

Methods in Experimental Psychology & Neuroscience Syllabus

Department of Psychology and Neuroscience
 PSYO/NESC 2000, Fall 2023

“Lecture” Details (Active Learning Classes)	Instructor: Dr. Jennifer Stamp, jastamp@dal.ca See Brightspace for Dr. Stamp’s office hours (questions about lecture and reading material; active learning exercises; quizzes & exams)
	When? Mondays and Wednesdays , 13:05 – 14:25 (Atlantic time)
	Where? Rowe, Room 1028 (Potter Auditorium)

Lab Details	Instructor: Dr. Erin Sparks, erin.sparks@dal.ca See Brightspace for Dr. Sparks’ office hours (questions about lab content, activities, and assignments).
	When? In-person labs will begin the week of Sept. 18, 2023 (for odd-numbered labs; even-numbered labs will begin the week of Sept. 25, 2023). You will have 4 in-person labs throughout the term. Lab days & times vary depending on the lab section you’ve registered for . Please check DalOnline to confirm your lab section, and check the course Brightspace page for information on lab scheduling.
	Where? LSC Psychology wing, Room 4208

Course description: This course provides a thorough grounding in scientific methods and research strategies used by psychologists and neuroscientists. Lectures explore concepts, methods, and analytic tools employed to investigate human and animal behaviour and neurophysiology. Students complete a series of labs meant to illustrate core scientific principles, with a focus on experiential learning and effectively communicating scientific findings. The primary goal is to provide the necessary tools and skills to ask questions scientifically.

Prerequisites: Full year (two terms) of Introductory Psychology with a minimum grade of B- in both (PSYO 1011 & 1012 or equivalent). This course is restricted to Psychology & Neuroscience majors unless special permission is granted.

Required readings: Readings for the course are primary scientific research articles and a **FREE open access** text, posted on Brightspace; <http://dal.brightspace.com>.

Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.

Dalhousie University also acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.

Course Structure

Flipped Classroom Lectures

The lecture component of this course follows a **flipped classroom approach**, in that most time in class is devoted to **active learning**, with **lectures delivered asynchronously** through Brightspace and class time used for developing study strategies and resources to prepare for exam questions. This is achieved through activities like creating summary tables, critically evaluating research, and designing flowcharts of research studies. Materials and instructions for these activities are available on Brightspace and can be completed outside of lecture time in case of missed class. Class sessions will be recorded and posted to Brightspace.

Lab Content

The lab component of this course involves blended learning, with four **in-person** sessions (led by TAs), complemented by **weekly online, asynchronous** content from the lab instructor (posted on Mondays). Asynchronous content and assignment instructions will be posted to Brightspace.

The in-person lab sessions are designed to help students **actively interpret** experiments and their findings, foster deeper learning of research methods, and to **collaboratively discuss** concepts related to their lab assignments. In-person lab sessions will be **recorded** for later viewing.

We expect that all students who can do so will attend the in-person sessions. However, students who are unable to attend will **NOT** be penalized (as such, we will NOT be requesting SDAs or other forms of documentation for missed labs). If you cannot attend a lab session, you are still expected to watch the online lab content to keep up, and are strongly encouraged to complete the corresponding lab activities.

Course Learning Objectives

- Differentiate science from non-science and pseudoscience
- Identify biases that could influence scientific thinking and strategies to avoid them
- Describe the history of research ethics and its current practice
- Discuss how participants can influence research findings
- Describe different types of data collected in psychology and neuroscience research
- Describe the main design components of different types of research studies
- Compare and contrast different research designs and identify strengths and weaknesses
- Describe strategies to strengthen reliability and validity
- Conduct and participate in research studies
- Identify the function of each section of a research article
- Communicate rationale, methods, findings, and interpretation in scientific manuscripts
- Critically evaluate scientific research encountered in published journal articles and media reports

Assessment & Policies on Missed or Late Requirements

Lecture evaluation (52% total)

- **2 ONLINE Exams, 20 marks each (40% total). OPEN BOOK**, 20–25 questions. Format includes multiple choice, multi-select, interpreting images, and short answer. Proctoring software will NOT be used.
 - Exams are **3 hours long but will not shut down once this official time is up** (in case there are internet or other problems). Students with time accommodations can work past time's up in accordance with their requirements, if necessary.
 - Missed exams **must** be communicated **within 24 hours** of the regularly scheduled date using a STUDENT DECLARATION OF ABSENCE (SDA) form, uploaded to the assignment folder on Brightspace.
 - Do **NOT** send medical notes or descriptions of illness (not required)
- **Best 6 of 8 ONLINE Quizzes, 2 marks each (12% total). OPEN BOOK**, 3–7 questions. Format includes multiple choice, multi-select, ordering, ranking, and fill-in-the-blanks.
 - Quizzes are **25 minutes long but will not shut down once this official time is up**. Students with time accommodations can work past the time's up in accordance with their specific requirements, if necessary.
 - Students' lowest quiz mark is dropped from final grades, including missed quizzes. Because of this, **there are no make-ups for missed quizzes**.

