meeting for the Society for Social Neuroscience. San Diego , CA, Nov 2018

2. *O'Connell. J., & **Shane, M.S.** (2017). Psychopathic Traits and the Ability to Modulate the Neural Indicators of Empathy for Same and Other-Race Targets. Talk to be given at the 6th Annual International Conference for the Society for the Scientific Study of Psychopathy. Antwerp, Belgium. May 2017.

3. **Shane, MS.** (2017). Emotion, Attention and Psychopathy: A Neural Perspective. Talk to be given at the 6th Annual International Conference for the Society for the Scientific Study of Psychopathy. Antwerp, Belgium. May 2017.

4. *O'Connell, J (2017). Empathic Concern and Perspective Taking in Individuals with Autistic versus Psychopathic Traits. Talk to be given at the Canadian Psychological Association Conference, June 2017.

5. *Denomme, W.J. & **Shane, M.S.** (2017, May). *Psychopathic traits and the neural response to drug cues: Delving deeper into the relationship between psychopathy and substance use disorders.* Talk presented at the Society of the Scientific Study of Psychopathy 2017 Conference, Antwerp, Belgium.

6. *Denomme, W.J. & **Shane, M.S.** (2017, April). *Psychopathic traits and the neural response to drug cues: Delving deeper into the relationship between psychopathy and substance use disorders.* Talk presented to the Carleton University Forensic Psychology in Canada Conference, Ottawa, ON.

7. Shane**, M.S.,** & Claus, E.D. (May 2015). Reduced dACC Response Following the Presentation of Negative Feedback Differentiates Stimulant Abusers from Nonabusers and Predicts Abstinence at 12 months. **Symposium Talk** to be presented at the 70th annual meeting of the Society for Biological Psychiatry. Toronto, ON, Canada.

8. **Shane, M.S.** & *Arbuckle, N.L. (June 2015). Psychopathic Individuals have Heightened Ability to Increase Empathy in Response to Instruction. **Symposium Talk** to be presented at the 6th biennial meeting of the Society for the Scientific Study of Psychopathy. Chicago, IL.

9. Shane, M.S., Kiehl, K.A., & Posse, S. (June 2014). Use of real-time functional magnetic resonance imaging for facilitation of self-regulation of nucleus accumbens response in cocaine abusers. Symposium Talk to be presented at the 103rd annual meeting for the College of Problems of Drug Dependence. San Juan, PR.

10. Shane, M.S. (May 2014). Neuromodulation Techniques as Novel Treatment Opportunities for Substance Abuse Disorders. **Symposium Chair.** Symposium to be presented at the 69th annual meeting for the Society for Biological Psychiatry. New York, NY.

11. Shane, M.S., Kiehl, K.A., & Posse, S. (May 2014). Use of real-time functional magnetic resonance imaging for facilitation of self-regulation of nucleus accumbens response in cocaine abusers. Symposium Talk to be presented at the 69th annual meeting for the Society for Biological Psychiatry. New York, NY.

12. *Arbuckle, N.L., **Shane, M.S.,** & Cunningham, W.A. (2014, February). Increasing concern for others in antisocial individuals. Talk presented at the annual meeting of the Society for Personality and Social Psychology, Austin, TX.

13. *Arbuckle, N., & Shane, M.S. (June, 2013). Psychopathic Individuals Show Increased Flexibility of Neural Responses to Emotional Material: An Alternative to Emotional Deficit Models of Psychopathy. Symposium Talk to be presented at the *5th Bi-annual conference for the Society for the Scientific Study of Psychopathy.* Washington, D.C. June 6-8th, 2013.

14. Shane, M.S. (Sept, 2012). Voluntary Modulation of Neural Response to Emotional Material in Psychopathic Individuals. Symposium Talk presented at the 26th annual conference for the Society for Research in Psychophysiology. New Orleans, LA. Sept 19-23rd, 2012.

15. Shane, M.S. (August, 2012). Voluntary Modulation of Neural Response to Cocaine Cues in Adult and Adolescent Cocaine Abusers. Symposium Talk presented at the 120th annual conference for the American Psychological Association. Orlando, FL, July 31st-August 4th, 2012.

16. Shane, M.S., *Wasserott, B., & *Weywadt, C. (2012). Voluntary Modulation of Anterior Cingulate Response to Errors: Implications for Anxiety. Poster presentation at the 67th Annual meeting for the Society for Biological Psychiatry. Philadelphia, PA, May 3-5th, 2012.

17. Shane, M.S. (2011, September). Neuromodulation of nucleus accumbens response to cocaine cues in cocaine abusers. Lecture presented at the NIDA sponsored Integrating Neuroscience and Substance Abuse Treatment conference. Washington D.C., USA.

18. Shane, M.S. (2011, February). Can People Voluntarily Modulate Their Neural Responses to Their Own Mistakes? Lecture presented at the MRN Internal Award Presentation Meeting. Albuquerque, NM, USA.

19. Shane, M.S. (2009, April). Unique neural underpinnings of psychopathy and comorbid substance abuse: Findings across multiple paradigms. Lecture presented at the 4th Annual Meeting of the Society for the Scientific Study of Psychopathy. New Orleans, LA, USA.

20. Shane, M.S. (2008, April). Understanding and Correcting Problem Behavior in Psychopathic and Substance Abusing Populations. Lecture presented to the MRN Board of Governors. Albuquerque, NM, USA.

21. Shane, M.S., (2007, April). Why should I care what happens to you? Empathy, psychopathy, and the observation of other's mistakes. Lecture presented at 3rd Annual Meeting of the Society for the Scientific Study of Psychopathy. University of Minnesota, Minneapolis, MN, USA.

22. Shane, M.S., (2003, November). The selective allocation of processing resources and intelligence: It isn't the size the matters, but how you use it. Lecture presented at the 2003-2004 Ebbinghaus Empire Meetings. University of Toronto, Toronto, Ontario, Canada.

23. Shane, M.S. (2003, April). Defensive processing in the psychopath: A new take on their inability to learn from punishment. Law and Psychology Conference, Toronto, Ontario, Canada.

24. Shane, M.S. (2002, November). Big-five trait structure and level of disinhibition in self-reported psychopaths: Similarities and differences with classic clinical diagnoses. In Silverthorn, P. (Chair), Assessing Psychopathy: Age, Gender, Rater, and Methodological Issues. Annual Meeting of the Associaltion for the Advancement in Behavior Therapy, Reno, Nevada, USA.

D5b. Selected Posters and Abstracts

1. *Denomme, W.J., *Simard, I., & **Shane, M.S.** (accepted). Psychopathic traits and stimulus-processing in addiction: How psychopathy and addiction interact to influence drug and food processing in the brain. Abstract submitted to the 73rd Annual Meeting of the Society of Biological Psychiatry, New York, NY.

2. *Simard, I., *Denomme, W.J., & **Shane, M.S.** (accepted). Power spectra analysis in antisocial individuals during rest: A network analysis. Abstract submitted to the 73rd Annual Meeting of the Society of Biological Psychiatry, New York, NY.

3. *Groat, L., & **Shane, M.S.** (2017). Neural Indicators of Empathy and Perspective Taking in Individuals with Differing Levels of Psychopathic Traits. Poster to be presented at the 6th Annual International Conference for the Society for the Scientific Study of Psychopathy. Antwerp, Belgium.

4. Denomme, W.J. & **Shane, M.S.** (2017, June). *Psychopathic traits, drug use, and drug addiction: Unraveling and elaborating the moderation effect of psychopathy on the development of drug addiction.* Poster presented at the Canadian Psychological Association 2017 Annual Convention, Toronto, ON.

5. *Groat, L.L., & Shane, M.S. (2016). Empathic Accuracy in Psychopathy. Poster presented at the 5th annual Mental Health Conference. Whitby, ON, Canada.

6. *Cassidy, S, & Shane, M.S. (2016). Motivated Empathy in Psychopathy. Poster presented at the 5th annual Mental Health Conference. Whitby, ON, Canada.

7. *O'Connell, J, & Shane, M.S. (2016). Empathic Accuracy: Psychopathy versus Autism Spectrum Traits. Poster presented at the 5th annual Mental Health Conference. Whitby, ON, Canada.

8. *Groat, L.L., Wasserott, B., & Shane, M.S. (2016). Convergent validity of the Psychopathy Screening Device: A scale for the preliminary estimation of PCL-R scores. Poster submitted for presentation at the 1st annual GTA Forensic Exchange.

9. *O'Connell. J., & Shane, M.S. (2016). Empathic Accuracy: Psychopathy versus Autism Spectrum Traits. Poster submitted for presentation at the 1st annual GTA Forensic Exchange.

10. *Arbuckle, N.A., & Shane, M.S. (2016). Empathic Accuracy: Psychopathy versus Autism Spectrum Traits. Poster submitted for presentation at the 1st annual GTA Forensic Exchange.

11. *Darling, B., & Shane, M.S. (2016). Psychopathy, Feedback, and Attention: A Neural Perspective. Poster submitted for presentation at the 1st annual GTA Forensic Exchange.

12. Shane, M.S., & Claus, E.D. (June 2015). Reduced dACC Response Following the Presentation of Negative Feedback Differentiates Stimulant Abusers from Nonabusers and Predicts Abstinence at 12 months. Poster Presentation to be presented at the 77th annual meeting of the College on Problems of Drug Dependence. Chicago, IL.

13. Shane, M.S., & Claus, E.D. (2015). Reduced dACC Response Following the Presentation of Negative Feedback Differentiates Stimulant Abusers from Nonabusers and Predicts Abstinence at 12 months. Poster presented at the 77th annual meeting of the College on Problems of Drug Dependence. Chicago, IL.

14. *Arbuckle. N.L., & Shane, M.S. (2015). Neural Indicators of Increased Empathy in Offenders. Poster presented at the 70th annual meeting of the Society for Biological Psychiatry. Toronto, ON, Canada.

15. Shane, M.S., Harenski, C.L., Nyalakanti, P., & Kiehl, K.A. (2011, May). Psychopaths can show "normal" levels of emotional reactivity: All you have to do is ask. Poster presented at the 4th Annual Meeting of the Society for the Scientific Study of Psychopathy. Montreal, QB, Canada.

16. Shane, M.S., Harenski, C.L., & Kiehl, K.A. (2011, April). Real-time fMRI neurofeedback aids modulation of nucleus accumbens in incarcerated cocaine abusers. Poster presented at the 67th Annual Meeting of the Society of Biological Psychiatry. San Francisco, CA, USA.

17. Shane, M.S., Harenski, C.L., Nyalakanti, P., & Kiehl, K.A. (2011, April). Psychopaths Can Increase their Neural Reactivity to Aversive Pictures. Poster presented at the 67th Annual Meeting of the Society of Biological Psychiatry. San Francisco, CA, USA.

18. Shane, M.S., Harenski, C.L., Nyalakanti, P., & Kiehl, K.A. (2010, June). Evidence of "normal" emotional reactivity in psychopaths: All you have to do is ask. Poster presented at the 16th Annual Meeting of Human Brain Mapping. Barcelona, Spain.

19. Shane, M.S., Harenski, C.L., Stevens, M.C., & Kiehl, K.A. (2009, April). Attenuated feedback error related negativity in cocaine abusers. Poster presented at the 16th Annual Meeting of the Cognitive Neuroscience Society. San Francisco, CA, USA.

20. Shane, M.S., Harenski, C.L., Stevens, M.C., & Kiehl, K.A. (2008, Nov). Attenuated recruitment in psychopaths and substance abusers during the performance and observation of errors. Poster presented at the 38th Annual Meeting of the Society for Neuroscience. Washington, DC, USA.

21. Shane, M.S., Harenski, C.L., Stevens, M.C., & Kiehl, K.A. (2008, April). Unique neural recruitment during response inhibition associated with substance abuse and psychopathy. Poster presented at the 15th Annual Meeting of the Cognitive Neuroscience Society. San Francisco, CA, USA.

22. Shane, M.S., Harenski, C.L., Stevens, M.C., & Kiehl, K.A. (2007, April). Neural response to success-related and error-related feedback within a time-estimation task. Poster presented at the 14th Annual Meeting of the Cognitive Neuroscience Society. San Francisco, CA, USA.

23. Shane, M.S., Harenski, C.L., Stevens, M.C., & Kiehl, K.A. (2007, March). Self-report and fMRI evidence of reduced empathy, but intact perspective-taking, associated with psychopathic traits. Poster presented at the 47th Annual Meeting of the Society for Physiological Research.

24. Shane, M.S., Harenski, C.L., Stevens, M.C., & Kiehl, K.A. (2007, January). This hurts me as much as it hurts you: Empathic concern and the observation of another's errors. Poster presented at the Social Psychology and Personality Society Annual Meeting.

25. Shane, M.S., Harenski, C.S., Stevens, M.C., & Kiehl, K.A. (2007, April). Reduced cingulate and medialfrontal activity in psychopathy during the viewing of another person making a mistake. Poster presented at the 2nd Annual Meeting of the Society for the Scientific Study of Psychopathy.

26. Byrd, A.L., Shane, M.S., Book, G., Kahn, R., Antonenko, O., & Kiehl, K.A. (2007, April). Response inhibition as a protective factor against incarceration in those high and low in psychopathic traits. Poster presented at the 2nd Annual Meeting of the Society for the Scientific Study of Psychopathy.

27. Antonenko, O., Shane, M.S., Harenski, C.L., Kahn, R., Byrd, A., & Kiehl, K.A. (2007, April). The PCL-R and self-report scales in a community sample. Poster presented at the 3rd Annual Meeting of the Society for the Scientific Study of Psychopathy.

