Syllabus for BIOL 701: Likelihood Methods in Biology

Monday and Wednesday 10-10:50 AM
2025 Haworth
Course website: http://phylo.bio.ku.edu/courses/likelihood

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Office hours by appt.

Grades will be based on class participation and homework assignments. We will have approximately one homework assignment per week.

Approximate Schedule of Topics

Week 1	Jan 24, Jan 26	Probability, random variables, distributions
Week 2	Jan 31, Feb 02	Random samples, sample distributions, likelihood
Week 3	Feb 07, Feb 09	Explicitly specifying variability: likelihood examples and Bayes' rule
Week 4	Feb 14, Feb 16	Likelihood examples and maximum likelihood estimation
Week 5	Feb 21, Feb 23	Likelihoods for process-based models: application to mark-recapture
Week 6	Feb 28, Mar 02	Computational aspects: numerical optimization
Week 7	Mar 07, Mar 09	Model Selection and Parametric bootstrapping
Week 8	Mar 14, Mar 16	Variance component estimation
	Mar 21 - Mar 27	SPRING BREAK
Week 9	Mar 28, Mar 30	Bayesian inference
Week 10	Apr 04, Apr 06	Applications: DNA evidence; classification into discrete groups
Week 11	Apr 11, Apr 13	Computational aspects: Markov chain Monte Carlo (MCMC)
Week 12	Apr 18, Apr 20	MCMC continued
Week 13	Apr 25, Apr 27	MCMC continued
Week 14	May 02, May 04	Special topics: based on student suggestions
Week 15	May 09, May 11	Special topics: based on student suggestions