

Lectures

	Topic			
	Lecturer	Date	Start Time	End Time
Week 1: Information Theory and Neural Coding				
Introduction	Berry	4-Aug	9:00 AM	9:30 AM
Noise and physical limits	Bialek	4-Aug	9:30 AM	12:00PM
Energy, information and fly vision	Laughlin	4-Aug	2:00 PM	3:30 PM
Introductions, first problem set, matlab tutorial	TAs	4-Aug	3:30 PM	5:30 PM
Sensory origins of motor noise?	Bialek	4-Aug	7:00 PM	8:00 PM
Additional matlab tutorials	TAs	4-Aug	8:00 PM	12:00AM
Receptive fields and adaptation	Fairhall	5-Aug	9:00 AM	12:00PM
Single cell adaptation	McCormick	5-Aug	2:00 PM	3:30 PM
<i>Tutorial on Information theory</i>	da Silveira	5-Aug	4:00 PM	5:30 PM
Retinal circuit and computation for differential motion sen	Baccus	5-Aug	8:00 PM	9:30 PM
Heterogeneity, correlation, and redundancy in retina and cortex	Berry	6-Aug	9:00 AM	12:00PM
Correlated neural populations	da Silveira	6-Aug	2:00 PM	3:00 PM
<i>Tutorial on maximum entropy principle</i>	Schneidman	6-Aug	3:00 PM	4:00 PM
Application to neural data	Schneidman	6-Aug	4:00 PM	5:00 PM
Generalized linear models and retinal population coding	Pillow	7-Aug	9:00 AM	10:30AM
Population coding in the ventral visual stream	DiCarlo	7-Aug	11:00AM	12:30PM
<i>Tutorial on clustering (K-means, EM, hierarchical, Info Bottleneck)</i>	Schneidman	7-Aug	2:00 PM	5:00 PM
Delay lines in auditory brainstem	Spain	8-Aug	9:00 AM	12:00PM
Computation in the cerebellum	Raymond	8-Aug	2:00 PM	3:30 PM
Timing in the cerebellum	Mauk	8-Aug	4:00 PM	5:30 PM
Week 2: Dynamical Systems and Attractors				
Dynamical systems and phase plane analysis	Ermentrout	11-Aug	9:00 AM	12:00PM
Reduced models of ion channel dynamics: resonance and adaptation	Izhikevich	11-Aug	2:00 PM	3:30 PM
<i>XPP Tutorial</i>	Bard	11-Aug	4:00 PM	6:00 PM
Boat trip!	Lisa	12-Aug	9:00 AM	12:00 PM
Ion channel biophysics: variety and timescales	Johnston	12-Aug	2:00 PM	3:30 PM
Basal ganglia	Wilson	12-Aug	4:00 PM	5:30 PM
Computational subunits in dendrites	Mel	13-Aug	9:00 AM	10:30 AM
Experiments on dendritic excitability	Hausser	13-Aug	11:00 AM	12:30 PM
<i>Introduction to NEURON / problem set</i>	Hines	13-Aug	2:00 PM	5:00 PM
Neural integrators	Tank	14-Aug	9:00 AM	10:30 AM
Theory of neural integrators, eigenvalues, robustness	Goldman	14-Aug	11:00 AM	12:30 PM
<i>Tutorial on attractor networks / problem set</i>	Solla/Mark	14-Aug	2:00 PM	5:00 PM

Experiments on mechanism of gamma band oscillations	Traub	15-Aug	9:00 AM	10:30 AM
Models of network oscillations	Kopell	15-Aug	11:00 AM	12:30 PM
<i>work on problem sets</i>	TAs	15-Aug	2:00 PM	6:00 PM

Week3: Learning

Nature and measurement of transmembrane potential	Kleinfeld	17-Aug	9:00 AM	10:00 AM
Nature and measurement of synaptic transmission	Kleinfeld	17-Aug	10:00 AM	11:00 AM
Nature and measurement of network activity	Kleinfeld	17-Aug	11:00 AM	12:00 PM
Probability Theory	Iyengar	17-Aug	2:00 PM	3:00 PM
Statistics I: Estimation	Iyengar	17-Aug	3:15 PM	4:15 PM
Tutorial: Matlab Prob/Stat I: Estimation	Kass/Iyengar	17-Aug	7:30 PM	9:30 PM

Neuro Joint Lecture I: Signal processing and spectral analysis	Pesaran	18-Aug	9:00 AM	10:30 AM
Neuro Joint Lecture II: Point process models and Splines	Kass	18-Aug	10:45 AM	12:15 PM
Neuro Joint Lecture III: Applications to the Vibrissa system	Kleinfeld	18-Aug	1:30 PM	3:00 PM
Neuro Joint Lecture IV: Neuroanatomy; analysis of ABA data set	Mitra	18-Aug	3:15 PM	4:45 PM
Tutorial: Signal Processing, Spectral Analysis. (Chronux)	Bokil, Pesaran	18-Aug	7:00 PM	9:30 PM

Spike-timing dependent plasticity and computational consequences	Abbott	19-Aug	9:00 AM	10:30 AM
Plasticity in cortical circuits	Dan	19-Aug	11:00 AM	12:30 PM

Motor sequence generation and learning in the songbird	Olvescyy	20-Aug	9:00 AM	10:30 AM
Model of learning in songbird	Fiete	20-Aug	11:00 AM	12:30 PM
<i>Overview of perceptrons and backpropagation</i>	Solla	20-Aug	2:00 PM	5:00 PM

Tempotron and network capacity	Sompolinsky	21-Aug	9:00 AM	10:30 AM
Decision-making	Wang	21-Aug	11:00 AM	12:30 PM
Temporal pattern learning with chaotic networks	Abbott	21-Aug	2:00 PM	5:00 PM

Hippocampal Anatomy, physiology and function.	Mehta	22-Aug	9:00 AM	12:00 PM
Effects of STDP and oscillations on place cells.	Mehta	22-Aug	10:00AM	11:00AM
Cortico-hippocampal interaction and learning.	Mehta	22-Aug	11:30 AM	12:30 PM
Decoding place fields	Eden	22-Aug	2:00 PM	3:30 PM
<i>Overview of Bayesian learning</i>	Solla	22-Aug	4:00 PM	5:00 PM

Entropy and Mutual Information Estimation: Lecture and Tutorial	Victor	22-Aug	7:30 PM	9:30 PM
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Week 4: Special Projects

Motion estimation	de Ruyter	25-Aug	3:00 PM	4:00 PM
A spike by any other name would cost the same	Sejnowski	26-Aug	3:00 PM	4:00 PM
Machine Learning I	Niyogi	27-Aug	9:00 AM	10:15 AM
Machine Learning II	Niyogi	27-Aug	10:30 AM	12:00 PM