

LS50A - Fall 2018				
TFs	Wk			
Emma Nagy & Mariela Petkova	1	1 Tu	4-Sep Introduction & course overview	Andrew
		2 W	5-Sep Biology as computation/ Central Dogma	Andrew
		3 Th	6-Sep Inferences, Rules, Errors	Michael
		4 F	7-Sep Equilibrium, energy, steady-state	Andrew
	2	5 M	10-Sep Probability distributions and Bayesian analysis	Michael
		6 Tu	11-Sep Lac operon I: Introduction	Andrew
		7 W	12-Sep Quantization, elements, atomic orbitals	Emma
		8 Th	13-Sep Lac operon II: Paradigm for gene regulation	Andrew
	3	9 F	14-Sep Periodic trends, molecular orbitals	Emma
		10 M	17-Sep Math Primer: Taylor Series, Multivariable Calc	Ben
		11 Tu	18-Sep VSPER, Molecular Orbitals, and Organic Molecules	Emma
		12 W	19-Sep Introduction to ordinary differential equations	Ben
	4	13 Th	20-Sep Protein structure, intermolecular forces	Emma
		14 F	21-Sep Linear algebra I	Michael
		15 M	24-Sep Macromolecules and membranes	Emma
		16 Tu	25-Sep Linear algebra II	Michael
	5	17 W	26-Sep Linear algebra III	Michael
		18 Th	27-Sep Linear algebra IV	Michael
		19 F	28-Sep Molecular genetics I	Andrew
		20 M	1-Oct Molecular genetics II	Andrew
	6	21 Tu	2-Oct Molecular genetics III	Andrew
		22 W	3-Oct Principal Component Analysis (PCA)	Ben
		23 Th	4-Oct PCA application I: microbial communities	Ben
		24 F	5-Oct PCA application II: Face Recognition	Ben
	6	M	8-Oct Columbus Day Holiday	
		Tu	9-Oct REVIEW	
		W	10-Oct Exam 1	
	7	25 Th	11-Oct Introduction to the cell cycle	Andrew
		26 F	12-Oct Yeast cell cycle I	Andrew
		27 M	15-Oct Sequence Analysis and Computational Biology 1	Cara
		28 Tu	16-Oct Yeast cell cycle II	Andrew
Andrea Giometto & Cara Weisman	8	29 W	17-Oct Sequence Analysis and Computational Biology 2	Cara
		30 Th	18-Oct Classical genetics I	Cassandra
		31 F	19-Oct Classical genetics II	Cassandra
		32 M	22-Oct Sequence Analysis and Computational Biology 3	Cara
	9	33 Tu	23-Oct Introduction to Thermodynamics	Michael
		34 W	24-Oct Sequence Analysis and Computational Biology 4	Cara
		35 Th	25-Oct Entropy and Temperature	Michael
		36 F	26-Oct Sequence Analysis and Computational Biology 5	Cara
	10	37 M	29-Oct Boltzmann Factor and Partition Function	Michael
		38 Tu	30-Oct Sequence Analysis and Computational Biology 6	Cara
		39 W	31-Oct Pressure and Volume, Free Energy	Michael
		40 Th	1-Nov Sequence Analysis and Computational Biology 7	Cara
	11	41 F	2-Nov Sequence Analysis and Computational Biology 8	Cara
		42 M	5-Nov Chemical Potential	Michael
		Tu	6-Nov REVIEW	
		W	7-Nov Exam 2	
	12	43 Th	8-Nov Chemical Potential, Gibbs Free Energy	Michael
		44 F	9-Nov Chemical Reaction Equilibria, Law of Mass Action; Pigments	Michael
		45 M	12-Nov Cooperativity from a Statistical Mechanics Perspective	Michael
		46 Tu	13-Nov Cooperativity from a Biochemical Perspective	Andrew
	13	47 W	14-Nov Introduction to Diffusion	Michael
		48 Th	15-Nov Diffusion and Chemical Potential	Michael
		49 F	16-Nov Examples of Diffusion	Michael
		50 M	19-Nov Membranes, Channels, and Pumps	Andrew
	14	51 Tu	20-Nov Photosynthesis and Redox	Andrew
		W	21-Nov Thanksgiving Holiday	
		Th	22-Nov Thanksgiving Holiday	
		F	23-Nov Thanksgiving Holiday	
	15	52 M	26-Nov Chemiosmotic hypothesis and ATP synthase	Andrew
		53 Tu	27-Nov Diffusion limited reactions	Michael
		54 W	28-Nov Reaction-Diffusion Systems	Michael
		55 Th	29-Nov Gene Regulation I	Cassandra
	16	56 F	30-Nov Gene Regulation II	Cassandra
		57 M	3-Dec Gene Regulation III	Cassandra
		Tu	4-Dec REVIEW	
		W	5-Dec Exam 3	

