Course Syllabus

Cellular Neuroscience

(Graduate)

Dr. Steve McWilliams

Course #/Section #	ACN/HCS 6340.0u1
Term	Summer 2025
Days/Times/Room	T 1:00-4:45 GR 4.204
Class Format	This class meets in-person. There's NOT an online or asynchronous option for this class. Lectures will NOT be recorded or posted.

I WANT VERY MUCH FOR YOU TO SUCCEED!

College-level classes require a certain level of maturity and responsibility on part of the student. This means you the student take your classes and your education seriously. This implies you attend lectures and put in the time needed to study. Students who come to class and study on a regular basis tend to do better than students who do not. I, as a teacher, can only teach you what you want to learn.

Dr. SM

Professor Contact Information

Email Address	All course-related communications must be sent to me at steven.mcwilliams@utdallas.edu from your UTD email account. Do not email me through eLearning. When emailing, please include your class in subject line, so that I know who you are…I teach more than one class! Do not leave voice messages.
Office Location	GR 4.714
Office Hours	By appointment only

General Course Information

Course Pre-requisites, Co-requisites, and/or Other Restrictions: BBSC majors only and department consent required.

Course Description and Content: A detailed study of neural physiology and the principles of synaptic transmission. This course explores the neurobiology of neurons -in detail- including both structure and function. We also look at the principles and physiology of synaptic transmission and neurotransmitter release. To understand how the nervous system works, you must first understand the neuron at the molecular level. As such, this course offers an in-depth look at the overall neurobiology of neurons including neuronal cell membranes, electrochemical properties of neurons, ion channels, neurotransmitters, synaptic transmission, and molecular signaling with neurons

Student Learning Objectives/Outcomes: After completing the course, students should be able to:

1. Describe and analyze the contributions of anatomical, physiological, behavioral, pharmacological, and molecular biological studies to the bases of neuroscience
2. Describe the basic morphology and functions of neurons and glia
3. Use proper scientific terminology for neurotransmitters, neurotransmitter receptors, and neurotransmitter receptor/effector signaling systems
4. Describe the cytology of subcellular organelles in neuronal cells
5. Analyze neurophysiological recording methods describing electrical activity of neurons, particularly the role of ion channels in maintaining and altering neuronal membrane potential
6. Describe mechanisms of synaptic transmission and synaptic plasticity induced by experience

7. Describe the intracellular signaling mechanisms associated with neuronal function and communication

Textbooks: (required) Neuroscience by Purves, 6th or 7th Ed.; (suggested- NOT required) Principles of Neuroscience by Kandel et al., 5th or 6th Ed. *While Kandel is not required, it is a great resource, especially for graduate level neuro-related courses* **(My teaching/lecture PowerPoints will be provided to students via eLearning)**

Exams/Quizzes/Grading/Attendance/Course Policies:
Exams (60%): There will be three exams during the course. All exams are weighted equally. Exams will cover the material preceding the exam and therefore are not comprehensive in design. No exam grade will be dropped. You will have 75 minutes to complete each 50-question (multiple-choice/true-false) exam. All exams must be completed in class during regularly scheduled class days and times. **YOU WILL NEED TO BRING A LAPTOP TO CLASS ON EXAM DAYS TO ACCESS THE ONLINE EXAM. All exams WILL REQUIRE UTD's Lockdown Browser to access.** You can download the software using the following link: http://www.respondus.com/lockdown/information.pl?ID=353814262**.** Make sure your laptop is functioning properly before coming to class to take the exam! You are not allowed to use any other electronic device during testing, nor are you allowed to leave during the exam for any reason unless preapproved by the instructor for a medical reason

Quizzes (40%): A 10-question weekly quiz will be posted on the Course Homepage on eLearning at the end of each week that will cover the material for that week. The quiz will become available starting Friday and remain available through the end of the day Tuesday. You will have 15 minutes to complete each online quiz. Your highest ten quiz grades will be totaled and averaged into your final course grade. Quizzes MUST be completed within the allotted time window.

