Undergraduate students' guide to

NEUROSCIENCE

at Dalhousie University

2026/27
Program Guidebook

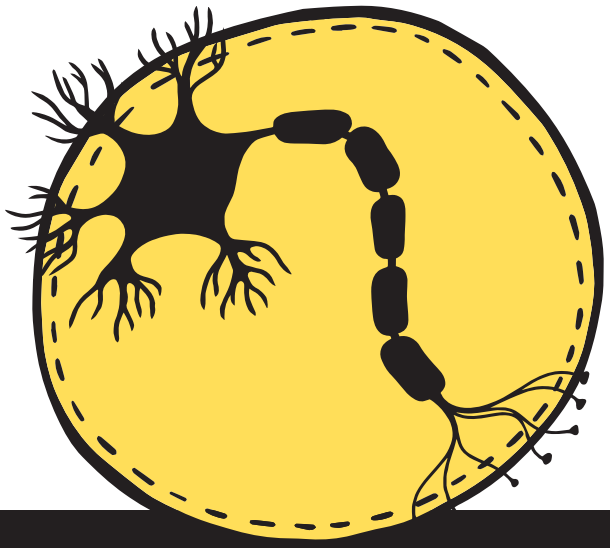
In this guide, you'll find information about:

NESC PROGRAM REQUIREMENTS

- **Major** in Neuroscience
- **Double-major** in Neuroscience
- **Honours** in Neuroscience
- **Combined honours** in Neuroscience
- **Minor** in Neuroscience
- Popular **certificates**

UNIVERSITY & PROGRAM INFO

- An **overview** of the Neuroscience program
- **General** degree requirements
- **Course registration** tips
- Independent & directed **research projects**
- Course **prerequisite** guides



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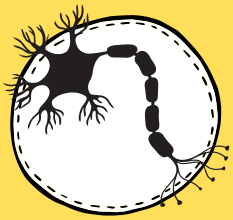


IS NEUROSCIENCE THE RIGHT PROGRAM FOR YOU?

Are you considering a degree in Neuroscience? Here are key things you should know to decide if it's right for you.

THE CANADIAN HANDBOOK OF CAREERS IN PSYCHOLOGICAL SCIENCE & NEUROSCIENCE

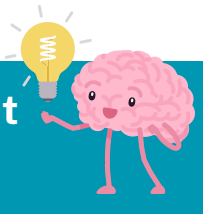
WHAT IS NEUROSCIENCE ABOUT?

The main goal of Neuroscience is to understand the brain. It is an interdisciplinary field that uses diverse approaches to study the **structure and function of nervous systems** (e.g., molecular, biochemical, behavioural, physiological, and developmental methods), and to explore the brain's **impacts on behaviour and cognition**. Neuroscience helps us understand how the nervous system normally works, and what happens to the nervous system when people have different neurological, psychiatric, or neurodevelopmental disorders.

WHAT TO EXPECT AS A NEUROSCIENCE MAJOR

Our program has a strong focus on teaching students to **think like neuroscientists**. All students take required courses in research methods, statistics, systems and cellular neuroscience, and cell biology. This training introduces students to tools that neuroscientists use to make discoveries. It also prepares students for the upper years of their program, where courses involve interpreting, evaluating, and applying empirical research. Students in our program learn **what we know** about neuroscience, and crucially, **how we know it**. The resulting analytic skills can help students use neuroscience to make informed decisions throughout their lives.

TIP: Interested in neuroscience, but not the stats & methods training it requires? A Minor in Neuroscience might be a good option for you!

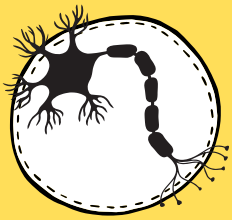


WHAT SKILLS DO STUDENTS DEVELOP?

Undergraduate degrees give students the opportunity to develop many **transferrable skills** (e.g., analytic thinking, communication, adaptability, self-regulation). Check out the Skillful Psychology Student resource [bit.ly/skillfulstudent] for a list (it applies to Neuroscience, too!). Reflect on the skills you're developing throughout your degree, and keep a record of examples. This will help you when applying to jobs and graduate/professional programs.

WHAT DO STUDENTS DO AFTER UNDERGRAD?

Some students pursue **graduate degrees in Neuroscience** or related fields (e.g. biology, biochemistry, pharmacology). These options are best for students who enjoy research, as they typically involve a research component. Others pursue **professional programs** (e.g., medicine, audiology, occupational therapy, public health). Graduate and professional programs require strong undergraduate performance and academic references — check program websites for admission requirements! Finally, students leverage their skills to find **bachelor's-level careers** in roles like data scientist, medical technician, and lab/research technician, or in fields like science communication, health care, or public policy.



FIRST-YEAR NEUROSCIENCE: REQUIREMENTS & TIPS

Are you a first-year student planning to complete your degree in Neuroscience? Here are key things you should know.

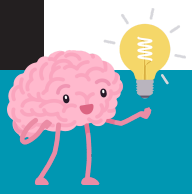
HOW TO DECLARE YOUR MAJOR

REQUIRED 1000-LEVEL COURSES

All Neuroscience programs (e.g., major, double-major, honours, etc.) have the same first-year program requirements. Remember to check the **Academic Calendar** for general university requirements that apply to all BSc and BA degrees!

