DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus Department of Psychology & Neuroscience PSYO/NESC 3131

Research Methods in Attention

Fall 2023

Instructor:	John Christie	john.christie@dal.ca
Office Hours:	M 11:30-13:30	room 2519 or MS Teams
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Office Hours:	appointment	MS Teams
Lectures:	LSC P4208	MW 8:35-9:25
Labs:	LSC P4207	W 10:05-11:35

Course Description

Most closely associated with our ability to focus on some things to the exclusion of others (selection), attention is an umbrella term that also covers the concepts of alertness, arousal, preparation, and control. Neglected by mainstream Psychology for the first half of the 20th century, this gateway to awareness has since returned to centre stage. In this laboratory course we will explore the methods, findings, and theories that underpin our understanding of attention. Team research projects will emphasize and reinforce class discussions on behavioural and neuroscientific methods that have been used to isolate and reveal the components of attention.

Course Prerequisites

PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and PSYO 2130.03/NESC 2130.03 or PSYO 2150.03/NESC 2150.03

Course Objectives/Learning Outcomes

There are several kinds of knowledge that I hope students will acquire in this class. Broadly speaking, we can distinguish "knowing that" from "knowing how". Needless to say, I expect students to learn facts (knowledge that) about attention and about research (methods, findings, theories) on attention. Attending to lecture material in class, engaging with the material, and taking good notes are important. Needless to say, coming to class is a pre-requisite. So, too, is engaging with the readings. Lectures will be in depth looks at the readings and will often assume they have been read. But let's not neglect the importance of "knowing how"—particularly in a lab class! How does a scientist interested in attention learn about it by reading the literature? When our questions are not answered there, how do we design experiments that will help answer them? How do we conduct such experiments, analyze and interpret the data they generate? How do we move on to the next questions? How do we report on our experiments to other interested scientists (lab reports, oral presentation, posters)? How do we transmit what we have learned from reading the literature? How do we adopt best practices—especially those sensitive to visible and invisible barriers to scientific progress? To help you learn these skills, and to evaluate your learning, you will be required to complete a team-based research project. For this project, you and your team will be exposed to nearly the entirety of the research process for one study. You will preregister your study, collect data, present your findings

both orally and as a poster, and write a manuscript. At each stage, we will engage in open, transparent, critical, and supportive reflection.

Textbook
There is no textbook for this course. Readings will be assigned but many will just be a launching point for reading and investigation on your own.

Course Assessment

In-Class Component	
Quizzes	***68% (2 * 34%)***
Participation	***32%***
Lab Component	
Preregistration Template	***20%***
Intro/Methods	***20%***
Peer Review	***20%***
Final Report	***40%***
Dissemination Component	
In-Class Presentation(s)	***40%***
Poster	***40%***
KT	***20%***
Final Grade:	
Highest Achieved Component	**37%**
Middle Achieved Component	**33%**
Lowest Achieved Component	**30%**

Course Assessment Descriptions

In-Class Components:
Quizzes:
The two quizzes will will be completed during class time as per the schedule. There will be no makeup quizzes.

Participation:
Participation will be graded on a variety of components so as to afford participatory merit in various capacities. Students can choose to participate by contributing to discussion during lectures, workshops, or following student presentations. Students can also participate by making discussion posts on Teams. Participation merit can also be earned by engaging online in Teams And, of course, attendance does count toward participation. Online posts should be brought to your instructor's attention.

Lab Components:
Preregistration Template:
Preregistrations will be completed using a template generated by modifying the default one from the Center for Open Science and based on your team project. Templates are designed to encourage transparency in research practices, organize a plan of action, and to facilitate the conceptualization of

clear research questions. These can be completed individually or as a research team. If completed as a team just make one submission and put all of your names on it.

Intro/Methods:
An introduction and methods of your team project will be submitted for evaluation and peer review. Introductions will be written individually, however Method sections can, and should, be shared across team members. The understanding of the methods must be done as a group. Furthermore, since most projects are closely related to published literature, the structure and content of your Method sections can rely heavily on the original studies. Late submissions will not benefit from peer-review.

