

Psychology 431 (Section 01)
Introduction to Neuropsychology
Winter 2022, T. Th. 4 – 5:15 pm in ASH 1204

Instructor: Xandra Xu, Ph.D.

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(Email is the best way to reach me. If you put your class number and section number in the subject line of your email, you typically receive a response within 2 business days. If you don't put your class number and section number in the subject line of your email, it will take longer time to receive a response.)

Mailing address: 1 Campus Dr., Allendale, MI 49401

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Office hour: T. Th. 2:30–3:30 pm in person at ASH 2204 or on Blackboard Collaborate at the following link:
<https://us.bbcollab.com/guest/04bc13e0df7342fd925a1e58292953f8>

Please click the following link to schedule your appointment for a time slot on T. Th. 2:30–3:30 pm
<https://calendar.google.com/calendar/u/1/r/week/2022/1/11?tab=mc>

Texts:

Required: Kolb, B. and Whishaw, I. Q. (2021). Fundamentals of Human Neuropsychology (8th ed.), Worth Publishers: New York.

Recommended: Materials on reserve in the Mary Idema Pew Library.

Course description:

This course will introduce students to the physiology and functions of the human brain. The course first provides students with necessary background information, including neural communication, neuroanatomy, and sensory and motor system, needed to the study of the brain. The course then focuses on the cerebral asymmetry, and the anatomical functions of occipital, parietal, temporal, and frontal lobes. Finally, the course emphasizes higher functions, such as memory and language, which require continual interaction of the different lobes; and examines abnormalities of the brain. Lectures will focus on selected concepts and theories. Students will be responsible for all materials presented in the texts as well as lectures. Prereq. Psy 101 and Psy 300.

Learning objectives:

Upon successful completion of this course, students will be able to:

Identify the structure and function of the major parts of the nervous system

Describe the process of action potentials

Describe the process of neurotransmission

Explain the sensory and motor systems

Analyze and think critically about basic research regarding cerebral asymmetry

Discuss functions of the four lobes of the cerebral hemispheres

Analyze neuropsychological concepts with respect to their relationship to everyday behavior

Course delivery/method of instruction:

This course is taught in face-to-face formats, but also using Blackboard for quizzes and assignments. Although the course blackboard contains video lectures used in previous semesters for your convenience, it is students' responsibility to make sure that they receive updated materials for this semester in class.

Course evaluation:

Exams and the Final Exam: There will be two within semester exams and a final exam. Each exam will be worth 50 points and the final exam 100 points. Exams and the final will consist of identification of brain structures, multiple choice, true-false, matching, and fill-in the blank questions. Multiple choice, true-false, and matching questions must be answered on the scantron sheet in order to receive any points for those questions. Students are not allowed to use any external materials, such as books, notes, paper, other devices, during any exams. In the final computation of your grade, the graded class participation 50 points described below will be included. The final grades will be based upon your percentage of total points (number of points you earned divided by total number of points possible, which is 250).

Graded class participation: Class participation including quizzes and assignments will be worth 50 points. Quizzes and assignments will be given in the course blackboard, and are open-book and open-notes. Class participation including quizzes and assignments is intended to guide students towards important concepts or theories or key issues and help students prepare for exams, and the class participation points (resulted from quizzes and assignments that are open-book and open-notes) are intended to increase students' grade. This course focuses on learning the particular material. Students receive participation points for demonstrating learning with the aid of books and notes. **Quizzes and assignments are open-book and open-notes, but they are graded.** **Note:** No individual students will be given any opportunity to earn extra points. Any possible opportunity to earn extra points will be given in class.

Missed exams / Make-up exams: Students must take exams as scheduled in this syllabus in person. Any within semester exam that any student cannot take as scheduled in this syllabus is considered as a missed exam. A score of "0" will be given in any missed exam. Students with documentations that can substantiate legitimate reasons for missing a scheduled exam will either receive prorated points according to their performance on the final exam or take a different version of the exam consisting of essay questions. You must notify me your decision to receive prorated points or to take a make-up exam consisting of essay questions, and turn in the documentations to me within a week of the missed exam. If I do not receive a written notification and documentations within a week of the missed exam, you will receive "0". Students who cannot take the final exam as scheduled in the syllabus will take a different version of the final exam consisting of essay questions.

Grading:

A - to A = 90 - 100 %
 B - to B + = 80 - 89 %
 C - to C + = 70 - 79 %

D to D + = 60 - 69 %
 F = below 60 %

Course Schedule: (Underlined dates are exam dates)

Date	Topic	Reading assignments
Jan. 11, 13	Development of neuropsychology	Chapters 1 & 4
Jan. 18, 20	Neural communication	Chapters 5 & 6
Jan. 25, 27	Neuroanatomy	Chapter 3
Feb. 1, 3	Sensory systems	Chapter 8
Feb. 8, <u>10</u> (1, 3-6, 8-9)	Motor system	Chapter 9
Feb. 15, 17	Cerebral asymmetry	Chapters 11 & 12
Feb. 22, 24	Occipital lobes	Chapter 13
Mar. 1, 3	Parietal and Temporal lobes	Chapters 14 & 15
Mar. 6-13	Spring Break	
Mar. 15, 17	Temporal and Frontal lobes	Chapters 15 & 16
Mar. 22, <u>24</u> (11-16)	Frontal lobes	Chapter 16
Mar. 29, 31	Learning and memory	Chapter 18
Apr. 5, 7	Language	Chapter 19
Apr. 12, 14	Neurological disorders	Chapter 26
Apr. 19, 21	Neuropsychological assessment	Chapter 28

Apr. 26, Tue. 4 - 5:50 pm: Final Exam (3, 4, 5, 6, 18, 19, 26, 28)

Drop deadline - grade of "W" - Fri., Mar. 11, 5 pm.