28. Shane, M.S., & Newman, J.P. (2005, April). Psychopathy and repressive coping: Implications for affective poverty in psychopathic offenders. Poster presented at the 1st Annual Meeting of the Society for the Scientific Study of Psychopathy. Vancouver, BC, Canada.

29. Shane, M. S., & Peterson, J. B. (2004, December). Learning to learn: Forcing exposure to negative feedback improves learning performance in previously inferior learners. Poster presented at the 112th Annual Meeting of the American Psychological Association. Honolulu, Hawaii, USA.

30. DeYoung, C., Shane, M.S., Peterson, J.B., Seguin, J., & Tremblay, R. (2003, April). How is self-deception like psychopathy? Poster presented at the 1st Annual Meeting on Psychopathic Behavior. Madison, Wisconsin, USA.

31. Shane, M.S., & Peterson, J.B. (2003, January). Self-induced memory distortions and the allocation of processing resources at encoding and retrieval. Poster presented at the Annual Meeting of the Society for Personality and Social Psychology. Los Angeles, California, USA.

D5c. Invited Talks

1. Shane, M.S. (2015). Neural underpinnings of psychopathic behavior. Invited talk presented to York University clinical grand rounds.

2. Shane, M.S. (2012). Using rt-fMRI as a potential intervention for adolescent cocaine dependence. Invited talk presented to NIH Roundtable of Novel Interventions for Addiction in Adolescence.

E. TEACHING AND SUPERVISORY EXPERIENCE

E1. COURSES TAUGHT

Course	Level/Type	Institution

Introduction to Cognition	Undergraduate	University of Ontario Institute of Technology
Brain and Behavior	Undergraduate	University of Ontario Institute of Technology
Psychology of Deviance	Undergraduate	University of Ontario Institute of Technology
Special Topics: Psychopathic Behavior	Undergraduate	University of Ontario Institute of Technology
Forensic Psychology	Undergraduate	University of Ontario Institute of Technology / Brock University / Carleton University
Cognition and Psychopathology	Undergraduate	University of Wisconsin - Madison
Cognitive and Neuroscience Perspectives On Function and Dysfunction	Undergraduate	University of Toronto

E2. UNDERGRADUATE THESES SUPERVISED

Level/Type	Date	Student
Undergraduate Thesis	2018-2019	Lauren Ercolao
Undergraduate Thesis	2018-2019	Katrina-Ray Villaneuve
Undergraduate Thesis	2018-2019	Vladamir Novikov
Undergraduate Thesis	2015-2016	Jennifer O'Connell
Undergraduate Thesis	2015-2016	Rebecca Bloom
Undergraduate Thesis	2014-2015	Brian Darling
Undergraduate Thesis	2005-2006	Diana Macpherson
Undergraduate Honours Thesis	2002-2003	Jamie Myslik
Undergraduate Honours Thesis	2001-2002	Kelly Liao

E3. GRADUATE STUDENTS SUPERVISED

Student	Date	Level/Type	Institution
Femi Carrington	2018-	MSc	University of Ontario Institute of Technology
Isabelle Simard	2017-	PhD	University of Ontario Institute of Technology
Jennifer O'Connell	2016-	MSc	University of Ontario Institute of Technology
William Denomme	2016-	MSc	University of Ontario Institute of Technology

Lindsay Groat	2015-	PhD	University of Ontario Institute of Technology
Christina Weywadt	2009-201	PhD	University of New Mexico

E4. POST-DOCTORAL/SCIENTIST SUPERVISION

Student	Date	Level	Institution
Dr. Nathan Arbuckle	2012-present	Post-doctoral Fellow	University of Ontario Institute of Technology
Dr. Eric L. Claus	2013-present	Junior Scientist	The Mind Research Network

E4. OTHER STUDENT SUPERVISION

Student	Date	Level	Institution
Nicole Charewicz	2013-2015	Undergraduate	University of Ontario Institute of Technology
Peter Goheen	2014-2015	Undergraduate	University of Ontario Institute of Technology
Erika Gilbert	2014-2015	Undergraduate	University of Ontario Institute of Technology
Peter Quon	2014-2015	Undergraduate	University of Ontario Institute of Technology
Rhea Boettcher	2014-2015	Undergraduate	University of Ontario Institute of Technology
Shantel Munr	2014-2015	Undergraduate	University of Ontario Institute of Technology
Hanna Serhan	2014-2015	Undergraduate	University of Ontario Institute of Technology
Irina Levit	2013-2015	Undergraduate	University of Ontario Institute of Technology
Danielle Loney	2013-2014	Undergraduate	University of Ontario Institute of Technology
Nicole Smith	2014-2015	Undergraduate	University of Ontario Institute of Technology

F. SERVICE

F1. Faculty-level Service Commitments

Practicum Review Committee	Member	UOIT	2016-present
Technology Committee	Member	UOIT	2014-present
Departmental Small Fund Distribution Committee,	Member,	UOIT	2014
Psychology Graduate Comprehensive Exam Committee	Member	UOIT	2015-present
Sessional Committee Member	Member	UOIT	2014-present
Academic Computing Committee	Member	UOIT	2013-present
Participant Pool Coordinator	Coordinator	UOIT	2013-present
Pilot Scan Review Committee	Member	MRN	2008-2009

F2. Institutional-level Service Commitments

Research Ethics Board	Member	UOIT	2014-present
CFI Award Competition Review Committee	Member	UOIT	2015
Internal Review Board	Member	MRN	2011-2013
Internal Award Competition Review Committee	Member	MRN	2008-2009
Internal Space Committee	Member	MRN	2009-2012

F3. Field-level Service Commitments

Academic Editor: *PLOS ONE* 2018-present

Review Editor: *Frontiers of Human Neuroscience* 2017-present

Ad hoc manuscript reviewer:
Archives of General Psychiatry
Bipolar Disorders
Cognition and Emotion
Cognitive Brain Research
Emotion
NeuroImage
Neuropsychologia
Personality and Individual Differences
Social Neuroscience
Social, Cognitive and Affective Neuroscience
PLoS One

Ad hoc grant reviewer:	*French National Research Agency (ANR)*	2016
	Polish Science Foundation	2017

G. PROFESSIONAL MEMBERSHIPS

Society for Biological Psychiatry
Society for Social Neuroscience
Society for Neuroscience
Society for Scientific Study of Psychopathy
Society for Social and Personality Psychology (past)
Cognitive Neuroscience Society (past)
Human Brain Mapping (past)
Society for Psychophysiology Research (past)

Curriculum Vitae

Annette F. Tavares, B.Sc., M.Sc.

Associate Teaching Professor, Faculty of Science (Biology)

University of Ontario Institute of Technology
2000 Simcoe Street North
Oshawa, Ontario
L1H 7K4

Annette.Tavares@uoit.ca
905-721-8668 Ext. 3641

Academic History

Degrees

M.Sc. Zoology/Aquatic Ecology - University of Toronto 1985-1990

A study of Niche Overlap, Species Interactions and the Food Web of a Macroinvertebrate Riffle Community in Duffin Creek, Ontario

Supervisor: Dr. D. Dudley Williams

B.Sc. Biology Specialist Programme (Hons) - University of Toronto 1981-1985

Diplomas

Diploma in Computer Graphics (Dip. C.G.) 1997-1998
International Academy of Design, Toronto Ontario

Employment History

Associate Teaching Professor

University of Ontario Institute of Technology July 2012 to present
Faculty of Science (Biology)

Responsible for teaching eight courses per year plus various administrative duties and university service.

Sessional Lecturer

University of Ontario Institute of Technology 2004 to Winter 2012

Developed and taught various courses and coordinated labs and tutorials

University of Toronto (Scarborough Campus) Fall 2008

Delivered lectures and prepared assignments, tests and exams for River Ecology (BGYD51).

Laboratory Instructor

University of Ontario Institute of Technology 2003 to 2006

Taught a variety of biology labs and tutorials. Marked assignments, invigilated exams, managed marks.

University of Toronto (Scarborough Campus) 2003-2010

Taught a variety of biology labs and tutorials. Marked assignments, invigilated exams, managed marks.

Contract Biologist

Health Protection Branch, Public Health and Community Services, City of Hamilton –
West Nile Virus Programme 2003 to 2014 (seasonal)

Consultant for West Nile Virus control and surveillance training

Region of Waterloo Public Health 2005 to 2014 (seasonal)

Consultant for West Nile Virus control and surveillance training

Oxford County Public Health and Emergency Services 2009 to 2014 (seasonal)

Consultant for West Nile Virus control and surveillance training

Niblett Environmental Associates May to Aug. 2003 (contract)

Conducted benthic invertebrate inventories related to environmental impact assessments. Conducted literature searches and created graphics for reports.

Senior Project Manager

Anatstat/Headcan Health Education Media Feb. 2001 to Dec. 2002

Management and supervision of design team and medical illustrators as well as liaison with product managers at major pharmaceutical companies. Scheduled and managed all aspects of projects from concept to production, ensuring project content was aligned with client needs. Ensured compliance with industry standards (FDA, PAAB). Consultant for scientific accuracy of illustrations and content of health care material.

Scientific Illustrator/Project Manager

Imagineering Scientific and Technical Artwork Inc. 1998-2001

Promoted from Scientific Illustrator to Project Manager in 1999. Responsible for management and supervision of art team, scheduling and logging art, writing weekly production and project summary reports, budgeting, quotes, invoicing, shipping, liaison with upper management and publishers.

Research Technician II

University of Toronto (Scarborough Campus) 1989-1996

Environmental and biological monitoring in freshwater systems, bioassays for biocontrol of mosquito larvae and effects on aquatic invertebrates.

Teaching Technician

University of Toronto (Scarborough Campus) 1995-1996 (Sessional)

Created and planned undergraduate labs for introductory environmental science course. Set up equipment and prepared media for undergraduate labs.

Science Presenter

Scientists in School 1992-1994 (Part–time)

Helped develop and presented hands-on science units to primary school students in Durham region. Units included Outdoor Pond Study (Pond Bingo!), Biological Diversity and Adaptation in Insects ("Invent-a-bug"), and Plant and Insect Anatomy and Biological Illustration.

Teaching Assistant

University of Toronto (Scarborough Campus) 1995-1996 (Sessional)

Taught a variety of biology labs and tutorials. Marked assignments, invigilated exams, managed marks.

Honours

University of Toronto Open Masters Fellowship (1987)
International Academy of Design President's Pin (Highest GPA) (1998)
International Academy of Design Certificate of Excellence in Computer Graphics (1998)

Scholarly and Professional Work

Articles in Refereed Journals:

Carolin Banasek-Richter, Marie-France Cattin, Yves Merz, Richard Baltensperger, Jean-Pierre Gabriel, Robert E. Ulanowicz, **Annette F. Tavares**, D. Dudley Williams, Peter De Ruiter, Kirk Winemiller and Louis-Felix Bersier. 2000. Complexity in quantitative food webs. **Ecology** 90:1470–1477.

D. Dudley Williams, Andrei I. Nesterovitch, **Annette F. Tavares** and Ernest G. Muzzatti. 2001. Morphological deformities occurring in Belarusian chironomids (Diptera: Chironomidae) subsequent to the Chernobyl nuclear disaster. **Freshwater Biology** 46: 503-512.

Annette F. Tavares-Cromar and D. Dudley Williams. 1997. Dietary overlap and coexistence of chironomid larvae in a detritus-based stream. **Hydrobiologia** 354: 67-81.

Annette F. Tavares-Cromar and D. Dudley Williams. 1996. The importance of temporal resolution in food web analysis: Evidence from a detritus-based stream riffle community. **Ecological Monographs** 66(1): 91-113.

D. Dudley Williams, **Annette F. Tavares-Cromar**, John R. Coleman, Donn J. Kushner and Christine M. Happey-Wood. 1994. Colonisation dynamics of algae in small artificial ponds. **Canadian Journal of Botany** 72: 1654-1665.

D. Dudley Williams, **Annette F. Tavares-Cromar**, Donn J. Kushner and John R. Coleman. 1993. Colonisation patterns and life history dynamics of mosquitoes in ponds of different character. **Canadian Journal of Zoology** 71: 568-578.

Annette F. Tavares-Cromar and D. Dudley Williams. 1990. Life histories, diet, and niche overlap of three sympatric species of Elmidae (Coleoptera) in a temperate stream. **Canadian Entomologist** 122: 563-577.

D. Dudley Williams, **Annette F. Tavares** and Eric Bryant. 1987. Respiratory device or camouflage? – a case for the caddisfly. **Oikos** 50: 42-52.

Illustration Credits:

The following are publications to which I have contributed original illustrations:

Figure 2 in Ian D. Hogg, John M. Eadie, D. Dudley Williams and Dory Turner. 2001. An evaluation of fluctuating asymmetry as an indicator of low-level thermal perturbation in a stream dwelling insect. Journal of Applied Ecology 38: 1326-1339.

Original line drawings in D. Dudley Williams. 2000. Invertebrate Phylogeny. Scarborough, CITD Press, University of Toronto. CD ROM. (A software project for teaching the diversity and interrelationships seen amongst invertebrate animals.)

Figure 1 in Karen E. Groff and John H. Yousson. 1997. An immunohistochemical study of the endocrine cells within the pancreas, intestine and stomach of the Gar (*Lepisosteus osseus* L.). General and Comparative Endocrinology 106: 1-16.

Figures 1 and 3 in Kelly, K. Tsioros and John H. Yousson. 1997. Intracellular distribution of iron (and associated elements) in various cell types of larvae and juveniles of the sea lamprey (*Petromyzon marinus*). Tissue and Cell 29: 137-162.

142 illustrations in D. Dudley Williams and Blair W. Feltmate. 1992. Aquatic Insects. C.A.B. International, Wallingford.

Figure 8 in Linda C. Ellis and John H. Yousson. 1991. The anionic charge barrier in the renal corpuscle of the pronephros in the lamprey, *Petromyzon marinus* L. The Anatomical Record 231: 178-184.

