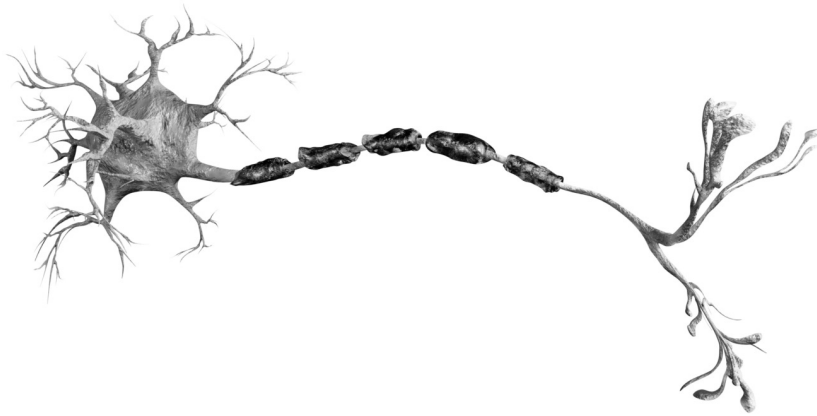


# A Student's Guide to Neuroscience

at Dalhousie University

2022/23



In this guide, you will find information about:

- University Requirements
- First-Year Requirements
- Major in Neuroscience (120-credit hour)
- Double-Major with Neuroscience
- Honours in Neuroscience
- Combined Honours in Neuroscience
- Minor in Neuroscience
- Certificates
- Independent and Directed Research Projects



# University Requirements

## General Degree Requirements

The University mandates that students in a BA or BSc program must meet specific requirements to complete their degree. In addition to degree requirements, each program (e.g., Neuroscience) has a set of requirements necessary to complete the program. It is important to know both the degree and program requirements to ensure successful completion of a degree. For a full list of University requirements, please check the Academic Calendar.

## Subject Groupings

Course offerings within the College of Arts and Science are placed into three subject groupings: (1) Languages and Humanities, (2) Social Sciences, and (3) Life and Physical Sciences. All BA and BSc programs must include a minimum of 6-credit hours from each of the three subject groupings.

## Writing Course Requirements

An approved writing course or set of courses is required for all BA (6-credit hours) and BSc (6-credit hours) degrees. It is recommended that students complete the writing requirement early in their programs, preferably in their first year of study.

## Math Requirements (BSc)

A minimum of 6-credit hours in mathematics or statistics are required for all BSc programs. See Academic Calendar for list of approved courses.

## Language Requirements (BA)

BA students are required to obtain 6-credit hours in a language course or set of courses. See Academic Calendar for list of approved courses.



### Pro Tip:

Use the **Degree Audit Reporting System (DARS)** on DalOnline, to ensure you're on track for graduation. DARS will show you all the requirements you need for your degree; identifying those you've met and those you have yet to complete. You can even use it to see how your requirements might look if you switched programs or changed paths.

