

FINAL EXAM, MAY 04, 7:40-9:30, LSE 204

1. **Counting and Graph Theory.** Counting strings. Basic concepts in graph theory.
2. **Probability Theory.**
 - Basic probability using counting.
 - Conditional probability, independent events.
 - The posterior probability and Bayes' formula.
3. **Alignment.**
 - Global alignment:
 - Linear gap penalty.
 - Affine gap penalty.
 - Local alignment.
 - Semi-global alignment.
4. **Markov Chains.** Finding the probability of a string.
5. **Hidden Markov Models.** Viterbi's algorithm for finding the most probable path. Forward algorithm for finding the probability of a string.
6. **Mapping.**
 - STS-content mapping and the C1P.
 - Radiation-hybrid mapping: Reduction to the TSP.
 - The tightest layout problem.