- **PSYO 1011 or 1031 (or PSYO 1501):** Introduction to Psychology I*
- **PSYO 1012 or 1032 (or PSYO 1502):** Introduction to Psychology II*
- **BIOL 1010 or 1020 (or BIOL 1501):** Principles of Biology I*
- **BIOL 1011 or 1021 (or BIOL 1502):** Principles of Biology II*
- **CHEM 1011 or 1021:** Concepts in Chemistry I
- **CHEM 1012 or 1022:** Concepts in Chemistry II
- **MATH 1215:** Life Sciences Calculus (recommended), or MATH 1000
- 3 additional credit hours in Math or Statistics (**STAT 1060 recommended**)

*(Or equivalents. The Dalhousie Integrated Science Program (DISP) courses, **SCIE 1506/1507**, are considered equivalent to all of the above.)*



***NOTE: To pursue a major in Neuroscience, you need a final grade of B– or higher in all four of the PSYO and BIOL required courses.**

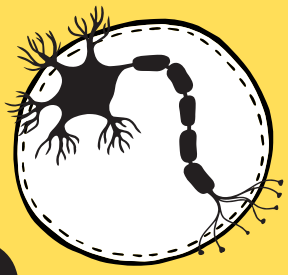
WHEN AND HOW TO DECLARE YOUR MAJOR

To declare your major, head to DalOnline and click Student Records. We recommend you do this early in Winter term of your first year, **BEFORE registering for second-year courses**! Some core, required 2000-level courses (NESC 2000, 2470, and PSYO 2501) are restricted to Psychology and Neuroscience majors. Leave time for the Registrar's Office to process and approve your major before registration opens! If your plans change, you can change your major at any point in DalOnline.

Most first-years will still be completing their 1000-level requirements when they declare their major. That's okay, as long as you're registered for the required PSYO & BIOL courses when you declare (and have a B– or higher in any you've completed). However, note that **you'll need final grades of B– or higher to continue** in the major.

TIP: Have the PSYO requirements, but not BIOL? You have the option to temporarily declare your major in Psychology so you can register for our restricted 2000-level courses (you can sign up for the NESC code). Once you have the missing requirements, switch your major to Neuroscience and continue with your degree.

WHAT ARE THE DEGREE OPTIONS IN NEUROSCIENCE?



Which degree is right for you? Use these summaries as a guide, and review guidebook & academic calendar pages for full requirements (click the headings below for quick access!)

MAJOR IN NEUROSCIENCE

A 120-credit-hour major is a "standard" bachelor's degree, where students **focus primarily on one field of study.** In addition to taking courses toward their major, students complete electives that add breadth to their education.

DOUBLE-MAJOR IN NEUROSCIENCE

If you're passionate about two subjects, a double-major may be for you! Double-majors provide a **general education in two subjects**. Keep in mind that you can also minor in a subject — this will be more flexible for scheduling than a double-major.

CONCENTRATED HONOURS IN NEUROSCIENCE

An honours degree provides **intensive training in research**. It is usually required for graduate programs with a research component (e.g., MSc or PhD in Neuroscience), but may not be required for professional programs. Students apply to the department the spring before their honours year (usually their final year).

COMBINED HONOURS IN NEUROSCIENCE

Think of this option as the honours student's equivalent of a double-major. Students focus on two subjects; they complete honours work in their **primary subject**, and complete requirements akin to a major in their secondary subject.

MINOR IN NEUROSCIENCE

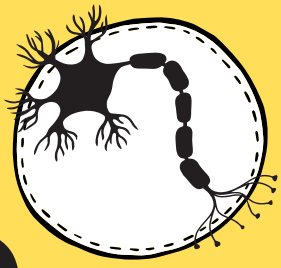
The term "minor" can mean two things. One is a **90-credit-hour minor**. This "general" bachelor's degree may appeal to students who want to enter the workforce quickly or go into a professional program that only requires some prior university work. The other type of minor involves completing at least **18 credit hours in the minor subject** as part of a 120-credit-hour degree (see the Academic Calendar for details).

WHAT ARE CERTIFICATES?

Certificates give students the opportunity to **build skills and experience in a specialized area of study**. Dalhousie offers a wide range of certificates that Neuroscience students may complete as an **addition** to their degree program.

NAVIGATION: Major | Double Major | Honours | Combined Honours | Minor | General Requirements

NESC REQUIREMENTS AT A GLANCE: MAJOR & HONOURS



This visual guide *summarizes* the required courses for the Major and Concentrated Honours in Neuroscience. Please read your program's guidebook & academic calendar pages for full details!

YEAR 1 (INTRODUCTORY COURSES)

PSYO 1011* (with B- or higher)	BIOL 1010* (with B– or higher)	CHEM 1011*	MATH 1215*	GENERAL ELECTIVE
PSYO 1012* (with B- or higher)	BIOL 1011* (with B- or higher)	CHEM 1012*	MATH/STAT ELECTIVE	GENERAL ELECTIVE

*__Or equivalent.__ In Psychology & Neuroscience, equivalent courses are listed in the calendar's course descriptions under "**EXCLUSIONS**"

When deciding what to take for your General Electives, make sure your plans include the General BSc/BA requirements!

YEAR 2 (FOUNDATIONAL NESC COURSES)

NESC 2000 (Research Methods) †	PSYO 2501 (Statistical Methods I)	NESC 2570 (Cellular Neuroscience)	2000-LEVEL NESC ELECTIVE [1]	GENERAL ELECTIVE
NESC 2470** (Systems Neuroscience)	BIOL 2020 (Cell Biology)	2000-LEVEL NESC ELECTIVE [1]	GENERAL ELECTIVE	GENERAL ELECTIVE

† To apply for the **Honours program** in Neuroscience or Psychology, students must receive a B+ or higher in NESC/PSYO 2000. For the **major**, only a pass (D or higher) is required.

[1] Selected from NESC 2130, 2140, 2150, 2160, BIOC 2300, BIOL 2030

PHYL 2041 is **equivalent to NESC 2470. Taking both is like repeating a course; only the attempt with the highest grade will count.

