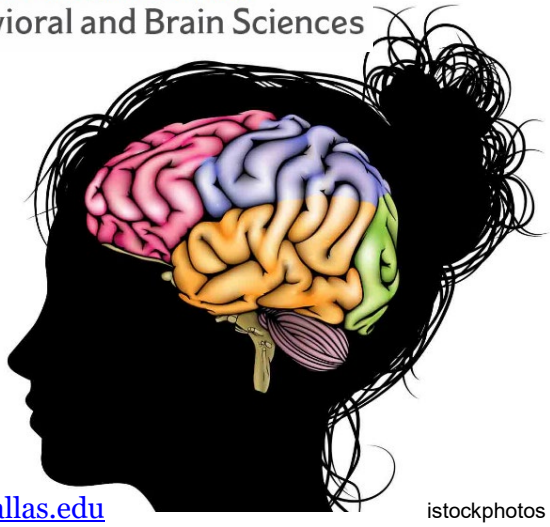
Introduction to Neuroscience
Course Syllabus | Spring 2019

THE UNIVERSITY OF TEXAS AT DALLAS
School of Behavioral and Brain Sciences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Course Information:
Catalog #: NSC3361.004
Class Schedule: Tuesdays/Thursdays 8:30am-9:45am
Class Location: CRA 12.110

Instructor:
Anna Marie Taylor, Ph.D.
Office: JO3.116
Office Hours: Mondays/Wednesdays 8:30am-10:00am
(other days and times are available by appointment)
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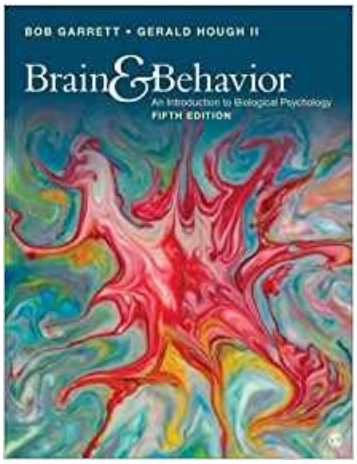
Course Description:
This is an introductory science course that explores the basic structure and function of the nervous system with emphasis on the neurophysiological processes that underlie behavior. The course includes an overview of neuroanatomy, cellular neuroscience, neuropharmacology, sensory and motor systems, cognitive neuroscience, behavioral neuroscience, and disorders of the nervous system.

Course Content:
To begin to study complex behaviors and treat neurological diseases in humans, one must first understand how the brain works. Since this is an introductory neuroscience course, we will first cover the cells of the nervous system and their physiological roles in processes such as the propagation of nerve impulses and the transfer of information between neurons. This will include a survey of basic neuroanatomy and the organization as well as the development of the nervous system. We will then delve deeper into emotion and motivation including drugs, sex, hunger, and thirst. Next we will explore how sensory systems such as vision, hearing, and motor systems control behavior. Finally, we will discuss learning and memory, intelligence, psychological disorders, and sleep. Whenever possible, clinically relevant examples will be incorporated into each lecture leading to discussions of current research and future aims. This is a lot to pack into one semester, so buckle your seatbelts!

Course Learning Objectives:
Students who complete this course should be able to:

1. Analyze the contributions of anatomical, physiological, behavioral, cell and molecular, developmental, pharmacological, and biological studies to the cross-disciplinary field of neuroscience.
2. Compare and contrast how neurons and glia cells will react in different disease states.
3. Explain how action potentials propagate along neurons, how information is transferred from neuron to neuron, and how glial cells influence these processes.
4. Predict how damage to neuro-anatomical structures will impact specific behaviors.
5. Evaluate the changes that the nervous system undergoes during typical development and how this is influence by genes vs. the environment.
6. Describe the anatomical structures and mechanisms associated with motivation, emotion, sensation, movement, and complex behaviors at the cellular and systems levels.
7. Demonstrate how scientists create and test hypotheses to study complex behaviors, neurological diseases, and psychiatric disorders.
8. Display a basic understanding of neurochemistry and neuropharmacology as it relates to neuronal function and mental disorders
9. Integrate pathological findings from psychology, psychiatry, physiology, and neurology with basic scientific work in the neurosciences.
10. Apply neuroscience concepts, theories, and research findings to issues in everyday life.

