

Faculty of Science Course Syllabus Department of Psychology and Neuroscience

Learning: Conditioning and Motivation (NESC & PSYO 2140)
Winter 2025 edition

- Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. 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.
- Dr. Gadbois acknowledges the histories, contributions, and legacies of Acadians, who have been here since 1604 and deported en masse from 1755 to 1763.
- All students are required to comply with health and safety requirements on campus, and should be considerate of others' health concerns. Non-compliance may be reported under the Code of Student Conduct.
- Please note that, as far as Dr. Gadbois is concerned, this class is a safe space. We can all contribute to a tolerant and discrimination-free atmosphere (for race, ethnicity, gender, sexual preference, language, religion, age, disability, etc.).
- Dalhousie is a scent-free working space.

Instructor:	Simon Gadbois (sgadbois@dal.ca) Please call me by my first name, "Simon" (pronounced the French way, i.e., silent n, or "sea-moh"), no "Dr.", "Prof", etc., needed.
Emails:	When sending an email to Simon Gadbois (sgadbois@dal.ca), please add "2140" to the subject line.
Office hours:	Monday, 3:00 to 4:00 and Tuesday 4:00 to 5:00 in LSC 3326 Office hours include midterm viewing except the week before an exam when I will be focussing on answering questions pertaining to the upcoming exam.
Lectures:	Tuesday & Thursday, 1:00 to 2:30, LSC Common Area 242
Laboratories:	N/A
Tutorials:	N/A
Course delivery:	<u>In-person</u> only; not recorded; students are allowed to audio record the lectures
Course Description (official, calendar)	Lectures focus on several goals: (1) providing general principles of learning; (2) understanding the behaviour of particular species; (3) direct application to human problems. Emphasis is on understanding why researchers in animal learning do what they are currently doing (given the goals and the historical context). FORMAT: Lecture LECTURE HOURS PER WEEK: 3
Course Prerequisites	PSYO 1011.03 (or PSYO 1021.03 or PSYO 1031.03) and PSYO 1012.03 (or PSYO 1022.03 or PSYO 1032.03); OR SCIE 1506.09/1507.09 (or SCIE1505X/Y.18). All prerequisite courses must have a grade of B- or better. CROSS-LISTED: PSYO and NESC 2140.03

Animal Behaviour Certificate	This course is one of the Animal Behaviour Certificate available courses: https://www.dal.ca/faculty/science/psychology_neuroscience/programs/certificate-programs/animal_behaviour.html
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Overview

This course will cover the modern theories of learning and motivation, starting with the basics of conditioning principles and exploring the cognitive and conative (motivational) underpinnings of learning. The course covers both human and non-human processes of learning. A neurobiological perspective is also taken throughout the course. The course prepares you for:

- PSYO/NESC 3043: Neurobiology of Learning
- PSYO/NESC 4140: Animal Learning Topics (Honours Seminar)
- PSYO/NESC 4740: Topics in the Neurobiology of Learning and Memory (Honours Seminar)
- Any psychology or neuroscience laboratory relying on operant (instrumental) responses from animals, including research in sensory, perceptual and cognitive processes with mice, rats, cats, dogs, etc.
- Various courses in developmental, social, and clinical psychology.
- Any CPA or APA certification for clinical psychologists, both requiring a learning class and necessary for understanding some of the main evidence-based therapies used in North America:
 - CBT: Cognitive Behavioural Therapy
 - ABA: Applied Behaviour Analysis
 - ACT: Acceptance and Commitment Therapy (based on RFT: Relational Frame Theory)

What this course is NOT:

- It is not a course on animal training (e.g., dog training). **But Learning Theory/conditioning use animal models** (in both psychology and neuroscience), so expect many examples with animals (rats and pigeons mostly, but also with dogs, as an intuitive example).
- It is not a course in cognitive psychology, school psychology or educational psychology.

Learning Objectives and learning outcomes

We favour an integrative and synthetic approach to learning theory (conditioning) and motivation:

- Understand and explain the contribution of all the main behavioural sciences and neurosciences of learning, memory, and motivation: Psychology, neuroscience, neurobiology, and behavioural biology.
- Grasp the basic and more advanced processes and theories of learning, with an emphasis on **conditioning** principles (i.e., classical and instrumental conditioning).
- Understand and explain the principles of **learning** and **motivation** in the main models used in psychology and neuroscience (birds and mammals) and applications to human behaviour (education, therapy, addictions, gambling, psychopathologies, parenting, marketing, and consumer psychology, etc).
- Understand the link between **learning** (acquisition of new information) and **memory** (retention and retrieval of information) in both animal and human models.

Course Materials

- Scientific papers on specific topics may be suggested at any time during the term.
- The course is on Brightspace where the lecture notes (PDF) and grades will be posted.
- Note that:
 - Lecture notes are only an outline, Dr. Gadbois does not use “slides” like a teleprompter. This means that missing material translates into missing crucial information for an exam. You should be annotating the lecture notes provided (outline), or taking your own to supplement the material presented.
 - Lecture notes are organized by theme, i.e., the sections are more like chapters, and not organized by lecture. Lecture notes are organised by theme, i.e., the sections are more like chapters, and not organised by lecture. This is because some years the course is offered in the 60 mins slot, and other years, in the 90 mins slot.
 - You should be annotating the lecture notes provided (outline), or taking your own to supplement the material presented. Dr. Gadbois does not use “slidedecks” as if they were a teleprompter. This means that missing lecture material translates into missing crucial information for an exam. You should be annotating the outline provided, or taking your own notes to supplement the material presented. For copyright reasons, some material will not be showing on the uploaded slides.
 - A note taker is required to assist one of your peers. If you are interested, please contact the Student Accessibility Centre, notetaking@dal.ca.

