

Course Syllabus

Course Information

Course Number/Section	Math 6343.001
Course Title	Computational Biology
Term	Fall 2016
Days & Times	MW 2:30-3:45 pm
Room	CB1 1.106

Check eLearning for announcements, reading materials and homework assignments.

Professor Contact Information

Professor	Yan Cao
Office Phone	6458
Email	yan.cao@utdallas.edu
Office Location	FO 2.402D
Office hours	MW 12-1pm or by appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

MATH 2418.

Course Description

This course provides an introduction to mathematical and computational methods and techniques in analyzing and understanding molecular biology problems. The focus will be on biological sequence analysis, probabilistic models of proteins and nucleic acids. Mathematical topics covered will include background on probability, Markov models and hidden Markov models, principal component analysis and support vector machine.

Student Learning Objectives/Outcomes

Students will learn some mathematical models and computational algorithms for biological sequence analysis. Students will be able to apply the mathematical techniques learned in class to model real world biological problems.

Required Textbooks and Materials

Biological Sequence Analysis Probabilistic models of proteins and nucleic acids by R. Durbin, S. Eddy, A. Krogh and G. Mitchison, Cambridge University Press.

Suggested Course Materials

Matlab is the suggested tool for all the assignments. Students who are unfamiliar with Matlab should go through the online tutorial material. The Matlab Helpdesk contains pointers to an extensive and detailed online documentation. Beginners should start with the Getting Started Tutorial.

Assignments & Academic Calendar

There will be a series of homework assignments, which include both theoretical problems and computer simulations. There will be one midterm exam and one final exam.

Important Dates:

Wednesday, September 7, Last day to drop a class without a "W"

Monday, November 7, Last day to withdraw from a course with a "W"

Monday, October 17, Midterm Exam

Wednesday, December 7, Final Exam

Grading Policy

40% Homework assignments

30% Midterm Exam

30% Final Exam

Grading Scale

[90-100] A [85-90) A-

[80-85) B+ [75-80) B [70-75) B-

[60-70) C

Below 60 F

Course & Instructor Policies

Make-up exams

N/A

Extra credit

N/A

Late work

For the assignments, failure to meet the deadline will result in a **10%** reduction per day late, of the point value for the assignment.

Special assignments

N/A

Class attendance

Required.

Classroom citizenship

Required. Any action which disturbs your classmates or interrupts the lecture is unacceptable.

Examples of such actions include the following:

1. Entering the classroom late. Please be punctual.
2. Leaving the classroom before the end of lecture.
3. Cell phones need to be turned off or silent.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.