Quantitative Thinking in the Life Sciences
Course Schedule Fall 2012

Week	Class topic	Computing component
Aug 29	Learning to think about the questions driving your research, the data necessary to answer those questions, and techniques to analyze those data	Introduction to R
Sep 5	Discuss the questions are driving your research. Data – what is it? Concept/logic maps.	R - coding
Sep12	Probability: From counting beans to counting cards. The real scientific method – an iterative process.	R - probability
Sep 19	Distributions: What are distributions? What do they tell us about the data? What are some likely distributions in your system?	R - distributions
Sep 26	Links to traditional statistics. Pitfalls in traditional statistics (p-values, a posteriori analysis, non-normal distributions)	R - variation
Oct 3	Your system revisited: Concept map, variables and error	R – sampling error
Oct 10	Variation: Climate Change data	R – simulation: Climate change example
Oct 17	Single variable modeling (e.g., linear models, growth rate models)	R – simulating your system
Oct 24	Composing static models of ecological processes. Can we turn your Concept map into a quantitative model?	Population modeling in Excel and R, elk growth rate model
Oct 31	Stochasticity in your system. Error and stochasticity as the keys to sampling design	Adding stochasticity to population growth models. Re-simulating your system
Nov 7	The concept of parsimony. Likelihood, maximum likelihood	Sampling design for your system and an introduction to the class project/challenge
Nov 14	Using your textbook as a guide	Class project
Nov 21	Class Recess	
Nov 28	Kullback-Liebler distance, AIC	Selecting among alternative models
Dec 5	Parameter estimation	Class project
Final	Final: Class project due	