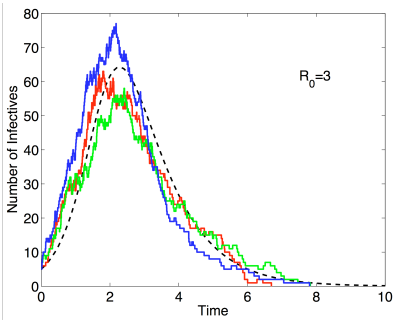
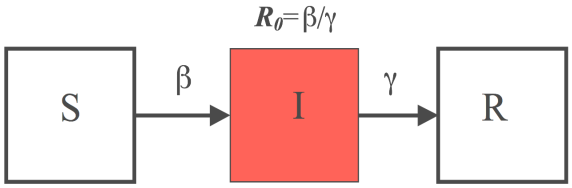
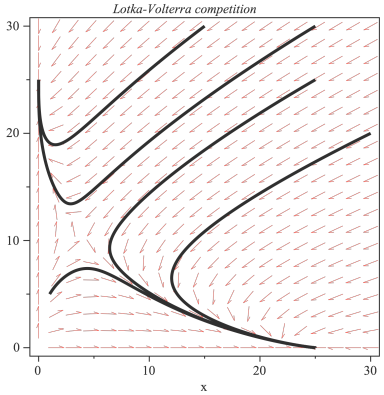
MAA PREP 2010
Mathematical Modeling in Population Biology and Epidemiology
June 4-6, 2010
Texas Tech University, Lubbock, TX 79409

Organizers and Speakers: Sophia Jang, Linda Allen, Lih-Ing Roeger, Edward Allen, and Richard Strauss

Mathematical models in population biology and epidemiology are becoming increasingly important and useful in addressing current problems in population biology and epidemiology, such as species invasions, emerging diseases, or drug resistance. In this MAA PREP workshop, we will introduce some mathematical models and techniques useful in the study of these current problems. Some mathematical and computational techniques for difference equations, differential equations, and stochastic models will be introduced and applied to biological problems. For example, we will discuss how to formulate a stochastic epidemic model from the basic susceptible-infective-recovered (SIR) model for disease spread and derive an estimate for the probability of disease emergence. In addition, we will formulate competition and predation models to investigate whether an introduced species is able to invade an established community. We will discuss how to formulate stochastic models of competition and predation that include variability in the birth, death, and immigration processes and explore the models' dynamics through computer simulations. Participants will have hands-on experience with computer technology, Maple and MatLab. Some preparatory exercises will be available for registered participants.







For more information about this workshop please visit the website:
www.math.ttu.edu/current/MAAPREP/MathematicalModeling/
To register for this workshop please visit the website: www.maa.org/PREP