

DATE: May 21, 2020

TO: Senate

FROM: Dr. Dwight Deugo, Vice-Provost and Associate Vice-President (Academic), and Chair, Senate Quality Assurance and Planning Committee

RE: 2021-22 Calendar Curriculum Proposals
Undergraduate Major Modification

Background

Following Faculty Board approval and, as part of academic quality assurance, major curriculum modifications are considered by the Senate Committee on Curriculum, Admissions and Studies Policy (SCCASP) and the Senate Quality Assurance and Planning Committee (SQAPC) before being recommended to Senate.

Documentation

Recommended calendar language, along with supplemental documentation as appropriate, are provided for consideration and approval.

Major Modifications

- 1. Neuroscience B.Sc. Combined Honours**
SCCASP approval: May 5, 2020
SQAPC approval: May 7, 2020

Senate Motion May 29, 2020

THAT Senate approve the name change from Neuroscience B.Sc. Combined Honours to Neuroscience and Biology B.Sc. Combined Honours with effect from Fall 2021.

Template for Major Modifications: A1

MEMORANDUM

To: Vice-President's Academic and Research Committee (VPARC)

From: Matthew Holahan, Kim Hellemans, Owen Rowland and Nicolas Rodrigue – Department of Neuroscience and Department of Biology

CC: Charles MacDonald and Naomi Cappuccino

Date: March 10, 2020

Subject: Major Modification to Neuroscience Combined Honours, Track A1 (Name Change)

Modification Description

- A description of the new modification

Change the name of the Neuroscience B.Sc. Combined Honours program to Neuroscience and Biology B.Sc. Combined Honours

B.Sc. Combined Honours Neuroscience program

The B.Sc. Combined Honours Neuroscience is a legacy program, originally developed decades ago and offered jointly by the Departments of Biology and Psychology; the courses included in the program were therefore primarily a combination of PSYC and BIOL courses. Following the establishment of the Department of Neuroscience in 2010, whose faculty derived at the time entirely from within the Department of Psychology, the Combined Honours Neuroscience program has been run jointly by the Departments of Biology and Neuroscience. When the program was revised in 2017 (in line with changes to the Neuroscience and Mental Health BSc. Program), it was entirely revised to include new NEUR courses (rather than PSYC). Thus, as a combined honours program, there is an even distribution of course requirements between the two host departments. Changing the name of this program to 'Neuroscience and Biology B.Sc. Combined Honours' would better reflect the course content of this program and would also create a uniquely appealing program as it would be the only B.Sc. Biology and Neuroscience program currently available in Canada. Most other Neuroscience programs in Canada are hybrid programs that are not jointly held by two Departments, but rather a collection of courses that are taught by faculty members from diverse disciplines.

The principal rationale for curricular changes to the program name are:

1. Most combined honours programs are named after the composite disciplines
2. The current program name does not indicate that the program is a combined honours – this is the only way of ensuring no confusion

3. The new name would better reflect the actual content of the Major CGPA components (similar number of NEUR and BIOL courses are required at 3000 level and above)
4. More readily distinguishes the program from the other program offered by the Department of Neuroscience, Neuroscience and Mental Health

The B.Sc. Neuroscience Combined Honours program was initially established decades ago as a joint program between the Departments of Biology and Psychology. It was mainly composed of pre-existing courses offered by these two departments. Courses with a more explicit focus on neuroscience were limited to those offered by the Department of Psychology, with their neuroscience focus indicated by the PSYC X2XX course code, as follows:

PSYC 2200 [0.5]: Biological Foundations of Behaviour
PSYC 3200 [1.0]: Behavioural Neuroscience (Honours Seminar)
PSYC 3202 [0.5] Sensory Processes
PSYC 3203 [0.5]: Field Course in Animal Behaviour
PSYC 3204 [0.5] Drugs and Behaviour
PSYC 3205 [0.5] Psychopharmacology and Behavioural Medicine
PSYC 3207 [0.5] Human Neuropsychology
PSYC 4200 [0.5] Seminar on Current Research in Neuroscience
PSYC 4207 [0.5] Neuropsychology of Memory Disorders

