

Course Syllabus

Introduction to Neuropsychology: PS365A

Department of Psychology, Faculty of Science, Waterloo Campus

Tuesdays and Thursdays from 5:30pm-6:50pm

Location: N1002 (Science Building)

Fall 2024

I acknowledge that in Kitchener, Waterloo, Cambridge and Brantford we are on the traditional territory of the Neutral, Anishnawbe, and Haudenosaunee peoples.

Course Professor Information

Yadurshana Sivashankar | Science Building, N2007A

Email: ysivashankar@wlu.ca

Weekly Office Hours: every Tuesdays, from 4:30pm to 5:30pm

Available also on Zoom, by appointment

Teaching Assistants

Angela Le | Science Building, N2065

Email: lexx1000@mylaurier.ca

Weekly Office Hours: every Wednesday, from 3:30pm to 4:30pm

Available in person or over Zoom, by appointment

Silas Manning

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Available in person or over Zoom, by appointment

Course Information

The focus of this course is to develop broad based knowledge concerning human behaviour from a neuropsychological perspective: primarily, this means viewing behaviour through the lens of neurological damage and disorders. Basic research and clinical examples will be used to explore the brain-behaviour relationships inherent in attention, memory, executive control, learning and beyond. Assessment tools used in the diagnosis and prognosis of such functional deficits will also be examined.

Pre-requisites: PS263 Behavioural Neuroscience or PS267 Introduction to Cognitive Neuroscience.

Course Objectives and Learning Outcomes

Upon completion of this course, students should be able to:

- Develop an understanding of various brain structure, location and functions.
- Explain the different types of research methods and assessment tools used in neuropsychology.
- Outline the neurobiological mechanisms underlying brain disorders and higher-order functions such as attention, memory, and emotion.
- Synthesize research articles and critically analyze controversial topics from multiple perspectives.

Required Textbook

There is no required textbook for this course. Rather, we will read and review research articles, whose content will be tested on during the exams. The research articles will be discussed during the lectures, and are intended to provide students with an idea of what contemporary neuroscience research looks like. Research articles will be posted in advance on MyLearningSpace (MyLS).

Student Evaluation

Assessment	Weighting	Due Date
Exam 1	20%	Oct 1 st
Exam 2	20%	Nov 7 th
Exam 3	20%	Dec 3 rd
Assignment 1 (Concept Map)	10%	October 25 th
Assignment 2 (Research Critique)	30%	November 22 nd

Midterms: The course will be divided into three sections with each section examined independently (i.e., exams will not be cumulative). Each section's exam will be a mixture of multiple choice, fill-in-the-blanks, and short answer questions. **Each midterm will be worth 20% of the final grade.** Together, the three exams make up 60% of the final grade.

Assignments: The final 40% of your grade will come from the following two assignments.

Assignment 1 (Worth 10%): Choose two topics covered in this course (e.g., Attention and Memory) and build a Concept Map depicting how the two topics may be linked. Seek original research articles (through PubMed or Google Scholar) to reference in your map. You can find the rubric and sample Concept Maps on MyLS.

You should include the following levels:

1. Behaviour
2. Brain Structures/Networks
3. Theories

Here's a resource for making a good Concept Map:
<https://www.youtube.com/watch?v=sZJj6DwCqSU&t=5s>

You will be evaluated on how well you highlight **critical terminology and concepts, knowledge of relationships between the concepts, and quality of communication.**

***** Assignment 1 Due – Friday October 25th – submitted on MyLS *****

The purpose of this assignment are the following:

1. To assess how well you have learned to integrate various concepts pertinent to the topic of brain and behaviour.
2. To develop your communicative and creative strategy to clearly convey complex scientific ideas; such a skill is required when communicating scientific findings to the lay public audience.

Assignment 2 (Worth 30%): Choose a journal article relevant to one of the topics covered in the course. PubMed is a good search engine for this (<http://www.ncbi.nlm.nih.gov/pubmed>). Critique the article with the following components to your paper:

1. Summarize the paper's main findings (~500 words; worth 5 marks)
2. Propose an alternate hypothesis to account for those findings (~500 words; worth 5 marks)
3. Design a follow-up experiment to test your hypothesis (~750 words; worth 15 marks)
4. Explain how data from your experiment would advance our understanding in a broader sense (~500 words; worth 5 marks)

Step 1 should only include any description of methodology insofar as it pertains to explaining the main findings. Step 2 should have clear directional hypotheses that support your alternate account. Step 3 should include enough detail to make it possible to critique your proposed design – that is, I am not expecting the level of detail required by an actual study – instead, think of this as a discussion you might have with a collaborator expecting your design to be modified to suit the goals of your study. For example, you may include the independent and dependent variables, design (within or between subjects), stimulus type, and sample characteristics. Step 4 should be clear and direct – no vague statements.