YEARS 3 & 4 (MAJOR IN NEUROSCIENCE)

There are 20 courses in this section (8 NESC; 12 electives). Spread them across MULTIPLE years (e.g., some Year 3, the rest Year 4)

3000-LEVEL NESC LAB CREDIT [2]	3000- or 4000-LEVEL NESC ELECTIVE [3]	3000- or 4000-LEVEL NESC ELECTIVE	3000- or 4000-LEVEL NESC ELECTIVE	TWELVE (12) GENERAL ELECTIVES
3000-LEVEL NESC LAB CREDIT [2]	3000- or 4000-LEVEL NESC ELECTIVE [3]	3000- or 4000-LEVEL NESC ELECTIVE	3000- or 4000-LEVEL NESC ELECTIVE	

[2] Selected from NESC 3051, 3131, 3133, 3134, 3137, 3161, 3165, 3370, 3371, 3440, 3505. (3100/3101 can also be used for **3 credit hours** of lab requirement; the other 3 credit hours count as a 3000-level NESC elective)

[3] Selected from NESC 3162, 3170, 3180, 3190, 3227, 3237, 3264, 3270, 3271, 3670, 3770, 3970, PATH 4100, PHAC 3001, PHAC 3030, PHAC 4001, PHAC 4403, PHAC 4409

YEARS 3 & 4 (CONCENTRATED HONOURS IN NESC)

There are 20 courses in this section (11 NESC; 9 electives). Spread them across MULTIPLE years (e.g., some Year 3, the rest Year 4)

3000-LEVEL NESC LAB CREDIT [2]	3000-LEVEL NESC LAB CREDIT [2]	3000- or 4000-LEVEL NESC ELECTIVE [3]	3000- or 4000-LEVEL NESC ELECTIVE [3]	3000- or 4000-LEVEL NESC ELECTIVE	3000- or 4000-LEVEL NESC ELECTIVE
NESC 4901 (Honours Foundation) †	NESC 4902 (Honours Thesis) †	PSYO 3502 (Statistical Methods II) †	4000-LEVEL NESC/PSYO SEMINAR [4]	4000-LEVEL NESC/PSYO SEMINAR [4]	NINE (9) GENERAL ELECTIVES

† Honours students complete 4901, 4902, and 3502 **during** their honours year (not before). Seminars are also typically completed during the honours year.

[4] All 4000-level NESC and PSYO courses (except 4901/2) count as a seminar. Seminars are typically **restricted to honours students**.

GENERAL BSc & BA DEGREE REQUIREMENTS

The university stipulates that all BSc and BA students must complete a set of general requirements (in addition to program requirements). For the full, definitive list of these requirements, check academiccalendar.dal.ca.

ACADEMIC CALENDAR

HOW TO RUN A DEGREE AUDIT

SUBJECT GROUPINGS (BSc and BA)

All BSc and BA students must complete at least 6 credit hours in ***each*** of three subject groupings: (1) **Language and Humanities**, (2) **Social Sciences**, and (3) **Life and Physical Sciences**. Ideally, these should be completed in the first 60 credit hours.

WRITING REQUIREMENT (BSc and BA)

Students must complete 6 credit hours in a set of **approved writing courses**. See the Academic Calendar for the list of courses; these can also be used toward a subject grouping. Students should complete this requirement early, preferably in their first year. The 3 credit-hour course **SCIE 1111** satisfies the full writing requirement for BSc students, and the 3 credit-hour course **ENGL 1111** satisfies the full writing requirement for BA and BSc students.

MATHEMATICS REQUIREMENT (BSc only)

All BSc students must complete at least 6 credit hours in math or statistics courses (these cannot also be used toward a subject grouping). See the Academic Calendar for details. Note that **PSYO 2501 and PSYO 3502 do *NOT* count** toward the BSc Mathematics Requirement.

LANGUAGE REQUIREMENT (BA only)

All BA students must complete at least 6 credit hours in a single language (these cannot also be used toward a subject grouping). See the Academic Calendar for eligible courses. **BA students majoring in Psychology may choose to complete the Mathematics Requirement** (see above) instead of the language requirement.

FIRST-YEAR BA REQUIREMENT (BA only)

Students completing a Bachelor of Arts must complete either **ASSC 1300** (Introduction to Humanities) or **ASSC 1400** (Introduction to Social Sciences) within their first 30 credit hours.

DISTRIBUTION REQUIREMENT (BA only)

Within their last 90 credit hours, BA students must complete 6 credit hours in each of **two subjects** other than their major. For **double-majors**, this is 6 credit hours in a *single* subject outside their majors.

"RESTRICTED/OUTSIDE ELECTIVES" (BSc and BA)

Students may take unlimited electives from programs **within** the Faculties of Science, Arts & Social Science, Computer Science, Agriculture, and the College of Sustainability. However, **there are limits on the number of credit hours that can be taken from programs OUTSIDE of these faculties**. See the Academic Calendar (College of Arts & Science "General Degree Requirements" page) for details, and watch for "ignored" courses at the bottom of your degree audit that may exceed this limit!

COURSE REGISTRATION TIPS FOR NESC/PSYO STUDENTS

RUN DEGREE AUDITS REGULARLY

The Degree Audit Reporting System (**DARS**) gives a snapshot of your degree progress and the requirements you have left to complete. Did you know you can add **planned courses** or run a **"what-if" audit** to see your progress toward a different program?

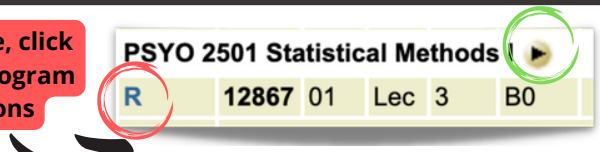
HOW TO RUN A DEGREE AUDIT

CONFIRM COURSE REQUIREMENTS

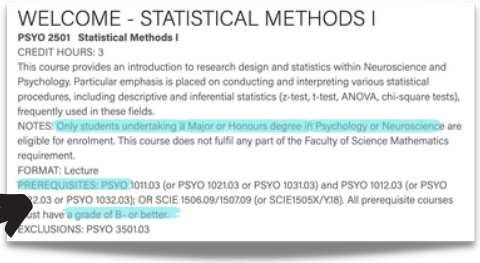
Courses have **prerequisites**, **grade minimums**, and/or **program restrictions** so students have the background they need. If you don't meet these requirements, you can't take the course. However, you can register for a course if you will have completed all prerequisites **before** it begins (e.g., you're taking the prereq in Fall and the course requiring it is in Winter). Students who don't successfully meet a prerequisite are removed from later courses that require it.

