

Neuroscience 1040

Biological Bases of Learning and Memory

**Spring Term 2018
Academic Calendar 2017/2018**

**Lecture Class Meeting Time: Tuesdays & Thursdays 5:00-6:15 pm
Room: A221 Langley Hall**

**Instructor: Dr. Germán Barrionuevo
Professor of Neuroscience**

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SYLLABUS

Part I: Clinical perspectives

Introduction: Definition of Memory and Learning

Introduction

Topic 1: Human Memory

Background: Macroscopic Organization of the Human Brain

Topic 2: Acute and Chronic Alcoholism

Korsakoff Wernicke Syndrome; cases NA and BY

Background: Anatomy of the Diencephalic Region

Topic 3: Alzheimer's Disease

Background: Anatomy of the Hippocampal Formation

Topic 4: Patients with Hippocampus Damage

Patients HM, RB, GD, LM, and WH.

Topic 5: Hippocampus Index and Episodic Memory

First Exam: Tuesday February 6

Part II: Behavioral processes and brain systems

Topic 6: Monkey Models of Amnesia:

Processes involved in Learning and Memory in Subhuman Primates.

Topic 7: Simple Learning:

General Overview of the Behavioral Paradigms to Study Learning in the Laboratory: Habituation, Sensitization, and Classical Conditioning.

Topic 8: General Overview of the Experimental Techniques Commonly Used To Determine The Memory Site.

Topic 9: The Case of the *Aplysia*

Background: Second messengers

Topic 10: Overview of Long-term Potentiation (LTP) of Synaptic Transmission in the Mammalian Brain

Second Exam: Thursday March 3

Part III: Cellular and molecular mechanisms

Topic 11: Maintenance of LTP

Topic 12: Molecular Mechanisms of LTP

Topic 13: LTP and Memory

Topic 14: Modulation of Memory

Topic 15: Fear Memories

Last Day of Class: Thursday April 19

Final Exam: April 27 4:00 to 5:50 pm