

Course Syllabus - NEURO 560

Course Number:	NEURO 560
Course Name:	Concepts of Learning & Memory
Quarter:	SP
Year:	2018
Start Date:	03/27/2018
End Date:	06/14/2018
Credits:	3.0
Last Date To Add This Course:	04/10/2018
Last Date To Drop This Course:	04/10/2018
Last Date To Change Grading Option:	04/10/2018
Minimum Class Size:	6

Meeting Days and Times

Day	Start	End	Location	Description
T	9:45 am	11:15 am	CA Campus	Graduate Office Large Conf Room
T	12:45 pm	2:15 pm	FL Campus	A116
TH	9:45 am	11:15 am	CA Campus	Graduate Office Large Conf Room
TH	12:45 pm	2:15 pm	FL Campus	A116
F	9:45 am	11:15 am	CA Campus	Graduate Office Large Conf Room (3/30 Only)
F	12:45 pm	2:15 pm	FL Campus	A116 (3/30 Only)

Course Managers

Role	Last Name	First Name	Department	Mail Code	Phone	Email	Organization Name (non-TSRI personnel)
Course Director	Tomchik	Seth	Department of Neuroscience	3C1	(561) 228-3496	stomchik@scripps.edu	
TA	Swarnkar	Supriya	Department of Neuroscience	3C1	(561) 228-3262	sswarnka@scripps.edu	

Course Description

This is a lecture course, with lectures provided by the teaching faculty. The course is designed to introduce graduate students and other participants to the field of learning and memory. The course will cover classical and modern concepts of learning and memory across all levels at which learning and memory is studied, including behavioral, anatomical, cellular, molecular and genetic levels of analysis. It will also introduce the many different systems in which learning and memory are studied, including Aplysia, Drosophila, honeybee, birds (birdsong), mice, rats, monkeys, and humans. The basic concepts of learning and memory will also be related to the diseases of learning and memory.

Background Preparation (Prerequisites)

There are no prerequisites for this course. Students will find it helpful to have a general undergraduate level introduction to neuroscience, genetics, molecular biology, and behavior. However, the necessary background to understand the material will be presented during the course and in the assigned reading material.

Texts and Journal References

Type	Title	Author	Date	ISBN/ISSN
Required	Memory: From Mind to Molecules. Scientific American Library, 2000 (selected chapters will be assigned as background reading for some lectures).	Squire, L. and Kandel, E.	2008	978-0981519418
Useful To Consult	Memory and Brain. Oxford University Press, 1987. (selected chapters will be assigned as background reading for some lectures).	Squire, L	1987	
Useful To Consult	Neuroscience: Exploring the Brain. Lippincott Williams & Wilkins, 3rd Edition.	Bear, M., Connors, B. W., and Paradiso, M. A.		
Useful To Consult	The Mind of a Mnemonist. Harvard University Press	Luria, A. R.	1968	
Useful To Consult	The Seven Sins of Memory: How the Mind Forgets and Remembers. Houghton Mifflin Co, 2001.	Schacter, D. L.	2001	

Course Learning Outcomes

By the end of this course, students will be able to:

1. Understand the general concepts of learning and memory
2. Analyze papers in the literature of learning and memory
3. Conduct critical analysis of contemporary basic research in learning and memory
4. Discuss essential concepts of learning and memory
5. Have an appreciation for the history of research of learning and memory that has brought us to the current state of the field.

Course Requirements and Assignments

1. Attendance is mandatory. Three or more unexcused absences will result in a grade of “F” for the course.
2. Readings from the books listed for background information and from research papers in the current literature will be assigned for each class. Successful completion of a midterm and a final exam is required.

Other Information

Class format

Each 90 minute class will consist of a lecture from a faculty member for approximately 75 minutes. The last 15 minutes will be used to discuss and highlight one or more recent research papers that contribute important and recent information to the topic under discussion. Lectures will be accompanied by slide presentations (PowerPoint) assembled by the lecturer.

Attendance Statement

Students are expected to attend all classes. Students who are unable to attend class must seek permission for an excused absence from the course director or teaching assistant. Unapproved absences or late attendance for three or more classes may result in a lower grade or an “incomplete” for the course. If a student has to miss a class, he or she should arrange to get notes from a fellow student and is strongly encouraged to meet with the teaching assistant to obtain the missed material. Missed extra-credit quizzes will not be available for re-taking.

Scientific and Professional Ethics

The work you do in this course must be your own. Feel free to build on, react to, criticize, and analyze the ideas of others but, when you do, make it known whose ideas you are working with. You must explicitly acknowledge when your work builds on someone else's ideas, including ideas of classmates, professors, and authors you read. If you ever have questions about drawing the line between others' work and your own, ask the course professor who will give you clear guidance. Exams must be completed independently. Any collaboration on answers to exams, unless expressly permitted, may result in an automatic failing grade and possible expulsion from the Graduate Program.

Course Grading Statement

Final grades will be weighted accordingly: 45% midterm; 45% final; 10% student participation.

Grading of the exams will be based on the student's general understanding of the subject matter as determined by answers to short-answer and essay questions. Class participation will be evaluated on the quality and quantity of participation in classroom discussions.