The goals of this assignment are of threefold:

1. Develop your critical thinking skills when reading science. Sometimes it can feel like a study represents the final say on a matter when in fact this is rarely, if ever, the case.

2. Develop creative ways to address questions of brain-behaviour relationships in humans. People often view science as rigid and formulaic, but the best science depends a great deal on creatively addressing a problem.
3. Develop your writing skills so that you can communicate complex scientific ideas persuasively and succinctly.

You are expected to format your papers to APA (7th edition) standards (<https://apastyle.apa.org/products/publication-manual-7th-edition>). You should include references (both in-text and full reference) when citing research findings, claims or theories proposed by others. **Assignment 2 will be submitted via Turnitin on MyLS to screen for plagiarism.**

***** Assignment 2 Due – Friday November 22nd – submitted on MyLS *****

Bonus Marks

You can earn three percent (3%) in bonus marks from participation in experiments through the Psychology Research Experience Program (PREP). To get the full 3% you will need to complete 3 full hours of experiments. For more information, see the Laurier PREP website. Experimental credits must all be finished by December 3rd.

Deferred Midterms

Students unable to take the midterm exams on the scheduled dates due to unforeseen personal circumstances will be able to take make up exams scheduled with the instructor/TAs. Please note that make up exams will not necessarily be in the same format as the original exam. The format chosen will be at the discretion of the instructor and could be in essay format, oral exam or in a standard (e.g., multiple choice) format.

Lecture Schedule

Note: topic dates are subject to change. Additional readings or topics could change based on the interest of the class.

All weekly readings can be found on MyLS under *Weekly Readings*. Lecture slides for each week will be posted on MyLS every Sunday before a new week.

Week 1

Thursday September 5 th (Topic 1)	Review Syllabus and begin Lecture 1 Introduction to Human Neuropsychology History of Neuropsychology Article: Sandrone et al., 2014
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Week 2

Tuesday September 10 th (Topic 1)	Finish Lecture 1 Introduction to Human Neuropsychology
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History of Neuropsychology
Article: Sandrone et al., (2014)

Thursday September 12th (Topic 2) Neuroanatomy
Helpful Resource: <https://www.neuroanatomy.ca/>

Week 3

Tuesday September 17th (Topic 3) Methods
Article: Shine & Poldrack (2018)
Article: Price & Friston (2002)
Article: Rorden & Karnath (2004)

Thursday September 19th (Topic 4) Hemispheric Specialization
Article: Miller et al., 2010

Week 4

Tuesday September 24th (Topic 5) Visual System and Object Recognition
Article: Konkle & Carramazza (2013)

Thursday September 26th (Topic 6) Comparative Biology: Inferring from Humans to other Species
Article: Kosciuk & Tranel (2012)
Midterm Review

Week 5

***** Exam 1 – Tuesday October 1st – written in class *****

Thursday October 3rd (Topic 7) Spatial Processing
Article: Saj et al., 2014, *Clinical Neurophysiology*

Week 6

Tuesday October 8th (Topic 8) Attention
Article: Hayden et al., 2011

Thursday October 10th (Topic 9) Unilateral Neglect
Article: Saj et al., 2014, *Psychological Science*

***** Week 7: Reading Week – No classes from October 14th to October 18th*****

Week 8

Tuesday October 22nd (Topic 10a) Memory I: Memory Systems
Article: Milner et al., 1998

Thursday October 24th (Topic 10b) Memory II: An Integrative Approach to Understanding the Brain
Article: Thompson, 1974

***** Assignment 1 Due – Friday October 25th – submitted on MyLS *****

Week 9

Tuesday October 29th (Topic 11) Higher-order Executive Functions
Article: Masumoto et al., 2015
Article: Caramazza et al., 2014