Course Materials:



- Recommended textbook: *Brain & Behavior* 5th Edition by Garrett and Hough. ISBN-9781506349206. This book is available in soft cover or as an eBook. While the majority of exam questions will come from lectures, readings to prepare for each lecture will be assigned from this textbook. **Readings should ideally be completed before class.**

- Recommended tool: a subscription to Top Hat Classroom polling software. Please check with the Bookstore for details about ordering or visit https://tophat.com/classroom/ Points from polling questions will be used for extra-credit only. Please see assessment section for details.

- Substitute textbooks: Several other Introductory Behavioral Neuroscience textbooks are available which cover similar topics as *Brain & Behavior,* including but not limited to *The Mind's Machine* and *Neuroscience- Exploring the Brain*. If you choose to use one of these books instead of the recommended book, you will be responsible for finding the corresponding chapter in your book.

- Additional Resource: The companion website for the textbook is free and useful, so please take advantage of it- https://edge.sagepub.com/garrett5e

- Additional Resource: An optional study guide to accompany the textbook is also available as either a soft cover or as an ebook and is strongly encouraged for those who fear they may struggle with the large amount of content that will be presented in this course. *Study Guide to Accompany Garrett & Hough's Brain & Behavior*. ISBN 9781506392455.

Assessment:

Exams: There will be four exams during the course, which will cover the material from the section preceding the exam, plus a comprehensive final exam. Material covered on the exams will be taken from the assigned chapter readings but mostly class lectures (refer to each lecture's objectives), as well as any additional material provided. Each exam will be worth 25.0% of your final grade. The lowest exam grade, even the final if desired, will be dropped. Missed exams may be made up by taking the final. We will supply the scantron sheet. You will need to bring **only** your Comet card and a sharpened pencil for each test. If you choose to bring a backpack, purse, etc. on an exam day, you will be asked to leave it in the front of the room while you take the exam. In order to receive credit for the exam, you must turn both the scantron as well as the exam copy in.

Extra-credit: You have the *opportunity* to earn up to 5.0% to add to your final course grade by answering Top Hat polling questions during class. You shall earn 2 points for every correct polling question answer, and 1 point for every incorrect but attempted answer. For the polling grade computation, I will average the top three students' total earned points and set that as 100%. So, if the top three students earned 130, 129 and 128 points, 100% is the average of these: 129. If you scored 112 total points, then your grade for the clickers is 112/129: 86.8%, and you receive 5.0 x .868 = 4.3 points added to your final course grade. As these are bonus points, no special consideration will be made if you were not able to answer in time due to technical difficulties or if you missed a day even due to an excused absence. There will be **no** other opportunities for extra credit, and scores will not be rounded up.

Grading scale: A+: 97-100%, A: 93-96.99%, A-: 90-92.99%, B+:87-89.99%, B: 83-86.99%, B-: 80-82.99%, C+: 74-79.99%, C: 68-73.99%, C-: 60-67.99%, D: 50-59.99%, F < 50.

Grading Examples:

Student	Exam 1	Exam 2	Exam 3	Exam 4	Final	Bonus	Total	Grade
1	92x.25= 23.00	93x.25= 23.25	89x.25= 22.25	92x.25= 23.00	~~0x.25= 0~~	5x.81= 4.05	95.60	A
2	99x.25= 24.75	~~0x.25= 0~~	91x.25= 22.75	86x.25= 21.5	82x.25= 20.5	5x0= 0.00	89.50	B+
3	~~45x.25= 11.25~~	62x.25= 15.50	68x.25= 17.00	60x.25= 15.00	62x.25= 15.50	5x1.00= 5.00	68.00	C

Class Schedule for NSC3361.004:

