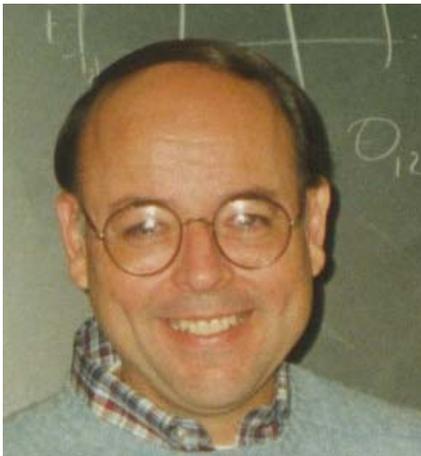


The University of South Carolina Department of Statistics presents

# Statistics2013 PALMETTO LECTURES IN STATISTICS



## Francisco J. Samaniego

Distinguished Professor of Statistics  
University of California, Davis

Dr. Samaniego is an elected Fellow of the American Statistical Association, the Royal Statistical Society and the Institute of Mathematical Statistics and is a member of the International Statistical Institute. In 2002, he was awarded the U C Davis Academic Senate's Distinguished Teaching Award. He served as the Theory and Methods Editor of the Journal the American Statistical Association in 2003 - 2005, and has been an Associate Editor of Naval Research Logistics since 1982. In 2004, he became the eighteenth annual recipient of the UC Davis Prize for Undergraduate Teaching and Scholarly Achievement.

**March 26, 2:00pm**  
**LeConte College 210B**

## A (Very) Short Course on Comparative Statistical Inference

Most universities today offer courses on the theory and practice of classical (or frequentist) methods in statistics and also offer courses in Bayesian statistical methods. Curiously, courses featuring a comparative analysis of the two approaches are hard to find. The guidance generally given on the question "Should I be a Bayesian?" is not very satisfying. Frequentists say "No!" and Bayesians say "Yes!" But is this the right question to be asking? Perhaps the question: "When should one be a Bayesian?" makes more sense. In today's "short course", the speaker will ask this latter question and will propose a particular way of addressing it. Empirical and theoretical evidence will be presented which supports the proposition that, in any particular problem, there exists a threshold in the space of prior distributions which separates "good priors" from "bad priors". In specific scenarios of some interest and importance (mostly dealing with exponential families of sampling distributions and conjugate prior distributions), this threshold can be identified analytically and graphically. We conclude that one should be a Bayesian in situations in which one's prior is on the right side of the threshold. Some practical advice on making that judgment will be given. For the sake of clarity and focus, this discussion will be restricted to problems involving statistical estimation.

**March 29, 2:00pm**  
**Capstone Conference Center**

## Network Reliability: A Fresh Look at Some Basic Questions

Network-centric operations are becoming increasingly dominant in industry and government. Research on the stochastic modeling of network performance has mushroomed in recent years. The proceedings of recent conferences of the Army Research Laboratory's Collaborative Technology Alliance in Communications and Networks features a good many research advances in the design and performance of communication networks, with connectivity, speed, cost and security issues carefully considered and with various forms of approximate optimality examined. In this talk, the speaker will address some fundamental questions about the topology of communication networks. The potential utility of analytical tools such as "dominations" and "signatures" in assessing the "reliability" of a given network, and in comparing two competing network designs, will be examined. The traditional approach to treating the question of whether there exists a uniformly optimal network design of a given size (i.e., with  $v$  vertices and  $n$  edges for fixed  $v$  and  $n$ ) is scrutinized, and certain weaknesses in the approach are noted. An alternative approach is proposed and is shown to provide rather striking results in a context in which the traditional approach had been shown to fail. A scenario which treats the tension between performance and cost is also considered, and the optimality of a network under a "performance per unit cost" criterion is studied. An agenda for further research in this area is outlined.



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