

**Psychology 435 (Section 01)**  
**Physiological Psychology**  
Fall 2019, T. Th. 4 – 5:15 pm in ASH 1204

**Instructor:** Xandra Xu, Ph.D.  
Office: 2211 Au Sable Hall  
Phone: 331-2411 (Students' phones calls will be returned within two business days, but students' emails will be replied between one to two weeks)  
Secretary Phone: 331-2195

**Office hour:** T. Th. 1 – 3 pm or by appointment

**Texts:**

Required: Carlson, N.R. (2017). Physiology of Behavior (12th ed.), Pearson.

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

**Course description:**

This course will examine the physiological basis of behavior in depth. Among topics to be covered are the following: the nervous system, psychopharmacology, research methods used to study the physiological basis of behavior, and the neural mechanisms involved in perceptual and motor processes, ingestive behaviors, learning and memory, language, and neurological and psychiatric disorders. The topics already covered in Psy 330 will be covered in depth in this course. 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 330.

**Learning objectives:**

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

- Describe the process of action potential, including how and why they occur
- Explain in detail the steps of neurotransmission
- Identify the behavioral function of major brain chemical systems
- Critique original research in behavioral neuroscience
- Discuss current topics in behavioral neuroscience research

**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, fill-in the blank, and essay questions. Multiple choice, true-false, and matching questions must be answered on the scantron sheet in order to receive any points for those questions. In the final computation of your grade, the class participation 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).

<u>Grading:</u>	A - to A = 90 - 100 %	D to D + = 60 - 69 %
	B - to B + = 80 - 89 %	F = below 60 %
	C - to C + = 70 - 79 %	

Make-up exams: Any within semester exam or the final 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. Make-up exams for within semester exams will be given on the day of the final exam to students with documentations that substantiate legitimate reasons for missing a scheduled exam. Make-up exams will be in Essay format. You must notify me in writing of your reason for missing the exam and the exam number you intend to make-up. You must turn in the note and documentations to me within a week of the missed exam. If I do not receive a written notification and documentations, there will not be a make-up exam for you. The make-up final will be in Essay format and will be given to only those students with documentations that can substantiate a medical reason for missing the final exam.

**Class participation:** Class participation including group activities, quizzes, answering questions in class, and group presentations will be worth 50 points. Early in the semester, students will form groups of 3-4 people and choose a topic regarding neurological disorders. Each group will then make a presentation during the last week of the semester. The group will be evaluated by the class and the instructor on a scale of 1 to 10 with 1 being poor and 10 being excellent. The rating will then be converted into points. The group presentation will be worth 25 points, and other class participation together will be worth 25 points.

**Cell phones and disrupting behavior:** Cell phones are to be turned off and kept out of sight – no exceptions. Disrupting behavior, such as talking to other students during my lectures or any cell phone related activity/ringing in class, should be avoided. First offense for disrupting behavior in class is a dirty look. Each subsequent occurrence of disrupting behavior will result in a 5% reduction of your total points for the semester.

**Course Schedule:** (Underlined dates are exam dates)

Date	Topic	Reading assignments
Aug. 27, 29	Neurons and synapses	Chapter 2
Sept. 3, 5	Anatomy of the nervous system	Chapter 3
Sept. 10, 12	Psychopharmacology	Chapter 4
Sept. 17, 19	Methods and strategies of research	Chapter 5
Sept. 24, <u>26</u> (2-5)	<b>Exam I</b>	
Oct. 1, 3	Vision	Chapter 6
Oct. 8, 10	Audition, and the body and chemical senses	Chapter 7
Oct. 15, 17	Control of movement	Chapter 8
Oct. 20-22	Fall Break	
Oct. 24	Ingestive behavior	Chapter 12
Oct. 29, 31	Ingestive behavior con't	
Nov. <u>5</u> (6-8, 12), 7	<b>Exam II</b> and Learning and Memory	Chapter 13
Nov. 12, 14	Human communication	Chapter 14
Nov. 19, 21	Psychiatric disorders	Chapters 16 & 17
Nov. 26	Psychiatric disorders con't	Chapters 16 & 17
Dec. 3, 5	Neurological disorders (student presentations)	Chapter 15

**Dec. 10, Tue. 4 – 5:50 pm: Final Exam (2, 3, 4, 13, 14, 15, 16, 17)**

**Drop deadline - grade of "W" - Fri., Oct. 25, 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 [Sections 223.00 and 223.01] related to academic integrity.

### ***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 435:

### Chapters 2, 3, 4, 5

- Burguiere, E., Monteiro, P., Feng, G., Graybiel, A.M. (2013). Optogenetic stimulation of lateral orbitofronto-striatal pathway suppresses compulsive behaviors. *Sciences*, 340: 1243-1246.
- 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>
- Paschke, R.E. & Xu, X. (2014). Human Brain Anatomy: a video PPT of human brain dissection.
- Paschke, R.E. & Xu, X. (2014). Sheep Brain Anatomy: a video PPT of sheep brain dissection.
- Pinel, J.P. (2014). Biopsychology (9<sup>th</sup> ed). Boston: Allyn and Bacon. **(Please place following Pages 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 6, 7, 8, and 12

- Bilalic, M., Langner, R., Ulrich, R., Grodd, W. (2011). Many faces of expertise: fusiform face area in chess experts and novices. *Journal of Neuroscience*, 31(28), 10206-10214.
- Davies-Thompson, J., et al. (2017). Perceptual learning of faces: a rehabilitative study of acquired prosopagnosia. *Journal of cognitive neuroscience*. 29(3): 573-591.
- Kim, et al (2014). Leptin signaling in astrocytes regulates hypothalamic neuronal circuits and feeding. *Nature neuroscience*, 17(7), 908-910. DOI:10.1038/nn.3725
- 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.
- 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.

### Chapters 13, 14, 15, 16, 17

- 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
- Gruchot, et al (2019). Neural cell responses upon exposure to human endogenous retroviruses, *Frontiers in Genetics*. DOI: 10.3389/fgene.2019.00655
- 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>.
- Xu, X., Weber, D., Burge, R., & VanAmberg, K. (2016). Neurobehavioral impairments produced by developmental lead exposure persisted for generations in zebrafish (*Danio rerio*). *NeuroToxicology*. 52, 176-185. DOI:10.1016/j.neuro.2015.12.009