Figure 1 in Linda C. Ellis and John H. Yousson. 1991. Ultrastructure of the pronephric kidney of embryos and prolarvae of the sea lamprey, *Petromyzon marinus*. Tissue and Cell 23:393-410.

Figure 16 in John H. Yousson and Dan R. Ogilvie. 1990. Ultrastructural features of degradation of the gallbladder during lamprey biliary atresia. Tissue and Cell 22:477-492.

Content Reviewer:

Served as a content reviewer for the phylogeny and ecology chapters of *Biology*, Second Canadian Edition for McGraw-Hill Ryerson. (Summer 2013)

Conferences and Presentations:

June 1989 North American Benthological Society (NABS); Guelph, Ontario. Seminar Presentation – Life histories, diet and niche overlap of three sympatric species of Elmidae (Coleoptera) in a temperate stream.

June 1987 North American Benthological Society (NABS); Bangor, Maine. Poster Presentation – Respiratory devise or camouflage? – a case for the caddisfly.

July 1986 Sixth International Conference on Trichoptera; Lyons, France. Poster Presentation – Respiratory devise or camouflage? – a case for the caddisfly.

May 1985 Ontario Ecology and Ethology Colloquium; Toronto, Ontario. Poster Presentation – Respiratory device or camouflage? – a case for the caddisfly.

Affiliations Past and Present:

Member of the Society for Freshwater Science (2014 – present)
Member of the National Centre for Case Study Teaching in Science (2013 - present)
Member of the National Science Teachers Association/Society for College Science Teachers (2013 – present)
Member of the Federation of Ontario Naturalists (1998-present)
Member of the Scugog Lake Stewards (2015 - present)
Member of the Xerces Society (2015 – present)
Member of the Human Anatomy and Physiology Society (HAPS) (2007-2010, rejoined in 2015)
Member of the Association for Biology Laboratory Education (ABLE) (2004-2008)
Volunteer with the Ontario Marsh Monitoring Programme (2000-2003)
Member of the Guild of Natural Science Illustrators (1998-2001)

Certifications:

CABIN (Canadian Aquatic Biomonitoring Network) certified (2009)

- Module 1 – Introduction to CABIN
- Module 2 – Reference condition approach, site selection and predictive modeling
- Module 3 – Field sampling using standard CABIN protocols
- Module 4 – Sample processing and taxonomy
- Module 5 – Data analysis, interpretation and reporting

Teaching Activities

Undergraduate Lecture Courses – University of Ontario Institute of Technology

BIOL1010U – Biology I: Molecular and Cellular Systems (2004 to present)

Life at the cellular and molecular level with a common thread of evolution woven throughout the course. Topics include basic cell structure and function, cell energetics, respiration, photosynthesis, cell communication, DNA structure and replication, gene expression, cell division and an introduction to genetics.

BIOL1011U – Introductory Cell and Molecular Biology (2013 to present)

This course is cross-listed with BIOL1010 and covers the same material but without the lab component. It is offered to non-biology or non-chemistry majors.

BIOL1020U – Biology II: Diversity of Life and Principles of Ecology (2004 to present)

An introduction to natural selection, speciation and systematics. The advantages of becoming multicellular is discussed followed by exploration of the diversity of protists and animals and the evolutionary relationships of these organisms. Adaptations and characteristics that distinguish the different animal are discussed in the context of evolutionary significance.

BIOL1021U – Introduction to Organismal Biology and Ecology (2014 to present)

This course is cross-listed with BIOL1020 and covers the same material but without the lab component. It is offered to non-biology or non-chemistry majors.

BIOL2010 – Introductory Physiology (Fall 2017)

An overview of the major physiological processes involved in plant and animal growth and development including the mechanism of action of growth regulators and hormones. Emphasis is placed on the use of genetic, biochemical and physiological approaches to understand the regulation of different systems in plants and animals.

BIOL2050U – Human Anatomy (2007 to present)

A detailed examination of gross anatomy of the major body systems such as the skeletal, muscular, lymphatic, cardiovascular, nervous, respiratory and digestive systems. Basic histology is also included. Spatial relationships of the various organs and structures are stressed throughout the course.

BIOL3060U – Fundamentals of Neuroscience (2013 to 2014)

An introduction to the nervous system and brain. Topics include the molecular and cellular mechanisms involved in neural function, brain structure, learning and memory, chemical senses, emotion, brain rhythms and sleep, and mental illness.

BIOL3610U – Comparative Zoology (2007 to present)

The course begins by exploring evolution, speciation and phylogenetics in greater depth than experienced in BIOL1020. Invertebrate and vertebrate diversity is explored with a focus on structure, function and adaptations unique to different taxa in the context of evolutionary history of the different groups.

BIOL3620U – Conservation Biology (Winter 2006, Winter 2008, Winter 2010)

An examination of biodiversity, methods of measuring biodiversity and the possible causes of the biodiversity crisis. The second part of the course discusses specific examples of species, habitats, ecosystems and landscapes in crisis both locally and globally. Conservation/management strategies and challenges associated with them are discussed in the context of feasibility and moral concerns.

BIOL3650U – Fundamentals of Nutrition (2014 to present)

An examination of the basic concepts of human nutrition and energy metabolism. The structure and function of various macronutrients, their digestion, absorption and metabolism in the body is discussed. Health issues associated with poor nutrition are also discussed. Healthy nutrition options based on Canada's Food Guide is a common thread throughout the course.

BIOL4620U – Animal Behaviour (2104 to present)

An overview of techniques for observing animal behaviour are introduced with in-class exercises for practice. The evolutionary basis of behaviour is stressed in the lectures. Topics include altruism, communication, antipredator behaviour, optimal foraging, reproductive and mating behaviour, the development of behaviour and how hormones influence behaviour.

BIOL4430U – Directed Studies in Biology – (Winter 2014, Fall 2014)

Independent research of a current topic in a specialized area of biology.

ENVS1000U – Environmental Science (Winter 2007)

The course examines the biological, economic and social components of environmental science. Basic ecological principles such as ecosystems and nutrient cycles are introduced in the context of sustainability, climate change, pollution, energy and agriculture. Enrollment was about 200 students.

SCIE1910U – Science in Context (2008 to 2009)

A survey of selected topics from biology, chemistry, computing science, mathematics and physics and their significance in today's context. This course was structured in such a way that I taught a few lectures and then coordinated guest lectures from UOIT faculty in the other disciplines. Enrollment was between 50 and 60 students.

Undergraduate Lecture Courses – University of Toronto (Scarborough)

BGYD51H3 - River Ecology (Fall 2008)

An introduction to stream hydrology and sediments, and the adaptations of plants and animals to life in a dynamic habitat. Micro- and macro-distribution of stream faunas and the problems of quantitatively sampling them; biotic interactions; community structure and stability; colonization patterns following disturbance; energy transformations; estimates of production; and man's effects on rivers.

University Service

Recruitment Committee (2012 to present)

Gonfalon Committee (2014 to present)

Tele-Transformation (Science) Committee (2015 to present)

First Year Retention Committee (2015 to present)

Science Rendezvous (2009 to present)

Hands-on science extravaganza for the community. Presenter since 2009 and organizer since 2013

Faculty of Science Student Orientation (2013 -2015)

Participated in egg-drop competition and Biology team-building activity

University Open House (Winter 2015, Fall 2015)

Student Retention Committee (2013)

Homecoming (2012)

Represented the Faculty of Science with a display of insect biodiversity and Biodiversity Bingo game.

Ontario University Fair (OUF) (2013)

Assisted with recruitment for Faculty of Science

Science Research for Health Day (2008)

An event hosting high school students from Durham region for a day to recruit them to conduct research with UOIT Faculty of Health Science mentors

YSTOP (Youth Science and Technology Outreach Programme) (2007)

An event hosting high school students from Durham region for a day to recruit them to conduct research with UOIT Faculty of Science mentors

CURRICULUM VITAE

A. GENERAL INFORMATION

Paul Yielder
1). **Associate Professor**
Faculty of Health Sciences
University of Ontario Institute of Technology
Oshawa, Ontario
L1H 7K4
Canada
Phone: (905)-721-8668 x 2768
E-mail: paul.yielder@uoit.ca

2). **Adjunct** Professor and Chair
Medical Imaging - Medical Radiations Science
School of Medicine
Faculty of Health
Deakin University
Melbourne – Geelong
Australia

EDUCATIONAL QUALIFICATIONS

2009 **PhD International** Doctoral School University of Aalborg, Aalborg Denmark conjointly by the Faculties of Science Medicine and Engineering April 2009 (*Danish Ministerial Order No 18 on May 6th 2009)*
Thesis title: The Mechanical and Physiological Properties of the First Dorsal Interosseous Muscle in Vivo. "An approach to the "Peripheral" Mechanisms of lateralization"

Approbation of Classical thesis – 2006 Moscow State Medical University- Russian State Classical Academy Moscow Russian Federation.

1991 **Ad Eundum Statum - Bachelor of Education (HONS)** University of Auckland New Zealand 1991 New Zealand State Registered Teacher and Guidance Counsellor (List B)

1976 **Graduate Diploma of the Society and College of Radiographers DCR (R)** (Radio diagnostic) London, U.K Newcastle upon Tyne School of Diagnostic Radiography "The Royal Victoria Infirmary & Newcastle upon Tyne General Hospital" Departments of Radiology and Neuroradiology. Tyne & Wear, United Kingdom State Registered Radiographer (UK).

1974 **Graduate Certificate "Theoretical and Practical Education** - Earth and Biological Sciences" (1971-1974) Durham University School of Education - College of the Venerable Bede Durham University United Kingdom. State Registered Teacher. (UK)

PREVIOUS APPOINTMENTS

July 2011 – August 2012	Associate Dean and Assistant Professor, UOIT
September 2009 – July 2011	Assistant Professor and Director of Health
Sciences April 2009 – September 2009	Director Health Science Programs, UOIT
December 2007 – April 2009	Sessional Instructor, Faculty of Health Sciences
December 1991 – October 2007	Senior Lecturer, Undergraduate and Postgraduate programs in Medical Imaging, Osteopathic Medicine & General Nursing UNITEC – Auckland, New Zealand

PROFESSIONAL AFFILIATIONS AND ACTIVITIES:

Professional Service
External Reviewer – Kingdom of Saudi Arabia Ministry of Health and National Guard Health Affairs. King Abdullah International Medical Research Center. Riyadh SA. (2016 -)
External Reviewer – NSERC Discovery Granting Round (MRI and fMRI (2012-2015)
External Reviewer – Cerebral Cortex (C CORT) (2013 – ongoing)
External Reviewer – Journal of Engineering in Medicine (JEM) (2011- ongoing)
External Reviewer – British Journal of Radiography (BJR) (2007 ongoing)
External Reviewer- Experimental Brain Research 2014 –
External Reviewer- Journal of Motor Behavior 2014 -
External Reviewer- Rehabilitation Science Doctoral (RSD) program-University of Florida National Research Service (NRSA) USA for Postdoctoral Fellows. (2011-ongoing)
Associate Professor and Instructor – Radiology Clinics and Advanced Imaging Applications Canadian Memorial Chiropractic College (CMCC) Toronto Ontario (2011- ongoing) International Moderator and NZQA Reviewer- New Zealand College of Chiropractic Auckland New Zealand

PROFESSIONAL REGISTRATIONS. (2015 – ongoing)

Australian Health Practitioners Registration Agency (AHPRA)
Accredited Academic and Clinical Professor. Advanced PhD. Level (Designations Teaching. Research. Supervision, (Development Establishment and Quality Assurance of Clinical Capability Frameworks)

Medical Radiations Practice Board of Australia (Inclusive New Zealand)
Designation – Professor

PROFESSIONAL MEMBERSHIPS.

1). College of Radiographers (London UK)
2). New Zealand & Australasian Neuroscience network
3). Australasian Society of Human Biology
4). State Classical Academy Moscow Russia.
5). Alumni Association – University of Durham UK
6). Society for Neuroscience 2009-present
7). International Society for Magnetic Resonance in Medicine (ISMRM)
8). International Society of Electromyography and Kinesiology (ISEK)

EXTERNAL REVIEW ACTIVITIES

Statement regarding professional practice (e.g., other teaching responsibilities, clinical work and maintenance of clinical license or consulting)

1).Ongoing invited consultation on the inauguration and consolidation of a combined research and clinical professorial chair and directorship in Medical Imaging and the Medical Radiation Sciences for the School of Medicine at Deakin University Melbourne in association with the Melbourne Universities Centre for Molecular Medicine Medical. Radiation Practice Board of Australia (MRPBA) and Australian Health Practitioners Registration Agency (AHPRA).

2). Health Community Service 2015- Completed July 2018 - Ongoing invited Consultation on Regional Rural and Indigenous Health South Western Australian Health Network – Department of Health and Human Services Victoria – attached Portland District Health Board Appointment by Hon. Jill Hennessey Minister of Health Victoria State Government) 2015 – 2018 Chair Quality Assurance and Risk Committee Portland District Health.

1).External Reviewer, Canadian Memorial Chiropractic College (CMCC) Review Panel Medical Imaging and Radiology. December 2014

2).Ongoing invited role as Assistant Professor and Instructor Radiology Clinics and Advanced Imaging Applications Canadian Memorial Chiropractic College (CMCC) Toronto Ontario (2011- ongoing) in support of the BHSC Kinesiology translation agreement with UOIT.

HQP current

Doctoral –four doctoral candidatures as principle or co supervisor)
(2) International Students ex Australia and (2) students within UOIT Faculty of Science.

Master's – four students as principle or co supervisor. MHSC Faculty of Health Science UOIT.