Peer Review:
You will be responsible for providing peer review feedback once on an Intro/Methods submission, and optionally on a Final Report. Identifying information will be redacted from all documents. Feedback will be structured by a peer review template employed by leading cognitive psychology journals. You will be evaluated on the quality of the feedback you provide. Feedback provided to you by your peers has no bearing on the grade you receive for your submission. This will need to be concise and a maximum of one page single space is permitted. The optional second feedback can be used to boost your grade if you wish and will not count against you. It has a maximum of 3 points awarded.

Final Report:
You will complete a final report based on your team research project. The report will consist of an Introduction and Method section, which will have already been subject to instructor and peer review. In addition, the report will include Results and a Discussion section. The Results can, and should, be completed as a team, or individually but needs to be collaborated on for understanding. If you have no data analysis experience, fear not! There will be analysis workshops upon completion of data collection. Discussion sections will be written individually. The report will also contain the standard full lab report sections including Title, Abstract, and References.

Dissemination Components:
In-Class Presentation(s):
Presentations will be held in class, in the style of a conference symposium. In one class session, each member of a research team will present a paper related to your research project (ideally one that is cited in the original paper, or one you intend to cite in your report). Group presentations will occur near the end of term to report on your completed projects.

Poster:
Digital posters will be created as a team, and presented during the poster symposium at the end of term. Posters will be evaluated based on the clarity and succinctness of the poster itself (team grade) and of the interactive presentations (individual grade) during the symposium.

KT:
Previously this was done on X in order to show knowledge dissemination and translation; but given issues that have arisen with social media networks you may submit how you wish. You can notify your instructor of an X or Threads thread, or post somewhere else on the internet. Or, you can submit

the content of the KT (Knowledge Translation) in the body of an email. It will be under 1200 characters (between 600 and 1200 typical), so it must be concise. You will describe the take-home message for an attention-related original research paper not otherwise covered in class or your team project work. Think of it like describing this paper to an interested family member. It must be clear and in common language. Further, it should show a critical understanding of the work. If there's reason not to believe the authors' claims you should state that. If you think they did a great job then you should say why. A journal article looking at an applied question would be strongly preferred. The article must be approved by Dr. Christie, at which time you'll send him your handle if posting online. If using X, Threads, or some other online system that uses hashtags, you will be required to use the class hashtag in the post (#psyo313123w). These can be completed at any time during the term. It is strongly advised that, should you post the KT online, that you write it offline, refine it, and then copy it online.

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

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

Course Policies

1. Numerical grades are converted to letter grades for your official transcripts (see conversion chart above).

2. Quizzes will be held during class time. Potential quiz questions will be posted prior to each quiz. Quiz questions will be selected on quiz day by way of a random lottery. There should be no question as to what needs to be studied for a test and preparation should be straightforward.

3. Quizzes will always be held during class time, not lab time. If a quiz class is cancelled due to weather (i.e., because the University is closed), the quiz will take place in the next class it can reasonably occur without disrupting labs. You can check the University webpage (www.dal.ca), or call the switchboard (902 494-2211) for up-to-date storm information. Also, you can sign up for text alerts to receive updates automatically (https://dalalert.dal.ca/). If a regular class is cancelled due to weather, the course schedule will be updated as soon as possible.

4. Written assignments are due at 11:59 PM on the date indicated in the Course Schedule. Late assignments/submissions will be penalized marks at a rate of $10\% \times 2^{(n-1)}$, where n = number of days late. Only PDFs will be accepted for submissions. If you have to be contacted to send a file in another format and you submitted last minute then your submission will be marked late. Make sure that your name and what the submission is are in the title, e.g. JohnChristieIntroAndMethods.pdf

5. Please include "[PN3131]" at the beginning of the subject line for any email correspondence with your instructor or TA. Failure to do so could result in your email being spam filtered.

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Furthermore, please allow a minimum of 48 hours for a reply to any email correspondence. If more urgent (last minute) correspondence is needed, please use the Teams Discussion Board to crowdsource your support.

6. We will not be using SDAs. If you have a reason to miss a class notify your instructor via email and request to be excused. If you have to miss many classes for some reason, again, notify your instructor via email and they will try to work with you on your situation, if possible.