Thursday October 31st (Topic 12) Language
Article: Zhang et al., 2013

Week 10

Tuesday November 5th **Midterm Review; Please come prepared with questions**

Thursday November 7th

***** Exam 2 – Thursday November 7th – written in class *****

Week 11

Tuesday November 12th (Topic 13) Emotion
Article: Decety et al., 2014

Thursday November 14th **Assignment 2 review and in-class exercise**

Week 12

Tuesday November 19th (Topic 14a) Clinical Disorders I: Mood Disorders
Article: Drevets, 2001

Thursday November 21st (Topic 14b) Clinical Disorders II: Psychotic Disorders
Article: Barch & Sheffield, 2014

***** Assignment 2 Due – Friday November 22nd – submitted on MyLS *****

Week 13

Tuesday November 26th (Topic 15) Aging and the Brain/Dementias
Article: Nguyen et al., 2014

Thursday November 28th (Topic 16) Limitations of techniques used in neuropsychology and
Midterm Review

Week 14

Tuesday December 3rd

***** Exam 3 – Tuesday December 3rd – written in class *****

Important Information, Policies and Resources for Students

1. **Academic Calendars:** Students are encouraged to review the Academic Calendar for information regarding all-important dates, deadlines, and services available on campus.

2. **Intellectual Property:** The educational materials developed for this course, including, but not limited to, lecture notes and slides, handout materials, examinations and assignments, and any materials posted to MyLearningSpace, are the intellectual property of the course instructor. These materials have been developed for student use only and they are not intended for wider dissemination and/or communication outside of a given course. Posting or providing unauthorized audio, video, or textual material of course content to third-party websites violates instructors' intellectual property rights, and the Canadian Copyright Act. **Recording lectures in any way is prohibited in this course unless specific permission has been granted by the instructor.** Failure to follow these instructions may be in contravention of the university's Student Non-Academic Code of Conduct and/or Code of Academic Conduct, and will result in appropriate penalties. Participation in this course constitutes an agreement by all parties to abide by the relevant University Policies, and to respect the intellectual property of others during and after their association with Wilfrid Laurier University.

3. **Accessibility:** Contact Accessible Learning if you require academic accommodations because of a disability. Review the Registration page for information about intake and documentation requirements. Deadlines: Students are responsible for meeting posted deadlines for registering with Accessible Learning and booking accommodated exams. Accessible Learning cannot guarantee accommodations for requests received after posted deadlines.

4. **Library Accessibility Services:** The Library offers accessibility services for people with disabilities, including alternate formats or remediation of Library collections and help accessing materials. For information please visit the Library Accessibility Hub (library.wlu.ca/services/accessibility-hub) or email libaccessibility@wlu.ca.

5. **Plagiarism:** Wilfrid Laurier University uses software that can check for plagiarism. If requested to do so by course instructors, students are required to submit their written work in electronic form and have it checked for plagiarism.

6. **Academic Integrity:** Laurier is committed to a culture of integrity within and beyond the classroom. This culture values trustworthiness (e.g., honesty, integrity, reliability), fairness, caring, respect, responsibility and citizenship. Together, we have a shared responsibility to uphold this culture in our academic and nonacademic behaviour. The University has a defined policy with respect to academic misconduct. As a Laurier student, you are responsible for familiarizing yourself with this policy and the accompanying penalty guidelines, some of which may appear on your transcript if there is a finding of misconduct. The relevant policy can be found at Laurier's academic integrity website along with resources to educate and support you in upholding a culture of integrity. Ignorance is not a defense.

7. **Late Assignment Policy:** A valid medical documentation or a self-declaration of an illness form is necessary for all academic accommodations. A missed assignment without valid medical documentation will result in a mark of “zero” – without exception. Documentation must be submitted within 24 hours after the missed assignment. Travel plans are not a valid reason to miss an assignment and will result in a mark of “zero”. The penalty for late assignments is 5% per day (including weekends) up to a maximum of 5 days after which a mark of zero will be applied. **It is the student’s responsibility to submit late assignments directly to Yadurshana Sivashankar via email.**

8. **Missed Midterms:** Students who miss a midterm due to unforeseen personal circumstances must provide a valid medical documentation or a self-declaration of an illness form (within 24 hours after the missed exam), to write the missed test. The date and time will be set up with the TA of the course (Makeup tests will be written one week from the date of the missed midterm). If a student cannot make the scheduled deferred test time, then any missed tests will be reweighed to midterms completed in the course. Travel plans are not a valid reason to miss any midterms in the course and will result in a mark of “zero”.