Textbook (strongly recommended):

- Bouton, Mark E. (2016). *Learning and Behavior: A Contemporary Synthesis*, 2nd Edition. Originally Sinauer / Now Oxford University Press; <https://learninglink.oup.com/access/bouton-learning-and-behavior-2e>
- Other material: Scientific papers on specific topics may be suggested at any time during the term.

Course Assessments

Assessment	% of final grade	Date	Location, time, duration
Midterm 1	30%	January 30th	Regular class time and location, 80 min
Midterm 2	30%	March 6th	Regular class time and location, 80 min
Final exam: Cumulative	40%	Scheduled exam period	TBD by the Registrar later this term. Do not make travel plans until the schedule has been published by the RO. The final exam is 3 hours.
Bonus point for participation in experiments	+ 1%	See the SONA system	https://www.dal.ca/faculty/science/psychology_neuroscience/research/credit-point-information.html

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The exams (both midterms and the final) have a mixed format and will contain multiple choice questions, and true/false questions. Material is fully *cumulative* for the final exam.

Note that you will be tested on:

- Material from available lecture notes.
- Material presented in class not fully developed in the lecture notes: Your personal notes will matter.
- Remember: Lecture notes are only an outline. Your own notes will be important here as well.

In order to pass this course you need to:

- Obtain a final grade of 50% or more (minimum D)
- Write the two midterms and the final exam*. Please refer to the course policy on missed tests/exams in the section below.
- Note: Any missed exams that are not resolved according to course policy will result in an INC final grade for the course. An INC (incomplete) that is not addressed within a month of the end of a class will result in an F for the course.

* Academic Calendar regulation 16.1 "In order to complete a course satisfactorily, a student must fulfill all the requirements as set down in the course outline [Syllabus]."

Other course requirements

Although not a course requirement per se, attendance may be taken intermittently, and randomly.

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

F	D	C-	C	C+	B-	B	B+	A-	A	A+
<50	50-54	55-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100

Course Policies on Missed or Late Academic Requirements

Missed lectures:

Although there is no direct penalty for missing lectures, it is particularly important that you realize you will be accountable for material covered during the lectures. As noted above, the slides decks provided are only an outline of what is discussed in class.

Missed tests/exams:

- No need for a SDA (student declaration of absence) in this class.
- Since SDA's are **not** valid for Final Exams, and finals cannot be missed like midterms, if you miss the final, only students with a valid and documented excuse will have the following option (following consultation with the Assistant Dean of Student Affairs): You write an essay question exam as a make-up in January.
- There are no make-ups for a missed midterm in this course: Your final exam adds the value of the missed midterm. In other words, your final will weigh more (value of the final + the value of the missed midterm).
- **If you miss both midterms**, and if the absence is justified and approved, your final exam will be worth 100% of your grade.
- For long-term or chronic absences please speak with either:

- An advisor at the Student Advising and Access Services if you have accommodations.
- The Assistant Dean of Student Affairs (at the Faculty of Science): Patricia Laws, scieasst@dal.ca.
- Remember that the final exam is fully cumulative, and therefore will be covering the material of the full term.

Cancelled midterms

If a midterm is cancelled due to weather or other force majeure events, the new date and time for the midterm will be announced on Brightspace, otherwise, by default, the exam is re-scheduled to the next planned (regular) class.

Course Policies related to Academic Integrity

Please see the Dalhousie regulations: Last page of this document. A plagiarism detection system may be used in this course if relevant or appropriate.

Course Content

The course will present the following topics: The numbers in the columns on the right are the chapters in Bouton (2016).

Note: Many of the themes below will have a “brain substrates” and/or “clinical perspectives” section that are not shown in this overview.

SECTIONS	THEMES	Sources
§1	Some introductory comments on learning and motivation in the context of psychology, neuroscience and behavioural biology/neurobiology. Defining the basic concepts: How the Ancient Greek saw the mind, and how neuroscience agrees: Cognition, Emotion and Conation (Motivation) History and schools of thought in animal and human learning. Learning Theory or learning theories? General applications of learning theory	1+
§2	Learning Theory at Dalhousie University: Giants in the field (Honig, LoLordo, Mackintosh, Moore, etc.)	Notes
§3	Learning as adaptation: The biological bases of learning The debate with ethology (behavioural biology): Nature vs. Nurture. Simple (non-associative learning): Habituation and sensitization Familiarization: Perceptual learning, Priming, Spatial learning	2, (6)
§4	Basic principles of associative learning (conditioning)	2
§5	Respondent or classical conditioning (aka Pavlovian conditioning) 1; Basics	3
§6	Respondent or classical conditioning (aka Pavlovian conditioning) 2; Theories	4
§7	Operant or instrumental conditioning (aka Skinnerian conditioning)	7
§8	Discrimination, Generalization, Categorization, Stimulus control	8
§9	The role of memory, modulation of behaviour, and the concept of behaviour systems. Short term and long term memory Episodic and semantic memory Skill memory Working memory (and attention) and executive function (cognitive control)	5
§10	Motivation: Drive theory, incentive theory, incentive motivation and incentive learning.	9
§11	Advanced issues in learning: if time allows Habit learning Avoidance learning and learned helplessness Issues: Misbehaviour of organisms, superstitious behaviours, punishment Emotions, learning, and implicit memory (priming specifically) Social learning	10

University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of 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.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.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.

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

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

Statement: <http://www.dal.ca/cultureofrespect.html>

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 (1321 Edward St) (elders@dal.ca).

Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)

https://www.dal.ca/academics/important_dates.html

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html