HQP Completed

1).2012-2018 PhD Thesis Supervisor Joanne Gourgouvelis "Effects of aerobic exercise on neural function" Principal supervisor (Ontario Graduate Scholarship) PhD conferred.(2018)

2). 2012-2017 PhD Co principal thesis supervisor Erin Dancey "The effects of increased and decreased afferent input on motor skill acquisition and cortical plasticity (Ontario Graduate scholarship) PhD conferred (2017)

HQP EXAMINED

1). UOIT Graduate Studies Faculty of Business and Information Technology (Health Informatics) Title of project. *"A Framework for visual analytics and knowledge dissemination in Critical Care and complex environments"* Doctor of Philosophy (PhD)
Candidate Rishi Kamaleswaran PhD Conferred (2016)

External Examiner Master's Thesis

2). School of Graduate Studies / Masters of Kinesiology Human Kinetics and Recreation Memorial University of Newfoundland. Title of the Thesis "The role of Central Drive and afferent Feedback on Corticospinal Excitability during Arm Cycling"
Candidate. Niketa Soran **(April 2017)**

Doctoral – currently involved in four doctoral candidatures as principle or co supervisor)
(2) International Students ex Australia and (2) students within UOIT Faculty of Science.

Recently Completed Masters: 2018 - 2017

1. 2016-2018 MH SC Co-Supervisor Antonia Karellas "EEG changes with altered sensorimotor integration" *(Ontario Graduate Scholarship)
2. 2016-2018 MH SC Principle supervisor Heather McCracken "EEG changes with Altered Multimodal Integration"
3. 2015-2017 MH SC Co-Supervisor Sinead O'Brien "Neck Fatigue and Cerebellar Function" (defending summer 2017)
4. 2015-17 MH SC Principle supervisor Ryan Gilley "Influence of hand dominance on motor training induced plasticity" (defending summer 2017)
5. 2014-2016 MH SC Principle supervisor Ryan Shivpaul "

RESEARCH AWARDS (grants, contracts, fellowships) during past 5 years including:

RECENT AWARDS 2017- 2018

Research Title: Eye-Link II Tracking and Ego My Lab Systems to study multi-sensory integration

Granting Body: Canada Foundation for Innovation John Evans Leader's Fund
Amount Awarded: $64,676
Principle/Co-Investigator/Co-applicants: Co-applicant with PI: Bernadette Murphy
Date of Award: March 28, 2017.

Research Title: Influence of altered sensory input and Cortical Asymmetry on Movement Induced Plasticity

Granting Body: Natural Sciences and Engineering Research Council of Canada (NSERC)
Amount Awarded: $25,000 per year for 5 years=$125,000
Principle/Co-Investigator/Co-applicants: Principle (sole PI)
Date of Award: April 1 2017 to March 31, 2023

RECENT 2017 -2018

Research Title: Reconfigurable Immersive Simulation Environment (RISE) Lab Granting body: Canada Foundation for Innovation (Innovation Fund)

Expected decision date: June 2017
My role: Co-investigator; Principle Investigator=Carolyn McGregor (PI),
Total project cost $3,379,940
Amount requested from the CFI $1,343,000

2017	CoI $64,676 (PI, B. Murphy)	Eye-Link II Tracking and EEgo MyLab Systems to study multi-sensory integration	Ontario Ministry of Research and Innovation*

*Normally this is awarded in conjunction with CFI, however there is delay between federal and provincial funding.

PREVIOUS

Date & Duration	Amount, Role and Co-investigators	Title	Funding Agency
May 2015 March 2017	(PI) $40,000 (50% NSERC contrib. 50% UOIT Contrib. $20.000 in kind) (PI)	Influence of Altered Sensory Input and Cortical Asymmetry on Movement Induced Plasticity	DDG Grant NSERC National Science and Engineering Council of Canada
Sept 2014- Aug 2016	$106,000 (Co PI -Investigator, PI-H. Haavik, other CoIs: Niazi, Lelic, Drewes, Murphy	The effects of a single session of chiropractic care on brain source connectivity	Australian Spinal Research Foundation and Hamblin Trust
April 2014 to March 2014	$7500	Cortical Asymmetry Altered Sensory Input and Movement Induced Plasticity	2014 Internal NSERC Discovery Grant Support Program
June 2012 to August 2013	$20,000	Cortical Asymmetry Altered Sensory Input and Movement Induced Plasticity	2012 Internal Funding Award Provosts Office UOIT

Teaching Grant Awards:
UOIT Teaching and Innovation Fund (TIF) Committee (2013) Amount Awarded: $8000 Project Title - Development of Video Clips for Online Kinesiology Teaching Delivery Recipients Dr. M Holmes. Dr. B Murphy. Dr. P. Yielder. Ian Barker.

3). **UOIT Teaching Innovation Fund** (TIF) Committee **(2012**) Amount Awarded $7500 - Project Title "Teaching Practical Skills to Kinesiology Students using e – Learning Resources" Recipients Dr. K Power. Dr. M Lloyd. Dr. B Murphy. Dr. P Yielder.

PUBLICATIONS

Names of HQP trained under my mentorship and supervision are indicated by a * and underline

PUBLISHED WORK (original articles published in journals with editorial and peer review)

1. Dancey E, **Yielder P** Murphy B *"Does Location of Tonic Pain Differentially Impact Motor Learning and Sensorimotor Integration?" (*2018*) Brain Sciences] Manuscript ID: brainsci-340537; doi: 10.3390/brainsci8100179.
2. Jansen C. Yielder P. ((2018) "Evaluation of the Male Inguinal Canal Sonographic Method" Journal Of medical Radiation Science https://doi.org/10.1002/jmrs.275
3. Gourgouvelis, J.*, **Yielder, P**., Clarke, S., Behbahani, H.*, Murphy, B**.** (2018) you can't fix what isn't broken: eight weeks of exercise do not substantially change cognitive function and biochemical markers in young and healthy adults *PeerJ* 6:e4675. doi:10.7717/peerj.4675
4. Baarbé, J.*, **Yielder, P.,** Haavik, H., Holmes, M. Murphy, B. (2018) Subclinical recurrent neck pain and its treatment impacts motor training-induced plasticity of the cerebellum and motor cortex PLOS ONE https://doi.org/10.1371/journal.pone.0193413
5. Gourgouvelis, J.*, **Yielder, P**., Clarke, S., Behbahani, H.*, Murphy, B**.** (2018) Exercise Leads to Better Clinical Outcomes in Those Receiving Medication Plus Cognitive Behavioral Therapy for Major Depressive Disorder *Frontiers in Psychiatry* Mar 6;9:37. doi:10.3389/fpsyt.2018.00037.*.* *eCollection 2018.*
6. Andrew, D*. **Yielder, P**., Haavik, H. Murphy, B**.** (2018) the effects of subclinical neck pain on sensorimotor integration following a complex motor pursuit task. *Experimental Brain Research.* 236 (1)1–11.
7. Farid, B.*, **Yielder, P.,** Holmes, M., Haavik, H., Murphy, B. (2018) Subclinical neck pain leads to altered multi-sensory integration at baseline and four week follow-up relative to healthy controls. *Journal of Manipulative and Physiological Therapeutics. Volume 41, Issue 2, Pages 81–91*
8. Gourgouvelis, J.*, **Yielder, P., Murphy**, B., (2017) Exercise Promotes Neuroplasticity in Both Healthy and Depressed Brains: An fMRI Pilot Study. *Neural Plasticity* Article ID 8305287, 13 pages https://doi.org/10.1155/2017/8305287
9. Holland, L.*, Murphy, B., Lee, T.*, Passmore, S., **Yielder, P.** (2017) Differences in corticomotor excitability between hemispheres following performance of a novel motor training task. *Neuroscience and Biomedical Engineering* Volume 5, pp. 116-125(10)
10. Dancey, E.*, Murphy, B., Andrew, D.*, Yielder, P. (2016) the interactive effect of acute pain and motor learning on sensorimotor integration and motor learning outcomes. *Journal of Neurophysiology.* **Vol.** 116 (5), 2210-2220 **DOI:** 10.1152/jn.00337.2016
11. Dancey,E.* Murphy, B.A., Andrew, D.*, **Yielder, P**.(2016). The effect of local versus remote experimental pain on motor learning and sensorimotor integration using a complex typing task. *Pain* 157(8):1682-1695
12. Lelic, D., I. K. Niazi, K. Holt, M. Jochumsen*, K. Dremstrup, **P. Yielder**, B. Murphy, A. M. Drewes and H. Haavik. (2016) Manipulation of dysfunctional spinal joints affects sensorimotor integration in the pre-fontal cortex: a brain source localization study. *Neural Plasticity.* Article ID 3704964, http://dx.doi.org/10.1155/2016/3704964

13. Luc Holland*, Bernadette Murphy, Steven Passmore, **Paul Yielder.** Time course of corticospinal excitability changes following a novel motor training task *Neuroscience Letters 591 (2015) 81–85 (February2015)*

14. Andrew, D., **Yielder, P.** Murphy, B. Do pursuit movement tasks lead to differential changes in early somatosensory evoked potentials related to motor learning in comparison to tapping tasks? *Journal of Neurophysiology,* 113(4)1156-1164.

15. Andrew, D., **Yielder, P.,** Haavik, H. Dancey, E. Murphy, B. (in press) Somatosensory evoked potentials show plastic changes following a novel motor training task with the thumb. *Clinical Neurophysiology* 126, (3) 575– 580.

16. Eklund, M. Fontana, N. Pugh, E. Mc Gregor, C. **Yielder, P.** James, E. Keyzers, M. Automated Sleep Wake Detection in Neonates from Cerebral Function Monitor Signals.*2014IEEE 27th International Symposium on Computer Based Medical System*s 1063-7125/14 2014 IEEE DOI 10/1109/CBMS2014-36

17. Dancey, E., Srbely, J. **Yielder, P.** (2014) The effect of experimental pain on motor training performance and sensorimotor integration.*Experimental Brain Research* 232 (9) 2879-2889

18. Baarbé. J., **Yielder, P.,** Behbahani, H., Daligadu, J., Haavik, H., Murphy, B. (2014) A Novel Protocol to Investigate Motor Training-Induced Plasticity and Sensorimotor Integration in the Cerebellum and Motor Cortex. *Journal of Neurophysiology.* 111(4):715-

19. Daligadu, J., Haavik, H. **Yielder, P.** Baarbé. J, Murphy, B. (2013) Alterations in cortical and cerebellar motor processing in subclinical neck pain patients following spinal manipulation *Journal of manipulative and physiological therapeutics* 36:527 -537.

20. Daligadu, J., Murphy, B., Brown, J., Rae, B., **Yielder, P**. (2012) TMS Stimulus-Response Asymmetry in Left and Right Handed Individuals, Experimental Brain Research 2013 Feb;224(3):411-6.

21. Boris J. Gutnik **Paul Yielder** Grant Hudson Gennadij V. Ganin Julia S. Archangelskaja Ekaterina A.Vasilieva GKA by Maimonideus Sadovnicheskaja st., 52/45, Moscow, 113035, Russia A computerized model for the objective measurement and quantitative analysis of muscle tone UDC 53/57/61 "European Researcher. 2011. 5-1(7): 552-555. Article in Russian language currently undergoing translated into English"

22. Gutnik B. **Yielder P**. Nash, D. Archangelskaja, J. (2011) Manual asymmetry and mechanical properties of muscle strain: The validity of the method of hand grip. Valeology. 3: 21-26.

23. Gutnik B. **Yielder P**. Nash, D. Archangelskaja, J. (2010) A new biomechanical approach toward explanation of the 10% rule in manual asymmetry. Kazan Science 8(2):403-407.

24. **Yielder, P.** Gutnik, B. Kobrin, V. Hudson, G. (2009) A possible anatomical and biomechanical explanation of the 10% rule used in the clinical assessment of prehensile hand movements and handed dominance. Journal of Electromyography and Kinesiology 19 (6), pg. e472-e480

25. **Yielder P,** Gutnik B, Kobrin V, Leaver J, Guo W (2007) Viscoelastic properties of a skin- and muscle compartment in the right and the left hands. -*Biophysics* **52,** 220-226

26. Hamilton, S., **Yielder, P**., (2006). The peg view made easy – an adjunct to current Clinical protocols in the Management of Acute Upper Cervical Spine Trauma. Journal of Diagnostic Radiography and Imaging. 6 (1), 13-23.

BOOKS and BOOK CHAPTERS PUBLISHED.

1). Gamble B, Kapral O, **Yielder P.** (2013) *Health Care Management in The Canadian Forces Health Services: A Comparative study on Military and Civilian Health Leadership Styles.* In "*Beyond the Line"* Military and Veteran Health Research (edited Aiken AB, Belanger SAH) McGill Queens University press) ISBN 978- 07735-42808-8 (paper) L"Institut canadian de rechere sur la sante des militaires et des veterans.

2). Yielder P. (2009) *The mechanical and physiological properties of the first dorsal interosseous muscle: an approach to the "peripheral" mechanisms of lateralization* PhD thesis VPN State publication- Center for Sensory-Motor Interaction (SMI), Department of Health Science and Technology, Aalborg University ISBN (print 978 -87-7094-029-0 ISBN (electronic) 978-87-7094-030-6n (910 downloads as at August 2018)

CONFERENCE PUBLICATIONS.

