

Psychology 351CA01 (22844) – Cognitive Neuroscience – Spring 2024

Course Outline

Time: Monday & Thursday, 11:30am – 2:50pm

Location: DTBA120

Website: Brightspace

Instructor: Prof. Adam Krawitz

Email: akrawitz@uvic.ca

Office : Cornett A251

Office Hours: TBA on Brightspace

Teaching Assistant: Sean Morgan

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Office: Cornett A148

Office Hours : TBA on Brightspace

Course Inspiration & Goals

“The mind is what the brain does.”

Steven Pinker, p. 21, How the Mind Works, 1997.

My primary goals for this course are for you to:

Improve your knowledge of the field of cognitive neuroscience.

Develop your ability to critically read and evaluate research about the mind and brain.

Gain a deeper understanding of the methods of cognitive neuroscience.

Increase your appreciation for how cognitive neuroscience is applicable to everyday life.

Territory Acknowledgement

We acknowledge served by this course, that

n and out of class, and that students' diversity be viewed as

present materials and activities that are respectful of

ity, age, socio -economic status, ethnicity, race, and culture.

ness of this course for you and your fellow

Psychology 351CA01 (22844) – Cognitive Neuroscience – Spring 2024
Course Outline

Evaluation

Your grade will be based on the following items:

<u>Item</u>	<u>Date</u>	<u>% of Grade</u>
iClicker Participation	throughout	5
Homework Assignments	throughout	20
Exam 1	Mon., Feb. 12	25
Exam 2	Thu., Mar. 14	25
Exam 3	(Exam Period)	25
Extra Credit	by Mon., Apr. 8	(up to .04)

Psychology 351CA01 (22844) – Cognitive Neuroscience – Spring 2024

Course Outline

Extra Credit (up to 2%):

Research Participation: Experience research being carried out here at UVic, while simultaneously helping our scientific community with data collection. Earn up to 2% toward your final grade by participating in research studies in the Department of Psychology. One hour of participation earns students one SONA credit, with credits given in 0.5 increments. Each credit increases your final grade by 1%, thus 2 credits will earn the full 2%. Note that there is a one credit bonus for in-person experiments regardless of the overall participation time.

For details, go to the Psychology Research Participation System web page (<https://www.uvic.ca/socialsciences/psychology/research/participants>) and follow the instructions for students. You are encouraged, but not required, to participate in studies pertaining to this class. The last day for earning and assigning credits towards this course is Monday, April 8.

Alternative Activity (article reviews): If you want to earn extra credit, but do not wish to be a research participant, article reviews are an alternative. You will gain research experience by writing reviews of recent journal articles about original research relevant to the course. Each review will be worth 1% extra credit and a maximum of 2 reviews will be accepted (i.e. you can earn a total of 2% extra credit). You must send an email to the TA no later than Monday, April 1 indicating you wish to use this option, and submitting the chosen journal article(s) for approval. Completed reviews must be submitted via Brightspace no later than Monday, April 8. Details and requirements are on Brightspace.

Note: You can combine Research Participation and an Article Review, but the total cannot exceed 2%.

Grades

Your final letter grade in the course will be determined by your total percentage score according to the standard UVic grading scale. Refer to the Department of Psychology Important Course Policy Information and the UVic Calendar ([https://DesrogiETc\(ge\)TJ\(/\)U1rdlt](https://DesrogiETc(ge)TJ(/)U1rdlt))

Psychology 351CA01 (22844) – Cognitive Neuroscience – Spring 2024
Course Outline

Sources of Assistance

Please make use of the following resources as needed:

Course Material: Do you have questions about course material? Or do you just want to chat about the courseaf
<https://www.sabca.org/> (P400-01-0158(3)10.84041041(s)06.941e.6566)IT(JN)4rg(0.67d(m)54)

Psychology 351CA01 (22844) – Cognitive Neuroscience – Spring 2024 Course Readings

