1046-Y1-1742 **Robert E. Burks Jr.*** (`robert.burks@usma.edu`), 211B Barry Road, West Point, NY 10996.
What's Math have to do with History: A Biological Application to Matrices and Difference Equations.

All incoming freshmen at the United States Military Academy begin their two year mathematics sequence with a course in mathematical modeling and introduction to calculus. The course emphasizes using problem solving strategies and modeling theory to solve complex and often ill-defined problems. The course is designed to nurture creativity, critical thinking, and exploit technological tools to enhance an understanding of data analysis. The course includes several applications that focus on biological modeling applications. These applications fuses for the student mathematical concepts learned during the course with biological case problems. The intent is to continually show students the relevance of mathematics to the study of real world problems, particularly to Biology. This presentation focuses on biological application built upon previous instruction in both matrix operations and difference equations to address the spread and devastation of disease on age-structured population problems. I will discuss how our program incorporates the application of mathematics to construct Leslie and SIR Models that address historical biological case studies. (Received September 16, 2008)