Meets Tuesdays/Thursdays at 8:30am-9:45am in CRA 12.110

Date	Week	Reading	Lecture Topic
1/15	1	Syllabus/Chapter 1	Introductions and the Origins of Neuroscience
1/17		Chapter 2	Neurons, Glia, and Potential
1/22	2	Chapter 2	Communication within the Nervous System
1/24		Chapter 3	Neuroanatomy- Just the Basics
1/29	3	Chapter 3	Development of the Nervous System
1/31		Chapter 4	Methods and Ethics of Research
2/5	4	**Chapters 1-4**	**Exam 1-** Neural Foundation of Behavior
2/7		Chapter 5	Neuropharmacology
2/12	5	Chapter 5	Addiction and Reward
2/14		Chapter 6	Hunger, Thirst, and Homeostasis
2/19	6	Chapter 7	Biology of Sex and Gender Identity
2/21		Chapter 8	Emotion, Stress, and Aggression
2/26	7	Chapter 8	Pain- That hurts!
2/28		**Chapters 5-8**	**Exam 2-** Motivation and Emotion
3/5	8	Chapter 11	Sensation
3/7		Chapter 11	Motor Control
3/12	9	Chapter 9	Auditory System
3/14		Chapter 9	Language
3/18-24			No Class- Spring Break
3/26	10	Chapter 10	Visual System
3/28		Chapter 10	Illusion and Perception
4/2	11	**Chapters 9-11**	**Exam 3-** Interacting with the World
4/4		Chapter 12	Learning
4/9	12	Chapter 12	Memory
4/11		Chapter 13	Cognitive Functioning
4/16	13	Chapter 13	Intellectual Deficiencies
4/18		Chapter 14	Psychopathology
4/23	14	Chapter 15	Brain Rhythms and Sleep
4/25		Chapter 15	Attention and Consciousness
4/30	15		Review Day
5/2		**Chapters 12-15**	**Exam 4-** Complex Behavior
5/7	8:00am-10:45am		**Final Exam** (Schedule tentative)

Class Schedule is subject to change at any time in the course as needed.
Additional readings and/or videos may be assigned throughout the semester.

Class Attendance:
While attendance will not count towards or against your grade, your class attendance is expected. Your class participation will strongly be reflected in the grade you earn.

eLearning:
Class lecture slides will be posted on elearning. No portion of these slides may be sold, retransmitted, reposted, duplicated or otherwise used without the express written approval of the author. Discussion boards and chat features are available for your use, however, will not be routinely monitored unless I receive complaints about inappropriate posting. Grades will be posted as soon as they are available. Announcements will be made from time to time. In event of classroom emergencies, such as lecture cancellations for a DFW Snowpocalypse, I will send an email to all enrolled in the class.

Extra help:
Supplemental Instruction (SI) is offered for this course. SI sessions are free peer-facilitated study sessions, scheduled two times per week. Sessions are facilitated by an SI Leader, who has taken the course and received a high final grade. Attendance is voluntary. For information about the days, times, and locations for SI sessions, refer to http://www.utdallas.edu/studentsuccess/help-with-courses/supplemental-instruction/

SI leader for NSC 3361.002/004 is Aaly Hussain: hjh160230@utdallas.edu

Review Sessions are another resource for you which will be held each week at the designated time by undergraduate teaching interns, who have previously taken the course and received a high final grade. In these sessions, the undergraduate TA's will review the lecture material presented that week and answer your questions. The review session immediately after each exam will be a test review.

Individual help is also available. You are welcome and indeed encouraged to meet with me, the graduate TAs or one of the undergraduate student TAs during office hours or by appointment to go over difficult concepts and discuss learning strategies. You must help us to help you. *Note*: the day before the test is too late for that exam…the week before the final is too late to review all the material for the course…Plan ahead!

For routine questions outside of class, please email the undergraduate TAs or the graduate TA. They will be available as needed to meet for questions and other appropriate academic help. The TAs are also a good source of information about course content, how to use elearning, the lecture slides, inside information about the exams, etc. The undergraduate TAs especially are to be consulted, because they have taken exams similar to the ones you will be given. If you need my help, I am available as well either during office hours, by appointment, or before/after lectures.

Academic Integrity:
Academic Dishonesty including but not limited to cheating on exams and sharing or posting exam questions (with or without the correct answers) will not be condoned in my class or at UTD. Any action deemed as potential academic dishonesty will be reported to the Office of Community Standards and Conduct for official review.

University Policies:
For detailed information about the University of the Texas at Dallas' policies and procedures, please refer to https://go.utdallas.edu/syllabus-policies. This website includes "Resources to Help You Succeed" in addition to the university's policies on Academic Integrity, Accommodations for Students with Disabilities, Copyright, Religious Holy Days, Student Grievance, and Withdrawal from Class.

If you require any accommodations or have concerns, please let Dr. Taylor know as soon as possible so that appropriate arrangements can be made.

UTD Creed: "As a Comet, I pledge honesty, integrity, and service in all that I do."