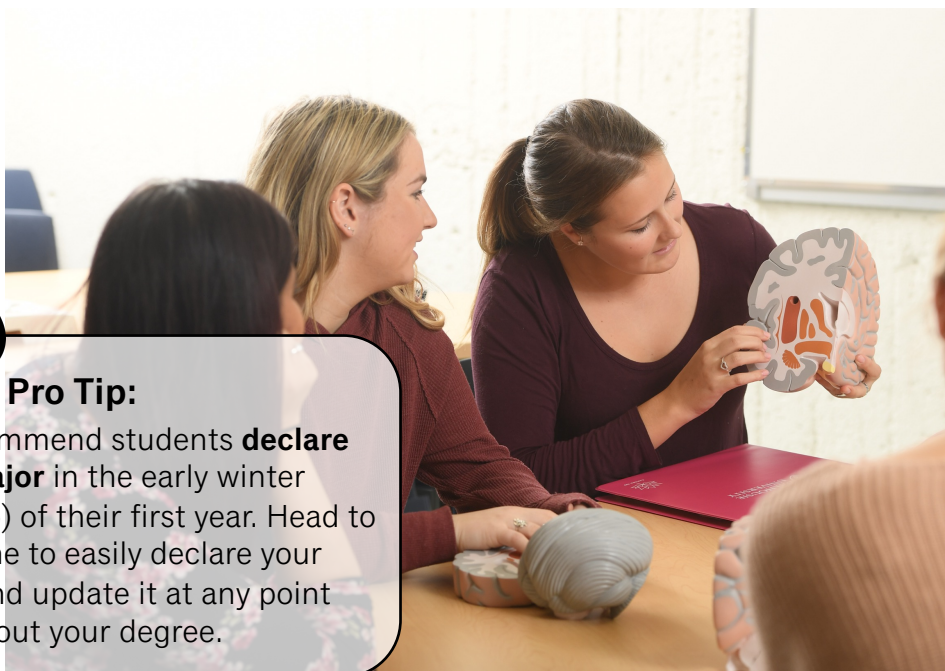
# First-Year Requirements

All Neuroscience programs (e.g., BSc, Honours, Double-Major, etc.) have the same program requirements for the first-year. Remember to check the Academic Calendar for University requirements for all BA and BSc degrees.

## 1000-level Program Requirements

- Introduction to Psychology I (PSYO 1011 or 1031)\*
- Introduction to Psychology II (PSYO 1012 or 1032)\*
- Biology I (BIOL 1010 or 1020)\*
- Biology II (BIOL 1011 or 1021)\*
- Chemistry I (CHEM 1011)
- Chemistry II (CHEM 1012)
- MATH 1215 (recommended) or MATH 1000
- Three (3) additional credit hours in Math or Statistics (STAT 1060 recommended)
- Note: the Dalhousie Integrated Science Program (DISP) is considered equivalent to all of the above (SCIE 1506/1507)

\* Final grade of B- or better is required in each of these four courses



### Pro Tip:

We recommend students **declare their major** in the early winter (Jan-Feb) of their first year. Head to DalOnline to easily declare your major and update it at any point throughout your degree.

# Major in Neuroscience (120-credit hour)

For 1000-level program requirements, see **page 2**. For all other University degree requirements, see the current Academic Calendar.

## 2000-level Program Requirements

- NESC 2000: Methods in Experimental Psychology & Neuroscience
- NESC 2470: Systems Neuroscience (*or equivalent*)
- NESC 2570: Cellular Neuroscience
- PSYO 2501: Statistical Methods
- BIOL 2020: Cell Biology
- Additional 6-credit hours selected from: NESC 2130, NESC 2140, NESC 2150, NESC 2160, BIOC 2300, BIOL 2030

## 3000/4000-level Program Requirements

- Two **lab** classes (6-credit hours), selected from:  
NESC 3051, 3131, 3133, 3134, 3137, 3161, 3165, 3370, 3371, 3440, 3100/3101  
(*Note: 3100/3101 can only be used to fulfill 3 credit hours of lab req*)
- Two classes (6-credit hours), selected from:  
NESC 3162, 3170, 3180, 3190, 3227, 3237, 3264, 3270, 3670, 3770, 3970,  
PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420
- Additional 12-credit hours of 3000/4000-level Neuroscience courses (*includes PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420*)



### Pro Tip:

Look ahead to 3000- and 4000-level courses to see what **pre-requisites** you may need, use that info to help you choose your 2000-level classes.



# Double-Major in Neuroscience (120-credit hour)

Students may take a degree that combines a Major in Neuroscience with another subject, such as Biochemistry or Biology. Students cannot take Psychology as their other subject. If electing to complete a Double-Major, students must select one subject as the primary and one as the secondary. Requirements for the 3000/4000-level differ depending on whether Neuroscience is selected as the primary or secondary subject.

