

CENTER FOR STATISTICAL TRAINING & CONSULTING

The Center for Statistical Training and Consulting is a professional service and research unit at MSU. Our aim is to support research and provide training, grant development, and consulting in statistics for faculty, staff and grad students.

SPRING 2016 WORKSHOPS

All workshops are on Fridays from 1-4 pm in 106 Farrall Hall. For complete abstracts or to register visit www.cstat.msu.edu.

INTRODUCTION TO MISSING DATA ANALYSIS

**Presented by Dr. Tenko Raykov,
Measurement and Quantitative Methods**

Friday, January 15th, from 1-4pm

This workshop discusses initially patterns and mechanisms of missing data, and subsequently the flaws of traditional methods for 'dealing' with missing data. We will discuss the methods of maximum likelihood (full information maximum likelihood) and multiple imputation.

INTRODUCTION TO SAMPLING

Presented by Dr. Alla Sikorskii; Statistics and Probability

Friday, January 22nd, from 1-4pm

This workshop will provide an introduction to sampling with the focus on design and its relation to the methods of data analysis. Basic sampling concepts and aspects of selecting and analyzing samples will be covered. Minitab and SAS will be used.

INTRODUCTION TO SURVIVAL ANALYSIS

**Presented by Dr. Tenko Raykov,
Measurement and Quantitative Methods**

Friday, January 29th, from 1-4pm

This workshop provides an introduction to the increasingly popular methodology of survival/event history/duration analysis in the medical, social, behavioral, economics, business, marketing, and educational sciences. Throughout the workshop, illustrative empirical data examples are utilized and STATA is employed on them.

SPATIAL REGRESSION IN R

Presented by Dr. Sarah Hession; CSTAT

Friday, February 5th, from 1-4pm

Limitations in aspatial regression techniques will be discussed, and methods of spatial regression analysis presented to assess the role of predictive variables while explicitly incorporating spatial autocorrelation in parameter estimation and hypothesis testing. Important considerations such as choosing an optimal neighbor matrix, model selection using information theoretic criteria, and diagnostic testing will be discussed.

INTRODUCTION TO ZERO INFLATED MODELS

Presented by Dr. Elise Zipkin; Integrative Biology

Friday, February 12th, from 1-4pm

This workshop will provide an introduction to modeling data with excess zeros. We will focus on zero-inflated and zero-truncated models. We will consider the kinds of research problems that can benefit from these modeling approaches and outline assumptions, equations, and model analysis.

INTRODUCTION TO VARIABLE SELECTION IN REGRESSION

Presented by Dr. Dhruv Sharma; CSTAT

Friday, February 19th, from 1-4pm

In this workshop we briefly cover various approaches to variable selection, including stepwise and penalization based approaches. Model selection approaches such as cross-validation and information criterion approaches will also be discussed. Approaches will be implemented on an illustrative example using R.

HIERARCHICAL LINEAR MODELS

**Presented by Dr. Kim Maier,
Measurement and Quantitative Methods**

Friday, February 26th, from 1-4pm

This workshop will provide a basic introduction to hierarchical linear models, a particular class of multilevel models. We will consider what research problems can benefit from this modeling approach, what a two-level hierarchical linear model looks like, and how we can analyze multilevel data.

MIXED MODELS

Presented by Dr. Robert J. Tempelman; Animal Science

Friday, March 18th, from 1-4pm

Mixed model analysis will be presented as a way to appropriately account for uncertainty found when classical ANOVA methods fail to represent random effects and to obtain correct standard errors and tests of hypotheses.

INTRODUCTION TO GENERALIZED LINEAR MODELS

Presented by Dr. Brian Maurer; CSTAT

Friday, March 25th, from 1-4pm

This workshop will review some basic generalized linear models and give examples of how to use the R statistical software system to analyze them.

INTRODUCTION TO PROPENSITY SCORES

Presented by Dr. Dhruv Sharma; CSTAT

Friday, April 1st, from 1-4pm

In this workshop we will discuss the merits of using propensity scores in observational intervention based studies. Various approaches of propensity scoring will be discussed and implemented in the R software language. No knowledge of R is required.

INTRODUCTION TO BAYESIAN STATISTICS

Presented by Dr. Andrew Finley; Forestry

Friday, April 8th, from 1-4pm

A range of useful linear models will be studied, including multiple regression, non-linear regression, and hierarchical random effects models. Models will be specified and fit following the Bayesian paradigm with inference based on MCMC samples from posterior distributions.