

PSYC422: Advanced Topics in Attention Winter Session, 2025 Syllabus

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What is Attention?

“Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others” (James, 1890)

Why Study Attention?

Our perceptual systems can process an incredible amount of information. But do we actually want to experience all of the information arriving at our perceptual receptors? Attention functions to select the information that we want to perceive. In fact, many researchers suggest that without attention, we cannot perceive. Attention then, may be the process that underlies our conscious awareness of the world.

Learning Outcomes

- To develop an understanding of the classic and current issues within the field of attention.
- To effectively evaluate and communicate research concepts within the field of attention.
- To research in depth a question regarding one of the issues regarding attentional control.

Course Format

- The first week will provide an introduction to the history of attention research.
- The next eight weeks will focus on a particular attentional topic.
- Wednesday is Day 1 and Friday is Day 2 for each week.
- Day 1: Students will take turns presenting the core articles provided by the instructor. Each student will do one of these presentations over the term. All other students are expected to read the core articles provided that week.
- Day 2: Students will take turns presenting articles related to that week's topic. Each student will do one of these presentations over the term.
- The last three weeks will consist of poster-style presentations of research proposals.

Activities and Assessments

Participation

Your presence and participation in class contributes to the knowledge and skills that you will develop throughout this course. You should complete the required readings, attend class regularly, and participate in class discussions.

Day 1 Core Paper Presentation

You will be assigned one week in which you are to read one of the provided core articles and provide a 10 minute presentation during the Day 1 class of that week. Your presentation will summarize the key points of the article. All other students are expected to read each of the core articles.

Day 2 Related Paper Presentation

You will be assigned one week in which you are to identify an article related to that week's topic and provide a 10 minute presentation during the Day 2 class of that week. Your presentation will summarize the rationale for the study, the method, and the key findings.

Research Proposal Report

Due on the last day of class, you will submit a research paper on a topic of current interest within the field of attention. This paper will include a review of past research relevant to your topic, and a proposal for future research. Late papers will be penalized 10% per day (including weekend days).

Research Proposal Poster Presentation

- The last three weeks will be used to present your research proposals (see Research Proposal Report) in a poster-style environment.
- Each student will make a virtual poster and provide a 8 minute poster presentation describing their research proposal (followed by a 5 minute question period).
- Students and instructors will observe and evaluate your poster presentation and ask questions.

Evaluation

Class Participation	15%
Day 1 Core Paper Presentation	20%
Day 2 Related Paper Presentation	20%
Research Proposal Report	30%
Research Proposal Poster Presentation	15%

Course Materials

There is no textbook. Readings will consist of scientific articles. There are no costs for any of the reading materials.

Course Schedule

Date	Topic
Week 1: Day 1	Organizational Meeting
Week 1: Day 2	History of Attention Research
Week 2: Day 1	Attentional Capacity – Core Paper Presentations
Week 2: Day 2	Attentional Capacity – Related Paper Presentations
Week 3: Day 1	Attention in Time – Core Paper Presentations
Week 3: Day 2	Attention in Time – Related Paper Presentations
Week 4: Day 1	Change/Inattentional Blindness – Core Paper Presentations
Week 4: Day 2	Change/Inattentional Blindness – Related Paper Presentations
Week 5: Day 1	Object-Based Attention – Core Paper Presentations
Week 5: Day 2	Object-Based Attention – Related Paper Presentations
Week 6: Day 1	Attention and Eye Movements – Core Paper Presentations
Week 6: Day 2	Attention and Eye Movements – Related Paper Presentations
Week 7: Day 1	Multifocal Attention – Core Paper Presentations
Week 7: Day 2	Multifocal Attention – Related Paper Presentations
Week 8: Day 1	Training of Attention – Core Paper Presentations
Week 8: Day 2	Training of Attention – Related Paper Presentations
Week 9: Day 1	Attention and Memory – Core Paper Presentations
Week 9: Day 2	Attention and Memory – Related Paper Presentations
Week 10: Day 1	Research Proposal Presentations
Week 10: Day 2	Research Proposal Presentations
Week 11: Day 1	Research Proposal Presentations
Week 11: Day 2	Research Proposal Presentations
Week 12: Day 1	Research Proposal Presentations
Week 12: Day 2	Research Proposal Presentations

Grading Scheme

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Academic Integrity

Queen's University is dedicated to creating a scholarly community free to explore a range of ideas, to build and advance knowledge, and to share the ideas and knowledge that emerge from a range of intellectual pursuits. Queen's students, faculty, administrators and staff therefore all have responsibilities for supporting and upholding the fundamental values of academic integrity. Academic integrity is constituted by the five core fundamental values of honesty, trust, fairness, respect and responsibility and by the quality of courage. These values and qualities are central to the building, nurturing and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University.