Course Schedule

Sep. 6	Introductions, Syllabus, Open Science + Data Collection 1 - Open Science Collaboration (2015)		
Sep. 11	Orienting foundations	Posner (1980)	
Sep. 13	Networks of Attention + Data Collection 2	Fan et al. (2002)	
Sep**. 18**	Data Limits	Norman & Bobrow (1975)	
Sep. 20	Attentional Capture + Data Collection 3	Folk, et al. (1992)	
Sep. 25	Priming and Attention	Neely (1976)	
Sep. 27	Inhibition of Return + Data Collection 4	Klein (2000)	
Oct. 4	Presentation 1 + Data Analysis 1		Intro+Methods
Oct. 11	Presentation 2 + Data Analysis 2		
Oct. 16	Presentation 3		
Oct. 18	Presentation 4 + Data Analysis 3	Distribute papers for review	
Oct. 23	quiz 1		
Oct. 25	Negative Priming + Data Analysis 4	Stadler & Hogan (1996)	pre-registration
Oct. 30	Search	Treisman & Gelade (1980)	
Nov. 1	Attention & Learning + group work	Dodd & Wilson (2009)	Peer Review 1
Nov. 6	Expert Attention	Green & Bavelier (2003)	
Nov. 8	Neglect + Poster Workshop	Posner et al (1984)	
Nov. 20	quiz 2		
Nov. 22	Project Time		
Nov. 27	further topics in attention		
Nov. 28	**Not a class day**		Poster Due
Nov. 29	Poster Symposium		
Dec. 4			Final Report
Dec. 6	**We did an accelerated schedule and don't need these extra Mondays**		Peer Review 2

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Course Papers

(You'll need to get copies of each, preferably through Dal network. If there's one you can't get then please contact your instructor.)

Amrhein, V., Greenland, S., & McShane, B. (2019). Scientists rise up against statistical significance. Nature, 567, 305-307. doi: 10.1038/d41586-019-00857-9

Briand, K. A. (1998). Feature integration and spatial attention: More evidence of a dissociation between endogenous and exogenous orienting. *Journal of Experimental Psychology: Human Perception and Performance, 24*(4), 1243-1256.

Collaboration, O. S. (2015). Estimating the reproducibility of psychological science. *Science*, *349*(6251), 943-951. doi: 10.1126/science.aac4716

Dodd, M. D., & Wilson, D. (2009). Training attention: Interactions between central cues and reflexive attention. *Visual Cognition*, *17*(5), 736-754.

Fan, J., McCandliss, B. D., Sommer, T., Raz, A., & Posner, M. I. (2002). Testing the efficiency and independence of attentional networks. *Journal of Cognitive Neuroscience*, *14*(3), 340-347. doi: 10.1162/089892902317361886

Folk, C. L., Remington, R. W., & Johnston, J. C. (1992). Involuntary covert orienting is contingent on attentional control settings. *Journal of Experimental Psychology: Human Perception and Performance*, *18*(4), 1030-1044.

Green, C. S., & Bavelier, D. (2003). Action video game modifies visual selective attention. *Nature*, *423*, 534-537.

Klein, R. M. (2000). Inhibition of return. *Trends in Cognitive Sciences*, *4*(4), 138-147.

Neely, J. H. (1976). Semantic priming and retrieval from lexical memory: Evidence for facilitatory and inhibitory processes. *Memory & Cognition*, *4*(5), 648-654.

Norman, D. A., & Bobrow, D. G. (1975). On data-limited and resource-limited processes. *Cognitive Psychology*, *7*, 44-64.

Posner, M. I. (1980). Orienting of attention. *Quarterly Journal of Experimental Psychology*, *32*, 3-25. doi: 10.1080/00335558008248231

Posner, M. I., Walker, J. A., Friedrich, F. J., & Rafal, R. D. (1984). Effects of parietal injury on covert orienting of attention. *The Journal of Neuroscience*, *4*(7), 1863-1874.

Stadler, M. A., & Hogan, M. E. (1996). Varieties of positive and negative priming. *Psychonomic Bulletin & Review*, *3*(1), 87-90.

Treisman, A. M., & Gelade, G. (1980). A feature-integration theory of attention. Cognitive Psychology, 12, 97-136.

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University Policies and 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

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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.