Lab evaluation (48% total)

Lab evaluation will be based on three assignments that involve interpreting and writing up a lab experiment, plus a series of low-stakes lab activities. Full instructions and rubrics will be available on Brightspace. Contact your **Lab TA** with questions about assignments (and Dr. Sparks if questions remain); contact **Dr. Sparks** about lab activities.

- **Introduction & Methods Sections (14% of total grade)**. Students will write Introduction and Method sections of a report based on a lab experiment we complete as a class. This will involve finding and incorporating past research, articulating the study's rationale, and accurately describing the study's participants, design, and procedure.
- **Full Lab Report (18% of total grade)**. Students will write a full lab report, including a revised version of their Introduction & Methods Section assignment along with Results & Discussion sections that report the findings of our lab experiment.
- **Study Proposal (15% of total grade)**. Throughout the term, you will apply research methods concepts by evaluating the validity of research claims in the media. Each lab section will choose **one** media claim and will collaboratively develop a study idea to test it. Each student will expand on this preliminary idea and write a proposal for their hypothetical study, following the structure of a lab report (Introduction, Method, Expected Results, Discussion).
 - Although you will collaborate with your labmates to generate the study idea, the details of your study, and the written proposal, must be completed **individually**.
- **Lab Activities (1% of total grade)**. Weekly lab material will include a brief activity (due on Wednesdays, 9 days after the corresponding material is posted). Each activity response will be graded on a pass/fail basis. A "pass" will be awarded to answers that address the specific prompt

and demonstrate understanding of the relevant concepts. Your lab activity mark will include your best 6 of 8 submissions (i.e., you can miss two activities with no penalty). Because of this, **there are no make-ups for missed lab activities.**

Late lab assignment policy: A late penalty of **5% per day** will be deducted from late lab assignments (Intro & Method, Full Lab Report, Study Proposal), up to a maximum of **7 days late**. Assignments more than 7 days late will be given a zero. However, students may claim **ONE** “free pass” extension on lab assignments. Students claiming a “free pass” will receive **an additional 4 days from the original due date** to submit their assignment. We will **NOT** require SDAs or other documentation for these extensions; students simply need to **notify their lab TA** that they wish to use their free pass.

To avoid grading delays, **SDAs and accommodation extensions CANNOT be “stacked” on top of free pass extensions** (i.e., you can’t claim a 7-day extension using a free pass plus accommodations; it’s one or the other). If an assignment is submitted after the extended deadline, late penalties will begin from the extended deadline.

Students whose **accommodation plans** include assignment extensions should use their “free pass” first, then may use their accommodations for subsequent assignments if needed. **Contact Dr. Sparks** to discuss accommodation-related extensions. Be sure to include your lab TA’s name when doing so.

Final grade conversion. Numerical grades will be converted to letter grades for official transcripts using the **Dalhousie Common Grade Scale**, outlined in the table below.

Letter Grade	A+	A	A–	B+	B	B–	C+	C	C–	D	F
Numerical Grades	90 – 100	85 – 89%	80 – 84%	77 – 79%	73 – 76%	70 – 72%	65 – 69%	60 – 64%	55 – 59%	50 – 54%	0 – 49%

Note: To apply for the Honours program in Psychology or Neuroscience, students must receive a B+ or better.

Academic Integrity Policies

Although you are encouraged to discuss course concepts, assignments, and activities with your peers, you must complete all assessments individually. Exams and quizzes are to be completed **alone**, but are **open book**. In other words, you can use resources, but you can only consult one brain (i.e. your own).

Feel free to use AI-driven tools to assist you in learning. Some lecture active learning exercises and lab material will involve evaluating AI output. But remember, the objective is for you to acquire the competencies and outcomes in this course. Unless an assessment explicitly says otherwise, specific assessments in this course disallow the use of AI-driven tools. **You are responsible for the accuracy of all work you submit.** Where tools are allowed, you must acknowledge all tools used to assist you. If applicable, you must provide links to chat logs. Using AI-driven tools where prohibited constitutes an academic offense.

