1086-39-510 **Lih-Ing W Roeger*** (lih-ing.roeger@ttu.edu), Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409. *NSFD schemes on two-dimensional Lotka-Volterra competition model and SIS and SIR epidemic models.* Preliminary report.

We construct discrete-time or difference equation systems of competitive Lotka-Volterra model, SIS model, and SIR epidemic model by applying the nonstandard finite difference (NSFD) schemes. A simple criterion is used to preserve positivity of solutions in all models. In some models, we present an exact finite difference scheme as well. The difference equation systems via NSFD schemes preserve almost all properties including the positivity of solutions, the conservation law, and the local and some of the global stability of the equilibria; therefore, the difference equations are said to be dynamically consistent with the analog continuous-time models. (Received September 05, 2012)