## 2000-level Program Requirements (Primary or Secondary)

- NESC 2000: Methods in Experimental Psychology & Neuroscience
- NESC 2470: Systems Neuroscience (*or equivalent*)
- NESC 2570: Cellular Neuroscience
- PSYO 2501: Statistical Methods
- BIOL 2020: Cell Biology\*
- Additional 3-credit hours of 2000-level (or above) NESC course

## 3000/4000-level Program Requirements (Primary)

- Two **lab** classes (6-credit hours), selected from:  
NESC 3051, 3131, 3133, 3134, 3137, 3161, 3165, 3370, 3371, 3440, 3100/3101  
(*Note: 3100/3101 can only be used to fulfill 3 credit hours of lab req*)
- Two classes (6-credit hours), selected from:  
NESC 3162, 3170, 3180, 3190, 3227, 3237, 3264, 3270, 3670, 3770, 3970, PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420
- Additional 6-credit hours of 3000/4000-level NESC courses (*includes PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420*)

## 3000/4000-level Program Requirements (Secondary)

- Two **lab** classes (6-credit hours; see above for selection)
- Additional 12-credit hours of 3000/4000-level NESC courses (*includes PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420*)

### Pro Tip:

If you're **passionate about two topics** and can't decide, a double-major might be the option for you! But don't forget, you can also minor in a subject – an option that is more flexible for scheduling.

*\*If primary or secondary degree also requires BIOL 2020, students must take an additional 2000-level NESC credit*



# Honours in Neuroscience (120-credit hour)

Admission to the Honours program requires the approval of both the Department and the Registrar. Students apply at the end of the winter term (May) prior to when they intend to complete their Honours project (*e.g., end of 3<sup>rd</sup> year if completing Honours in 4<sup>th</sup> year*). Check Department website for official deadline.

## Requirements for admission:

- Grade of B+ (or higher) in NESC 2000
- Average of A- (or higher) in the last six (6) completed NESC courses
- Confirmed supervisor

## 2000-level Program Requirements

- Identical to 120-credit hour Major in Neuroscience (see page 3)

## 3000-level Program Requirements

- Two **lab** classes (6-credit hours), selected from:  
NESC 3051, 3131, 3133, 3134, 3137, 3161, 3165, 3370, 3371, 3440, 3100/3101  
(*Note: 3100/3101 can only be used to fulfill 3 credit hours of lab req*)
- Two classes (6-credit hours), selected from:  
NESC 3162, 3170, 3180, 3190, 3227, 3237, 3264, 3270, 3670, 3770, 3970,  
PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420

## 4000-level Program Requirements

- NESC 4901: Honours Foundation (*B- required to continue to 4902*)
- NESC 4902: Honours Thesis
- PSYO3502: Statistical Methods II
- Two 4000-level NESC/PSYO seminar classes (6-credit hours)  
(*Note: ALL 4000-lvl NESC/PSYO courses are seminar courses*)
- Additional 6-credit hours of 3000/4000-level Neuroscience courses  
(*includes PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420*)

## Important Note

- University policy stipulates that Honours students must receive a grade of C or better in all program-related courses

## Pro Tip:

If you're interested in pursuing an Honours degree, you may want to gain **hands-on research experience** in your 3<sup>rd</sup> year, by completing an Independent Research Project (*NESC 3100/3101 or 3001/3002*).







# Combined Honours in Neuroscience

Students may elect to complete a Combined Honours, combining Neuroscience with another subject. **Departmental requirements for admission are identical to those for an Honours program** (see page 6). For a full list of University requirements for a Combined Honours degree, please see the Academic Calendar. If electing to complete a Combined Honours, students must select one subject as the primary and one as the secondary\*. Requirements differ depending on whether Neuroscience is selected as the primary or secondary subject.

## 2000-level Program Requirements (Primary)

- NESC 2000: Methods in Experimental Psych & Neuro (*B+ or higher*)
- NESC 2470: Systems Neuroscience
- NESC 2570: Cellular Neuroscience
- PSYO 2501: Statistical Methods
- BIOL 2020: Cell Biology\*\*
- Additional 3-credit hours of 2000-level (or above) NESC course

## 3000-level Program Requirements (Primary)

- Two **lab** classes (6-credit hours; see Honours requirements for list)
- Additional 3-credit hours selected from:  
NESC 3162, 3170, 3180, 3190, 3227, 3237, 3264, 3270, 3670, 3770, 3970, PHAC 3001, PHAC 4403, PHAC 4409, PHYL 3420

## 4000-level Program Requirements (Primary)

- NESC 4901: Honours Foundation (*B- required to continue to 4902*)
- NESC 4902: Honours Thesis
- PSYO 3502: Statistical Methods II
- Two 4000-level NESC/PSYO seminar classes (6-credit hours)  
(*Note: ALL 4000-lvl NESC/PSYO courses are seminar courses*)

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## 2000-level Program Requirements (Secondary)

- If Neuroscience is the Secondary subject, students are only required to take the 15 credit-hours of core 2<sup>nd</sup>-year courses (NESC 2000, 2470, 2570, PSYO 2501, BIOL 2020) only.