Recent 2018 - 2017

1. Dancey, E.*, **Yielder, P,** Murphy, B. The effect of tonic pain and motor learning on corticospinal excitability. Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, 2017 (poster)
2, Gilley, R.*, Murphy, B, Andrew, D.* **Yielder, P.** Increased accuracy and differential changes in early somatosensory evoked potentials in response to novel motor training for the non-dominant hand relative to the dominant hand. Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, 2017 (poster)
3. O'Brien, S.*, Yielder**, P**., Andrew. D*. Murphy, B. Comparing neurophysiological and behavioral outcomes between distal and proximal upper limb muscles in response to novel motor skill acquisition. . Neural Control of Movement, Dublin, Ireland, Satellite meeting April 30 to May 1, 2017 (poster).
4 .Farid, B.*, **Yielder, P.,** Holmes, M., Haavik, H., Murphy, B. Subclinical neck pain leads to altered multi-sensory integration at baseline and four week follow-up relative to healthy controls. World Federation of Chiropractic Biennial Congress, Washington, USA, March 13-18th, 2017 (Oral)-Award winning paper.
5 .Gilley, R*, Baarbé, J.* **Yielder, P.,** Holmes, M., Haavik, H., Murphy, B. Subclinical Neck Pain Affects Motor Skill Acquisition and Transfer as Compared to a Healthy Control Group. World Federation of Chiropractic Biennial Congress, Washington, USA, March 13-18th, 2017 (Oral)

Prior 2017.
C6. Gourgouvelis, J.* **Yielder, P.** Behbahani, H., Murphy, B. The effects of exercise in combination with other conventional antidepressant therapies in treating individuals suffering with Major Depressive Disorder. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Chicago, USA. July 5-8, 2016 (poster)
C7. Dancey, E.*, Murphy, B., Andrew, D.*, **Yielder, P.** The effect of acute pain and motor learning and sensorimotor integration and accuracy using a motor tracing task. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Chicago, USA. July 5-8, 2016 (poster)
C8. Baarbé, J.*, **Yielder, P.,** Haavik, H., Holmes, M., Murphy, B. Subclinical neck pain impairs the cerebellar
Response to motor training which is normalized following treatment with spinal manipulation. "Action

& Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016 (poster).
C9. Dancey, E.* Murphy, B., **Yielder, P**. The Effect of Local, Remote, and Contralateral Tonic Pain on Motor
Learning and Sensorimotor Integration using a Motor Tracing. "Action & Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS) Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016 (poster).
C10. Gourgouvelis, J.*, **Yielder, P.,** Behbahani, H.*, Murphy, B. The effects of exercise on cognitive function in people suffering with Major Depressive Disorder. "Action & Perception: Cognition, Coding and Clinical Populations"; Canadian Action and Perception Network (CAPnet)-Canadian Physiological Society (CPS)
Satellite Symposium of the Canadian Association of Neuroscience 10th Annual Meeting, Toronto, Canada, May 2016 (poster).
C11. Baarbé, J., **Yielder, P.,** Haavik, H., Holmes, M., Debison-Larabie, C., Murphy, B. Enhanced cerebellar disinhibition when cervical manipulation precedes motor learning in individuals with subclinical neck pain. Proceedings of the 13th World Federation of Chiropractic Biennial Congress, Athens, Greece, May 13-16th, 2015. (Poster)
C12. Lelic, D., Khan Niazi, I., Holt, K., Jochumsen, M.*, Dremstrup, K., **Yielder, P.,** Murphy, Drewes, A., Haavik, H., Manipulation of dysfunctional spinal joints affects sensorimotor integration in the pre-fontal cortex: A brain source localization study, Proceedings of the 13th World Federation of Chiropractic Biennial Congress, Athens, Greece, May 13-16th, 2015 (poster).
C13. Gourgouvelis, J.*, Murphy, B, **Yielder, P.** Mechanisms by which Exercise Promotes Hippocampal Function in People with Depression. Advancing Recovery Research-Patients, partnerships and peers-Ontario Shores Research Day Feb 24, 2015.
C14. Julianne Baarbé*, **Paul Yielder,** Heidi Haavik, & Bernadette Murphy. Changes in Cerebellar Inhibition in Participants with Subclinical Neck Pain in response to a Motor Acquisition Task: A Intervention Study
With Healthy Control Group Comparison. Exercise Neuroscience Group Meeting, June 23&24, 2015, Brock University, and St. Catherine's Ontario.
C15. Erin Dancey*, Bernadette Murphy, Danielle Andrew*, **Paul Yielder** The effect of local versus remote experimental pain on motor learning and sensorimotor integration using a complex typing task. Exercise Neuroscience Group Meeting, June 23&24, 2015, Brock University, and St. Catherine's Ontario.
C16. Behbahani H., **Yielder P.,** Gourgouvelis J.C., Murphy B.A. Changes in corticomotor plasticity induced by ten weeks of exercise in sedentary young adults. International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Rome, Italy, July 15-18, 2014 (poster)
C17. Hahn C, McNamara P, **Yielder P.** Automated Sleep-Wake Detection in Neonates from Cerebral Function Monitor Signals (submission ID: 157) submitted to IEEE CBMS 2014 has been accepted for LONG presentation, a paper of 6 (six) pages.) The 27th *IEEE* International Symposium on Computer-Based Medical Systems (*CBMS* 2014) Icahn **School of Medicine at Mount Sinai, New York USA May 27.29th 2014**. (Impact 1.85)
C18. Holland L, Baarbé J, Murphy B, and **Yielder P.** Patterns of inhibition and facilitation between dominant and non-dominant hemispheres of both right and left-handed individuals. Accepted for presentation at "*Society for Neuroscience 43th Annual Meeting"* San Diego, California, United States of America, November 9-13, 2013, 171.01/RR16
C19. Baarbé J, Debison-Larabie C, Haavik H, **Yielder P,** and Murphy B. Differences in effects of cerebrellar
Inhibition following motor learning in subclinical neck pain patients. Accepted for presentation at "*Society for Neuroscience 43th Annual Meeting"* San Diego, California, United States of America, November 9-13,

2013, 748.09/VV14
C20. Behbahani, H., **Yielder, P.,** Gourgouvelis, J., Murphy, B. Plasticity changes in motor cortex induced by cardiovascular and musculoskeletal exercise prescription in sedentary young adults. Proceedings of the Canadian Society for Exercise Physiology Annual General Meeting: Extreme Human Physiology: From Pathology to Performance. Toronto, October 16-19, 2013, page 1024 http://www.nrcresearchpress.com/doi/pdfplus/10.1139/apnm-2013-0299
C21. Andrew, D., Haavik, H. **Yielder, P.,** Murphy, B. The effect of a thumb motor training task on median nerve sensory processing. *Progress in Motor Control IX", biennial conference of the International Society for Motor Control*, Montreal, Canada, July 13-16, 2013, Abstract #164.
C22. Baarbé, J., Daligadu, J., Behbahani, H., Haavik, H., **Yielder, P.,** Murphy, B. The effects of motor learning on the cerebellum and motor cortex. *Progress in Motor Control IX", biennial conference of the International Society for Motor Control*, Montreal, Canada, July 13-16, 2013, Abstract #169.
C23. Dancey, E., Srbely, J., Murphy, B., **Yielder, P.** The effect of experimental pain on motor training performance and sensorimotor integration. Accepted for presentation at "*Progress in Motor Control IX", biennial conference of the International Society for Motor Control*, Montreal, Canada, July 13-16, 2013, and Abstract #165.
C24. Holland, L, Baarbé, J., Murphy, B, **Yielder, P.** Asymmetry in inhibition and facilitation between dominant and non-dominant hemispheres in right-handed individuals. *Progress in Motor Control IX", biennial conference of the International Society for Motor Control*, Montreal, Canada, July 13-16, 2013, Abstract#171
C25. Brenda Gamble, PhD, and **Paul Yielder, PhD**, University of Ontario Institute of Technology; Oleana Kapral, MA, University of Ottawa; Winston Issac, PhD, Ryerson University What is the Role of Emotional Intelligence? Canadian Healthcare Leader's Views on Leadership Competencies AUPHA Annual Meeting June 19th -22nd Monterey California USA
C26. Andrew, D., Haavik, H. **Yielder, P.,** Murphy, B. The effect of a thumb motor training task on median nerve sensory processing. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July 13-16, 2013, and Abstract #164.

C27. Baarbé, J., Daligadu, J., Behbahani, H., Haavik, H., **Yielder, P**., Murphy, B. The effects of motor learning on the cerebellum and motor cortex. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July 13-16, 2013, and Abstract #169.
C28. **Dancey, E.,** Srbely, J., Murphy, B., **Yielder, P**. The effect of experimental pain on motor training performance and sensorimotor integration. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July 13-16, 2013, and Abstract #165.
C29. Holland, L, Baarbé, J., Murphy, B, **Yielder, P**. Asymmetry in inhibition and facilitation between dominant andnon-dominant hemispheres in right-handed individuals. Accepted for presentation at "Progress in Motor Control IX", biennial conference of the International Society for Motor Control, Montreal, Canada, July
13-16, 2013, and Abstract #171.
C30. Barker, I., **Yielder, P.,** Haavik, H, Murphy, B. The Effect of 12 Weeks of Manipulative Care on the Cervical Flexion Relaxation Response: A Pilot Study. Proceedings of the 12th World Federation of Chiropractic Biennial Congress, Durban, South Africa, April 10-13, 2013, p.165.
C31. Bossé, J. Passmore, S., **Yielder, P**., Haavik, H., Murphy, B. The effect of spinal manipulation on sensorimotor integration and cortical effects of motor training in a cohort of participants with subclinical neck pain.
Proceedings of the 12th World Federation of Chiropractic Biennial Congress, Durban, South Africa, April 10-13, 2013, p. 170.
C32. Daligadu, J., **Yielder, P.,** Baarbé, J., Haavik, H., Murphy, B. Alterations in Cortical and Cerebellar

Motor Processing in Neck Pain Patients Following Chiropractic Manipulation. Proceedings of the 12th World Federation of Chiropractic Biennial Congress, Durban, South Africa, April 10-13, 2013, p. 142.
C33. Barker, I., **Yielder, P.,** Murphy, B. "The effects of neck muscle fatigue on the cervical flexion relaxation
Response and on cervical joint position sense". International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Brisbane, Australia, July 17-21, 2012 ORAL, SENS_O2.1., p.100.
C34. Daligadu, J., **Yielder, P**., Behbahani, H. Holland, L., Murphy, B. "The feasibility of using cerebellar stimulus response curves to investigate changes in excitability of cerebellar projections to primary motor cortex" International Society of Electromyography and Kinesiology (ISEK) Biannual Meeting, Brisbane, Australia, July 17-21, 2012 Poster, PLAS_P1.7, p. 97.
C35. Daligadu, J., **Yielder, P.,** Murphy, B. "TMS Stimulus-Response Asymmetry in Left and Right Handed Individuals" Exercise Neuroscience Group Biannual meeting. June 16th and 17th, 2011, Wilfrid Laurier University campus. Waterloo, Canada.
C36. Gutnik B. **Yielder P**. Hudson G. Archangelskaja J. Vasilieva E. A Further Possible Explanation of the 10% Rule in Manual Asymmetry based on muscle stiffness in vivo. Archive of the Pushchino International Symposium.On Biological Motility. Moscow Russia 2-3 December (2011)
C37. **Yielder P.** Daligadu J. Brown J Murphy B (2010) TMS stimulus response recruitment curve asymmetry in lefthanded individuals - Session 592 Human Neurophysiology for Voluntary Motor Control (November 16th) Society for Neuroscience (40th meeting San Diego California 592.5)
C38. Daligadu J. **Yielder P.** (2010) TMS Stimulus Response Recruitment Curve Asymmetry in Left andRight Handed Individuals. Summer Student Research Showcase UOIT pg 24.
C39. **Yielder P.,** Bosse J., Daligadu J, Haavik Taylor H, Murphy, B. (2010) "Motor Training Changes processing of Early- Cerebellar and Cortical Somatosensory Evoked Potentials Special Session "Altered Afferent Input
And Neuroplasticity" ISEK XVIII Congress International Society of Electromyography and Kinesiology University of Aalborg Denmark Pg82.
C40. Brown, J. **Yielder, P** (2010) Research Forum – Practicum (Poster Presentation) Faculty of Health Sciences University of Ontario Institute of Technology: Development of a technique to determine some characteristics of the neural drive of the paired First Dorsal Interossei hand muscles using Transcranial Magnetic stimulation (TMS)
C41. **Yielder P**. Gutnik B. Hudson G. (2005) Peripheral muscular factors in the assessment of hand dominance. In proceedings of Movement Analysis 2005 – Building Bridges – Auckland University.Pg.119-122.
C42. Gutnik, B., **Yielder P.** Leaver J. Kobrin V. (2005) .The viscoelastic behaviour of the distal hand muscles in the lateral aspect. (FDI) In proceedings of Movement Analysis 2005 – Building Bridges – Auckland University Pg.115 – 118
C43. Gutnik, B., **Yielder, P.,** Leaver, J., Henneberg, M. (2005). Behaviour of distal human muscle undertensile stress"in vitro" – Approach to manual asymmetry. In Proceedings of Russian State Classical Academy – Movement and Clinical symposium "Current Problems in Modern Medicine" (M.Maimonides). p.33
C44. Gutnik,B., **Yielder P.** Leaver J. Kobrin V. Wei Guo (2005). Development of a Peripheral ComparativeIndex from a Pilot study for the Assessment of Manual Asymmetry. . In Proceedings of Russian State Classical Academy – Movement and Clinical symposium "Current Problems in Modern Medicine" (M.Maimonides). p.34.
C45. **Yielder, P**., Gutnik, B., Doyle, A., Donald, S., Hudson, G. (2005). Contradictions to the traditional Approach used in the Assessment of Handed Dominance. In Proceedings of Russian State Classical Academy – Movement and Clinical symposium "Current Problems in Modern Medicine" (M.Maimonides). p.48.
C46. **Yielder, P.,** Gutnik, B., Kobrin, V. (2005). Whole muscle assessment of the First Dorsal Interosseous Muscle (FDI) incorporating an approach to the peripheral mechanisms of lateralisation. "Fusion 2005."Inaugural joint New Zealand Institute of Medical Radiation Technology / Australian Institute of Radiography Conference, Auckland 25-28 August, 2005. Pg 48.

