

COURSE ANNOUNCEMENT
FALL 2004
CBS 520

**Mathematical Modeling and
Introduction to Computational Biology**

Instructor: Dr. Rosemary Renaut
Time: 10:40 – 12:30 Monday – Wednesday – Friday
Location: LSE 236(Computer Laboratory)
Line #: See instructor (renaut@asu.edu)
Credit Hours: 4

Topics: This course focuses on scientific and mathematical tools, emphasizing computing skills, required in Bioinformatics. Precise content depends on the background of the students. Topics will be selected :

Matlab will be used to illustrate new concepts
Perl will be introduced as a tool for regular expression searches
Signals analysis – Fourier transforms, filtering.
Numerical libraries for bioinformatics –alignments etc
Nonlinear minimization – basic introduction.
Pattern recognition - neural networks/support vector machines
Differential models of biological systems as time permits.

Requirements: Students will be expected to complete regular homework assignments with substantial computing components. Teams will be formed to investigate and present new topics in class. Students should expect to work 10 hours per week for this course.

Format: The course takes place in a computer laboratory. Anticipate that lectures are held Monday and Wednesday each week, and that Friday is set for a lab session/office hours. Student should expect that there may be required attendance at talks given by invited speakers, on Fridays, or early evenings, dependent on the schedules of the speakers.

Prerequisites: Contact Professor Renaut prior to registration for the course. Preference for those students enrolled in the CBS PSM program.

Textbook: to be determined-we will supplement with information on the web as available.