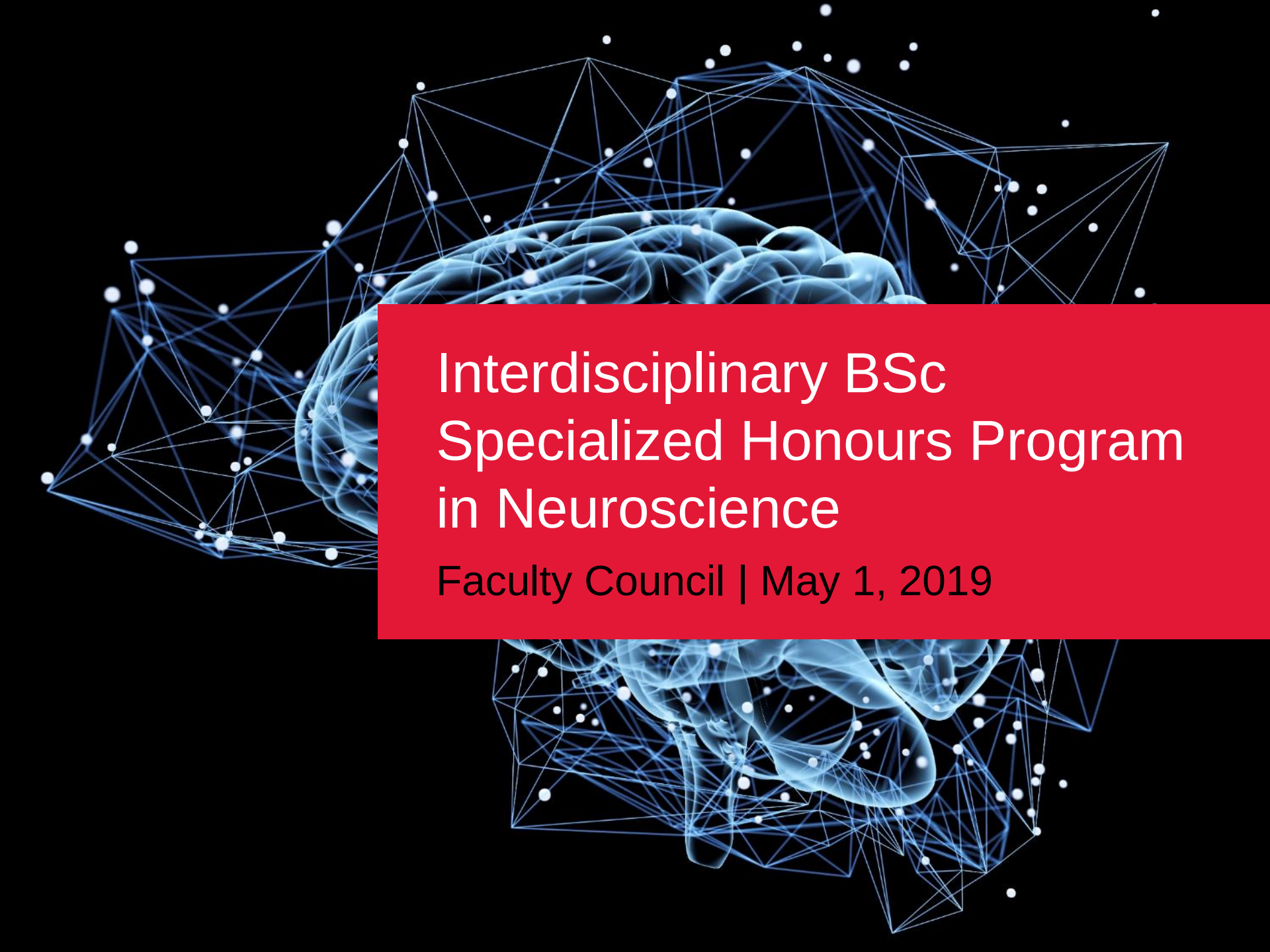


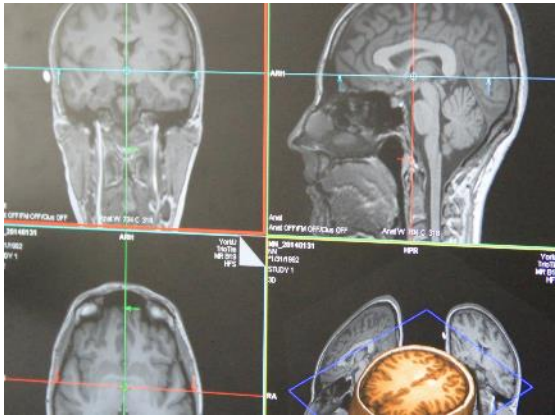
Interdisciplinary BSc Specialized Honours Program in Neuroscience

Faculty Council | May 1, 2019

Program Objectives

To provide students with:

- a broad and advanced exposure to cellular/molecular, cognitive/behavioral, & systems neuroscience;
- an undergraduate path into graduate studies;
- preparation for neuroscience related careers in academia, hospitals, or industry



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Why was the program created?