C47. Gutnik. B Henneberg, M. **Yielder, P.** Kobrin, V. J.Leaver (2005). Manual asymmetry – towards the peripheral approach: investigation in-vitro on cadaver muscles – part III In. Chudoerkova E.P. (ED).Russian State Academy of Medical Science: Dept of Medical and Biological Sciences - Russian state Institute of Brain Research: (ISBN 5-7479-0128-9) The Structural functional and NeurochemicalPatterns of Asymmetry and Plasticity of the Brain.pg 319-3232

C48. V.Kobrin. B.Gutnik**. P.Yielder** J.Leaver (2005). "Manual Asymmetry"Towards the Peripheral Approach Part 1 investigation in vivo In. Chudoerkova E.P. (ED). Russian State Academy of Medical Science: Dept of Medical and Biological Sciences - Russian state Institute of Brain Research: (ISBN 5-7479-0128-9) The Structural functional and Neurochemical Patterns of Asymmetry and Plasticity of the Brain.pg 319-3232 pg. 324-327

C49. **Yielder, P.,** Gutnik, B.,Kobrin,V. (2005). The Influence of the peripheral factors in the assessment of Hand Dominance in Vivo (Part II). In.Chudoerkova E.P. (ED). Russian State Academy of Medical Science: Dept of Medical and Biological Sciences - Russian State Institute of Brain Research: (ISBN 5-7479-0128-9) The Structural functional and Neurochemical Patterns of Asymmetry and Plasticity of the Brain.pg 329-332

PATENTS and INVENTIONS

1).Gutnik B, **Yielder P,** Kobrin V, Leaver J, Guo W (2009) (RU 8575).
Device for assessment of the viscoelastic properties of skin and muscle.
Design and application patent applied for under regulations of the Russian Federation
The device is termed an automated-viscoelastometer

PARTICIPATION IN INTERNATIONAL WORKSHOPS

1).International Society for Magnetic Resonance in Medicine:

ISMRM Community for Clinicians and Scientists Workshop on Dynamic MR Imaging & Spectroscopy of Psychiatric Illness – 7-10th September 2014 Lisbon, Portugal

2).International Society for Magnetic Resonance in Medicine: ISMRM Community for Clinicians and Scientists International Workshop and Conference on Perfusion MRI: Standardization, Beyond CBF & Everyday Clinical Applications (11-14 October 2012). Amsterdam -Netherlands.

3).International Society for Magnetic Resonance in Medicine: ISMRM Community for Clinicians and Scientists International Workshop and Conference on "Neuroimaging Biomarkers of Psychiatric Disorders" Montabaur Germany (13th – 17th October 2011)

INVITED LECTURES AND SEMINARS

1).Yielder P. (2018) The Anatomy and MRI of The Brachial Plexus "From Bench to Bedside" Translating Neuroscience Clinical Research to Patient Care. 4th Scientific Meeting in Neurology National Brain Hospital Jakarta - Pullman Central Park Hotel Jakarta Indonesia Feb 8th -11th)

2). **Yielder P.** (2018) "MRI advances in the Pre Surgical Localization Planning of Intracranial Tumors "From Bench to Bedside" Translating Neuroscience Clinical Research to Patient Care. 4th Scientific Meeting in Neurology National Brain Hospital Jakarta - Pullman Central Park Hotel Jakarta Indonesia Feb 8th -11th)

3). **Yielder, P.** (2016- 2017) Neuromechanics and Human Tissue Modelling using Advanced Medical Imaging Modalities. Imaging Institute of Electrical and Electronics Engineers (IEEE) and Intelligent Systems Man and Cybernetics Society (SMC). Deakin University, Geelong, Australia. **Part I** December 2016 – **Part Two** March 2017.

4).Yielder, P. 2016 "Central and Peripheral Asymmetries in Human Neural Systems" Two contemporary clinically focused studies profiling the application of Structural Magnetic Resonance Imaging techniques and Transcranial Magnetic Stimulation (TMS) and their applications in modelling human tissue systems research. Centre for Molecular and Medical Research Centre, Deakin University, Melbourne April 2016.

5).Yielder P. 2016. "Lymph node imaging using integrated magnetic resonance, positron emission tomography and fluorescence techniques in translation from animal studies to human participant clinical trials" Centre for Molecular and Medical Research Centre, Deakin University, Melbourne April 2016.

6). Gourgouvelis, J., Murphy, B, **Yielder, P.** (May 2012 "Train your brain-The role of exercise in promoting Hippocampal activation and improving memory in people with depression" Durham Region Mental Health "Hope Health and Humor Symposium:

7). **Yielder, P**. (2009) Peripheral Contributions to Asymmetry and Handedness-an MRI modelling and Computational Approach. Presented to Applied Bioscience Research Seminar Series, Faculty of Science, UOIT, November 2009

TEACHING AND COURSE DELIVERY (UOIT) 2007 – 2017

As course designer and /or Instructor Faculty of Health Sciences, University of Ontario Institute of Technology.

HLSC 5320G (W2017)	Neuroscience in Rehabilitation Kinesiology
HLSC 5322U (F 2016)	Theory, Application and Analysis of Biomedical Signals
HLSC 4414U (W2017)	Advanced Topics in Neuromuscular Physiology/Patho
HLSC 5320G (W2016)	Neuroscience in Rehabilitation Kinesiology
HLSC 4414U (F2015)	Advanced Topics in Neuromuscular Physiology/ Patho
HLSC 2400U (F2015)	Introduction to Human Movement Neuroscience (109 students enrolled In section BHSC Health Sciences Comprehensive Cohort)
HLSC 3020U (F2013)	Health and Exercise Psychology
HLSC5010G (W 2014)	Research Paradigms and Methods in the Health Sciences
HLSC 5322U (W2014)	Theory, Application and Analysis of Biomedical Signals and Images
HLSC 4414-HLSC 4414G (F 2013)	Advanced Topics in Neurophysiology and Advanced Neuromuscular Pathology
HLSC 3020U (W2013)	Health and Exercise Psychology
HLSC5010G (W 2013)	Research Paradigms and Methods in the Health Sciences
HLSC 5322U (F 2012)	Theory, Application and Analysis of Biomedical Signals and Images
HLSC 4414-HLSC 4414G (F 2012)	Advanced Topics in Neurophysiology and Advanced Neuromuscular Pathology
HLSC5010G (W 2012)	Research Paradigms and Methods in the Health Sciences
HLSC 3020U (W2012)	Health and Exercise Psychology
RADI3200U (F2011)	Introduction to Biomedical and Advanced Medical imaging
HLSC 4414-HLSC 4414G (F 2011)	Advanced Topics in Neurophysiology and Advanced Neuromuscular Pathology
HLSC 4998U (W2011)	Research Practicum
HLSC 3400U (W 2011)	Human Motor Control and learning
HLSC 3020U (W 2011)	Health and Exercise Psychology
HLSC 340OU (F 2010)	Introduction to Movement Science
HLSC 5010G (F 2010)	Research Paradigms and Methods in Health Science HLSC 4998U (W2010) Research Practicum
HLSC 3400U (F2009)	Human Motor Control and Learning
HLSC 2400U (F 2009)	Intro to Movement Science
HLSC-3601U (S2009)	Managing Health Care Teams
HLSC -2400U (W2009)	Intro to Movement Science
HLSC 3601U (S2008)	Managing Health Care Teams
HLSC 341OU (S2008)	Human Motor Control and Learning
HLSC 203OU (S2008)	Theory and Practice of Interpersonal Communication (2 section

PERMANENT SENIOR LECTURER -SCHOOL OF HEALTH SCIENCES UNITEC AUCKLAND NEW ZEALAND (1991-2007)

Undergraduate Course designed and delivered (Nationally Accredited by the New Zealand Qualifications Authority NZQA)

HEAL 5162	Applied Health Psychology
HEAL 6162	Anatomy and Physiology
CSI.602	Neurophysiology and Neuroembryology
HEAL 6154	Pathology/Clinical Pathology
HEAL 7154	Anatomy /Pathology/ Applied Imaging
HEAL 7159	(HONS) Research Project Supervision.
BSI.	Neuroanatomy

Graduate Courses designed and delivered for UNITEC in Association with Auckland University School of Medicine Dept. of Anatomy with Radiology. Nationally Accredited by the New Zealand Qualifications Authority NZQA)

HEAL 8009	Specialist Imaging Anatomy/Pathology; MRI and Clinical Ultrasound
HEAL 8007	Clinical and Therapeutic Supervision
HEAL 8018	Image Interpretation
HEAL 8159	Thesis Supervision

FACULTY OF HEALTH SCIENCE MASTERS DEGREE SUPERVISION COMPLETION

2016.

1). 2014 -2016 MSc Co-Supervisor-Bassim Farid "Effects of altered sensory input from the neck on multimodal integration" (Aug 2016).

2). 2013 - 2016 MH SC. co-supervisor Chad Debison-Larabie "Understanding risk factors derived from the cervical spine in relation to whiplash and concussions in varsity athletes" (MRI Structural and Segmental Modelling of the SCM muscles in the neck in acute response to violent perturbation) (May 2016)

Prior to 2016

1. 2013 – 2015 Julianne Baarbe "Effects of Altered Sensory Input from the Neck on Cerebellar Function, Body Schema and Sensorimotor Integration"
2. 2012-2014 Nick Fontana "Automated Sleep-Wake Cycling Detection in Neonates from Cerebral Function Monitor Signals"
3. 2012-2014 Luc Holland "Influence of hand dominance on movement-induced plasticity in the central nervous system"
4. 2012-2014 Hushyar Behbahani "Effects of aerobic exercise on cortical plasticity measures"
5. 2012-14 MSc thesis Danielle Andrew "Motor sequence acquisition and sensorimotor plasticity" (Co-supervisor)
6. Erin Dancey July 2012 "The effect of experimental pain on motor training performance and sensorimotor integration. A thesis submitted in partial fulfillment of the requirements for the degree of Masters of Health Sciences University of Ontario Institute of Technology
7. Joanne Gourgouvelis (August 2012) Title "Mechanisms by which exercise promotes hippocampal function in both depressed and non-depressed individuals: A feasibility study
8. Jessica Bossé (July 2012) Title "The effect of motor training on sensorimotor integration"
9. Julian Daligadu (July 2012) "The role of the cerebellum in changes in corticomotor output observed following motor training".

Previous Master's Degree Thesis Supervision

Mullaney S. (2007) *Massage and Muscle Stiffness* – A thesis submitted in partial fulfillment of the requirements for the degree of Masters in Health Science (Osteopathic Medicine) UNITEC Auckland New Zealand

External Examiner for MSC. And MHSC. Thesis Examinations

1. **External Examiner.** Evaluation ofthe thesis entitled"*A numerical study of the effects of Inhomogeneousmedia in Diffusion Weighted Imaging (Magnetic Resonance Imaging)"* Submitted for review by candidate Jessica Cervi to the Faculty of Science University of Ontario Institute of Technology in accordance with the requirements of the degree of Master of Science (July 2015).

2. **External Examiner** evaluation of the thesis entitled *"Engaging Adult Literacy learners: Investigating Problem Based learner OBJECT(PBLO) Use as a possibility for implementing Problem Based Learning (PBL) Online*
Submitted for review by candidate Judith Amesbury to the Faculty of Education University of Ontario Institute of Technology (UOIT) in partial fulfillment of the requirements for the award of the degree of Master of Arts in Education and Digital Technologies (February 2015).

3. **External Examiner** evaluation of the thesis entitled "*Premovement exitability changes of the corticopsinal tract are not dependent on the forthcoming task but due to a general excitation of the Motor System"* Submitted for review by candidate David Copithorne to the School of Graduate Studies in partial fulfillment of the requirements for the award of the Degree of Master of Science (Kinesiology) through the School of Human Kinetics and Recreation - Memorial University of Newfoundland. (April 2014)

4. **External Examiner** evaluation of the thesis entitled *" Correlation and Real Time Classification of Physiological Streams for Critical Care Monitoring"* Submitted for review by candidate Anirudh Thommandram in partial fulfillment for the award of the Degree Master of Electrical and Computer Engineering December 2013.(UOIT)

5. **External Examiner** evaluation of the thesis entitled"*Physicians Perspectives on the Ontario Drug Benefit programme*"submitted for reviewby candidate Rima Karam in partial fulfillment for the award of the Degree Master of Health Science 2013.(UOIT)

UOIT MHSC Thesis committee member record

1. 2013-2016 Chad Debison-Larabie "Differences in neck muscle volume and activation time between male and female varsity hockey players" MHSc defended April 2016
2. 2013-2015 Patricia Riley-"Analyzing the Reliability and Validity of the Sway Balance™ System for the Assessment of Postural Sway" MHSc Defended January 2016
3. 2013-2016 Jessica Salt-Factors contributing to concussion underreporting in varsity athletes (part-time) MHSc defended June 2016
4. 2014-2017 Lindsey Thomas "The impact of a general education elective including physical activity in a college student population" (part-time); planned defense date of March 2017
5. 2014-2016 Bassim Farid "Effects of altered sensory input from the neck on multimodal integration" planned defense date August/September 2016
6. May Helfawi (January 2015) Title Patient involvement in IPC, a catalyst to the delivery of patient centered-care at community based mental health settings (FOHS Supervisor Dr B. Gamble)
7. Gaythiri Jayathevan (Completed June - July 2014) Nurse Navigators Role and Scope of Practice in Oncology (FOHS Supervisor Dr M Lemonde)

Other Completed Thesis Examinations

1. Olga Boyko (2011) Professors' View on Mental Health Nursing Education in the Baccalaureate Nursing Programs of Ontario: The Grounded Theory Approach
2. Ian Barker – (August 2011). Alterations in Neck Muscle Performance and Proprioception with Fatigue, Altered Posture and Recurrent Neck Pain
3. Diana Gray – (August 2011) Development of Instruments to Assess Physiological and Physical Neck Pain Risk Factors
4. Rohan Gonsalves (August 2011) Investigating Yang-style Tai Chi and its Influence on Physical Function and Fall Prevention among Older Adults
5.

