

Math 36: Mathematical Methods for Life Scientists
Tentative Schedule

Text: *Mathematical Methods in Biology* by E. Allman and J. Rhodes (2004)

WEEK	Monday	Wednesday	Friday
8/29	No Class	Modeling Growth: 1.1	Non-linear Models: 1.2
9/5	Analysis of one-dimensional models: 1.3	Variations on the logistic model: 1.4	Continuous Models: 1.5
9/12	Modeling several populations: 2.1	Special matrices: Leslie matrices and Usher matrices: 2.2	Matrices: identity and inverse: 2.2 and Matlab
9/19	Long-term behavior: eigenvalues and eigenvectors: 2.3	Asymptotic behavior of Leslie models: 2.3 cont'd (complex numbers)	More on eigenvectors and eigenvalues: 2.4 TAKE HOME QUIZ: CH.1-2
9/26	Predator Prey models: 3.1	Equilibria of interacting population models: 3.2	Linearization and stability: 3.3
10/3	Developing models: competitive, cooperative and homeostatic models: 3.4	Modeling DNA mutation: 4.1, 4.2	Probability: 4.2 cont'd
10/10	Recap and Review (get your questions answered!)	MIDTERM I (Chapters 1 through 4.2)	Conditional probability: 4.3
10/17	FALL BREAK	Markov models: 4.4	Base substitution: Kimura models, etc. 4.4
10/24	Phylogenetic distances: 4.5	Phylogenetic trees: 5.1 (omit the rest of chapter 5)	Mendelian genetics: 6.1
10/31	The chi-squared distribution: 6.2	Sex-linked genes: 6.3	Gene frequency in populations: 6.4
11/7	The SIR model: 7.1	Threshold values: 7.2	Variations on the SIR model: 7.3
11/14	Multiple populations in the spread of disease: 7.4	Finding the best model: 8.1	The method of least squares: 8.2
11/21	Fitting to polynomials: 8.3	Logistic regression (supplementary materials)	THANKSGIVING BREAK
11/28	Issues in model fitting: (supplementary materials)	Recap and Review (figure out all the details!)	MIDTERM II (4.3-5.1, Chapters 6, 7 and 8)
12/5	Recap and Review	Recap and Review (special hints given out today!!!)	Reading Days: 12/8-12/9 (no regular class)
	COMPREHENSIVE FINAL: Tuesday, 12/13, 9AM		