- Due to increased need/demand
  - pressing scientific challenges
    - 1 in 3 Canadians will be affected by a brain or nervous system disorder.
  - opportunity
    - $61 billion annually spent on neurological and mental health disorders in Canada (Canadian Brain Research Strategy)
    - increase in enrollments in Neuroscience programs in Ontario between 2009-2017.
  - interest by our students
    - 60% of York undergraduate survey respondents were somewhat or very interested in an undergraduate Neuroscience program
  - trained undergrads needed by researchers
- Increase enrollments in the Faculties of Science and Health
- Contribute to research intensification
- Increase undergraduate student quality

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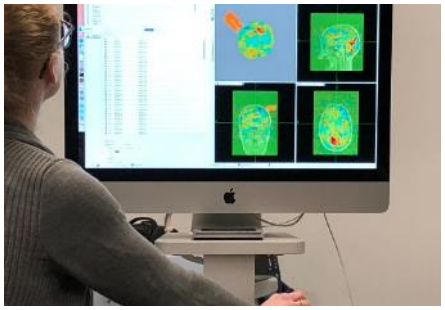
Why Kinesiology, Psychology, & Biology?

Interdisciplinary component between Science and Health

- course work and research integrates multiple disciplines
- consistent with other neuroscience programs.

Proposing: “Three pathways” program model



First cohort – Admission September 2020 to:

Faculty of Health

- Neuroscience - School of Kinesiology & Health Science

OR

- Neuroscience - Department of Psychology

OR

Faculty of Science

- Neuroscience - Department of Biology

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Admission Requirements

- Grade 12 performance (approx. 80%) based on 4 compulsory courses:
  - 12U Advanced Functions, Biology, Chemistry, and English

Note: Fall intake cap will be approximately 70 students.

  - Proportions of capped enrollment will be allotted among Psychology, Kinesiology & Health Science, and Biology.

- Secure spot in Neuroscience program beginning in 2nd year but students must:
  - complete required number of 1st year credits (27) and
  - maintain specified overall GPA (7.5) in 1st year

Summary of Degree Requirements

Course Code	Title	Credit	Status
BIOL 1000 3.00	Biology I	3	exists
BIOL 1001 3.00	Biology II	3	exists
PSYC 1010 6.00	Introduction to Psychology	6	exists
NRSC 1001 1.00	Frontiers of Neuroscience	1	new
NRSC 2000 3.00	Fundamental Molecular and Cellular Neuroscience	3	new
NRSC 2100 3.00	Systems, Behavioural and Cognitive Neuroscience	3	new
NRSC 2200 3.00	Neuroscience Techniques	3	new
PSYC 2021 3.00 or BIOL 2060 3.00 or KINE 2050 3.00	Statistics*	3	exists
NRSC 3000 3.00	Molecular and Cellular Neurobiology	3	new
PSYC 3250 3.00	Neural Basis of Behaviour	3	exists
KINE 3650 3.00	Functional Neuroanatomy	3	exists
NRSC 4000 6.00 or NRSC 4002 6.00	Neuroscience Capstone	6	new
	Chosen Specialized stream	12	exists
	Alternative Specialized stream	12	exists
	Total Credits:	**64**	

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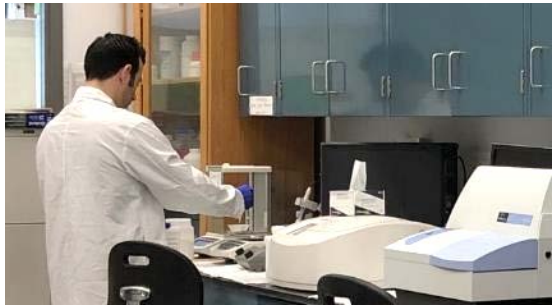
Example Degree Requirements: First & Final Year





First year: *keystone experience* *Frontiers of Neuroscience (NRSC 1001 1.00)*

- Purpose:
  - build a cohort of students
  - familiarize students with breadth of research
  - begin to learn about the purpose and function of research ethics

Final year: *capstone experience* *Individual/Team Research project (NRSC 4000/4002 6.00)*

- Purpose
  - integrate knowledge and apply research skills to contribute to an existing body of knowledge
  - practice/develop research citizenship (display autonomy & professional capacity)
  - practice and refine written and oral communication skills
  - Critically reflect on experience