Letter Grade Descriptions

Letter Grade	Grade Point	Description	Learning Outcome
A	4.00	Outstanding achievement. Student performance demonstrates full command of the course subject matter and evinces a high level of originality and/or creativity that far surpasses course expectations.	
A-	3.67	Excellent achievement. Student performance demonstrates thorough knowledge of the course subject matter and exceeds course expectations by completing all requirements in a superior manner.	
B+	3.33	Very good work. Student performance demonstrates above-average comprehension of the course subject matter and exceeds course expectations on all tasks as defined in the course syllabus. There is notable insight and originality.	
B	3.00	Satisfactory work. Student performance meets designated course expectations and demonstrates understanding of the course subject matter at an acceptable level.	
B-	2.67	Marginal work. Student performance demonstrates incomplete understanding of course subject matter. There is limited perception and originality.	
C+	2.33	Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course subject matter. There is severely limited or no perception or originality. Course will not count toward degree.	
C	2.00	Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course subject matter. There is severely limited or no perception or originality. Course will not count toward degree.	
P	0.00	Satisfactory work. Student performance demonstrated complete and adequate understanding of course subject matter. Course will count toward degree.	
F	0.00	Unacceptable work/Failure. Student performance is unacceptably low level of knowledge and understanding of course subject matter. Course will not count toward degree. Student may continue in program only with permission of the Dean.	
I	0.00	Incomplete is assigned when work is of passing quality but is incomplete for a pre-approved reason. Once an incomplete grade is assigned, it remains on student's permanent record until a grade is awarded.	
W	0.00	Withdrew from the course with Dean's permission beyond the second week of the term.	

- o All courses will be recorded and maintained in the student's permanent academic record; only courses that apply towards the degree will appear on the academic transcript. Non-credit or audited courses will not appear on the transcript.
- o 4 core courses taken for a letter grade (pass = A or B for a core course)
- o 2 elective courses taken pass/fail (pass = A, B, C for an elective)
- o Because students are encouraged to take electives outside their area of expertise, a "C" letter grade is passing.
- o Grading will be based on general attendance/participation, student presentations of the classic and contemporary publications, and

Course Schedule

Date	Type	Topic or Lecture Title	Presenter Last Name	Presenter First Name	Presenter Department	Presenter Mail	Presenter Phone	Presenter Email	Organization Name (non-TSRI personnel)
03/27/2018	Lecture	Historical Overview	Tomchik	Seth	Department of Neuroscience	3C1	(561) 228-3496	stomchik@scripps.edu	
03/29/2018	Lecture	Memory Processes and Experimental Design I	Miller	Courtney	Department of Molecular Medicine	3B3	(561) 228-2958	cmiller@scripps.edu	
03/30/2018	Lecture	Memory Processes and Experimental Design II NOTE: This Lecture is on Friday 3/30	Miller	Courtney	Department of Molecular Medicine	3B3	(561) 228-2958	cmiller@scripps.edu	
04/05/2018	Lecture	Learning and memory in C. elegans	Grill	Brock	Department of Neuroscience	3C1	(561) 228-2110	bgrill@scripps.edu	
04/10/2018	Journal Club								
04/12/2018	Lecture	Hippocampal place cells – circuitry and memory functions at the systems level	Xu	Baoji	Department of Neuroscience	3C1	(561) 228-2340	bxu@scripps.edu	
04/17/2018	Lecture	Memory allocation, intrinsic neuronal excitability	Tomchik	Seth	Department of Neuroscience	3C1	(561) 228-3496	stomchik@scripps.edu	
04/19/2018	Lecture	Neurodevelopmental disorder genes and learning processes	Page	Damon	Department of Neuroscience	3C2	(561) 228-2899	paged@scripps.edu	
04/24/2018	Lecture	Simple Learning: Habituation and Sensitization in Aplysia californica	Puthanveettil	Sathyanarayanan	Department of Neuroscience	3C2	(561) 228-2243	sputhanv@scripps.edu	
04/26/2018	Lecture	Simple Learning (continued)	Puthanveettil	Sathyanarayanan	Department of Neuroscience	3C2	(561) 228-2243	sputhanv@scripps.edu	
05/01/2018	Lecture	Local protein synthesis and memory formation	Puthanveettil	Sathyanarayanan	Department of Neuroscience	3C2	(561) 228-2243	sputhanv@scripps.edu	
05/03/2018	Exam								
05/08/2018	Lecture	Functional synaptic plasticity in learning in vertebrates	Rumbaugh	Gavin	Department of Neuroscience	3B3	(561) 228-3461	grumbaugh@scripps.edu	
05/10/2018	Lecture	Structural synaptic plasticity and learning in vertebrates	Rumbaugh	Gavin	Department of Neuroscience	3B3	(561) 228-3461	grumbaugh@scripps.edu	
05/15/2018	Journal Club								
05/17/2018	Lecture	Memory traces in rodent systems	Mayford	Mark				mmayford@ucsd.edu	UCSD
05/22/2018	Lecture	Memory suppression and forgetting	Davis	Ronald	Department of Neuroscience	3C2	(561) 228-3463	rdavis@scripps.edu	
05/24/2018	Lecture	Cognitive enhancers	Davis	Ronald	Department of Neuroscience	3C2	(561) 228-3463	rdavis@scripps.edu	
05/29/2018	Lecture	Neurodegeneration and Memory	Subramaniam	Srinivas	Department of	3C1	(561) 228-	esubrama@scripps.edu	

03/29/2018	Lecture	neurodegeneration and memory	Subramanian	Srinivasa	Neuroscience	3C1	2104	ssubraman@scripps.edu
05/31/2018	Lecture	Biology of Drosophila memory formation	Tomchik	Seth	Department of Neuroscience	3C1	(561) 228-3496	stomchik@scripps.edu
06/05/2018	Lecture	Biology of Drosophila and honeybee memory formation	Tomchik	Seth	Department of Neuroscience	3C1	(561) 228-3496	stomchik@scripps.edu
06/07/2018	Exam	FINAL EXAM						