

# Syllabus

Spring 2005

- Course:** Statistics 892, Statistical Methods in Bioinformatics
- Instructor:** Steve Kachman
- Office:** 104 D Miller Hall
- Phone:** 472-2903
- Office Hours:** MWF 2:00-3:00 and by appointment
- Text Book:** *Statistical Methods in Bioinformatics: An Introduction*, Ewens and Grant
- Prerequisites:** Probability and Distributions  
Calculus  
Statistical Methods  
SAS
- Homework:** Approximately once every other week  
20% will be deducted for each day late.
- Exams:** Two exams, will be announced at least one week in advance
- Final Exam:** Monday, May 2 10:00-Noon  
Revise travel plans accordingly.
- Conflicts:** Expected to take exams at the scheduled time  
If an exam conflicts with an activity vital to your program,  
please have your major advisor contact me well in advance.  
I should be notified as soon as possible of any potential conflicts.
- Grading:** Exams 200 pts  
Final 150 pts  
Homework and Quizzes 100 pts  
Grading will be on a straight 90, 80, 70, 60 percent basis.  
Available at <http://blackboard.unl.edu/>
- Web page:** <http://statistics.unl.edu/faculty/steve/bioinformatics/2005/>

The objective of this course is to provide students with an understanding of statistical methods used in bioinformatics. Bioinformatics is a very broad term and we will focus on issues related to DNA and protein sequence analysis.

### **Outline**

- Chapter 5: Analysis of One DNA Sequence
- Chapter 6: Analysis of Multiple DNA or Protein Sequences
- Chapter 7: Random Walks
- Chapter 8: Classical Estimation and Hypothesis Testing
- Chapter 9: BLAST
- Chapter 10: Markov Chains
- Chapter 11: Hidden Markov Models
- Chapter 13: Evolutionary Models
- Chapter 14: Phylogenic Tree Estimation