9. **Course Drop Dates 2024-2025:** Please refer to the Undergraduate Academic Calendar Academic Dates 2024-2025 – For details, of course, add/drop dates, etc.

10. **Final Examinations:** Students are strongly urged not to make any commitments (e.g., vacation) during the examination period. Students are required to be available for examinations during the examination periods of all terms in which they register. Refer to the Handbook on Undergraduate Course Management for more information.”

The Academic Date section of the Calendar (Academic Dates 2024-2025) clearly states the examination date period for each semester. Students must note that they are required to reserve this time in their personal calendars for the examinations. The examination period for the Fall Term: Dec 7th - Dec 20th. Students who are considering registering to write MCAT, LSAT or GMAT or a similar examination, should select a time for those examinations that occur

outside the University examination period. For additional information that describes the special circumstances for examination deferment, consult the University calendar.

11. Religious and Spiritual Accommodation: The University welcomes students, staff and faculty from a wide range of backgrounds, beliefs and traditions and has a duty to provide accommodation based on creed (religion and spirituality) under the Ontario Human Rights Code. This obligation requires the University to work with students to provide reasonable accommodation when a student's religious observances or spiritual beliefs creates a conflict with their academic schedule. In order for instructors to provide proper accommodations, students have obligations to request accommodations in a timely manner. All policies, procedures, timelines, and request forms are found on Laurier's Religious and Spiritual Accommodations and Supports webpage.

12. Gender Inclusivity: This course will be conducted in an affirming and mutually respectful atmosphere for people of all gender expressions and identities. I was provided with a class roster with your name as it appears on the official enrollment information. If you use a name different from the roster, please let me know at your earliest convenience. You can also share your gender pronouns with me if you like. Members of the class are expected to refer to one another by the name and pronouns identified by each student. If you are comfortable, you can also let your classmates know about your name and pronouns. The Centre for Student Diversity, Equity and Inclusion (CSEDI) has developed a website outlining how to request a different name to appear on some university records and systems such as Zoom, MyLS and email. The website also provides information about Laurier's Inclusive Washroom Initiative, support resources at Laurier, and more.

13. Classroom Use of Electronic Devices: Use of technology by students and instructors is permitted during class provided it is used for educational purposes. However, the instructor is permitted to regulate the use of technology if usage becomes disruptive. **Students are not permitted to use technological devices during assessments (i.e., midterms),** except under circumstance pre-approved by Accessible Learning. **Students are expected to have their mobile devices on silent during the lecture.**

14. Academic and Research Misconduct:

Academic misconduct is an act by a student, or by students working on a team project, which may result in a false evaluation of the student(s), or which represents a deliberate attempt to unfairly gain an academic advantage, where the student either knew or ought reasonably to have known that it was misconduct. Plagiarism is the unacknowledged presentation of work of others as one's own. To represent such work as self-created is dishonest and academically worthless. Cheating is the using, giving, receiving, or the attempt to use, give or receive unauthorized information during an examination, or the presentation of a single work in more than one course without the permission of the instructors involved. Students who are uncertain whether a course of action might constitute plagiarism or cheating should consult the instructors in advance. **Plagiarism is considered a serious academic offence and will**

result in the appropriate penalties. Please refer to the University Calendar Web Site for further clarification of academic and research misconduct.

15. Laurier Email Account:

Students are expected to regularly check their Laurier email account for important notices from the university community. **Students are also expected to send emails to official members of the university community from their Laurier email account in order to ensure delivery.** Emails sent from non-Laurier accounts, such as Hotmail and Gmail, may be identified as spam and not be delivered. Your co-operation is appreciated.

16. Use of Zoom for Office Hours:

“Wilfrid Laurier University uses a range of technologies to facilitate in-person and remote instruction. Zoom is currently used for remote course delivery, including lectures, seminars, and group office hours, which may be recorded, stored and shared through MyLearningSpace for access by students in the course. For these course activities, students are permitted to turn off their cameras or use an alternative name to maintain their privacy after they have confirmed this with their course instructors. Student personal information is collected and used in the course in accordance with University policies and the Notice of Collection, Use or Disclosure of Personal Information. All exams and mid-terms in the course that are conducted online will be proctored using only technologies approved for assessment at Laurier as outlined on this page.”