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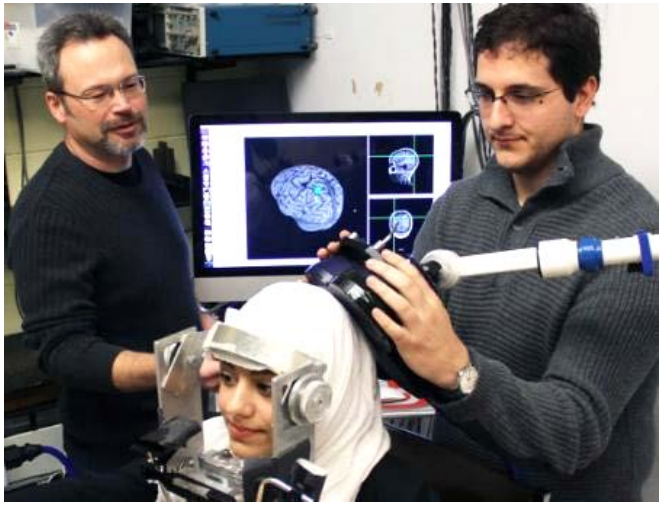
Key Differentiators

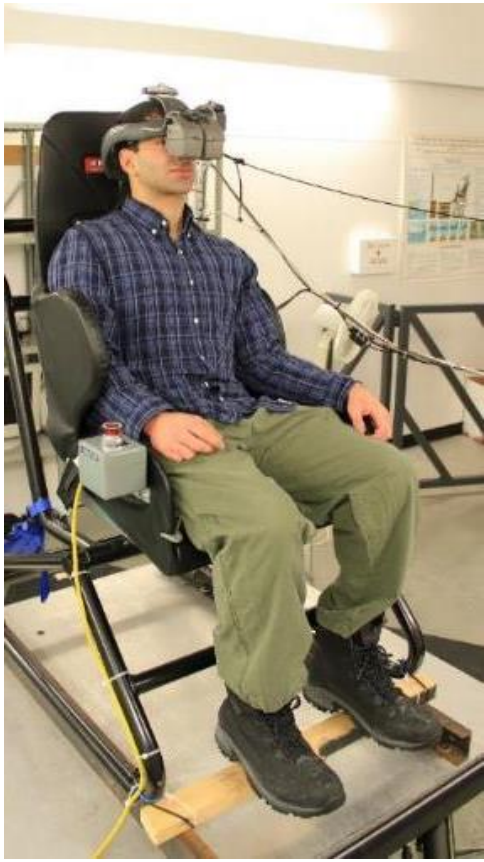
- Alignment of the neuroscience program level objectives with measurable course learning outcomes
- Experiential education
  - One minute paper, interviews (e.g., NRSC 1001)
  - critical reflections (e.g., NRSC 1001, 3000, 4000/4002)
  - research and/or laboratory participation (e.g., NRSC 4000/4002)
  - case studies (e.g., NRSC 2100)
  - journal article critiques (e.g., NRSC 2000, 2002)
- Technology enhanced learning/elearning
  - proposed flipped or blended course models, proactive use of LMS
  - simulations to see processes occur (e.g., NRSC 2000, 2100 2200)
  - leverage learning technologies (e.g., iClicker/REEF, mini-quizzes)
  - leverage video modules at Lynda.com (e.g., data visualization with excel, building podcasts, etc)
- Applied principles of universal design for learning
  - flexible, accessible, allow for choices

Key Differentiators cont'd

Significant faculty strengths:

- 40 faculty members conduct research in Neuroscience fields (4 Canada Research Chairs & 1 Distinguished Research Professor)





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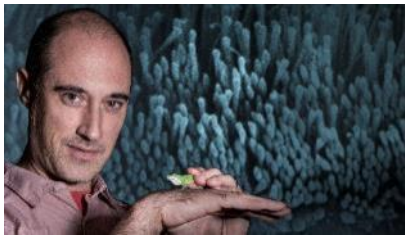
Confirmed Core Faculty

Christopher Bergevin | (Physics and Astronomy)
Steven Conner | (Biology)
Dorota Crawford | (Kinesiology & Health Science)
Doug Crawford | (Psychology) | Canada Research Chair
Joseph DeSouza | (Psychology)
Logan Donaldson | (Biology)
Mazyar Fallah | (Kinesiology & Health Science)
Ebrahim Ghafar-Zadeh | (Computer Science and Engineering)
Vinod Goel | (Psychology)
Laurence Harris | (Psychology)
Denise Henriques | (Kinesiology & Health Science)
Shayna Rosenbaum | (Psychology)
Lauren Sergio | (Kinesiology & Health Science)
Jennifer Steeves | (Psychology)
Dale Stevens | (Psychology)
Christine Till | (Psychology)
Gary Turner | (Psychology)
Niko Troje | (Biology)
Georg Zoidl | (Biology/Psychology) | Canada Research Chair





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Confirmed Affiliated Faculty

Ellen Bialystok | (Psychology) | Distinguished Research Professor
James Elder | (Computer Science and Engineering)
Erez Freud | (Psychology)
Mazen Hamadeh | (Kinesiology & Health Science)
Walter Heinrichs | (Psychology)
Susan Murtha | (Psychology)
Norm Park | (Psychology)

Plus additional *potential* core and affiliated faculty members not yet confirmed

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Thank you
Questions?

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