Check courses' calendar descriptions for requirements!

In timetable, click R to view program restrictions



Click arrow to view calendar description



HAVE BACKUP COURSES IN MIND!

Some courses may fill quickly, and we can't guarantee students a spot in specific courses. If your first choices are full, which other courses will let you make progress?

GRADUATING, BUT CAN'T GET COURSES YOU NEED?

We won't let space constraints prevent you from graduating on time! Email **pnugpc@dal.ca** if you are entering your graduating year **and** are missing a PSYO/NESC program requirement. Although we can't guarantee a spot in specific courses, we will find you something that fulfills your missing PSYO/NESC requirement(s)!

UNDERSTAND CROSS-LISTED COURSES

Some courses count toward both Psychology and Neuroscience degrees. These **cross-listed** courses have separate PSYO and NESC codes, but they're the same course. You can register for **either** code, and it will count toward your program requirements (e.g, a Neuroscience major can join PSYO 3190). If one code is full, check to see if the other has space available!

ON A COURSE'S WAITLIST?

Watch your Dal email! If you are admitted from the waitlist, the instructor will email you. You'll have 3 business days to claim your spot before the system drops you from the waitlist. **If you decide not to take a course, please take yourself off the waitlist!** This makes room for your peers who want the class. Note: Being on a waitlist doesn't guarantee a spot in the class.

CHECK YOUR STUDENT ACCOUNT

Holds on your student account may prevent you from registering. **Instructors can't override these holds**, and they have no way to save you a spot until holds are cleared. Contact the Registrar's Office if you need help with a hold on your account!

REGISTRATION STATUS

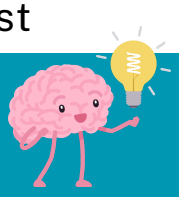
MAJOR IN NEUROSCIENCE (120 CREDIT HOUR)

NESC Program Requirements

REQUIREMENTS AT THE 2000-LEVEL

- **NESC/PSYO 2000:** Methods in Experimental Psych & Neuro
  - Students need a B+ or higher to apply for honours. However, there is no grade minimum for the major (only a pass is required; D or higher)
- **PSYO 2501:** Statistical Methods I
- **NESC/PSYO 2470:** Systems Neuroscience *(or PHYL 2041)*
  - NESC/PSYO 2470 and PHYL 2041 are equivalent courses. If you take both, it's treated like you repeated a course. You will only get credit for **ONE** (whichever mark is higher).
- **NESC/PSYO 2570:** Cellular Neuroscience
- **BIOL 2020:** Cell Biology
- 6 credit hours (**2 courses**) from the **2000-level NESC electives** list

TIP: When choosing 2000-level courses, look ahead to our 3000- and 4000-level courses. What prerequisites will you need for the upper-year classes that interest you? Use the NESC course list pages in this guidebook as a resource!



REQUIREMENTS AT THE 3000+ LEVEL

Complete these requirements **during your upper years**. There are no specific courses you must take in third vs. fourth year. Spread your NESC requirements across multiple years, mixed with electives that interest you!

- 6 credit hours (**2 courses**) from the 3000-level **NESC lab credit** list.
- 6 credit hours (**2 courses**) from the 3000-level **NESC lecture/elective** list (*excluding* NESC 3011/3012).
- An additional 12 credit hours (**4 courses**) of NESC courses **at or above the 3000 level**, including courses on the NESC lab list, 3000-level NESC lecture/elective list (*including* NESC 3011/3012), and independent/directed projects.

NOTE: 4000-level NESC courses **can** count toward this requirement. However, 4000-level courses are **typically restricted to honours students**. Non-honours students should plan to meet this requirement with 3000-level courses.

How many NESC* credit hours (beyond the 1000 level)?

Minimum 45 credit hours, maximum 60 credit hours

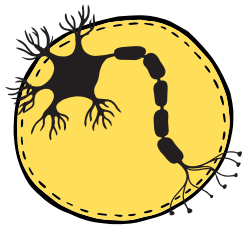
(i.e., you have room for up to 5 "extra" NESC* courses beyond the minimum requirements. Don't exceed your maximum!)

IMPORTANT NOTE:

All BSc/BA programs have a **maximum** # of credit hours. Extra courses are **ignored**, which may leave you without enough credits to graduate.

*Includes NESC-approved courses (e.g., BIOL 2020, BIOC 2300, PHAC 3030, etc.) if these are applied toward your NESC program.

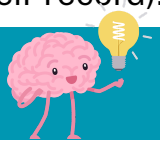
DOUBLE-MAJOR IN NEUROSCIENCE (120 CR/H)



Neuroscience as **primary** or **secondary** subject?

Students may pursue a degree that combines a major in Neuroscience with a major in another subject. Students in a double-major must select one as the **primary** subject (appears first on their academic record) and the other as the **secondary** subject (appears second on their record).

NOTE: Students *CAN'T* do a double-major combining Neuroscience and Psychology, given how much these programs overlap.



When you graduate, **you need to have more advanced credit hours in your primary subject**.