With the separation of Neuroscience from Psychology in 2010, ownership of these courses was negotiated so that PSYC 3200, 3202, 3203, 3204 and 4200 would be fully transferred from psychology to neuroscience and renamed as NEUR courses (maintaining the same numeric designation to limit confusion). PSYC 2200 would similarly be renamed NEUR 2200, taught exclusively by Neuroscience faculty, but would remain cross-listed with its original PSYC 2200 designation. This cross-listing was subsequently removed at the request of the Department of Psychology, and PSYC 2200 is therefore no longer listed in the undergraduate calendar. PSYC 3205, 3207 and 4207 remained as PSYC courses as they had either not been offered for many years (PSYC 3205 and 4207) or were being actively taught exclusively by Psychology faculty who were not members of the Institute of Neuroscience, and who were remaining in the Psychology department (PSYC 3207). PSYC 3203 (now NEUR 3203) has, to the best of our knowledge, never been offered by either Psychology or Neuroscience, and remains in the calendar cross-listed as BIOL 3605. It will therefore not be considered further in the present discussion (though deleting it from the calendar is a recommendation listed at the end of this document).

Two additional Psychology courses that focused on either research methods or statistics were cross-listed as NEUR courses, given the importance of the course content to both Neuroscience and Psychology students, on the understanding that they would be taught exclusively by the Psychology department:

- PSYC 2001 [0.5]: Introduction to Research Methods in Psychology
- PSYC 2002 [0.5]: Introduction to Statistics in Psychology

Cross-listing of these courses has since been removed at the request of the Department of Psychology, with NEUR 2001 and NEUR 2002 now taught exclusively by members of the Department of Neuroscience.

Finally, NEUR 4908 [0.5] Honours Research Thesis was added to the calendar in 2011-12 to allow honours thesis students to complete a research project in Neuroscience and have NEUR reflected clearly on their transcript.

By the end of 2010, Neuroscience course and program offerings had therefore been negotiated as follows:

Courses

- NEUR 2001 [0.5]: Introduction to Research Methods in Psychology
 - Cross-listed as PSYC 2001, but taught exclusively by Department of Psychology
- NEUR 2002 [0.5]: Introduction to Statistics in Psychology
 - Cross-listed as PSYC 2002, but taught exclusively by Department of Psychology
- NEUR 2200 [0.5]: Biological Foundations of Behaviour
 - Cross-listed as PSYC 2200, but taught exclusively by Department of Neuroscience
- NEUR 3200 [1.0]: Behavioural Neuroscience (Honours Seminar)
- NEUR 3202 [0.5] Sensory Processes
- NEUR 3204 [0.5] Drugs and Behaviour
- NEUR 4200 [0.5] Seminar on Current Research in Neuroscience
- NEUR 4908 [1.0] Honours Research Thesis

Programs

Operation of the B.Sc. Neuroscience Combined Honours program was transferred from Psychology to Neuroscience. It therefore became a joint honours program between the Departments of Biology and Neuroscience. This transfer, including determination of faculty teaching assignments, was effective as of September 2012.

No changes to the program structure will be implemented; only a name change.

Impact on Other Programs (½ page)

There is really no impact on other programs. The Biology Department held a board meeting and faculty voted in favour to change the name of the Neuroscience B.Sc. Combined Honours program to Neuroscience and Biology B.Sc. Combined Honours. Biology faculty present were nearly unanimously in favour of the name change, except for one person against. Neuroscience faculty are in unanimous agreement to have the name change (indeed, it was a suggestion by external reviewers in our recent Cyclical Program Review).

There have been a few common question faculty members have raised on the change of name.

1. Won't Neuroscience then create another program called "Neuroscience"? There is no intent to do this – not even sure what this program would be or look like. It would be very difficult to create another program that is distinct enough from Neuroscience and Mental Health (NMH) or the Combined Honours program to get through the approvals process (i.e. Science Faculty Board and Senate)

2. Won't Neuroscience then change the name of the Neuroscience and Mental Health program to just Neuroscience? There is no intent to do this – we like the title of that program as it accurately reflects the programmatic / course offerings and is attractive to students seeking a program with a disease/mental health focus. Also note that the current research vision of the Department of Neuroscience is aligned with the brain in relation to stress and mental health. We want to keep the NMH name to reflect our research strengths
3. Won't enrolment go down if we change the name to include Biology? By the contrary, we think it will go up, especially if we coordinate our recruitment strategies for the Combined program. Also, the numbers in the Combined Honours program have remained strong (100+ students) despite the existence of the NMH program since 2012
4. But Neuroscience IS Biology – isn't that confusing/doesn't make sense to have them listed separately in the degree name. Agree. However, Neuroscience is also psychology, physiology, cognitive science, anatomy, pharmacology, etc... It is a discipline that embodies many other scientific domains/applications of study. What we offer programmatically, however, is the combination of two disciplines within Carleton University.

