

PSYD62Y
Fall 1994

Instructor: Professor N.W. Milgram
Room S-513
284-3353
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Course description:

This course is intended to provide a detailed overview of our current knowledge of the neurobiology of learning and memory. The course material will include everything discussed in class, assigned readings and lecture notes provided by the instructor.

Grading:

1. Student presentations: each student will review one article for the class. The review will describe the article and discuss its importance. In order to do an adequate job of explaining the article, it probably will be necessary to do some background reading. You should also prepare an outline summarizing the article for the class. 15% of total mark.
2. Ten weekly quizzes, starting September 19th, at the start of each class. The first two will be worth 5% of final mark. The remaining 8 will be worth 10% each. The top 6 of the final 8 quizzes will be counted towards the final grade. The quizzes will cover the assigned reading and the articles presented in the previous week
3. Class participation 15 %
4. There will also be an optional term paper that will be worth 9%. If you choose to do it, a topic must be agreed upon by the end of September.

Updated schedule: PSYD62Y: 1994
Student presentations

Room R3228

Week 3

Carolyn Johnstone - Shallice
Aliea Butt - Schacter et al.
Andrew Weeks - Nadel

Week 4

Meenu Sharma - Knowlton & Squire (1993)
Leslie Solis - Wilson & McNaughton (1993)

Week 6

Prayna Sharma - Kim & Fanselow
Michelle Yhip - Miller & Desimone
Paul Grinelle - Wilson, Scalaidehe, & Goldman-Rakic

Week 7

Karin Bir - Wilson & McNaughton (1994)
Masihlall, R. - Ahissar et al.
Seeratin, - Aosaki

Week 8

Khosla, J. - Kaba et al
Douglas, C. - Schumann & Madison

Week 9

Janina - Montague & Segnowski,
Caitlin - Linden

Week 11

Ben-David, M. - Silva et al (2 artuckes)
Thirlwell, C - Patneau, D. K. & Stripling, J.S.
Charlene R. - Nguyen et al

Week 12

Kameka, Marie - Nottebaum
Michaels, M. - Schiff et al
Ebert, P.

Week Date	Topic
1. Sept 12	Introduction: paradigms, levels of analysis, model systems
2. Sept 19	Learning and memory systems 1: Declarative memory perceptual representational memory
3. Sept 26	Declarative memory & perceptual representational memory
4. Oct 3	Learning and memory systems 2: Learning of Skills and procedures; stimulus reinforcement learning
6. Oct 17	Learning and memory systems 2: Learning of Skills and procedures; stimulus reinforcement learning
7. Oct 24	Temporal processes and memory: short term memory working memory
8. Oct 31	Consolidation - Long term potentiation The synaptic change hypothes
9. Nov 7	Synaptic plasticity - Induction mechanisms - short term
10. Nov 14	- No classes: Neuroscience Society Meeting
11. Nov 21	Induction mechanisms: coincidence detectors - network models
12. Nov 28	Expression and maintenance
13. Dec 5	Final Exam

Assigned readings for:

Week 2 (For September 19th)

Lecture notes

Eichenbaum, H., Otto, T. & Cohen, N.J. (1992). The hippocampus - what does it do? *Behavioral and neural biology*, 57, 2-36. Read pages 1-9

Squire, L.R., & Zola-Morgan, S. The medial temporal lobe memory system. *Science*, 1991, 253, 1380-1386.

Week 3

Eichenbaum, Otto, & Cohen (1992) pages 9-36

Tulving, E., & Schacter, D.L. Priming and human memory systems. *Science*, 1990, 247, 301-306.

Weeks 4

LeDoux, J.E. (1994). Emotion, memory and the brain. *Scientific American*, 270, 50-59.

Week 5

Thompson, R.F., & Krupa, D.J. (1994). Organization of memory traces in the mammalian brain. *Annual Review of Neuroscience*, 17, 519-549.

Week 6

Hebb, D.O. The organization of behavior. Chapter 4, pp 60-78.

Week 7

McGaugh, J.L. (1989). Involvement of hormonal and neuromodulatory systems in the regulation of memory storage. *Annual Review of Neuroscience*, 12, 255-288.

Week 8

Hawkins, R.D., Kandel, E.R., & Siegelbaum, S.A. (1993). Learning to modulate transmitter release: themes and variations in synaptic plasticity. *Annual review of Neuroscience*, 16, 625-665.

Week 9

Class notes

Malenka, R.C., & Nicoll, R.A. 1993. NMDA-receptor-dependent synaptic plasticity: multiple forms and mechanisms. *Trends in Neuroscience*, 16, 521-526.

Week 11

Week 12

Catsicas, S., Grenningloh, G., & Pich, E.M. (1994). Nerve cell proteins: to fuse to learn. *Trends in Neuroscience*, 17,368-372.

Week 13

Student presentations:

Nadel, L. The hippocampus and space revisited. (1991) The hippocampus and space revisited. *Hippocampus*, 1, pp 221-229.
(Week 3)

Shallice, T., Fletcher, P., Frith, C.D., Grasby, P., Frackowiak, R.S.J., & Dolan, R.J. (1994). Brain regions associated with acquisition and retrieval of verbal episodic memory. *Nature*, 368, 633-635.

Schacter, D.L., Cooper, L.A., Tharan, M., & Rubens, A.B. (1991). Preserved priming of novel objects in patients in memory disorders. *Journal of Cognitive Neuroscience*, 3, 117-130
(Week 3)

Kim, J.J., & Fanselow, M.S. (1992). Modality-specific retrograde amnesia of fear. *Science*, 256, 675-678.
(Week 4)

Miller, E.K., & Desimone, R. (1994). Parallel neuronal mechanisms for short-term memory. *Science*, 263, 520-522.
(Week 6)

Wilson, F.A. W., Scaldidhe, S.P.O., & Goldman-Rakic, P.S. (1993) Dissociation of object and spatial processing domains in primate prefrontal cortex. *Science*, 260, 1955-1957.
(Week 6)

Wilson, M.A. & McNaughton, B.L. Reactivation of hippocampal ensemble memories during sleep. *Science*, 1994, 265, 676-679.