As Supervisor for Undergraduate HLSC 4998U & 4999U Student Research Practicum Completed in 2015 – 2016

1. Tia Etherington (Principal Supervisor)
2. Suvatheka Mathiyalagan (Principal Supervisor)
3. Steven Genis (Co-supervisor)

Supervision Undergraduate HLSC 4998U & 4999U Student Research Practicum 2014 – 2015

1. 2015 Menelek Luke "Effects of chronic alterations in neck sensorimotor input on visuomotor processing"
2. 2015 Ryan Gilley "Chronic alterations in neck sensorimotor input impairs performance on a dart throwing task"

Practicum Completion in 2013 – 2014

1. Ellen Smith "Modelling Neck Muscle Volume with MRI"
2. Thomson Lee "Motor cortical excitability based on task specialization"
3. Angela Dares "Effects of altered neck input on upper limb proprioception" (co-supervisor)
4. Joseph Guirguis "Kinetics and kinematics of a cerebellar task"
5. Bassim Farid "Effects of altered neck input on multimodal integration"
6. Hera Khayyam "Effects of a ten week exercise intervention on fitness and depression scores in depressed individuals" (jointly with B Murphy)
7.

Practicum Completion 2012 – 2013.

1. Julianne Barbe furthering work on "Graded cerebellar Stimulation to Investigate Cerebellar projections to the primary motor Cortex"
2. Ryan Chung furthering work on Asymmetry with Inhibition and Facilitation - Between dominant and Non-Dominant Hemispheres related to Handedness

Completed Prior 2012

1. Luc Holland (2012) Asymmetry with Inhibition and Facilitation - Between dominant and Non-Dominant Hemispheres related to Handedness
2. Shafaq Maula (2012*)* The Influence of Prolonged Posture and Neck Muscle fatigue on Upper Limb Proprioception
3. Jeff Brown (2010) "Development of a technique to determine some characteristics of the neural drive of the paired First Dorsal Interossei hand muscles using Trans cranial Magnetic Stimulation (TMS)

B. SERVICE

University of Ontario Institute of Technology

2018 – Current - Vice Chair Research and Ethics Review Board

University

- Consultancy and Advice to the International Office at UOIT in association with the Associate Provost Research at UOIT in establishing MOU's with Australian Universities formalising the award of two summer semester Commonwealth for UOIT Health Sciences Masters students to conduct research projects at Deakin University CSIR (Research Institute) May – August (2016)
- Curriculum program me and Review Committee (2010 –2014)
- Strategic Enrolment and Recruitment Committee (2009 –2014)
- Grades Review and Strategic Planning Committee (2011-2013)
- Provosts Office Academic and Professional Conduct Appeals Committee (2010–2014)
- UOIT Student Mental Health Working Group (2012 –as required)

Faculty

- External review and preparation of report for MTC credit transfer institution grant (CTIG) "Kinesiology Bridge Expansion and Optimization Program" (2016- 2017) Massage Therapy extension UOIT and Durham College.
- External review and preparation of report for MTC credit transfer institution grant (CTIG) "Kinesiology Bridge Expansion and Optimization Program" (2015- 2016)
- Academic Standing and Appeals Committee (From July 2015 – current)
- Associate Dean of Faculty of Health Sciences (July 2011- September 2012)
- Acting Dean of Faculty of Health Sciences as required in support of Dean of the Faculty.
- (2009 – 2012)
- Director of Health Sciences and Program me Supervisor for the BHSC (HONS) and BAHSC Degree's
- (2009- 2011)
- Member of Faculty Health Sciences Executive Governance Committee (2009 – September 2012)
- Chair BHSc (HONS) Program me committee (2009 – 2011)
- Chair Faculty of Health Sciences Academic and Professional Misconduct and Appeals Committee
- (2009 - April 2011)
- Health Information Management Advisory Committee (2009 – 2011)
- Faculty Reader at Convocation (2009, 2010, 2011, 2012, 2013.)
- Judge – Undergraduate Research Posters Day (2008, 2009, 2010)

Hiring Committees, University of Ontario Institute of Technology

- FOHS Search Committee Winter 2012 Core Faculty (Assistant Professor) Human Neuro mechanics UOIT 12-145
- FOHS Search Committee Winter 2012 Core Faculty (Associate or Full Professor). Population based Research methods and Biostatistics UOIT 11167
- FOHS Search Committee Winter 2012 Teaching Faculty (Foundation in Health Sciences) UOIT 11-168
- FOHS Search Committee Fall 2011 Core Faculty (Assistant Professor) Nursing.

FOHS Se

- arch Committee Winter 2010 Core Faculty (Assistant Professor) Kinesiology Specialization.

REVIEWERS' REPORTS FOR NEW PROGRAMS

Reviewers' Report on the Proposed BSc Program in Integrative Neuroscience at the University of Ontario Institute of Technology

Reviewer: Aimee J. Nelson, PhD
Associate Professor, Canada Research Chair
Department of Kinesiology, McMaster University

Program name: Integrative Neuroscience

1. OUTLINE OF THE REVIEW

Please indicate whether this review was conducted by desk audit or site visit. For those reviews that included a site visit, please indicate the following:

This review was conducted by site visit.

- Who was interviewed

The following individuals were interviewed during the site visit: Dr. Bob Bailey, Dr. Greg Crawford, Dr. Lori Livingston, Dr. Sean Forrester, Dr. Bernadette Murphy, Dr. Paul Yielder, Dr. Jason Chung, Annette Tavares, Dr. Matthew Shane, Nicole Suss, Shelly Windsor, George Stamatiou and Tracy James-Hockin.

- What facilities were seen

I toured undergraduate teaching laboratories including the kinesiology labs and faculty of science wet labs at the North campus, and psychology labs at the downtown location. I also toured the research laboratories allocated to Science, Health science and Social science faculty members.

- Any other activities relevant to the appraisal

I observed undergraduate classes being taught in the kinesiology labs. I was also exposed to new techniques in research and forensic sciences through my interaction with graduate students and faculty.

2. EVALUATION CRITERIA

NOTE: Reviewers are asked to provide feedback on each of the following Evaluation Criteria.

2.1 Objectives

- Consistency of the program with the institution's mission and academic plans.

- Clarity and appropriateness of the program's requirements and associated learning outcomes in addressing the institution's own undergraduate or graduate Degree Level Expectations.
- Appropriateness of degree nomenclature.

The introduction of the integrative neuroscience program is directly in line with UOIT's mission statement, "To provide superior undergraduate and graduate programs that are technology-enriched and responsive to the needs of students and the evolving workplace." The proposed program is the only program of it's kind in Canada and will offer a diverse neuroscience undergraduate degree. Diversity in this respect refers to the wide breadth of neuroscience knowledge extending from animal to human systems, from cellular neuroscience to cognition and behaviour.

The program's requirements and degree nomenclature align with the existing practices in the faculty of science and are appropriate.

2.2 Admission requirements

- Appropriateness of the program's admission requirements for the learning outcomes established for completion of the program.
- Sufficient explanation of alternative requirements, if any, for admission into a graduate, second-entry or undergraduate program, such as minimum grade point average, additional languages or portfolios, along with how the program recognizes prior work or learning experience.

In my estimation, the Integrative neuroscience program will be in high demand, sought after by a large number of prospective undergraduate students. The program appropriately allocates space to accommodate 25 students in each year of study. Therefore, admission requirements may need to include additional steps beyond a grade-point threshold approach. I have provided some recommendations below that are based on the discussions during the site visit.

2.3 Structure

- Appropriateness of the program's structure and regulations to meet specified program learning outcomes and degree level expectations.
- For graduate programs, a clear rationale for program length that ensures that the program requirements can be reasonably completed within the proposed time period.

The Integrative neuroscience program will require two years of foundational science study that is common to all programs within the faculty of science. The collection of courses that comprise Integrative neuroscience began in year three and continue to the end of the fourth year. The core required courses are numerous, but this is to be expected to achieve the knowledge breadth across

the sub-disciplines of neuroscience. However, there are also opportunities for science and non-science electives that are taken predominantly in year four of study.

2.4 Program content

- Ways in which the curriculum addresses the current state of the discipline or area of study.
- Identification of any unique curriculum or program innovations or creative components.
- For research-focused graduate programs, clear indication of the nature and suitability of the major research requirements for degree completion.
- Evidence that each graduate student in the program is required to take a minimum of two-thirds of the course requirements from among graduate level courses.

The academic curriculum is created by capitalizing on existing courses offered through the faculties of science, health science and social sciences. The initial implementation of the program involves the creation of one, fourth year capstone course that is available only to students enrolled in the Integrative neuroscience program. By virtue of the multiple disciplines that are combined to provide the diverse education in neuroscience, the curriculum is unique and creative. I do not know of any other similar program offered to undergraduate students in Canada. UOIT is to be commended for initiating the Integrative program that requires a collegial environment and sharing of resources to achieve.

2.5 Mode of delivery

Comment on the appropriateness of the proposed mode(s) of delivery to meet the intended program learning outcomes and Degree Level Expectations.

Course content is delivered through lecture style courses and courses with a strong laboratory component. There are experiential learning opportunities embedded in every year of the program. I have some recommendations for enhancing the delivery of human neuroscience laboratories as described below. The mode of delivery is appropriate and will allow for the achievement of the learning outcomes.

2.6 Assessment of teaching and learning

- Appropriateness of the proposed methods for the assessment of student achievement of the intended program learning outcomes and Degree Level Expectations.

- Completeness of plans for documenting and demonstrating the level of performance of students, consistent with the institution's statement of its Degree Level Expectations.

Most of the course content included in the Integrative neuroscience program has been delivered for several years. Therefore, these courses have outlines that clearly articulate the learning objectives and methods of evaluation. The new element in the curriculum relates to the fourth year neuroscience capstone course. The assessment for this course appears to be appropriate and will likely evolve over the next several years. All curriculum and evaluation of learning is consistent with UOIT's degree level expectations.

2.7 Resources for all programs

- Adequacy of the administrative unit's planned utilization of existing human, physical and financial resources, and any institutional commitment to supplement those resources, to support the program.
- Participation of a sufficient number and quality of faculty who are competent to teach and/or supervise in the program.
- Evidence that there are adequate resources to sustain the quality of scholarship produced by undergraduate students as well as graduate students' scholarship and research activities, including library support, information technology support, and laboratory access.

One of the most impressive aspects of the Integrative neuroscience program involves the pooling of resources and infrastructure across the faculties of science, health science and social science. The program will capitalize on existing administrative staff to provide academic advisement, and teaching staff who oversee the safe delivery of laboratory experiences. There are eight faculty members who will deliver the neuroscience curriculum, all of whom demonstrate the expertise in a sub-discipline of neuroscience that is relevant to the new program. As discussed below, one recommendation for future expansion of the program involves a new faculty hire, although this not necessary for the initial delivery of the program.

There is a strong emphasis on experiential learning in the Integrative neuroscience program. UOIT is well equipped to sustain this aspect. In the faculty of science, I toured three undergraduate laboratories dedicated to bench work. This impressive facility will be instrumental in providing experiential learning in small group settings. In the faculty of health sciences, there is a very large room sectioned into two laboratory spaces to deliver experiential learning in human neuroscience. These facilities will supply excellent resources to sustain the quality of the program and also enable future growth of the program.

There is a library located on both campus sites that will provide adequate support. Information technology support is available in all three participating faculties and will be used to support the new program. Students are encouraged to bring their own computing device and have access to software and hardware support online.

2.8 Resources for undergraduate programs only

Evidence of and planning for adequate numbers and quality of: (a) faculty and staff to achieve the goals of the program; or (b) of plans and the commitment to provide the necessary resources in step with the implementation of the program;

The Integrative neuroscience program anticipates the delivery of core neuroscience courses via delivery through the existing eight faculty members with expertise in neuroscience. There appears to be some overlap in expertise within both the human and nonhuman neuroscience faculty members, and this will be important for course coverage during sabbatical's or other relevant leaves of absence. The initial plan is to have Dr. Sean Forrester direct the Integrative neuroscience program. Dr. Forrester is a midcareer scientist who leads a very productive and successful research program related to ion channels in nematodes. At this stage in his career, he is well-positioned to direct this program without compromising the magnitude and quality of the research generated in his own lab. Dr. Forrester is also one of UOIT's first faculty hires and has a solid foundational knowledge of the institution and of its members. Dr. Forrester will also act as the point of contact for Integrative neuroscience students and his welcoming demeanour is likely to encourage these interactions.

(c) planned/anticipated class sizes; (d) provision of supervision of experiential learning opportunities (if required); and (e) the role of adjunct and part-time faculty.

The program will be capped at 25 students in year one, ultimately leading to 100 in program students. The size of the program was created strategically to enable the addition of one laboratory section only. This addition is not expected to tax or create a strain on existing teaching workload. However, the long-term plan (6-10 years) may involve expansion of the program and class sizes will be expected to grow accordingly.

As indicated above, experiential learning is a key element of the Integrative neuroscience program in both the first two years of foundational science and the last two specialized years of study. The faculty members contributing to these experiential learning opportunities have the expertise to deliver high quality education.

