

Course Syllabus
MCB 261/NEU261
Advanced Cellular Neurobiology
Spring Semester, 2014

Course Description:

This course covers the molecular/cellular basis of neuron excitability (membrane potentials, action potential generation and propagation, ion channels), synaptic transmission and plasticity, and sensory receptor function. The reading material associated with the course will be primary research papers and there will be an emphasis on modern experimental techniques and research areas.

Course Professors:

Dr. Marla Feller (MF) (course director)
mfeller@berkeley.edu, 195A LSA, 643-1726
Dr. Ehud Isacoff (EI)
Dr. Hillel Adesnik (HA)
Dr. Richard H. Kramer (RK)

Class Meetings: Tu/Th 11-12:30; location 220 Wheeler Hall

Grading will be based on attendance, worksheets, and presentation at the end of the course

1. January 21 – Resting potentials -- HA
2. January 23 – Action potentials -- HA
3. January 28 – Synapses – Intro -- NMJ/quantal analysis – MF
4. January 30 – Synapses – Pre (calcium dependence, methods etc) - MF
5. February 4 – Synapses -- post /CNS Ligand-gated Ion channels EI
6. February 6 – Ion channels - methods of study EI
7. February 11 – voltage-ligand gated ion channels EI
8. February 13 – ligand – gated ion channels – excitatory EI
9. February 18 – ligand gated ion channels – inhibitory EI
10. February 20 – Diversity of ion channels -- MF
11. February 25 – presynaptic calcium - MF
12. February 27 -- vesicles, SNAREs, and friends - MF
13. March 4—Optical techniques in electrophysiology – RK
14. March 6— Photo transduction I – RK
15. March 11 – Photo transduction II – RK
16. March 13 -- Hair cells -- RK
17. March 18 – Pain Receptors -- RK
18. March 20 – TBD—RK
- March 25/27 – Spring break
19. April 1 – Short term plasticity -- MF
20. April 3 – Dendritic integration – MF
21. April 8 – Long term synaptic plasticity 1 -- HA
22. April 10 – Long term synaptic plasticity 2 -- HA
23. April 15—Synaptic inhibition - HA

24. April 17—STUDENT PRESENTATIONS -- EI
25. April 22 – STUDENT PRESENTATIONS -- HA
26. April 24 – STUDENT PRESENTATIONS -- HA
27. April 29 – STUDENT PRESENTATIONS -- MF
28. May 1 – STUDENT PRESENTATIONS--MF