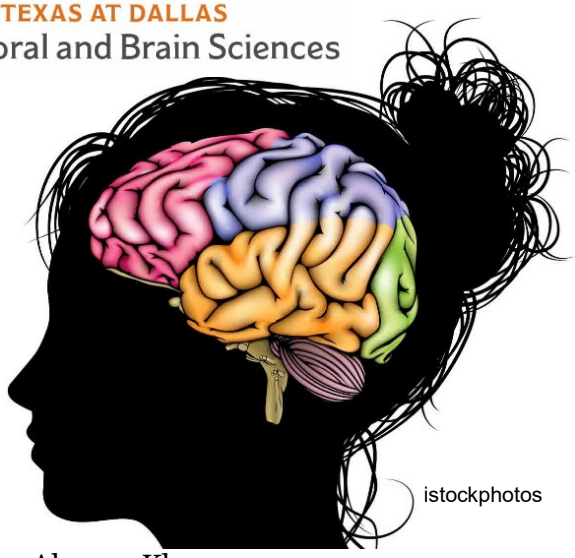
Introduction to Neuroscience
Course Syllabus | Fall 2023

THE UNIVERSITY OF TEXAS AT DALLAS
School of Behavioral and Brain Sciences



Course Information:
Catalog #: NSC3361.002
Class Schedule: Mondays/Wednesdays
Class Times: 8:30am-9:45am
Class Location: CRA 12.110
Instructional Mode: Traditional Classroom (Synchronous only)

Instructor: Anna Marie Taylor, Ph.D.
Office: JO3.116 Phone: 972-883-2446 (no voice mail)
Open Hours: Tuesdays & Thursdays 10:30am-12:00pm
(other days or times and virtual options are available by appointment)
Email: anna.taylor2@utdallas.edu

Graduate TA: Tabitha Ristvedt - Tabitha.Ristvedt@UTDallas.edu
Undergraduate TAs: Muhammad Babar- mab200008@utdallas.edu; Akrama Khan- aak200018@utdallas.edu; Apoorva Subramanian- axs190316@utdallas.edu ; Sharanya Swaminathan- sxs190261@utdallas.edu
SI Leader: TBD

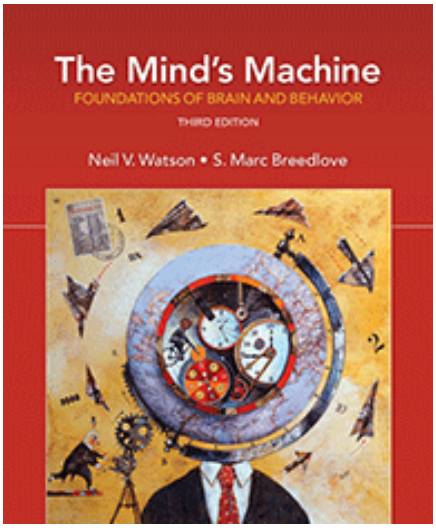
Course Description:
This is an introductory science course that explores the basic structure and function of the nervous system with emphasis on the neurophysiological processes that underlie behavior. The course includes an overview of neuroanatomy, cellular neuroscience, neuropharmacology, sensory 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. Next, we will explore how sensory systems including touch, vision, and hearing, as well as, motor systems control behavior. We will then delve deeper into emotion and motivation including drugs, sex, hunger, thirst, and sleep. Finally, we will discuss learning and memory, intelligence, psychological disorders, and language. Whenever possible, clinically relevant examples will be incorporated into lectures leading to discussions of current research. This is a lot to pack into a 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:



- Required tool: a subscription to Top Hat Pro. To order, please visit https://tophat.com/students/ or check with the Bookstore. Top Hat will be used for in-class questions. See assessment section for details.
- Recommended textbook: *The Mind's Machine 3e* by Watson and Breedlove. ISBN- 9781605357300. This book is available in soft cover or as an eBook. Readings to prepare for each lecture will be assigned from this textbook. **Readings should be completed before class.** While the majority of exam questions will come from lectures, quizzes will be based on assigned chapter readings.
- Substitute textbooks: Several Introductory Neuroscience textbooks are available which cover similar topics as *The Mind's Machine,* including but not limited to *Brain & Behavior* and *Neuroscience- Exploring the Brain*. If you choose to use one of these substitute books or another edition of *The Mind's Machine*, you are responsible for finding the corresponding chapter in your book.
- Additional Resource: The companion website for the textbook has free open access resources, so please take advantage of it- https://oup-arc.com/access/watson3e

Assessments:

***In-Class Questions* (50 pts):** During each lecture, interactive questions will be asked using Top Hat. You shall earn full credit for every correct answer and half credited for every incorrect but attempted answer. For the final in-class question computation, students will earn points based on the percentage of credit earned: 50 points: 80-100%, 40 points: 60-79.9%, 30 points: 40-59.9%, 20 points: 20-39.9%:, 10 points: 0.1-19.9%:, 0 points: 0%. *As you only need to earn 80% to get full credit, please note there will be no makeups 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.*