From my discussions, the entire program will proceed without the immediate need to hire additional faculty. This seems entirely reasonable given the breadth of expertise that exists from the contributing faculty members that span the three faculties. We did not discuss the contribution of adjunct or part-time faculty.

2.9 Quality and other indicators Definition and use of indicators that provide evidence of quality of the faculty (*e.g.*, qualifications, research, innovation and scholarly record; appropriateness of collective faculty expertise to contribute substantively to the proposed program).

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

In addition to the qualifications of Dr. Sean Forrester (described above), the expertise of other faculty members will be instrumental in enabling a successful Integrative neuroscience program. Following my on-site visit with several of the faculty members (Dr. Jason Chung, Dr. Matthew Shane, Dr. Bernadette Murphy, Dr. Paul Yielder) and visits to research laboratories, both shared and individual spaces, I am confident that the collective group have both the expertise and resources to provide an exceptional education in Integrative neuroscience. The researchers involved in the program have laboratories equipped with cutting-edge techniques for studying molecular and systems level neuroscience. These laboratories and research programs are funded through tri-council and provincial agencies and have a strong graduate and undergraduate trainee presence.

NOTE: Reviewers are urged to avoid using references to individuals. Rather, they are asked to assess the ability of the faculty as a whole to deliver the program and to comment on the appropriateness of each of the areas of the program (fields) that the university has chosen to emphasize, in view of the expertise and scholarly productivity of the faculty.

3. OTHER ISSUES

There are no outstanding issues from my perspective, particularly since the program unites a collection of resources that are already in excellent operation. I have several recommendations intended to enhance the quality of the program.

4. SUMMARY AND RECOMMENDATIONS

NOTE: The responsibility for arriving at a recommendation on the final classification of the program belongs to the Appraisal Committee. Individual reviewers are asked to refrain from making recommendations in this respect.

The Integrative neuroscience program will be a unique, one-of-a-kind program in Canada. The program offers a solid foundation in basic science over the first two years of study and subsequently offers two years of study within the field of neuroscience incorporating sub disciplines including neurophysiology, neural mechanics, cell and systems level neuroscience, cognitive and behavioural neuroscience, health and mental health neuroscience. This unique program is the result of a collaboration among three faculties. As a result, this program needs only minor financial resources to be created and to be sustained. During my site visit I met with a very collegial, hard-working and dedicated faculty and staff complement who are enthusiastic about the delivery of the new program.

Because of the diverse neuroscience content offered by the program, and also because of the appealing program title, I anticipate this program will attract very high-achieving students. Further, this program is likely to be popular and strategies for admission selection will need consideration. I offer some recommendations aimed to enhance the quality and success of this exciting new program.

Last, in my opinion, graduates of the Integrative neuroscience program will be strong candidates for graduate school programs in related fields. These students will have exposure to several aspects of neuroscience research and will have knowledge of their genuine interests in animal or human models and whether molecular, systems-level or behavioural neuroscience best suits their interests.

Admission processes

1. Due to the novelty of the program, a large number of applicants are anticipated. To ensure admission to the highest achieving students a two or three tiered approach to admission is suggested. For students that achieve a particular grade threshold, they may be invited to submit an essay and/or attend an interview.

2. There also exists the potential desire for non-first-year students in neighbouring programs to enrol in this new program. One suggestion to ensure equity in this regard is to grandfather this program to high achieving students who are entering second or third year who may transfer to Integrative neuroscience. Similar to the first year cohort, a particular grade threshold may be established.

Student satisfaction

Gauging student satisfaction in the program will be important for ensuring longevity of the program.

1. One recommendation is to provide entry survey opportunities for the first year cohorts to assess their learning expectations and desires.
2. Similarly, providing an exit survey at the end of the fourth program year can be used to assess the perception of program attributes including but not limited to leadership opportunities, experiential learning, access to instructors, access to resources, instructor quality, courses most enjoyed etc.

Academic curriculum
The Integrative neuroscience program may benefit from the following minor adjustments.

1. Remove the fourth-year course HLSC4471U musculoskeletal biomechanics since this course may be taken as an elective within the program.

2. Replace PSYC3060U Personality psychology with PSYC2010U developmental psychology in semester six as it would seem the latter course is more in line with the content projected in the Integrative neuroscience program.

3. Move BIOL4820U Neuropharmacology from semester eight to semester seven to reduce the workload slightly in the final term of study that, at present, appears to be quite high.

4. Consider the inclusion of a fourth-year directed readings course specific to the Integrative Neuroscience program. The rationale for this inclusion relates to the anticipated demand for the NEUR 4410U Integrative Neuroscience Thesis course that may not have the capacity to accommodate all students within their fourth year who qualify for this course. Offering an alternative directed-reading course does not impose demands on the lab resources of faculty. It may be that the faculty of science, health science and social science provide a financial incentive to faculty members to promote acceptance of students in a directed-readings course. It is my understanding that the faculty of science currently offers $500 to faculty members for each thesis student accepted into their laboratory. A similar model may operate well for a directed readings course.

5. Consider making the NEUR 4410U Integrative Neuroscience thesis course one full year (two terms) course. The rationale for this is to create a degree of cohesion and unity for the Integrative neuroscience students. The intention is to create a sense of community among the students and program.

6. Consider adding content related to neuroscience career options as a seminar provided to third and/or fourth-year students in program.

7. Consider adding the course CSCI1040 “Introduction to programming for scientists” to the first year curriculum. The rationale for this relates to the relevance of computer programming to neuroscience.

Program description
In general the program provides a unique combination of neuroscience study that is well-founded in a basic science program. The description of the program could be modified slightly in the following ways.

1. The description of the Integrative neuroscience program is mainly focused on brain function. However, this description should be expanded to include the nervous system as a whole particularly since the spinal cord and peripheral nervous system are major components.

2. The course descriptions for year two and three courses should identify learning objectives that are specific to human versus non-human species.

3. A checklist of skills, theory and expertise gained in program should be created. This checklist can be used for recruitment and also by graduates of the program for admission to subsequent academic programs or employment.

Academic guidance
The Integrative neuroscience program offers several electives to be taken during the third and fourth year of program. These science and non-science electives are diverse. For example, electives may offer content specific to a particular aspect of human neuroscience, while others relate to very distinct topics.
1. To facilitate the selection of appropriate courses tailored to the growing and changing interests of students and program, a roadmap should be provided at the start of first year. This roadmap should outline the various possibilities of study by emphasizing the elective opportunities that align with specific subdisciplines of neuroscience.

Program enhancement
As the program gains momentum, the following suggestions may be relevant to sustain the growth and obtain the high quality.

1. Requests for funds to purchase equipment used to enhance the teaching of human neuroscience laboratories. For example, an electroencephalography system and portable electromyography amplifiers would create additional experiential learning opportunities for students with an interest in human neuroscience.

2. A new faculty hire in computational neuroscience, neural or artificial networks would enhance the program by providing expertise in this area. Although this is not necessary for the creation of the program it would certainly contribute to the breadth of neuroscience knowledge obtained by students enrolled in the program.

3. A new course in human neurophysiology would enhance the understanding of neuroscience from a human perspective. At present the neuroscience curriculum is very rich and diverse and a new course such as this may offer an excellent elective option for students wishing to pursue human related neuroscience.

Signature: Alison J. Nunn

Date: November 8, 2018

Response to the External Review Team Report for the

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Bachelor of Science (Honors) in Integrative Neuroscience

Submitted By Greg Crawford, Dean of Science

November 22, 2018

Introduction

We thank Dr. Aimee Nelson for the very positive, enthusiastic and comprehensive report on our proposed BSc program in Integrative Neuroscience. It was clear from the report that we have developed a very unique program that clearly meets the degree level expectations for a university science program. The collaborative environment between Faculties at UOIT has facilitated the development of this unique program. The reviewer was able to meet a highly capable and enthusiastic group of faculty and staff members who will collaborate to deliver the program and ensure that the students are meeting the learning outcomes. We are happy to respond to the report and consider the recommendations.

Summary of Recommendations and Responses

In this section we restate the recommendations summarized in the external review team report along with our comments and responses

A. Due to the novelty of the program, a large number of applicants are anticipated. To ensure admission to the highest achieving students a two or three tiered approach to admission is suggested. For students that achieve a particular grade threshold, they may be invited to submit an essay and/or attend an interview.
Response: This will be important to consider once we gauge demand. As with other high-demand programs in the Faculty of Science, grade threshold will be the primary cut off for this program. We will work with our colleagues in the Faculties of Health Science and Social Science and Humanities to continuously monitor whether our admissions standards are capturing the best students for this program and at the same time providing equal opportunity for students.

B. There also exists the potential desire for non-first-year students in neighbouring programs to enrol in this new program. One suggestion to ensure equity in this regard is to grandfather this program to high achieving students who are entering second or third year who may transfer to Integrative neuroscience. Similar to the first year cohort, a particular grade threshold may be established.
Response: We will consider the transfer of students from other programs in the Faculty of Science on a case-by-case basis. This is the current process in the Faculty of Science and students do have the ability to transfer between programs. We will work with our colleagues in the Faculties of Health Science and Social Science and Humanities to establish criteria for student transfer to the Integrative Neuroscience program.

C. One recommendation is to provide entry survey opportunities for the first year cohorts to assess their learning expectations and desires.
Response: This is an excellent suggestion which we will implement.

D. Similarly, providing an exit survey at the end of the fourth program year can be used to assess the perception of program attributes including but not limited to opportunities, experiential learning, access to instructors, access to resources, instructor quality, courses most enjoyed etc.
Response: This is an excellent suggestion which we will implement.

E. Remove the fourth-year course HLSC4471U musculoskeletal biomechanics since this course may be taken as an elective within the program.
Response: We agree and this has been removed. We will however develop a list of suitable electives based on perquisite requirements and suitability for the program.

F. Replace PSYC3060U Personality psychology with PSYC2010U developmental psychology in semester six as it would seem the latter course is more in line with the content projected in the Integrative neuroscience program.
Response: We agree and this has been changed

G. Move BIOL4820U Neuropharmacology from semester eight to semester seven to reduce the workload slightly in the final term of study that, at present, appears to be quite high.
Response: We will consider this seriously. We have to first determine the impact of this change on our Life Sciences program which BIOL4820 is also a core course.

H. Consider the inclusion of a fourth-year directed readings course specific to the Integrative Neuroscience program.
Response: We will consider adding additional elective course offerings such as directed studies as the program matures

I. Consider making the NEUR 4410U Integrative Neuroscience thesis course one full year (two terms) course.
Response: We have changed the Integrative Neuroscience course code from NEUR to NSCI. The thesis course is essentially one full year. Students who enrol in thesis must take NSCI 4410 in Fall and NSCI 4420 in winter. They will receive a single grade at the end of their winter semester. This is in line with our other thesis courses for other programs in the Faculty of Science.

J. Consider adding content related to neuroscience career options as a seminar provided to third and/or fourth-year students in program
Response: We agree and we will add this content to our Advanced Topics in Integrative Science in their fourth year. The plan is to have the program director teach this course. This will allow the director to closely monitor each cohort of outgoing students to ensure that they have achieved the learning outcomes from the program and allow the implementation of content related to career options.

K. Consider adding the course CSCI1040 “Introduction to programming for scientists” to the first year curriculum.
Response: We agree and this has been added

L. The description of the Integrative neuroscience program is mainly focused on brain function. However, this description should be expanded to include the nervous system as a whole particularly since the spinal cord and peripheral nervous system are major components.
Response: We agree and this has been added to the calendar description and additional parts of the proposal

M. The course descriptions for year two and three courses should identify learning objectives that are specific to human versus non-human species.
Response: This is included for many of our courses. We will request that the course instructors include this information for relevant courses that may not specify this.

N. A checklist of skills, theory and expertise gained in program should be created. This checklist can be used for recruitment and also by graduates of the program for admission to subsequent academic programs or employment.
Response: We agree and will work on generating this in time for our first cohort

O. To facilitate the selection of appropriate courses tailored to the growing and changing interests of students and program, a roadmap should be provided at the start of first year. This roadmap should outline the various possibilities of study by emphasizing the elective opportunities that align with specific subdisciplines of neuroscience.
Response: We agree and this will be generated for students in year 1. The cross-faculty curriculum committee will be meeting before the first cohort of students arrive to ensure that appropriate roadmaps for this program are implemented.

P. Requests for funds to purchase equipment used to enhance the teaching of human neuroscience laboratories.
Response: We agree and this will be done through our regular capital calls in the Faculty of Science.

Q. A new faculty hire in computational neuroscience, neural or artificial networks would enhance the program by providing expertise in this area. Although this is not necessary for the creation of the program it would certainly contribute to the breadth of neuroscience knowledge obtained by students enrolled in the program.
Response: We agree and this one area of expertise that we will consider as we plan for future hires for this program. The program director will be advocating for future hires in the Integrative Neuroscience program.

R. A new course in human neurophysiology would enhance the understanding of neuroscience from a human perspective
Response: We agree and will strongly consider a course such as this as the program matures

Revisions made to the proposal following External Review

List all revisions

1) Changed the term “brain” to “nervous system” in several parts of the introduction and calendar description
2) Added CSCI 1040 to winter semester Year 1. In order to maintain the number of free electives, the addition of CSCI 1040 was offset by the removal of BIOL2060- Fundamentals of Microbiology. BIOL2060 is not a prerequisite for any course in the Integrative Neuroscience program. The removal of BIOL2060 also allowed us to include PSYC 2010 which was recommended by the reviewer
3) Replaced PSYC 3060-Personality Psychology with PSYC 2010- Developmental Psychology
4) Removed HLSC4471U - Musculoskeletal Biomechanics from 4th year.
5) Included some small edits to improve wording in some sections
6) Other changes reflect the new start date of 2020