This course is subject to the GVSU policies listed at <http://www.gvsu.edu/coursepolicies>

Academic Integrity

Students will do original work and will not take or receive the efforts of another person on any test or assignment, use unauthorized resources on quizzes or tests, plagiarize, or give/sell other students papers or assignments *not authorized by the instructor*. **You are responsible** for not giving the appearance of cheating, such as wandering eyes or talking during exams. **You are responsible** for making yourself aware of and for understanding the policies and procedures that pertain to academic integrity. To that end, be sure to familiarize yourself with the GVSU Student Code related to academic integrity and [Integrity of Grades & Scholarship](#).

Disability

If there is any student in this class who has special needs because of a learning, physical, or other disability, please contact me and Disability Support Resources (DSR) at (616) 331-2490. Furthermore, if you have a disability and think you will need assistance evacuating this classroom and/or building in an emergency, please make me aware so that the university and I can develop a plan to assist you. It is the *student's responsibility* to request assistance from DSR.

Supplemental reading on reserve for Psy 431:

- Anticevic, A., et al., (2013). Characterizing thalamo-cortical disturbances in schizophrenia and bipolar illness. *Cortex*, doi: 10.1093/cercor/bht165
- Bayley, P. J., O'Reilly, R. C., Curran, T., & Squire, L. R. (2008). New semantic learning in patients with large medial temporal lobe lesions. *Hippocampus*, 18(6): 575-583.
- Burguiere, E., Monteiro, P., Feng, G., Graybiel, A.M. (2013). Optogenetic stimulation of lateral orbitofronto-striatal pathway suppresses compulsive behaviors. *Sciences*, 340: 1243-1246.
- Carlson, N.R. (2013). *Physiology of Behavior*. (11th ed). Boston: Allyn and Bacon. **(Please place following pages on E-reserve: 5, 6, 29, 31, 43, 44, 46, 47, 48, 53, 69, 72, 83, 86, 90, 91, 92, 95, 107, 123, 143, 144, 151, 154, 173, 194, 211, 214, 215, 232, 236, 250, 265, 267, 461, 470, 483, 488, 538, 541, 563)**
- Davies-Thompson, J., et al. (2017) Perceptual learning of faces: a rehabilitative study of acquired prosopagnosia. *Journal of cognitive neuroscience*. 29(3): 573-591.
- De Sousa, A., McDonald, K., Rushby, J., Li, S., Dimoska, A., and James, C. (2011). Understanding deficits in empathy after traumatic brain injury. *Cortex*, 47 (5), 526-535.
- Gerlach, C. & Starrfelt, R. (2021) Patterns of perceptual performance in developmental prosopagnosia: An in-depth case series, *Cognitive Neuropsychology*, 38:1, 27-49, DOI: 10.1080/02643294.2020.1869709
- Kumfor, F., Irish, M., Hodges, J.R., & Piguet, O. (2013). The orbitofrontal cortex is involved in emotional enhancements of memory: evidence from the dementias. *Brain*, doi: 10.1093/brain/awt185
- Kuypers, K. et al. (2019). Microdosing psychedelics: more questions than answers? An overview and suggestions for future research. *Journal of Psychopharmacology*, DOI: 10.1177/026988119857204.
- Li, W. et al. (2016). Extensive graft-derived dopaminergic innervation is maintained 24 years after transplantation in the degenerating Parkinsonian brain. *Proceedings of the National Academy of Sciences of the United States of America*, 113(23): 6544-9.
- Malm, H. et al (2015). Pregnancy Complications Following Prenatal Exposure to SSRIs or Maternal Psychiatric Disorders: Results From Population-Based National Register Data. *The American Journal of Psychiatry*. Doi.org/10.1176/appi.ajp.2015.14121575
- Meinzer, M., Darkow, R., Lindenberg, R., et al. (2016). Electrical stimulation of the motor cortex enhances treatment outcome in post-stroke aphasia. *Brain: a journal of neurology*, 139(4): 1152-63

- Mouro, F.M., et al (2018). Chronic, intermittent treatment with a cannabinoid receptor agonist impairs recognition memory and brain network functional connectivity. *Journal of neurochemistry*, <https://doi.org/10.1111/jnc.14549>
- Oliveri, M. & Vallar, G. (2009). Parietal versus temporal lobe components in spatial cognition: setting the mid-point of a horizontal line. *Journal of Neuropsychology*, 3, 201-211.
- Paschke, R.E. & Xu, X. (2014). Human Brain Anatomy: a video PPT of human brain dissection.
- Rantanen, K., Eriksson, K., & Nieminen, P. (2011). Cognitive impairment in preschool children with epilepsy. *Epilepsia*, DOI: 10.1111/j.1528-1167.2011.03092.x
- Schmid, M. C, Mrowka, S. W, Turchi, J., Saunders, R. C, Wilke, M., Peters, A. J. et al. (2010). Blindsight depends on the lateral geniculate nucleus. *Nature*, 466(7304): 373-377.
- Wikenheiser A.M. et al (2021) Spatial Representations in Rat Orbitofrontal Cortex. *Journal of Neuroscience*, 41(32):6933–6945.