

Psychology 330 (Section 03)
Foundations of Behavioral Neuroscience
Winter 2022, T. Th. 1– 2:15 pm in ASH 1310

Instructor: Xandra Xu, Ph.D.
Office: 2204 Au Sable Hall Mailing address: 1 Campus Dr., Allendale, MI 49401
Office Phone: 331-2411 Email address: xux@gvsu.edu
(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.)

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: Carlson, N. & Birkett, M. (2020). Foundations of Behavioral Neuroscience (10th ed.), Pearson.
Recommended: Materials on course reserve that can be accessed through the course blackboard

Course description:

This course will examine the physiological basis of behavior. Among topics to be covered are the following: the nervous system; and neural mechanisms involved in sensory and perceptual processes, motor control, sleep, language, and neurological and mental disorders. Lectures will focus on selected concepts and theories. Students will be responsible for all materials presented in the lectures as well as the textbook. Prereq. Psy 101.

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
- Identify the behavioral function of major brain chemical systems
- Discuss basic research in behavioral neuroscience
- Discuss the neural basis of perception, movements, sleep, and language
- Relate biological processes 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 three 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, and matching 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, any 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 300).

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	Introduction	Chapters 1 & 2
Jan. 18, 20	Neuron and neural communication	Chapters 2 & 3
Jan. 25, 27	Anatomy of the nervous system	Chapter 3
Feb. 1, <u>3</u> (1-3)	Exam I	
Feb. 8,10	Research methods and strategies	Chapter 5
Feb. 15, 17	Drugs and behavior	Chapter 4
Feb. 22, 24	Vision	Chapter 6
Mar. <u>1</u> (4-6), 3	Exam II and Audition and somatosenses	Chapter 7
Mar. 6-13	Spring Break	
Mar. 15, 17	Motor control	Chapter 8
Mar. 22, 24	Sleep	Chapter 9
Mar. 29, <u>31</u> (7-9)	Exam III	
Apr. 5, 7	Language	Chapter 14
Apr. 12, 14	Neurological disorders	Chapter 15
Apr. 19, 21	Mental disorders	Chapter 16

Apr. 26, Tue. 12 – 1:50 am: Final Exam (2, 3, 4, 14, 15, 16)

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 330:

Chapters 1, 2, 3

Paschke, R.E. & Xu, X. (2014). Human Brain Anatomy: a video PPT of human brain dissection.

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.

Pinel, J.P. (2014). Biopsychology (9th ed). Boston: Allyn and Bacon. **(The following Pages are on E-reserve: 55, 59, 60, 65, 66, 71, 90, 96, 110, 131, 132, 140, 173, 174, 175, 179, 180, 188-202,196, 200, 201, 261, 262, 263, 343, 347,349, 350, 355, 364, 399, 411, 412, 451, 452)**

Chapters 4, 5, 6

Davies-Thompson, J., et al. (2017) Perceptual learning of faces: a rehabilitative study of acquired prosopagnosia. *Journal of cognitive neuroscience*. 29(3): 573-591.

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.

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>

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

Chapters 7, 8, 9

Banissy, M. J., & Ward, J. (2007). Mirror-touch synesthesia is linked with empathy. *Nature neuroscience*, 10(7), 815-816.

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.

Kohyama, J. (2021). Which is more important for health: sleep quantity or sleep quality. *Children*, 8(7). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8304732/>

Chapters 13, 14, 15, 16

Anticevic, A., et al., (2013). Characterizing thalamo-cortical disturbances in schizophrenia and bipolar illness. *Cortex*, DOI: 10.1093/cercor/bht165

Hoban, C., Byard, R.W., and Musgrave, I.F. (2015). A comparison of patterns of spontaneous adverse drug reaction reporting with St. John's Wort and fluoxetine during the period 2000–2013. *Clinical and Experimental Pharmacology and Physiology*. DOI: 10.1111/1440-1681.12424

- 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
- Moncaster, J. A, Pineda, R., Moir, R. D., Lu, S., Burton, M. A., Ghosh, J. G. et al. (2010). Alzheimer's disease amyloid-beta links lens and brain pathology in Down syndrome. *PLoS One*, 5(5): e10659.