LS50B - Spring 2019

TFs		Wk			
Will Xiao & Mike Jin	1	1 M	28-Jan	Graphs & Networks I	Ben
		2 Tu	29-Jan	Graphs & Networks II	Ben
		W	30-Jan	Wednesday Activity	
	3	Th	31-Jan	Dynamical systems I: fixed points and phase plane analysis	Aravi
	4	F	1-Dec	Chemotaxis I: the phenomenology of how bacteria find food	Aravi
	2	5 M	4-Feb	Dynamical systems II	Aravi
		6 Tu	5-Feb	Chemotaxis II: the molecular circuitry of chemotaxis	Aravi
		W	6-Feb	Wednesday Activity	
	7	Th	7-Feb	Dynamical systems III	Aravi
	8	F	8-Feb	Chemotaxis III: mathematical models of chemotaxis	Aravi
	3	9 M	11-Feb	Dynamical systems IV	Aravi
	10	Tu	12-Feb	Intro to Neuroscience	Ben
		W	13-Feb	Wednesday Activity	
	11	Th	14-Feb	Hodgkin and Huxley	Ben
	12	F	15-Feb	Non-linearities in Neuroscience	Ben
	4	M	18-Feb	President's Day Holiday	
	13	Tu	19-Feb	Stochastic Phenomena in Biology	Ben
	14	W	20-Feb	Animal navigation: how worms and maggots get around	Aravi
	15	Th	21-Feb	Symmetry and Symmetry Breaking	Ben
	16	F	22-Feb	Symmetry and Symmetry Breaking in animal behavior	Aravi
Anurag Lindi & Ceejay Lee	5	17 M	25-Feb	Markov Chains	Ben
		Yellow	Tu	REVIEW	
		Red	W	Exam 1	
	18	Th	28-Feb	Animal behavior as a Markov chain	Ben
	19	F	1-Mar	Simulating Stochastic Processes	Ben
	6	20 M	4-Mar	Markov Chain Monte Carlo	Ben
	21	Tu	5-Mar	Simulating Animal Behavior and its control	Aravi
		W	6-Mar	Wednesday Activity	
	22	Th	7-Mar	Structure I: how to determine molecular structure	Andrew
	23	F	8-Mar	Structure II: Fourier transformation I	Aravi
	7	24 M	11-Mar	Structure III: Fourier transformation I	Aravi
	25	Tu	12-Mar	Structure IV: Nucleic Acids	Andrew
		W	13-Mar	Wednesday Activity	
	26	Th	14-Mar	Structure V: Proteins	Andrew
	27	F	15-Mar	Structure III -- Protein Folding Pathways and Protein Isolation	Andrew
		Grey	M	Spring Break	
			Tu	Spring Break	
			W	Spring Break	
			Th	Spring Break	
			F	Spring Break	
	8	28 M	25-Mar	Mechanisms of Enzyme Catalysis I	Andrew
		29 Tu	26-Mar	Mechanisms of Enzyme Catalysis II	Andrew
		W	27-Mar	Wednesday Activity	
	30	Th	28-Mar	Optics and Microscopy	Andrew
	31	F	29-Mar	Cell Structure	Andrew
	9	32 M	1-Apr	Cytoskeleton	Andrew
		Yellow	Tu	2-Apr	REVIEW
		Red	W	3-Apr	Exam 2
	33	Th	4-Apr	Evolution, development, history of life: An introduction	Cassandra
	34	F	5-Apr	An introduction to animal development	Cassandra
	10	35 M	8-Apr	Population Genetics I	Cassandra
	36	Tu	9-Apr	Models of early development I: nuclear movement in early embryos	Cassandra
		W	10-Apr	Wednesday Activity	
	37	Th	11-Apr	Population Genetics II	Cassandra
	38	F	12-Apr	Models of early development II: gastrulation	Cassandra
	11	39 M	15-Apr	Population Genetics III	Cassandra
	40	Tu	16-Apr	Models of early development: symmetry breaking in cell specification	Cassandra
		W	17-Apr	Wednesday Activity	
	41	Th	18-Apr	Population Genetics IV	Cassandra
	42	F	19-Apr	Evo Devo I	Cassandra
	12	43 M	22-Apr	Evo Devo II	Cassandra
	44	Tu	23-Apr	Molecular Evolution I	Andrew
		W	24-Apr	Wednesday Activity	
	45	Th	25-Apr	Molecular Evolution II	Andrew
	46	F	26-Apr	Origin of Life	Ben
	13	47 M	29-Apr	History of Life	Ben
		Yellow	Tu	30-Apr	REVIEW
		Red	W	1-May	Exam 3