NESC Requirements

REQUIREMENTS AT THE 2000-LEVEL (BOTH PRIMARY & SECONDARY)

- **NESC/PSYO 2000:** Methods in Experimental Psych & Neuro
  - Students need a B+ or higher to apply for honours. However, there is no grade minimum for the major (only a pass is required; D or higher)
- **PSYO 2501:** Statistical Methods I
- **NESC/PSYO 2470:** Systems Neuroscience *(or PHYL 2041)*
  - NESC/PSYO 2470 and PHYL 2041 are equivalent courses. If you take both, it's treated like you repeated a course. You will only get credit for **ONE** (whichever mark is higher).
- **NESC/PSYO 2570:** Cellular Neuroscience & **BIOL 2020:** Cell Biology
  - If your other program also requires BIOL 2020, take an extra course from the NESC 2000-level electives list in place of BIOL 2020. Courses can only count toward **one** program, not both.
- 3 credit hours (**1 course**) from the **2000-level NESC electives** list

NESC PRIMARY: 3000+ LEVEL REQUIREMENTS

- 6 credit hours (**2 courses**) from the 3000-level **NESC lab credit** list.
- 6 credit hours (**2 courses**) from the 3000-level **NESC lecture/elective** list (*excluding* NESC 3011/3012)
- An additional 6 credit hours (**2 courses**) of NESC courses **at or above the 3000 level**
  - See 'Major in NESC' page for a note on 3000- and 4000-level courses that fulfill this

NESC SECONDARY: 3000+ LEVEL REQUIREMENTS

- 6 credit hours (**2 courses**) from the 3000-level **NESC lab credits** list.
- An additional 12 credit hours (**4 courses**) of NESC courses **at or above the 3000 level**
  - See 'Major in NESC' page for a note on 3000- and 4000-level courses that fulfill this

How many NESC* credit hours (beyond the 1000 level)?

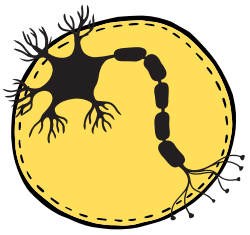
Minimum 36 credit hours, maximum 54 credit hours

(i.e., you have room for up to 6 "extra" NESC* courses beyond the minimum requirements. Don't exceed your maximum!)

IMPORTANT NOTE:
All BSc/BA programs have a **maximum** # of credit hours. Extra courses are **ignored**, which may leave you without enough credits to graduate.

*Includes NESC-approved courses (e.g., BIOL 2020, BIOC 2300, PHAC 3030, etc.) if these are applied toward your NESC program.

CONCENTRATED HONOURS IN NEUROSCIENCE (120 CR/H)



NESC Honours: Departmental Admission Criteria

Students apply to the department **at the end of the winter term before they intend to complete honours** (e.g., end of 3rd year if completing honours in 4th year). Each year's deadline will be posted on our website.

Honours provides **intensive training in research**. Visit our honours website for information on the work involved, and tips to decide if honours is right for you!

Admission requirements:

- **B+ or higher** in NESC/PSYO 2000
- Average of **A- or higher** in the last **six** completed NESC courses (at time of application)
- Confirmed, eligible **supervisor**

NESC Honours Program Requirements

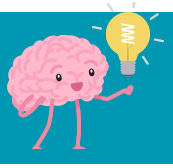
REQUIREMENTS AT THE 1000- AND 2000-LEVELS

- Identical to the 120-credit-hour Major in Neuroscience.

REQUIREMENTS AT THE 3000+ LEVEL

- 6 credit hours (**2 courses**) from the 3000-level **NESC lab credit** list.
- 6 credit hours (**2 courses**) from the 3000-level **NESC lecture/electives** list (*excluding* NESC 3011/3012).
- An additional 6 credit hours (**2 courses**) of NESC courses **at or above the 3000 level**, including courses on the NESC lab list, 3000-level NESC lecture/elective list (*including* NESC 3011/3012), and independent/directed projects.
  - See 'Major in NESC' page for a note on 4000-level courses

NOTE: You need all of the 3000-level requirements to *graduate* with honours, but you DON'T need them all to *apply* for honours. You can complete missing 3000-level requirements during your honours year.



HONOURS YEAR REQUIREMENTS (4000-LEVEL)

- **NESC 4901:** Honours Foundation (B– or higher required for 4902)
- **NESC 4902:** Honours Thesis
- **PSYO 3502:** Statistical Methods II
- **6 credit hours** of NESC and/or PSYO **honours seminar** classes
  - All **4000-level** NESC/PSYO courses (aside from 4901/4902) are honours seminars

How many NESC* credit hours (beyond the 1000 level)?

Minimum 54 credit hours, maximum 66 credit hours

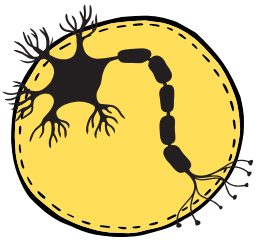
(i.e., you have room for up to 4 "extra" NESC* courses beyond the minimum requirements. Don't exceed your maximum!)

IMPORTANT NOTE:

University policy stipulates that Honours students must earn a **C or better** in **ALL** program-related courses.

*Includes NESC-approved courses (e.g., BIOL 2020, BIOC 2300, PHAC 3030, etc.) if these are applied toward your NESC program.

COMBINED HONOURS IN NEUROSCIENCE (120 CR/H)



NESC Honours: Departmental Admission Criteria

Students can complete an honours degree that combines Neuroscience with another subject (other than Psychology). **If NESC is your primary subject, our departmental requirements for admission are identical to those of the Concentrated Honours**. Students should ensure they meet any honours admission requirements in their other subject, as well.

TIP: The term "combined honours" can be misleading! Students complete honours work (including thesis) in their PRIMARY subject, and complete requirements akin to a double-major in their secondary subject. You DON'T need a thesis project that combines both disciplines.

NESC as the **primary** honours subject

REQUIREMENTS AT THE 1000- AND 2000-LEVELS

- Identical to the 120-credit-hour Double Major in Neuroscience.

