

Prof. John Stufken  
Arizona State University

## **Abstract**

### **Title: Design of Experiments: From Small Data to Big Data**

Abstract: Experimentation is an integral part of science. Exploring or analyzing data leads to new insights, hypotheses, and questions that fuel further investigation. Before data can be explored or analyzed, it needs to be collected. Where possible, this is ideally done through a designed experiment. In a designed experiment, conditions under which observations are made can be controlled, and causal relationships can be studied. A central question in choosing a design is the information that it provides for pursuing the objectives of the experiment. This question is at the heart of the research area of optimal design of experiments. In this talk, I will give a brief introduction to this area of research, and present selected results. While most of this talk will be on research in this area that has been conducted with an eye towards physical experiments that result in "small" amounts of data, I will also suggest a potential value of these results for analysis of "big data".