Societal Need

The combination of programmatic offerings that include courses on the function and structure of the nervous system, as well as basic cellular and molecular mechanisms and organismal physiology provides students with the knowledge and skills to solve many global problems, and provides the basis for diverse careers in health. Our graduates are well-trained to pursue careers in research (academic, industrial, or other), health care (e.g., nursing, occupational therapy, medicine), and other disciplines that may require strong analytical and critical thinking skills (e.g., health policy).

Student Demand

What are the benefits to students?

- Clarity as to the actual programmatic content (1/2 courses from biology, 1/2 courses from Neuroscience)
- Degree name reflects the combined honours of the two disciplines
- Clarity for first year students who think the Combined Honours program is the Neuroscience and Mental Health (NMH) program. Some see 'Neuroscience' when applying to the program and think that's it. Then they need to switch to NMH (which may create the impression of a retention issue for the Combined Honours program). Clarity with the program name will retain students into the program they wish to be in.
- Greater enrolment to the program! We believe that having Biology in the name would attract more students as they know what biology is coming out of high school (vs. neuroscience -not many know what that is)
- Some of our strongest students are in the Combined Honours program. Historically, these are the students who enter medical school (and graduate school); we want to further celebrate these students and enhance the profile of this program.
- In order to attract and promote students into this program, the Recruitment and Retention Committees of Biology and Neuroscience plan to meet prior to each recruiting cycle to co-develop recruitment strategies for the Combined Honours program and align our messaging.

- Clarity with advising students for each program
- Ability to appropriately guide students into programs that reflect either more physiology/cellular basis of the nervous system vs. more mental health/disease focus

Resources

- Faculty resources:* If additional faculty are required, there should be a clear indication of the anticipated source of funds (e.g., the line dean, the Financial Planning Group)
 >>> **No new faculty resources are needed. Only the name is changed.**
- Contract instructors:* if additional contract instructors are required, there should be a clear indication of the anticipated source of funds (e.g., the line dean, the Financial Planning Group)
 >>> **No new contract instructors are needed.**
- Administrative support:* If there is a need for additional administrative support, there should be a clear indication of the anticipated source of funds (e.g., the line dean, the Financial Planning Group)
 >>> **Administrative positions are already in place in both units and utilized for this program. No new positions are needed.**
- Library resources:* a Library Report will be requested by FGPA (graduate programs) or OVPAVPA (undergraduate programs). If additional base or fiscal funds are required, there should be a clear indication of the anticipated source of funds (e.g., the University Librarian, the line dean, the Financial Planning Group)
 >>> **No new library resources are needed for this name change.**
- Space:* will there be adequate space for additional faculty and graduate students? Will additional laboratory or other instructional space be required? Has the Space Management Committee been consulted in collaboration with the line dean? Are there incremental costs for renovations and/or construction? If so, what is the anticipated source of funds (e.g., the line dean, the Financial Planning Group)?
 >>> **Space is already in place for new Neuroscience labs (Health Science Bldg) and the established Biology labs (Tory and Nesbitt Bldgs). Students in the combined program have access to all of this space.**
- Equipment:* if there is a need for additional equipment, there should be a clear indication of the anticipated source of funds (e.g., the line dean, the Financial Planning Group)
 >>> **No new equipment is needed.**

Date Submitted: 04/20/20 11:52 am

Viewing: **HBS-6E : Neuroscience and Biology**
B.Sc. Combined Honours

Last approved: 03/22/19 9:29 am

Last edit: 04/20/20 11:51 am

Last modified by: sarahanneszabototh

Changes proposed by: sarahanneszabototh

In Workflow

1. **NEUR ChairDir UG**
2. **BIOL ChairDir UG**
3. **SCI Dean**
4. **SCI FCC**
5. **SCI FBoard**
6. **PRE SCCASP**
7. **SCCASP**
8. **SQAPC**
9. Senate
10. PRE CalEditor
11. CalEditor