## 3000-level Program Requirements (Secondary)

- Two **lab** classes (6-credit hours; see Honours requirements for list)
- Additional 12-credit hours of 3000/4000-level Neuroscience courses

\* Students cannot take Psychology as their other subject.

\*\*If primary or secondary degree also required BIOL 2020, students must take alt 2000-lvl NESC credit

## Minor in Neuroscience

Students majoring in a subject other than Neuroscience (*with the exception of Psychology*) may choose to complete a minor in Neuroscience.

**To complete a minor, students must complete 18-credit hours in NESC courses, above the 1000-level, (with a max of 6-credit hours of NESC-equivalent courses; e.g., BIOC 2300, etc.).**

Note: NESC 2000 & 2470 are restricted to majors only; however, if a student has completed these courses and switches from a major to a minor, these credits can be used to fulfill the requirements of the minor.

## Certificates (Additional to Program)

Did you know you can build skills in a specialized area of study by adding a certificate to your degree? Certificates are a great way for students to dive deeper into the topics that interest them, while also adding skills and experience to their resume.

Certificates vary in their learning structure and requirements. While some are course-based, many offer research, practicum and interdisciplinary learning components, ensuring students gain hands-on experience. By adding a certificate to your degree or current skill set, you'll ensure your resume stands out among the rest.

Dalhousie offers certificates in 15+ fields of interest. Certificates of particular interest to Neuroscience students include:

- **Animal Behaviour**
- **Genetics**
- **Neurotechnology Innovation**
- **Science Communication and Leadership**



### Pro Tip:

Although students often enroll in certificate programs in their 3<sup>rd</sup> or 4<sup>th</sup> year, it's a good idea to think about these in your 2<sup>nd</sup> year to ensure you've completed any necessary 2000-level courses. For a **full list of all certificates** offered at Dalhousie, and the full course requirements for each, head to the Academic Calendar (Academic Calendar -> College of Arts and Sciences -> Certificates)





# Independent & Directed Research Courses

Students wishing to gain hands-on experience in a lab and receive course credit, especially those interested in pursuing an Honours degree, may want to complete an Independent or Directed Research course.

## **NESC 3001 (or 3002) Directed Research**

A single-term project (3 credit hours) designed to ensure all work can be completed in a 12-week span. The term 'directed' is used in the course title because it is expected that the supervisor will play a larger role in developing the project – primarily to ensure it is a reasonable plan considering the time constraints. The final product of this project is often a final paper. These projects can be completed in any term: fall, winter, or summer. Students who have already completed a 3001 project have the option of completing a second 3-credit hour, single term project with the same supervisor or a different supervisor. The guidelines are identical for 3002 as for 3001. A 3002 project must have distinct beginning and end points and CANNOT be a continuation of a 3001 project (though the topic can be similar, it must be a new project).

## **NESC 3100/3101 Independent Research**

An independent research project spans the fall and winter terms (6 credit hours). The term 'independent' is used in the course title because it is expected that students will play a larger role in helping to develop the project, collect and analyze the data, interpret the results, and create a finished product (e.g., full report and/or poster and/or presentation). This course satisfies 3 credit hours towards the LAB component of our Psychology and Neuroscience programs. This project can only be completed during the fall-winter terms (consecutively).