- Bechtel, W. (2002). Aligning multiple research techniques in cognitive neuroscience: Why is it important? *Philosophy of Science*, 69(S3), S48–S58. <http://doi.org/10.1086/341767>
- Botvinick, M. M., & Cohen, J. D. (2014). The computational and neural basis of cognitive control: Charted territory and new frontiers. *Cognitive Science*, 38(6), 1249–1285. <http://doi.org/10.1111/cogs.12126>
- Braver, T. S., Barch, D. M., & Cohen, J. D. (1999). Cognition and control in schizophrenia: A computational model of dopamine and prefrontal function. *Biological Psychiatry*, 46(3), 312–328. [http://doi.org/10.1016/S0006-3223\(99\)00116-X](http://doi.org/10.1016/S0006-3223(99)00116-X)
- Buzsáki, G. (2004). Large scale recording of neuronal ensembles. *Nature Neuroscience*, 7(5), 446–451. <http://doi.org/10.1038/nn1233>
- Cabeza, R., Rao, S. M., Wagner, A. D., Mayer, A. R., & Schacter, D. L. (2001). Can medial temporal lobe regions distinguish true from false? An event-related functional MRI study of veridical and illusory recognition memory. *Proceedings of the National Academy of Sciences of the United States of America*, 98(8), 4805–4810. <http://doi.org/10.1073/pnas.081082698>
- Dronkers, N. F. (1996). A new brain region for coordinating speech articulation. *Nature*, 384(6605), 159–161. <http://doi.org/10.1038/384159a0>
- Georgopoulos, A. P. (1994). New concepts in generation of movement. *Neuron*, 13(2), 257–268. [http://doi.org/10.1016/0896-6273\(94\)90345-X](http://doi.org/10.1016/0896-6273(94)90345-X)
- Georgopoulos, A. P., Lurito, J. T., Petrides, M., Schwartz, a B., & Massey, J. T. (1989). Mental rotation of the neuronal population vector. *Science*, 243(4888), 234–236. <http://doi.org/10.1126/science.2911737>
- Hallett, M. (2007). Transcranial magnetic stimulation: A primer. *Neuron*, 55(2), 187–199. <http://doi.org/10.1016/j.neuron.2007.06.026>
- Henson, R. (2005). A mini review of fMRI studies of human medial temporal lobe activity associated with recognition memory. *The Quarterly Journal of Experimental Psychology. B, Comparative and Physiological Psychology*, 58(3–4), 340–360. <http://doi.org/10.1080/02724990444000113>
- Hillis, A. E. (2007). Aphasia: Progress in the last quarter of a century. *Neurology*, 69(2), 200–213. <http://doi.org/10.1212/01.wnl.0000265600.69385.6f>
- Hinton, G. E. (1992). How neural networks learn from experience. *Scientific American*.

Psychology 351CA01 (22844) – Cognitive Neuroscience – Spring 2024
Tentative Course Schedule

<u>Topic</u>	<u>Date</u>	<u>Reading</u>	<u>Optional Textbook Reading</u>	<u>Homework *</u>
0. Course Introduction	Mon., Jan 8	Posner & DiGirolamo (2000)	Ch. 1	
1. TMS & Perception	Thu., Jan 11	Hallett (2007)	Ch. 3 (pp. 88-89) & Ch. 5	
	Mon., Jan 15	Walsh & Cowey (1998)		
	Thu., Jan 18	Pascual-Leone & Walsh (2001)		
2. ERPs & Attention	Mon., Jan 22	Luck (2012)	Ch. 3 (pp. 98-102) & Ch. 7	HW 1. Due
	Thu., Jan 25	Luck, Woodman, & Vogel (2000)		
	Mon., Jan 29	Luck, Vogel, & Shapiro (1996)		
3. Single-Unit Recording & Action	Thu., Feb. 1	Buzsáki (2004)	Ch. 3 (pp. 95-98) & Ch. 8	HW 2. Due
	Mon., Feb. 5	Georgopoulos (1994)		
	Thu., Feb. 8	Georgopoulos et al. (1989)		
Exam 1	Mon., Feb. 12	(Topics 1 & 2)		
4. Neural Networks & Cognitive Control	Thu., Feb. 15	Lewandowsky & Farrell (2010) , Hinton (1992)	Ch. 3 (pp. 11-114) & Ch. 12	HW 3. Due
	(Mon., Feb. 19	Family Day & Reading Break – No Class)		
	(Thu., Feb. 22	Reading Break – No Class)		
	Mon., Feb. 26	Botvinick & Cohen (2014)		
	Thu., Feb. 29	Braver, Barch, & Cohen (1999)		