17. Waterloo Resources for Students:

Academic Advising and Support: Enhance your success at Laurier through professional one-on-one, online and peer-to-peer resources. Student success programs support and improve your academic experience throughout your time at Laurier. These services include assistance with learning, mathematics, study skills and writing development. Most of these services are delivered in small groups and individual consultation settings and are designed to encourage the sharing of ideas and peer learning.

Located at the Teaching and Learning Commons (TLC) 2nd floor of the Peters Building.

To further your academic and professional success, [academic advising](#) is offered in the faculties and departments of your program.

Teaching and Learning Commons (TLC):

Some resources for students to use.

[Accessible Learning](#)

[Educational Technologies](#)

[Math and Statistics Support*](#)

[Online Learning](#)

[Study Skills and Course Support](#)

[Writing Services](#)

*This space is in addition to the other Math and Statistics Learning Labs on-campus.

Waterloo Student Food Bank: All students are eligible to use this service to ensure they're eating healthy when overwhelmed, stressed or financially strained. Anonymously request a package online 24-7. All dietary restrictions accommodated.

Waterloo Hawk Walk: 519.886.3668 walkw@wlu.ca Foot Patrol is a volunteer operated safe walk-home service, available daily during evening hours. Teams of two radio-dispatched volunteers are available on request to escort students to and from campus as well as to off-campus destinations. Foot Patrol can be found on the 2nd floor of the Fred Nichols Campus Centre next to the Dean of Students Office.

Waterloo Student Wellness Centre: 548-889-3239. The Centre supports the physical, emotional, and mental health needs of students. Located on the 2nd floor of the Student Services Building. Waterloo campus hours are Mondays to Wednesdays from 9:00 am to 7:30 pm, and Thursday and Friday from 9:00 am to 4:15 pm. Closed from 12-1 for lunch. Contact the centre: wellness@wlu.ca or @LaurierWellness. A limited number of same-day appointments are available each day for students with acute illness and unpredictable concerns. Offer [online booking](#) to registered Laurier students for **non-urgent/routine appointments only**.

Emergency Response Team: (ert@wlu.ca): The Emergency Response Team provides medical assistance to students on campus. ERT can be booked for on-site event support by filling out the online booking request form on their website.

18. Multi-campus Resources:

Student Rights Advisory Committee (studentsrights@wlu.ca): The Student Rights Advisory Committee exists to provide you with information about your rights when it comes to landlord-tenant issues or academic appeals. While in no way legal representation, it can help to inform you about your options to make difficult situations easier to navigate.

Empower Me - Mental Health Resources provided by Dialogue: Empower Me is a mental health and wellness service that seeks to contribute to a resilient student community by supporting existing on-campus and community mental health resources. Empower Me has a number of professionals with various domains of expertise, including psychology, psychotherapy, social work, nutrition, etc., to support you and respond effectively to diverse needs. You can access services via telephone, videoconference, or in-person. Empower Me is: available 24/7, 365 days a year, confidential, multilingual, culturally sensitive, gender-inclusive, and faith inclusive.

The Essentials - Legal Care Program: The Essentials, Legal Care Program allows students to access a legal consultation service. Students are free to consult a duly certified lawyer regarding any legal questions. Upon filling out the Support Form, students can expect a response from legal counsel within approximately 48 hours (business days) about next steps and assistance that is required to navigate housing disputes, employment disputes, disputes with an academic institution, and public notaries. Students can also seek legal representation when their case qualifies for further counsel.

19. Brantford Resources:

Food Bank: lbfoodbank@wlu.ca Food Bank provides food parcels to cater to the nutritional and dietary needs of students. All students are eligible to use this service, regardless of circumstance or financial situation. Request a package at <https://www.yourstudentsunion.ca/food-bank>

Foot Patrol: 519.751.7875 walkb@wlu.ca Foot Patrol is a volunteer operated safe walk-home service, available daily during evening hours. Teams of two radio-dispatched volunteers are available on request to escort students to and from campus as well as to off-campus destinations. Foot Patrol can be found in the basement of the Student Centre beside the Clubs & Associations Storage Space. The door will be open while volunteers are on-shift.

After hours crisis support is available:

[Here 24/7](#) Crisis Line. Call anytime to access Addictions, Mental Health& Crisis Services Waterloo – Wellington 1.844.437.3247

[Good2Talk](#) is a post-secondary school helpline. Call 1.866.925.5454 or through 2.1.1. Available 24/7/365