MATH 660

INFORMATION ON THE FINAL EXAM

The final in MATH 660 is Friday, **May 4 at 8am**. You should bring a (dumb) calculator so that you can do some elementary arithmetic quickly if need be. The exam will *heavily* emphasize ideas since the midterm. That is, the emphasis will be on chapters 6-13 in the notes. You do, however, need to know things like what problem NJ is trying to address (closest taxa metrically may not be sister), MC, parsimony informative site, etc. You will not, for example, be asked to do a weighted parsimony analysis. Computational questions will focus on things like estimating model parameters or performing an ML maximization problem or computing the expected time to coalescence under Kingman's coalescent model of n gene lineages.

You may bring a cheat sheet with you to the exam where you write all the formulas for the pairwise distances we learned. If you think you need to have something else written down, let me know in advance and I will make a decision and let other students know if needed.

The sort of computations/numerical questions you should expect will be modeled on those in the HW or examples from class. For instance, given a joint distribution of patterns for two sequences, argue which model might be a good fit for the data and compute a distance from the table. Something like finding a maximizer of a log-Likelihood is fair too. Being about to compute a simple posterior distribution (with either a discrete of continuous prior) may also be asked. Understanding NNI, SPR, and TBR moves in tree space will be tested. There are sure to be questions on the coalescent model.

The other information you need to know are definitions and statements of important results. This includes what it means for an estimator $\hat{\theta}_n$ to be consistent, and which of our methods for tree reconstruction are consistent. It is also important that you can discuss clear and concisely the difference between a 'statistically good' property (theoretical property) and practical questions (okay, so $\hat{T}_{MLE,n}$ is consistent, but how big should n be?) There will most certainly be questions asking you to compare and contrast various methods of tree construction.