Approval Path

1. 02/25/20 11:19 am
Matthew Holahan
(matthewholahan):
Approved for NEUR
ChairDir UG
2. 02/25/20 1:13 pm
SarahAnne Szabotoh
(sarahanneszabototh):
Approved for BIOL
ChairDir UG
3. 03/09/20 8:13 am
Naomi Cappuccino
(naomicappuccino):
Approved for SCI Dean
4. 04/20/20 10:05 am
Naomi Cappuccino
(naomicappuccino):
Rollback to Initiator
5. 04/20/20 1:35 pm
Matthew Holahan
(matthewholahan):
Approved for NEUR
ChairDir UG
6. 04/20/20 3:49 pm
SarahAnne Szabotoh
(sarahanneszabototh):
Approved for BIOL
ChairDir UG
7. 04/20/20 3:54 pm
Naomi Cappuccino
(naomicappuccino):
Approved for SCI Dean
8. 04/30/20 4:22 pm
Naomi Cappuccino

- (naomicappuccino):
Approved for SCI FCC
- 9. 04/30/20 4:28 pm
Naomi Cappuccino
(naomicappuccino):
Approved for SCI FBoard
- 10. 05/01/20 8:20 am
Sarah Cleary
(sarahcleary): Approved
for PRE SCCASP
- 11. 05/07/20 4:09 pm
Erika Strathearn
(erikastrathearn):
Approved for SCCASP

History

1. Apr 2, 2014 by sandra
2. May 5, 2014 by sandra
3. Feb 11, 2015 by Heather Martel (heathermartel)
4. Jan 8, 2016 by Ruth Hill-Lapensee (ruthhilllapensee)
5. Mar 16, 2017 by Lenore Gale (lenoregale)
6. Apr 3, 2017 by Sandra Bauer (sandrabauer)
7. Mar 22, 2019 by SarahAnne Szabotoh (sarahanneszabotoh)

Calendar Pages Using this Program [Neuroscience](#)
[Biology](#).

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|----------------|--------------------------------------------------------|
| Effective Date | 2021-22 |
| Workflow | majormod minormod |
| Program Code | HBS-6E |
| Level | Undergraduate |
| Faculty | Faculty of Science |
| Academic Unit | Department of Biology Department of Neuroscience |
| Degree | Bachelor of Science Honours |
| Title | Neuroscience and Biology B.Sc. Combined Honours |

Program Requirements

Neuroscience and Biology

B.Sc. Combined Honours (20.0 credits)

A. Credits Included in the Major CGPA (14.5 credits)

| | | |
|------------------------------------------------------------------|--------------------------------------------------------------|------------|
| 1. 5.5 credits in: | | 5.5 |
| NEUR 1202 [0.5] | Neuroscience of Mental Health and Psychiatric Disease | |
| NEUR 1203 [0.5] | Neuroscience of Mental Health and Neurological Disease | |
| NEUR 2001 [0.5] | Introduction to Research Methods in Neuroscience | |
| NEUR 2002 [0.5] | Introduction to Statistics in Neuroscience | |
| NEUR 2201 [0.5] | Cellular and Molecular Neuroscience | |
| NEUR 2202 [0.5] | Neurodevelopment and Plasticity | |
| NEUR 3001 [0.5] | Data Analysis in Neuroscience I | |
| NEUR 3002 [0.5] | Data Analysis in Neuroscience II | |
| NEUR 3204 [0.5] | Neuropharmacology | |
| NEUR 3206 [0.5] | Sensory and Motor Neuroscience | |
| NEUR 3207 [0.5] | Systems Neuroscience | |
| 2. 3.0 credits in: | | 3.0 |
| BIOL 1103 [0.5] | Foundations of Biology I | |
| BIOL 1104 [0.5] | Foundations of Biology II | |
| BIOL 2001 [0.5] | Animals: Form and Function | |
| BIOL 2104 [0.5] | Introductory Genetics | |
| BIOL 2200 [0.5] | Cellular Biochemistry | |
| BIOL 3305 [0.5] | Human and Comparative Physiology | |
| 3. 1.5 credits in BIOL or BIOC at the 3000 level or above | | 1.5 |
| 4. 1.0 credit from: | | 1.0 |
| NEUR 3301 [0.5] | Genetics of Mental Health | |
| NEUR 3303 [0.5] | The Neuroscience of Consciousness | |
| NEUR 3304 [0.5] | Hormones and Behaviour | |
| NEUR 3401 [0.5] | Environmental Toxins and Mental Health | |
| NEUR 3402 [0.5] | Impact of Lifestyle and Social Interactions on Mental Health | |
| NEUR 3403 [0.5] | Stress and Mental Health | |
| NEUR 3501 [0.5] | Neurodegeneration and Aging | |
| NEUR 3502 [0.5] | Neurodevelopmental Determinants of Mental Health | |
| NEUR 4301 [0.5] | Neurobiology of Energy Homeostasis | |
| NEUR 4302 [0.5] | Sex and the Brain | |
| NEUR 4303 [0.5] | Indigenous Health & Mental Health | |
| NEUR 4305 [0.5] | Immune-Brain Interactions | |
| NEUR 4306 [0.5] | The Neural Basis of Addiction | |
| NEUR 4600 [0.5] | Advanced Lab in Neuroanatomy | |
| 5. 2.0 credits from: | | 2.0 |
| BIOC 4007 [0.5] | Membrane Biochemistry | |
| BIOL 2600 [0.5] | Ecology | |
| BIOL 2301 [0.5] | Biotechnology I | |
| BIOL 2303 [0.5] | Microbiology | |
| BIOL 3307 [0.5] | Advanced Human Anatomy and Physiology | |

| | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------|
| BIOL 3605 [0.5] | Field Course I | |
| BIOL 3609 [0.5] | Evolutionary Concepts | |
| BIOL 3802 [0.5] | Animal Behaviour | |
| BIOL 3804 [0.5] | Social Evolution | |
| BIOL 4306 [0.5] | Animal Neurophysiology | |
| BIOL 4317 [0.5] | Neuroethology: The Neural Basis of Animal Behaviour | |
| BIOL 4802 [0.5] | Advanced Animal Behaviour | |
| CHEM 2204 [0.5] | Organic Chemistry II | |
| 6. 0.5 credit from: | | 0.5 |
| NEUR 4200 [0.5] | Seminar on Current Advances in Neuroscience | |
| NEUR 4202 [0.5] | Seminar on Current Research in Neuroscience and Psychiatric Disease | |
| NEUR 4203 [0.5] | Seminar on Current Research in Neuroscience and Clinical Neurology | |
| 7. 1.0 credit in neurophysiology, animal behaviour, neuropsychology or a related topic from: | | 1.0 |
| NEUR 4905 [1.0] | Honours Workshop | |
| NEUR 4907 [1.0] | Honours Essay and Research Proposal | |
| NEUR 4908 [1.0] | Honours Research Thesis | |
| BIOL 4905 [1.0] | Honours Workshop | |
| BIOL 4907 [1.0] | Honours Essay and Research Proposal | |
| BIOL 4908 [1.0] | Honours Research Thesis | |
| B. Credits not included in the Major CGPA (5.5 credits) | | |
| 8. 1.0 credit in: | | 1.0 |
| MATH 1007 [0.5] | Elementary Calculus I | |
| MATH 1107 [0.5] | Linear Algebra I | |
| 9. 1.5 credits in: | | 1.5 |
| CHEM 1001 [0.5] | General Chemistry I | |
| & CHEM 1002 [0.5] | General Chemistry II | |
| CHEM 2203 [0.5] | Organic Chemistry I | |
| 10. 1.0 credit in: | | 1.0 |
| PHYS 1007 [0.5] | Elementary University Physics I | |
| & PHYS 1008 [0.5] | Elementary University Physics II | |
| 11. 2.0 credits in approved courses outside of the faculties of Science and Engineering and Design (may include NSCI 1000) | | 2.0 |
| Total Credits | | 20.0 |

| | |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| New Resources | No New Resources |
| Summary | Name change to list both departments involved in the combined honours. |
| Rationale for change | Degree name reflects the combined honours of the two disciplines. Clarity as to the actual programmatic content (1/2 courses from biology, 1/2 courses from Neuroscience). |
| Transition/Implementation | The Recruitment and Retention Committees of Biology and Neuroscience will meet prior to each recruiting cycle to co-develop recruitment strategies for the Combined Honours program and align our messaging. |

Program reviewer comments **naomicappuccino (04/20/20 10:05 am):** Rollback: to add "and Biology" in the program requirements section. Thanks!