Summary: Mathematical techniques are playing an increasingly important role in biology and medicine as technological advances allow for more quantitative measurements. In this class we shall focus on mathematical approaches useful in modeling and analysis in a range of areas, from understanding the dynamics of populations of interacting species to how action potentials are generated in neurons. The first part of the semester will concern general mathematical techniques in the context of specific biological models following the textbook of Edelstein–Keshet. The remainder of the course after the midterm will be concerned with special topics in current areas of biological and medical research.

Professor: Paul J. Atzberger, atzberg@rpi.edu, Office 412 in Amos Eaton, Phone 518–276–2184.

Time: Mondays and Thursdays 2:00pm – 3:50pm.

Office Hours: 12:30pm – 2:00pm on Thursdays.

Webpage: http://www.rpi.edu/~atzberg/Fall2003/index.html


Recommended Books: Dynamical Systems and Linear Algebra, Hersh and Smale; Stochastic Processes, Sheldon M. Ross; Computational Cell Biology, Fall et al; Molecular Biology of the Cell, Alberts et al.

Grading: There will be bi–weekly homework assignments, one midterm exam, and a final project. The homework will count for 20%, the midterm for 40%, and the final project for 40%. There will be no make–up exam for the midterm. Homework will not be accepted late. The midterm will be on Thursday, November 17th. The final project will be due the last week of class.