

Psychology 330 (Section 01)
Foundations of Behavioral Neuroscience
Fall 2019, T. Th. 11:30 am – 12:45 pm in ASH 1204

Instructor: Xandra Xu, Ph.D.
Office: 2211 Au Sable Hall
Phone: 331-2411 (Students' phone calls will be returned within two business days, while students' emails will be replied within seven to ten business days)
Secretary Phone: 331-2195

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

Texts:

Required: Carlson, N.R. (2014). Foundations of Behavioral Neuroscience (9th ed.), Pearson.

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

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, learning and memory, language, and neurological and mental disorders. 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.

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
- Relate biological processes to everyday behavior

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 70 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 lowest grade of within semester exams may be modified with the class participation points described below. 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 220).

Grading:

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

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

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, and answering questions in class will be worth 50 points. Some students do not feel they are best able to demonstrate their learning on objective examinations. These students and any others who are not doing as well on the exams as they would like may ask for the class participation points to be averaged with the lowest grade of within semester exams.

Cell phones and disrupting behavior: Cell phones are to be turned off and kept out of sight – no exceptions. Disruptive 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	A physiological approach	Chapters 1 & 2
Sept. 3, 5	Neuron and neural communication	Chapters 2 & 3
Sept. 10, 12	Anatomy of the nervous system	Chapter 3
Sept. <u>17</u> (1-3), 19	Exam I and Research methods and strategies	Chapter 5
Sept. 24, 26	Drugs and behavior	Chapter 4
Oct. 1, 3	Vision	Chapter 6
Oct. 8, <u>10</u> (4-6)	Exam II	
Oct. 15, 17	Audition and somatosenses	Chapter 7
Oct. 20-22	Fall Break	
Oct. 24	Motor control	Pinel's P188-202 On Reserve
Oct. 29, 31	Sleep	Chapter 8
Nov. 5, <u>7</u> (7, motor control, 8)	Exam III	
Nov. 12, 14	Learning and Memory	Chapters 12 & 13
Nov. 19, 21	Language	Chapter 13 & 14
Nov. 26	Neurological disorders	Chapter 14
Dec. 3, 5	Mental disorders	Chapter 15

Dec 10, Tue. 10 – 11:50 am: Final Exam (2, 3, 4, 12, 13, 14, 15)

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 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.

Chapters 4, 5, 6

- 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.
- Burguiere, E., Monteiro, P., Feng, G., Graybiel, A.M. (2013). Optogenetic stimulation of lateral orbitofronto-striatal pathway suppresses compulsive behaviors. *Sciences*, 340: 1243-1246.
- 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>

Motor control, Chapters 7 and 8

- 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.
- Pinel, J.P. (2014). Biopsychology (9th 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 12, 13, 14, 15

- 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
- 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.