The following statements from "The Fundamental Values of Academic Integrity" (2nd edition), developed by the International Center for Academic Integrity (ICAI), contextualize these values and qualities:

1. **Honesty:** Academic communities of integrity advance the quest for truth and knowledge through intellectual and personal honesty in learning, teaching, research, and service.
2. **Trust:** Academic communities of integrity both foster and rely upon climates of mutual trust. Climates of trust encourage and support the free exchange of ideas which in turn allows scholarly inquiry to reach its fullest potential.

3. **Fairness:** Academic communities of integrity establish clear and transparent expectations, standards, and practices to support fairness in the interactions of students, faculty, and administrators.
4. **Respect:** Academic communities of integrity value the interactive, cooperative, participatory nature of learning. They honor, value, and consider diverse opinions and ideas.
5. **Responsibility:** Academic communities of integrity rest upon foundations of personal accountability coupled with the willingness of individuals and groups to lead by example, uphold mutually agreed-upon standards, and take action when they encounter wrongdoing.
6. **Courage:** To develop and sustain communities of integrity, it takes more than simply believing in the fundamental values. Translating the values from talking points into action -- standing up for them in the face of pressure and adversity — requires determination, commitment, and courage.

Students are responsible for familiarizing themselves with and adhering to the Senate [regulations](#) concerning academic integrity, along with [Faculty or School](#) specific information. Departures from academic integrity include, but are not limited to, plagiarism, use of unauthorized materials, facilitation, forgery and falsification. Actions which contravene the regulation on academic integrity carry sanctions that can range from a warning, to loss of grades on an assignment, to failure of a course, to requirement to withdraw from the university.

Academic Accommodations

For all requests for academic accommodations, contact Tara Karasewich (Accommodations and Learning Management Systems Assistant) at psyaccom@queensu.ca.

Queen's University is committed to working with students with disabilities to remove barriers to their academic goals. Queen's Student Accessibility Services (QSAS), students with disabilities, instructors, and faculty staff work together to provide and implement academic accommodations designed to allow students with disabilities equitable access to all course material (including in-class as well as exams). If you are a student currently experiencing barriers to your academics due to disability related reasons, and you would like to understand whether academic accommodations could support the removal of those barriers, please visit the [QSAS website](#) to learn more about academic accommodations or start the registration process with QSAS by clicking *Access Ventus* button at [Ventus | Accessibility Services | Queen's \(queensu.ca\)](#)

VENTUS is an online portal that connects students, instructors, Queen's Student Accessibility Services, the Exam's Office and other support services in the process to request, assess, and implement academic accommodations.

To learn more go to: <https://www.queensu.ca/ventus-support/students/visual-guide-ventus-students>

Academic Considerations for Students with Extenuating Circumstances

If you require an extension for extenuating circumstances, you will need to submit a request for academic consideration to the Faculty of Arts and Science. Requests may be submitted using the following link: <https://www.queensu.ca/artsci/undergrad-students/academic->

[consideration-for-students](#). Once your request is approved, then forward your approved request to Tara Karasewich (Accommodations and Learning Management Systems Assistant) at psyacom@queensu.ca.

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the [Senate Policy on Academic Consideration for Students in Extenuating Circumstances](#).

For more information, undergraduate students in the Faculty of Arts and Sciences should consult the Faculty's webpage on [Academic Consideration in Extenuating Circumstances](#) and submit a request via the [Academic Consideration Request Portal](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

Readings

Week 1: History of attention research

Pashler, H. E. (1998). The psychology of attention. Cambridge, MA: The MIT Press. (just the introduction – pp. 1-32)

Tsotsos, J. K., Itti, L., & Rees, G. (2005). A brief and selective history of attention. In L. Itti, G. Rees, and J. K. Tsotsos (Eds.). *Neurobiology of attention* (pp. xxiii-xxxii). San Diego, CA: Elsevier Academic Press.

Week 2: Attentional capacity

Franconeri, S. L., Alvarez, G. A., & Cavanagh, P. (2013). Flexible cognitive resources: competitive content maps for attention and memory. *Trends in Cognitive Sciences*, 17(3), 134-141.