Final Grades: Please note that UTD does not use A+, C-, D-, D, or D+ as part of the grading scale for graduate students. As such, the following grading scale will be used in this course. A (90-100), A- (88-89) B+ (86-87), B (80-85), B- (78-79), C+ (76-77),C (66 - 75), F (65 or below)

Attendance: Although I do not take weekly regular attendance, **I will randomly take attendance for an in-class quiz grade to be added to your final quiz average. You must be present -in class- to receive the attendance quiz grade.** This is to encourage you to come to class! Regular class attendance is strongly recommended. Students who fail to participate in class regularly are inviting scholastic difficulty.

Policies Regarding Missed Exams, Missed quizzes, Illness, and Lateness:
No makeup exam will be given unless **PREAPPROVED BY THE INSTRUCTOR**. Prior notification of instructor, for example just sending me an email, does not imply or grant approval. **The only possible excuse for missing an exam without prior notification and approval is that you were either hospitalized at the time of the exam (with an IV in your arm or you were unconscious) or jailed the day of the exam** (I probably don't want to know why). Prior approval for missing an exam is typically only given for (1) the need to attend an official UTD event for which you are an official UTD member (proof required), or (2) an immediate emergency involving you are an immediate family member (proof of emergency is required) (An immediate family member is defined as a spouse, parent, sibling, or your children ONLY). If granted a makeup exam, the instructor reserves the right to use a different exam from that given to the class. **It is the student's responsibility to contact Course Instructor to schedule a day and time to make-up the missed exam**. Any exam not completed within a week will be given a grade of zero. No other make-up exams will be given. **Students are expected to be on time at the start of the exam**. **If you show up late, you may not be allowed to take the exam. If a student is late to an exam and is given approval to start the exam, the student MUST complete the exam at the same time the class is scheduled to end the exam, unless preapproved by the instructor**. There are no make-up quizzes, so please don't ask- no exceptions. If you go over the time limit, eLearning will NOT grade your quiz, and you will receive a zero for that quiz. I do not give extra credit work- so please don't ask.

UT Dallas Syllabus Policies and Procedures

Information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please see https://go.utdallas.edu/syllabus-policies for these policies.

Information contained in the following link constitutes the University's policies and procedures on student conduct and academic integrity. Please see http://conduct.utdallas.edu/integrity/ and https://policy.utdallas.edu/utdsp5003

OSA/ADA: It is the policy and practice of The University of Texas at Dallas to make reasonable accommodation for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with your professor and allow one-week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact OSA for a confidential discussion. OSA is located in the Student Services Building, SSB 3.200. They can be reached by phone at 972-883-2098, or by email at studentaccess@utdallas.edu.

Lecture and Exam Schedule

Date	Day	Topic-Lecture Discussion/Exam Schedule	Related Textbook Chapters
Jun 3	T	Introduction and Orientation	
Jun 10	T	Cells of the Nervous System	Purves ch 1 (Kandel 6ed 3&7)
Jun 17	T	Gene Expression in Nerve Cells/Protein Trafficking in Nerve Cells	(Kandel ch2&7)
Jun 24	T	**Exam I (in-class)**	
Jul 1	T	Electrical Signals and Voltage-Dependent Membrane Permeability	Purves ch 2&3 (Kandel ch9)
Jul 8	T	Ion Channels and Transporters	Purves ch 4 (Kandel ch8)
Jul 15	T	Synaptic Transmission and Neurotransmitter Release	Purves ch5 (Kandel ch11,12,&13)
Jul 22	T	**Exam II (in-class)**	
Jul 29	T	Neurotransmitters and Their Receptors	Purves ch6 (Kandel ch15&16)
Aug 5	T	Molecular Signaling and Modulation of Synaptic Transmission	Purves ch7 (Kandel ch14)
Aug 12	T	Cellular Mechanisms of Synaptic Plasticity	Purves ch8 (Kandel ch53&54)
Aug 13	W	**Exam III (online)**	

(The information contained here is subject to change)