***Readiness Quizzes* (50 pts):** Throughout the course, 8 readiness quizzes will be assigned due by 8:30am on designated quiz days. These quizzes will be 10 multiple choice questions (worth 1 pt each) based on assigned chapter readings prior to lecture. Quizzes will be administered remotely during a 24 hour period as timed 10 minutes tests in eLearning. Although these quizzes are remote, they should be completed by students individually. You will be allowed to use your reading guide, which you should complete individually using the textbook before taking the quiz. Then, you will retake the quiz with your assigned team during the first 10 minutes of class. On each quiz if your individual grade is at or above the minimum threshold of 5pts, then it will count for 50% of your grade and the team score will count for 50%. If you do not achieve 5pts, only your individual score will count. *As answers will be discussed in class, please note there will be no makeups for missed quizzes even for excused absences.* The points earned from your top 5 readiness quizzes will be counted. **The quiz points will be added to the In-class Questions points, which can be dropped as the lowest exam grade.**

***Exams* (400 pts):** There will be four unit exams during the course, which will cover the material from the section preceding the exam, plus a comprehensive final exam. Each exam will be worth 100 pts. While Unit Exams will consist of multiple-choice and short answer questions, the final will be 100 multiple choice questions. Material covered on the exams will be taken mostly from class lectures, as well as any additional material provided. 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. **The lowest exam grade, even the final if desired, will be dropped. Missed exams may be made up by taking the final.**

Make-up Exams:

Missed exams will be made up by taking the final, which will be used to replace the lowest exam grade. For students who must miss more than one exam, make-ups will be given only if you provided verifiable documentation from an authoritative source: a) you were seriously ill, or b) you were detained the day and time of the exam, or c) you made arrangements prior to the exam to attend an urgent affair. In any case, you must notify me in advance of the scheduled time of the exam via email. Otherwise, you will receive a 0.

Note: Make-up exams must be taken within 1 week after the student can return to campus and will **not** include bonus questions.

Grading Scale:
This course uses a point system. Your final grade in the course will be calculated based on the points you earn throughout the semester, as follows:

A+: 485-500+ pts, A: 465-484.9 pts, A-: 450-464.9 pts, B+:435-449.9 pts, B: 415-434.9 pts, B-: 400-414.9 pts, C+: 370-399.9 pts, C: 340-369.9 pts, C-: 300-339.9 pts, D: 250-299.9 pts, F: 0-249.9 pts

Note: *Students must earn their grades.* ***No*** *bonus point opportunities will be given to individual students and no scores will be rounded up (****not*** *even by 0.1 pts), so please do* ***not*** *make an awkward situation by asking.*

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.

Class Attendance:
Regular and punctual class attendance is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. Your class participation will strongly be reflected in the grade you earn. This is a traditional classroom in-person course.

eLearning:
The course syllabus, class lecture slides and other resources will be posted on elearning, which can be accessed using your UT Dallas NetID account on the eLearning website. Please see the course access and navigation section of the Getting Started with eLearning webpage for more information. No portion of these materials may be sold, retransmitted, reposted, duplicated or otherwise used without the express written approval of the author.

Communication: This course utilizes both in-person and online tools for interaction and communication. Grades will be posted as soon as they are available. Student emails and discussion board messages will be answered within 3 working days under normal circumstances. For every scheduled class period, an announcement will be made in eLearning, which will give you details about how that day's lecture, quiz, or exam will be conducted. In event of classroom emergencies, such as lecture cancellations for a DFW Snowpocalypse, I will send an email to all enrolled in the class.

Class recordings: After each lecture, you will be able to watch a recording of the meeting, which will be available to all students registered for this class through MS Teams. **Please note that watching recordings asynchronously is NOT a substitute for class participation.** Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved AccessAbility accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. *Failure to comply with these University requirements is a violation of the Student Code of Conduct.*

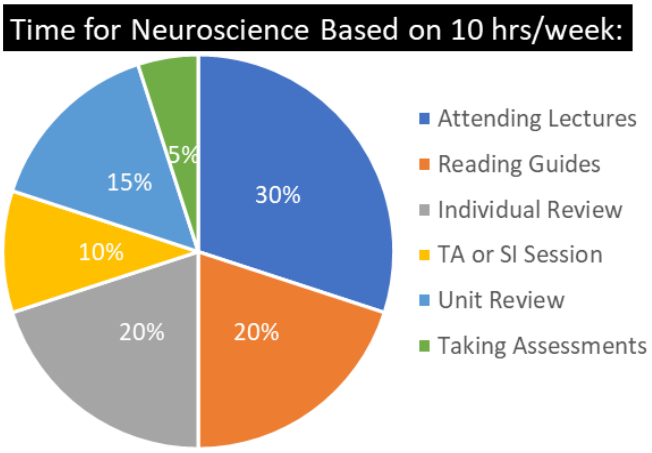
Extra help:
Supplemental Instruction (SI) is offered for this course. SI sessions are collaborative group study sessions, scheduled two times per week. Sessions are facilitated by an SI Leader, who has taken the course and received a high final grade. Attendance is voluntary. For information about the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

Review Sessions will be held each week by our undergraduate TAs, who have previously taken the course. In these sessions, the TA's will review the lecture material presented that week and answer your question. Although these sessions are not required, students who fear they may struggle with the large amount of content that will be presented in this course are strongly encouraged to attend each week. These sessions will be offered only remotely for at least the first three weeks of the semester with the plan to start in-person sessions when safe.