Course Content & Schedule

Week #	Date	LECTURE COMPONENT			LAB COMPONENT		Assessments (due by 11:59pm)
		Lesson	Recorded Material (watch <i>before</i> class)	Text Sections	Recorded Material (watch the week posted)	In-person lab?	
1	Sept. 6	Introduction	Welcome/Course Tour	None	Lab Overview	None	
2	Sept. 11 Sept. 13	Scientific Thinking	Science & Pseudoscience Bias in Research; Research Ethics	1.1, 1.2 7.1, 7.2, 7.3; 4.1, 4.2	Can You Claim It?: Types of Research Claims	None	Quiz 1: Sept 15
3	Sept. 18 Sept. 20	Research Reporting	Science Communication Replication	None None	Introduction & Method Sections	Lab 1 (odd #)	Lab activity 1: Sept. 20 Quiz 2: Sept 22
4	Sept. 25 Sept. 27	Research Participants	Research with Humans; Research with Animals Time of Day Effects	9.3; None None	Writing Tips; Library Searches	Lab 1 (even #)	Lab activity 2: Sept. 27 Quiz 3: Sept 29
5	Oct. 2 Oct. 4	TRUTH & RECONCILIATION DAY (no class)					
		Dealing with Data	Types of Data; Operational Definitions	2.1; 5.2, 5.3, 5.4	Can You Claim It?: Construct Validity	None	Lab activity 3: Oct. 4 Quiz 4: Oct 6
6	Oct. 9 Oct. 11	THANKSGIVING (no class)					
		Descriptive Research	Famous Case Studies	None	What Makes a Strong Hypothesis?	None	Intro & Method lab assignment due Oct. 11
7	Oct. 16 Oct. 18	Descriptive Research	Naturalistic Observation; Other Descriptive Research	8.1	Results & Discussion Sections	Lab 2 (odd #)	Lab activity 4: Oct. 18
		EXAM REVIEW/HELP			None		
8	Oct. 23 Oct. 25	EXAM 1					
		Correlational Research	Elements of Correlations	8 (Intro), 8.2	Can You Claim It?: External Validity	Lab 2 (even #)	Lab activity 5: Oct. 25
9	Oct. 30 Nov. 1	Correlational Research	Exploring Causation; Surveys	8.3; 6.2, 6.2	Survey Research	Lab 3 (odd #)	Lab activity 6: Nov. 1 Quiz 5: Nov 3
		Laboratory Research	Research Settings; Order Effects	None; 9.2			
10	Nov. 6 Nov. 8	Experimental Designs	Elements of Experiments	9.1, 9.2	Can You Claim It?: Internal Validity	Lab 3 (even #)	Full Lab Report due Nov. 8 Quiz 6: Nov 10
			Complex Experiments	10.1, 10.2			
	Nov. 13–17	STUDY BREAK (no classes or labs)					
11	Nov. 20 Nov. 22	Experimental Pitfalls	Confounds Expectancy Effects	9.1 9.3	Identifying Study Limitations	Lab 4 (odd #)	Lab activity 7: Nov. 22 Quiz 7: Nov 24
12	Nov. 27 Nov. 29	Special Designs	Quasi-experiments Neuroimaging	10.2 None	Can You Claim It?: Statistical Validity	Lab 4 (even #)	Lab activity 8: Nov. 29 Quiz 8: Dec 1
13	Dec. 4 Dec. 5 Dec. 6	Special Designs	Clinical Trials	None	None (work on final assignments & exam prep)	None	Study Proposal assignment due Dec. 6
		EXAM REVIEW/HELP					
		TBD (FLEX/SPILLOVER TIME)					
Exam period		EXAM 2 (date and time TBD, scheduled by the Registrar's Office)					

University Policies & Statements

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or elders@dal.ca. Additional information regarding the Indigenous Student Centre can be found at: https://www.dal.ca/campus_life/communities/indigenous.html

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: <https://www.dal.ca/about-dal/internationalization.html>

Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. Additional academic integrity information can be found at: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (<https://www.dal.ca/about-dal/agricultural-campus/student-success-centre.html>)

Conduct in the Classroom – Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes

fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). Additional diversity and inclusion information can be found at: <http://www.dal.ca/cultureofrespect.html>

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner - perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. The full Code of Student Conduct can be found at:

https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Fair Dealing Policy

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at: https://www.dal.ca/dept/university_secretariat/policies/academic/fair-dealing-policy-.html

Originality Checking Software

The course instructor may use Dalhousie's approved originality checking software and Google to check the originality of any work submitted for credit, in accordance with the Student Submission of Assignments and Use of Originality Checking Software Policy. Students are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work and must inform the instructor no later than the last day to add/drop classes of their intent to choose an alternate method. Additional information regarding Originality Checking Software can be found at:

https://www.dal.ca/dept/university_secretariat/policies/academic/student-submission-of-assignments-and-use-of-originality-checking-software-policy-.html

Student Use of Course Materials

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.