REQUIREMENTS AT THE 3000 LEVEL

- 6 credit hours (**2 courses**) from the **NESC lab credit** list
- An additional 3 credit hours (**1 course**) of NESC courses **at or above the 3000 level**, including courses on the NESC lab list, 3000-level NESC lecture/ elective list, and independent/directed projects.
  - See 'Major in NESC' page for a note on 4000-level courses

HONOURS YEAR REQUIREMENTS (4000-LEVEL)

- Identical to the Concentrated Honours in Neuroscience.

NESC as the **secondary** honours subject

1000- AND 2000-LEVEL REQUIREMENTS

- Identical to the 120-credit-hour Double Major in Neuroscience.

3000-LEVEL REQUIREMENTS

- 6 credit hours (**2 courses**) from the **NESC lab credit** list
- An additional 12 credit hours (**4 courses**) of NESC courses **at or above the 3000 level** (same options as listed above under NESC Primary)

How many NESC* credit hours (beyond the 1000 level)?

NESC Primary: Minimum **42**, maximum **54** credit hours
NESC Secondary: Minimum **33**, maximum **54** credit hours

IMPORTANT NOTE:
University policy stipulates that Honours students must earn a **C or better** in **ALL** program-related courses.

*Includes NESC-approved courses (e.g., BIOL 2020, BIOC 2300, PHAC 3030, etc.) if these are applied toward your NESC program.

MINOR IN NEUROSCIENCE

90-credit-hour minor (BSc only)

A **90-credit-hour** degree requires less specialization in a single subject than a 120-credit-hour major. With a typical course load, it can usually be completed in three years.

Students who complete this degree graduate with a **Minor** in Neuroscience, rather than a major.

REQUIREMENTS:

- Minimum **18**, and maximum **36**, credit hours in Neuroscience (above the 1000 level)
- Complete all **general** degree (BSc) requirements, and 90 credit hours total

Minor as an addition to a 120-credit-hour major/honours

Students completing a **120-credit-hour** degree, majoring in a subject other than Neuroscience, may choose to complete a minor in Neuroscience. They must complete a minimum of **18**, and maximum of **36**, credit hours in Neuroscience (above the 1000 level).

Please note that students majoring in Neuroscience *can't* minor in Psychology. Similarly, students majoring in Psychology *can't* minor in Neuroscience.

NOTE: NESC 2000, 2470, and PSYO 2501 are restricted to majors. However, if you have completed them and switch to a minor, they can be used to fulfill minor requirements.

POPULAR CERTIFICATES

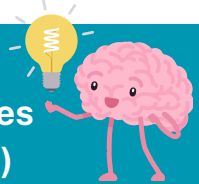
Optional addition to your degree program

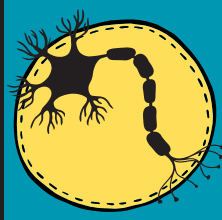
Did you know that you can **build skills in a specialized area** by adding a certificate to your degree? Dalhousie offers many certificates that vary in their structure and requirements. Students who graduate with a certificate will receive a notation on their transcript and a certificate of completion from the Registrar's Office.

Certificates that are popular among NESC/PSYO students include: Animal Behaviour, Disability Management, Indigenous Studies, Genetics, Human Physiology, Medical Humanities, Neurotechnology Innovation, Science Communication and Leadership.

For a full list of certificates, and the requirements of each, check **academiccalendar.dal.ca**!

NOTE: Students *can't* double-count the same course toward two programs at once (e.g., a major and minor). However, you typically *can* double-count courses toward your program and a certificate (check your certificate's requirements!)





2000-LEVEL NEUROSCIENCE CORE, REQUIRED COURSES

All students completing a major or honours degree in Neuroscience must complete the following courses. These courses are the foundation of our program, and they give students tools to critically evaluate neuroscientific/psychological claims.

NESC COURSES & EXAMPLE SYLLABI

NESC/PSYO 2000: Research Methods in Experimental Psychology and Neuroscience

- **Required for:** All 3000- and 4000-level NESC courses, ***except*** for NESC/PSYO 3165, 3162, 3170, 3180, 3227, 3264, 3670, 3970, and NESC 3440
  - Note: Courses listed here require may use NESC/PSYO 2000 as prerequisite, but allow other prerequisites in lieu of NESC/PSYO 2000 (e.g., a course may require NESC/PSYO 2000 **OR** BIOL 2020)
- **Grade requirement:** B+ or higher required for honours eligibility & 3011/3012

WHY THIS REQUIREMENT?

Studying research methods helps students to evaluate evidence for neuroscientific claims, understand why studies sometimes disagree, and understand **how we know** what we know about psychology & neuroscience. This course prepares students to think critically about research and to communicate research findings. The foundation it provides will give you tools to **make evidence-based decisions** and **apply neuroscience responsibly** in real-world contexts.

PSYO 2501: Statistical Methods I

- **Required for:** Many lab credits, including PSYO/NESC 3131, 3133, 3137, and 3505
- **Grade requirement:** B or higher required for PSYO/NESC 3505

WHY THIS REQUIREMENT?

Statistics helps us turn data into meaningful conclusions. Studying statistics helps students **understand what data mean**, evaluate how confident we can be in research findings, and identify where the limits of research evidence lie. **Statistical literacy** is essential for interpreting research, assessing real-world claims, and using neuroscience in evidence-based ways. Statistics skills are also useful in many **non-academic careers**.

