

Neurobiology of Learning and Memory

Course Information

Course Number/Section NSC 4357.001
Course Title Neurobiology of Learning and Memory
Term Spring 2025

Professor Contact Information

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Online Office Hours Mondays and Wednesdays from 11:30-12:30 PM, by MS Teams

Course Modality and Expectations

Instructional Mode	This course will be offered in person, on Mondays and Wednesdays from 10:00-11:15. Discussion is an important feature of the course, so you are strongly encouraged to attend the class.
Expectations	You will have a written assignment due before the start of most classes (worth 25% of total grade) and three cumulative exams (each worth 25% of total grade).
Class recordings	The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. 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.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Introduction to Neuroscience (or equivalent) is a pre-requisite for this course.

Course Description

This course will review classic and contemporary research on memory processing in the brain. Course work will include reading and discussing research papers in class, short at-home assignments, and three examinations.

Student Learning Objectives/Outcomes

After completing the course, students should be able to:

- Demonstrate understanding of the history of the neurobiology of memory, including the evolution of theories and methods.
- Demonstrate an understanding of current research and views in the neurobiology of memory in the context of historical evolution of the field.
- Weigh support for conclusions and identify weak, contradictory, and inappropriate assertions in published research.
- Apply concepts, theories, and findings in neurobiology of memory research to issues in everyday life.

- Effectively communicate ideas and ask coherent questions in a professional manner.

Required Textbooks and Materials

Required Texts

The Neurobiology of Learning and Memory, by Jerry Rudy

Required Materials

Other required materials will be provided on eLearning

Suggested Course Materials

Suggested Readings/Texts

Neurobiology of Memory and Emotion, by James L. McGaugh

Suggested Materials

Other suggested materials will be provided on eLearning

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the [Getting Started with eLearning](#) webpage.

Course Access and Navigation

This course can be accessed using your UT Dallas NetID account on the [eLearning](#) website.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The [eLearning Support Center](#) includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the [Student eLearning Tutorials](#) webpage for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Server Unavailability or Other Technical Difficulties

The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online [eLearning Help Desk](#). The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Academic Calendar

Date	In class	Assignment
1/22	Intro	
1/27	Historical perspective	Rudy, Ch. 1
1/29	A case of unusual autobiographical memory	Parker, Cahill, & McGaugh (2006)
2/3	Is the brain a hard drive?	Thomas and Loftus (2002)
2/5	Kinds and phases of memory	Agranoff (1965); last day to drop without a 'W'
2/10	Where is memory?	Scoville and Milner (1957)
2/12	Multiple memory systems	McDonald and White (1993)
2/17	<i>Exam 1</i>	
2/19	What is memory?	Rudy Ch. 2-3
2/24	Conceptual issues and methodologies - optogenetics	Rudy, Ch. 9
2/26	Synaptic plasticity	Whitlock et al. (2007)
3/3	Engrams	Liu et al. (2012)
3/5	Engrams	TBD
3/10	Review	
3/12	<i>Exam 2</i>	
3/17	SPRING BREAK	
3/19	SPRING BREAK	
3/24	Memory consolidation	McGaugh (2015)
3/26	Memory modulation	Rudy, Ch. 12 (Ch. 13 in 2 nd Ed)
3/31	Sleep and memory	Walker and Stickgold (2004)
4/2	Traumatic memory	Ressler et al (2004)
4/7	Traumatic memory	Pena et al (2012)
4/9	Reconsolidation	Nader and LeDoux (2000) last day to withdraw
4/14	Reconsolidation	Rudy, Ch. 15 (Ch. 14 in 2 nd Ed)
4/16	Reconsolidation/addiction	Xue et al. (2012)
4/21	Addiction and memory (cont)	
4/23	Sex differences	Shansky and Woolley (2016) and Eliot and Richardson (2016)
4/28	Aging and memory	Park and Festini (2017)
4/30	Something current	TBD
5/5	Review	
5/7	<i>Exam 3</i>	

Grading Policy

This course involves a lot of reading! Please submit 2 questions through eLearning, before the start of class on the day that the reading assignment is due. These questions should be addressed to the authors of the paper. The point of this exercise is to help you to articulate thoughtful, and sometimes critical questions in a clear and collegial manner.

- Reading question assignments are worth 25% of your total grade
- Exams are each worth 25% of your grade

Grading Scale

A (94–100), A- (90-93), B+ (87–89), B (84-86), B- (80-83), C+ (77-79), C (74–76), C- (70-73), D+ (67-69), D (60-66), F (\leq 59).

Course Policies

Make-up exams

If you know you will miss an exam due to a personal or professional event, please tell me as soon as possible. In case of illness or emergency, you may take the exam the week you return to class, with credible documentation of the illness/emergency.

Late Work

Assignments will only be accepted late in cases of documented illness or emergency. All students will be allowed one free pass on the assignments.

Class Participation

Students are expected to read the material before class and actively participate in class discussion.

Classroom Citizenship

Students should feel free to express thoughts and opinions about the subject matter, and intelligent debates are encouraged. Please be respectful.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

Accommodations

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the AccessAbility Resource Center (ARC) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me 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 ARC for a confidential discussion. ARC is located in the Administration Building, AD 2.224. They can be reached by phone at 972-883-2098, or by email at studentaccess@utdallas.edu.

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students. Please go to [Academic Support Resources](#) webpage for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.