



SAN DIEGO STATE
UNIVERSITY
Minds that move the world.

Department of Mathematics & Statistics
STATISTICS SEMINAR
presents

James Zouris
Naval Health Research Center

**Friday,
November 4,
2011**

2:00PM

GMCS 405

Coffee Social
1:30pm

*Modeling Casualty Rate for
Military Combat Planning*

Abstract:

One critical component of military planning for combat operations is estimating the magnitude and composition of illnesses and injuries sustained on the battlefield. These estimates are used by planners to establish a network of medical treatment facilities, and to ensure that adequate beds, blood, and medical material (equipment and consumables) are available to treat the expected patient stream. Furthermore, these estimates are used as indicators of overall battlefield lethality and combat care effectiveness.

The magnitude is the gross number of casualties that can be expected for a given battlefield scenario, and is often expressed as casualty rates. Composition refers to the types of illnesses and injuries that can be expected, and is expressed as patient streams. With the advent of high-performance computing and networking capabilities, electronic data capturing surveillance systems, and the vastly improved casualty reporting metrics, more reliable and comprehensive data has become available.

This presentation will discuss how casualty rates are calculated and modeled by using probability distributions functions with associated time series correlations. Patient streams are modeled by determining the probability of the patient condition occurrence frequency (PCOF) distribution of the most likely illnesses and injuries that are specific to military operations. Treatment profiles are associated with PCOFs, which are then used for medical requirements estimation.