NESC/PSYO 2470: Systems Neuroscience

- **Required for:** NESC 3051, 3134, 3170, 3227, 3270, 3271, 3370, 3371, 3505, 3670, 3770, PATH 4100. **Can be used toward:** NESC 3180 (or one of MICI 2100/BIOL 2020), 3237 (or take 2570), 3264 (or take BIOL 2020), PHAC 4403 & PHAC 4409 (or take one of NESC 2570/BIOC 2300)

NESC/PSYO 2570: Cellular Neuroscience

- **Required for:** NESC 3165, 3370, 3371, 3270. **Can be used toward:** NESC 3970 (or take BIOL 2020 or 2030)

BIOL 2020: Cell Biology

- **Required for:** NESC 3440. **Recommended for:** NESC 3670. **Can be used toward:** NESC 3165 (or take 2000), 3237 (or take 2470), 3264 (or 2000 and 2470), 3970 (or take 2570 or BIOL 2030), PHAC 4403 & 4409 (or take one of NESC 2470/BIOC 2300)

2000-LEVEL NEUROSCIENCE ELECTIVE COURSE LIST

These courses are open to students who have completed PSYO 1011 and 1012 (or equivalents) with final grades of B– or higher in both (exceptions are noted below). Use them to explore different subfields of Neuroscience & prepare for upper-year courses!

NESC COURSES & EXAMPLE SYLLABI

NESC/PSYO 2130: Introduction to Cognitive Psychology

- **Required for:** NESC/PSYO 3133, 3137, 3190
- **Recommended for:** NESC/PSYO 3227, 4130
- **Can be used toward:** NESC/PSYO 3131 (or take 2150), 3134 (or take 2090)

NESC/PSYO 2140: Learning - Conditioning and Motivation

- **Can be used toward:** Animal Behaviour Certificate

NESC/PSYO 2150: Perceptual Processes

- **Required for:** NESC/PSYO 3051
- **Can be used toward:** NESC/PSYO 3131 (or take 2130), Human Physiology Certificate

NESC/PSYO 2160: Animal Behaviour

- **Required for:** NESC/PSYO 3162, Animal Behaviour Certificate
- **Recommended for:** NESC/PSYO 4160

BIOC 2300: Introduction to Biochemistry

- **Prerequisites:** BIOL 1010, CHEM 1011, and CHEM 1012, or equivalents, all with grades of C or higher (or instructor's consent).
- ***Note:*** This list only includes courses that count toward Neuroscience requirements. BIOC 2300 may be a prerequisite for additional courses in other programs.

BIOL 2030: Genetics and Molecular Biology

- **Prerequisites:** BIOL 1010 (or equivalent), with a grade of C or higher. CHEM 1011 and CHEM 1012 are recommended.
- **Recommended for:** NESC/PSYO 3670
- **Can be used toward:** NESC/PSYO 3970, PHAC 4403 (or take PSYO/NESC 2470 or 2570), PHAC 4403 (or take PSYO/NESC 2470 or 2570)
- ***Note:*** This list only includes courses that count toward Neuroscience requirements. BIOL 2030 may be a prerequisite for additional courses in other programs.

3000-LEVEL NEUROSCIENCE LAB CREDIT LIST

Not all courses are offered every year. Check dal.ca/timetable!

NESC COURSES & EXAMPLE SYLLABI

NESC/PSYO 3051: Research Methods in Sensation and Perception

- Requires NESC/PSYO 2000, NESC/PSYO 2470, and NESC/PSYO 2150

NESC/PSYO 3131: Research Methods in Attention

- Requires NESC/PSYO 2000, PSYO 2501, and one of NESC/PSYO 2130 or 2150

NESC/PSYO 3133: Research Methods in Memory

- Requires NESC/PSYO 2000, PSYO 2501, and NESC/PSYO 2130

NESC/PSYO 3134: Research Methods in Psycholinguistics

- Requires NESC/PSYO 2000, NESC/PSYO 2470, and one of NESC/PSYO 2130 or PSYO 2090

NESC/PSYO 3137: Research Methods in Cognitive Neuroscience

- Requires NESC/PSYO 2000, PSYO 2501, and NESC/PSYO 2130

NESC/PSYO 3161: Measuring Behaviour

- Requires NESC/PSYO 2000

NESC/PSYO 3165: Neuroethology

- Requires NESC/PSYO 2570, and either NESC/PSYO 2000 or BIOL 2020

NESC/PSYO 3370: Advanced Methods in Neurobiology

- Requires NESC/PSYO 2000, NESC/PSYO 2470, and NESC/PSYO 2570

NESC/PSYO 3371: Neuronal Organization Laboratory

- Requires NESC/PSYO 2000, NESC/PSYO 2470, and NESC/PSYO 2570

NESC 3440: Neuroanatomy

- Requires BIOL 2020 or permission of the instructor

NESC/PSYO 3505: Neural Data Science

- Requires NESC/PSYO 2000, PSYO 2501 (with a B or higher), and NESC/PSYO 2470

NESC/PSYO 3100 & 3101: Independent Research in Neuroscience

- See Independent & Directed Research Projects. Fulfills 3 credit hours toward lab requirement (the other 3 credit hours = NESC elective at or above the 3000 level)

3000-LEVEL NEUROSCIENCE LECTURE/ELECTIVES LIST

Not all courses are offered every year. Check dal.ca/timetable!

NAVIGATION: Major | Double Major | Honours | Combined Honours | Minor | Visual Guide

NESC 3011 & 3012: Experiential Learning in Science Communication (6 credit hours total)

- Requires NESC/PSYO 2000 (B+ or better), advanced NESC/PSYO courses, and instructor permission

NESC COURSES & EXAMPLE SYLLABI

NESC/PSYO 3162: Advanced Animal Behaviour

- Requires NESC/PSYO 2000 (or BIOL 3062 or BIOL 3630), and NESC/PSYO 2160

NESC/PSYO 3170: Hormones and Behaviour

- Requires NESC/PSYO 2470 (or equivalent)

NESC/PSYO 3180: Psychoneuroimmunology / Ecological Immunology

- Requires BIOL 1010 and 1011 (or equivalents), and one of NESC/PSYO 2470, MICI 2100, or BIOL 2020