## **Permission Requirements (for Directed or Independent):**

- Grade of B or higher in NESC/PSYO 2000
- Average of B+ or higher in all completed 2000-level and above NESC/PSYO courses
- Willing supervisor
- Electronic copy of signed syllabus sent to [pnistud@dal.ca](mailto:pnistud@dal.ca) prior to ADD/DROP date of corresponding start term. A template syllabus can be provided by emailing [pnistud@dal.ca](mailto:pnistud@dal.ca)

# Required Courses (Visual Guide)

The majority of our students tend to complete either the **Major in Neuroscience** (120-credit hour) or the **Honours in Neuroscience** program. Below is a visual representation of the required courses for both programs.

## Year 1

PSYO 1011* (B-)	BIOL 1010* (B-)	CHEM 1011	MATH 1215 *	Elective
PSYO 1012* (B-)	BIOL 1011* (B-)	CHEM 1012	MATH/ STATS Elective	Elective

\* Or equivalent

## Year 2

NESC 2000	PSYO 2501	NESC 2570	2000-lvl NESC Elective <sup>1</sup>	Elective
NESC 2470	BIOL 2020	2000-lvl NESC Elective <sup>1</sup>	Elective	Elective

<sup>1</sup>Selected from: NESC2130,  
2140, 2150, 2160, BIOC2300,  
BIOL2030

## Years 3 & 4 (120-credit hour major)

3000-lvl NESC LAB Elective <sup>2</sup>	3000 or 4000-lvl NESC Elective <sup>3</sup>	3000 or 4000-lvl NESC Elective	3000 or 4000-lvl NESC Elective	Elective (x6)
3000-lvl NESC LAB Elective <sup>2</sup>	3000 or 4000-lvl NESC Elective <sup>3</sup>	3000 or 4000-lvl NESC Elective	3000 or 4000-lvl NESC Elective	Elective (x6)

<sup>2</sup>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)

<sup>3</sup>Selected from: NESC 3162, 3170,  
3180, 3190, 3227, 3237, 3264,  
3270, 3670, 3770, 3970, PHAC  
3001, PHAC 4403, PHAC 4409,  
PHYL 3420

## Years 3 & 4 (Honours)

3000-lvl NESC LAB Elective <sup>4</sup>	3000-lvl NESC LAB Elective <sup>4</sup>	3000-lvl NESC Elective <sup>5</sup>	3000-lvl NESC Elective <sup>5</sup>	3000 or 4000-lvl NESC Elective	Elective (x9)
NESC 4901	NESC 4902	PSYO 3502	4000-lvl NESC Seminar	4000-lvl NESC Seminar	3000 or 4000-lvl NESC Elective

<sup>4</sup>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)

<sup>5</sup>Selected from: NESC 3162,  
3170, 3180, 3190, 3227, 3237,  
3264, 3270, 3670, 3770, 3970,  
PHAC 3001, PHAC 4403, PHAC  
4409, PHYL 3420



# My Plan

Year: \_\_\_\_\_

Fall term

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Winter term

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Year: \_\_\_\_\_

Fall term

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Winter term

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Year: \_\_\_\_\_

Fall term

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Winter term

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Year: \_\_\_\_\_

Fall term

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Winter term

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Year: \_\_\_\_\_

Fall term

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Winter term

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Notes: \_\_\_\_\_


# Who do I speak to about...?

- General degree (e.g., BA, BSc, etc.) requirements?
  - Academic Advising ([dal.ca/advising](http://dal.ca/advising))
- Program requirements (e.g., Major, minor, etc.)?
  - Faculty Advisor ([dal.ca/psychandneuro](http://dal.ca/psychandneuro))
- Courses required to graduate?
  - Consult the Degree Audit Report System (DARS) through DalOnline and/or speak to an advisor ([dalonline.dal.ca](http://dalonline.dal.ca))
- Class offerings?
  - Consult the Academic Calendar ([academiccalendar.dal.ca](http://academiccalendar.dal.ca)), speak to an advisor, or seek advice from other students (e.g., Undergraduate Neuroscience Society)
- Getting more involved?
  - Check out all our resources posted on our departmental website: [dal.ca/psychandneuro](http://dal.ca/psychandneuro)



**Disclaimer:** This guidebook is intended to help clarify our program requirements as outlined in the Academic Calendar. Students should always check the Calendar for additional details and information. In the event of disagreement between this document and the Academic Calendar, the Registrar's Office will ALWAYS defer to the latter.