Individual help is also available. You are welcome and indeed encouraged to meet with me or our TAs during virtual office hours or by appointment to go over difficult concepts, discuss learning strategies, and review exams. 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 for the course…Plan ahead!

How to be successful in the course:

Learning any content requires time and effort; however, Neuroscience is a subject dense in new terms and details that must be understood in order to apply the content. Thus, I have designed this Introduction to Neuroscience course to include exposure, application, and review of the material, so that every student regardless of background can succeed in retaining Neuroscience not just for exams but for application in their future courses and careers. The time chart shows the typical time spent per week to successfully complete this course followed by an ***Example Weekly Schedule:***



Day of Week	Tasks
1 (Pre-Lecture)	• Prepare for next lecture by completing reading guide as you read the assigned chapter(s).
2 (1st Lecture)	• Actively participate in lecture by taking notes, answering polling questions, and asking relevant questions.
	• Individually review PowerPoint slides and notes taken in class. View any extra resources.
3 (Pre-Lecture)	• Prepare for next lecture by completing reading guide as you read the assigned chapter(s).
	• Take assigned quiz before class.
4 (2nd Lecture)	• Retake quiz with your Team in class (learn what you really know by defending your answer).
	• Actively participate in lecture by taking notes, answering polling questions, and asking relevant questions.
	• Individually review PowerPoint slides and notes taken in class. View any extra resources.
Each week	• Attend 1 SI or Lab session to review weekly content with a group.
	• Take 1-2 rest day(s) from Neuroscience and then start back with Day 1 (Pre-Lecture)
Week of Exam	• Review all lectures individually focusing on what you do not know.
	• Attend the in-class unit review.
	• Take exam in the classroom. (You can come by office hours to review your exam).

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, COVID-19, Religious Holy Days, Student Grievance, and Withdrawal from Class.

If you require ARC 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."

Class Schedule for NSC3361.002:

Meets Monday/Wednesday 8:30am-9:45am GR 4.428

Date	Week	Reading	Lecture Topic
8/21	1	Syllabus/Chapter 1	Introductions and the Origins of Neuroscience
8/23		Chapter 2	Neurons and Glia
8/28*	2	Chapter 2	Neuroanatomy- Just the Basics
8/30		Chapter 13.3	Development of the Nervous System
9/4	3		No Class- Labor Day
9/6		Chapter 3	Communication within the Nervous System
9/11*	4	Chapters 3	Synaptic Transmission
9/13		Chapters 4.1	Neurotransmitters/ *Unit 1 Review*
9/18	5	**Chapters 1-4.1, 13.3**	**Exam 1 -** Neural Foundation of Behavior
9/20		Chapter 5	Sensation and Pain
9/25*	6	Chapter 5	Motor Control
9/27		Chapter 6	Hearing
10/2	7	Chapter 6	Balance, Taste, and Smell
10/4*		Chapter 7	Visual System
10/9	8	Chapter 7	Illusion and Perception/ *Unit 2 Review*
10/11		**Chapters 5-7**	**Exam 2-** Interacting with the World
10/16	9	Chapter 8	Hormones
10/18		Chapter 8	Neurobiology of Sex
10/23*	10	Chapter 9	Hunger, Thirst, and Homeostasis
10/25		Chapter 10	Biological Rhythms and Sleep
10/30*	11	Chapter 11	Emotions
11/1		Chapter 11	Stress and Aggression/ *Unit 3 Review*
11/6	12	Chapter 4	Neuropharmacology
11/8*		Chapter 12	Psychopathology
11/13	13	Chapter 13	Learning
11/15		**Chapters 8-11**	**Exam 3 -** Motivation and Emotion Learning
11/20-26			No Class- Fall Break
11/27	14	Chapter 13	Memory
11/29*		Chapter 15	Language and Lateralization
12/4	15	Chapter 14	Higher Cognition, Attention, & Consciousness/ *Unit 3 Review*
12/6		**Chapters 4,12,13,15**	**Exam 4 -** Complex Behavior
12/11	8:00am-10:45am		**Cumulative Final** (Schedule tentative)

* indicates the most likely days for **Read**iness Quizzes; however, these could be given on any day. So be **read**y!

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.