NESC/PSYO 3190: Psycholinguistics

- Requires NESC/PSYO 2000 and NESC/PSYO 2130

NESC/PSYO 3227: Principles of Human Neuropsychology

- Requires NESC/PSYO 2470 (or equivalent); NESC/PSYO 2130 is recommended

NESC/PSYO 3237: Drugs and Behaviour

- Requires NESC/PSYO 2000, and one of NESC/PSYO 2470 or 2570

NESC/PSYO 3264: The Science of Sleep

- Requires NESC/PSYO 2000 and NESC/PSYO 2470 (or equivalent), or BIOL 2020

NESC/PSYO 3270: Developmental Neuroscience

- Requires NESC/PSYO 2000, NESC/PSYO 2470 (or equivalent), and NESC/PSYO 2570

NESC/PSYO 3271: Developmental Origins of Health and Disease

- Requires NESC/PSYO 2000 and NESC/PSYO 2470 (or equivalent)

NESC/PSYO 3670: Genes, Brain, and Behaviour

- Requires NESC/PSYO 2470, BIOL 1010 and 1011 (or equivalents). BIOL 2020 and 2030 recommended.

NESC/PSYO 3770: Behavioural Neuroscience

- Requires NESC/PSYO 2000 and NESC/PSYO 2470 (or equivalent)

NESC/PSYO 3970: Molecular Neuroscience

- Requires NESC/PSYO 2570 (or BIOL 2020 or BIOL 2030)

PATH 4100: Critical Thinking in Neuropathology

- Requires NESC/PSYO 2470 (or equivalent)

PHAC 3030: Pharmacology: The Drugs Around Us

- Requires students to be in third year or above (i.e., completed at least 60 credit hours)

PHAC 4403: Systems Pharmacology I

- Requires one of NESC/PSYO 2570, NESC/PSYO 2470 (or equivalent), or BIOC 2300

PHAC 4409: Systems Pharmacology II

- Requires one of NESC/PSYO 2570, NESC/PSYO 2470 (or equivalent), or BIOC 2300

NAVIGATION: Major | Double Major | Honours | Combined Honours | Minor | Visual Guide

INDEPENDENT & DIRECTED PROJECT COURSES

Interested in conducting research for course credit? Consider a directed or independent research project!

FULL GUIDELINES & SYLLABUS TEMPLATES

Linked under the sidebar!

Eligibility requirements:

- **B or higher** in NESC/PSYO 2000
- Average of **B+ or higher** in all completed NESC program courses at the 2000-level and above (i.e., major GPA of 3.3 or higher)
- Confirmed, eligible **supervisor** (see guidelines document for criteria)
- Submit **completed syllabus** & **ethics confirmation** by the dates specified in the guidelines document. Syllabus templates are provided in the guidelines document.

Independent Research Project: NESC/PSYO 3100/3101

3100 Fall | **3101** Winter

- **Multi-term** course in which one project spans Fall/Winter
- Must be completed in **consecutive** Fall and Winter terms

Students complete a Fall/Winter research project worth 6 credit hours total. The term **"independent"** is used in the course title because the two-semester duration lets students play an active role in helping to develop the project, collect & analyze data, interpret the results, and complete deliverables (e.g., presentations, reports, etc.).

Satisfies 3 credit hours toward the NESC **lab** requirement. The remaining 3 credit hours contribute to the "additional NESC courses at or above the 3000 level" requirement.

Directed Research Project: NESC/PSYO 3001 or 3002

3001 F, W, or S | **3002** F, W, or S

- **Single-term** project completable in 12 weeks (Fall, Winter, or Summer)
- First project = 3001
- If doing a second project, 3002. Must be **distinct** from the 3001 project.
  - May be with the same supervisor **or** a new one

Students complete a single-term research project (in any semester) worth 3 credit hours total. The term **"directed"** is used in the course title because supervisors play a larger role in developing the project (to ensure it is completable within the time constraints of a 12-week semester).

Students who have already completed a 3001 project have the **option** of completing a second directed research project under NESC/PSYO 3002. Guidelines are identical for 3001 and 3002. A 3002 project must have a distinct beginning & end point that separates it from the student's 3001 project (i.e., it **CAN'T be a continuation** of 3001). The topic may be similar, but it must be a **new** project.

NOTE: Students may earn a maximum of 6 credit hours from these research project courses. This means students can complete either one Independent Research Project (3100/3101; 6 credit hours) or 1–2 Directed Research Projects (3001 and 3002; 3 credit hours each).

Completing both an Independent and Directed Research Project would exceed this maximum (9 credit hours total). Excess credit hours would be ignored from the student's degree (i.e., the extra 3 credit hours cannot count toward NESC/PSYO requirements or overall credit hours).

Where should you go if you have **QUESTIONS?**

GENERAL DEGREE REQUIREMENTS

- Run a **degree audit** in DARS (learn how to use DARS here)
  - Try the 'what-if' audit and planned courses tools!
- Are you a first or second-year student? **Bissett Student Success Centre advisors** can help you plan your degree.

PSYCHOLOGY PROGRAM REQUIREMENTS

- Contact a **departmental advisor** (book meetings and/or email)
- Check out our **honours program** website
- View **Neuroscience course offerings** with example syllabi

GET INVOLVED WITH THE PROGRAM

- View Psychology & Neuroscience **faculty profiles**
- Social media: **@psychneurodal** on Instagram and Bluesky; follow us on Linkedin
- Follow our student societies: Dalhousie Association of Psychology Students (**DAPS**) and Undergraduate Neuroscience Society (**UNS**)

CAREER PLANNING RESOURCES

- Explore Dal's **career advising resources** & meet with an advisor
- Canadian Handbook for Careers in Psychological Science & Neuroscience (**free, online book**)
- Canadian Psychological Association (**CPA**) careers hub
- Develop and document your **transferrable skills** (use the Skillful Psychology Student resource & worksheet as a guide)

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