* Homework Activities are due at 11:59pm on the due date.

BE WELL



A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

Social Life, Friends, & Community at UVic:

Having a social network is an extremely important foundation for positive mental health. There are lots of benefits to joining clubs, course unions, intramurals and teams on campus.

<https://www.uvic.ca/undergraduate/housing-student-life/student-life/index.php>

Counselling Services:

The Student Wellness Centre can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. <https://www.uvic.ca/student-wellness/contacts/student-wellness-team/index.php#ipn-counsellors>

Health Services:

The Student Wellness Centre also provides a full service primary health clinic for students. <https://www.uvic.ca/student-wellness/contacts/student-wellness-team/index.php#ipn-physicians>

Centre for Accessible Learning

The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations <https://www.uvic.ca/accessible-learning/index.php>. The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course.

Elders' Voices:

The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being.

www.uvic.ca/services/indigenous/students/programming/elders/

Mental Health Supports and Services:

Mental health supports and services are available to students from all areas of the UVic community: <https://www.uvic.ca/student-wellness/wellness-resources/mental-health/>

UNIVERSITY OF VICTORIA
Department of Psychology
Important Course Policy Information
Spring Session 2024

Accessible Learning

The University of Victoria is committed to creating a learning environment where all students can succeed. **All members of the university community have the right to this experience and** such an environment. The University will not tolerate racism, sexualized violence, bullying, or harassment.

Engaging with UVic's learning systems or interacting with online resources and course materials, you are engaging in a University activity.

For more information, please refer to the University's policies and procedures regarding accessibility and accommodations.

Policy on Academic Integrity including Plagiarism and Cheating

The Department of Psychology fully endorses and intends to enforce rigorously the [Senate Policy on Academic Integrity](#). It is of utmost importance that students who do their work honestly be protected from those who do not. Because this policy is in place to ensure that students carry out and benefit from the learning activities assigned in each course, it is expected that students will cooperate in its implementation.

The offences defined by the policy can be summarized briefly as follows:

1. **Plagiarism.** You must make sure that the work you submit is your work and oerg (a)-3.e tncergw (r)4T/6y9 (yo)1.9 (u s)-8 (e)

Prerequisites

Students who remain in courses for which they do not have the prerequisites do so at their own risk. Students who complete courses without prerequisites **ARE NOT** exempt from having to complete the prerequisite course(s) if such courses are required for the degree program.

Program Requirements

For more information see the [UVic Calendar](#).

Registration Status

Students are responsible for verifying their registration status. Registration status may be verified using My Page, View Schedule. Course adds and drops will not be processed after the [deadlines](#) set out in the current UVic Calendar.

Students who do not attend classes must not assume that they have been dropped from a course by an academic unit or an instructor. Courses that are not formally dropped will be given a failing grade, students may be required to withdraw and will be required to pay the tuition fee for the course.

Request for Academic Concessions

Students can apply for [academic concessions](#) if their course requirements are affected by (i) unexpected and/or unavoidable circumstances (e.g., illness, family affliction, etc.), or (ii) conflicting responsibilities (e.g., service in the armed forces or first responder, representing the university).

Request an in-course extension

If you require more time to complete a course requirement or miss a test or midterm exam, then you will need to complete the "[In-Course Extension Form](#)" and submit it directly to your course instructor. All