Lavie, N. (2005). Distracted and confused?: Selective attention under load. *Trends in Cognitive Sciences*, 9, 75-82.

Murphy, G., Groeger, J.A. & Greene, C.M. (2016). Twenty years of load theory—Where are we now, and where should we go next?. *Psychon Bull Rev* 23, 1316–1340.

Week 3: Attention in Time

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

Klein, R.M. & MacInnes, W.J. (1999). Inhibition of return is a foraging facilitator in visual search. *Psychological Science*, 10, 346-352.

Shapiro, K. L., Arnell, K. M., & Raymond, J. E. (1997). The attentional blink. *Trends in Cognitive Sciences*, 1, 291-296.

Week 4: Change / Inattentional Blindness

Simons, D. J., & Levin, D. T. (1997). Change blindness. *Trends in Cognitive Sciences*, 1, 261-267.

Chun, M. M., & Marois, R. (2002). The dark side of visual attention. *Current Opinion in Neurobiology*, 12, 184-189.

Simons, D. J. (2000). Attentional capture and inattentional blindness. *Trends in Cognitive Sciences*, 4, 147-155.

Week 5: Object-Based Attention

Scholl, B.J. (2001). Objects and attention: the state of the art. *Cognition*, 80, 1-46.

Moore, C.M., Yantis, S. & Vaughan, B. (1998). Object-based visual selection: Evidence from perceptual completion. *Psychological Science*, 9, 104-110.

Pratt, J., & Sekuler, A.B. (2001). The effects of occlusion and past experience on the allocation of object-based attention. *Psychonomic Bulletin & Review*, 8, 721-727.

Week 6: Attention and Eye Movements

Awh, E., Armstrong, K. M., & Moore, T. (2006). Visual and oculomotor selection: links, causes, and implications for spatial attention. *Trends in Cognitive Sciences*, 10, 124-130.

Theeuwes, J., Kramer, A.F., Hahn, S., & Irwin, D.E. (1998). Our eyes do not always go where we want them to go: Capture of the eyes by new objects. *Psychological Science*, 9, 379-385.

Hooge, I.T.C., Over, E.A.B., van Wezel, R.J.A., & Frens, M.A. (2005). Inhibition of return is not a foraging facilitator in saccadic search and free viewing, *Vision Research*, 45, 1901-1908.

Liversedge, S. P., & Findlay, J. M. (2000). Saccadic eye movements and cognition. *Trends in Cognitive Sciences*, 4(1), 6-14. [https://doi.org/10.1016/S1364-6613\(99\)01418-7](https://doi.org/10.1016/S1364-6613(99)01418-7)

Week 7: Multifocal Attention

Cavanagh, P., & Alvarez, G. A. (2005). Tracking multiple targets with multifocal attention. *Trends in Cognitive Sciences*, 9, 349-354.

Fehd, H. M., & Seiffert, A. E. (2008). Eye movements during multiple object tracking: Where do participants look? *Cognition*, 108, 201-209.

Meyerhoff, H. S., Papenmeier, F., & Huff, M. (2017). Studying visual attention using the multiple object tracking paradigm: A tutorial review. *Attention, Perception, & Psychophysics*, 79(5), 1255-1274.

Week 8: Training of Attention

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

Green, C.S., & Bavelier, D. (2006). Effect of action video games on the spatial distribution of visuospatial attention. *Journal of Experimental Psychology: Human Perception and Performance*, 23, 1465-1478.

Tang, Y.-Y., Tang, R., Posner, M. I., & Gross, J. J. (2022). Effortless training of attention and self-control: Mechanisms and applications. *Trends in Cognitive Sciences*, 26(7), 567-577.

Week 9: Attention and Memory

Kiyonaga, A., & Egner, T. (2014). The Working Memory Stroop Effect When Internal Representations Clash With External Stimuli. *Psychological Science*, 25(8), 1619-1629.

Awh, E., & Jonides, J. (2001). Overlapping mechanisms of attention and spatial working memory. *Trends in Cognitive Sciences*, 5, 119-126.

Fu, Y., Guan, C., Tam, J., O'Donnell, R. E., Shen, M., Wyble, B., & Chen, H. (2023). Attention with or without working memory: mnemonic reselection of attended information. *Trends in Cognitive Sciences*, 27(12), 1111-1122.

Downing, P.E. (2000). Interactions between visual working memory and selective attention. *Psychological Science*, 11, 467-473.

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