Instructor: Dr. Richard Lockhart

Prerequisite:

STAT 450 or permission of the instructor. Students with credit for STAT 801 may not take this course for further credit.

Textbook:

All Of Statistics: A Concise Course in Statistical Inference by Larry Wasserman. Publisher: Springer.

Calendar Description:

The statistical theory that supports modern statistical methodologies. Distribution theory, methods for construction of tests, estimators, and confidence intervals with special attention to likelihood and Bayesian methods. Properties of the procedures including large sample theory will be considered. Consistency and asymptotic normality for maximum likelihood and related methods (e.g., estimating equations, quasi-likelihood), as well as hypothesis testing and p-values. Additional topics may include: nonparametric models, the bootstrap, causal inference, and simulation.

Course Outline:

This course covers the statistical theory that supports modern statistical methodologies. Distribution theory, methods for construction of tests, estimators, and confidence intervals with special attention to likelihood and Bayesian methods. Properties of the procedures including large sample theory will be considered. Consistency and asymptotic normality for maximum likelihood and related methods (e.g., estimating equations, quasi-likelihood) will be covered. I will start with inference and fill in background in probability as needed.   Our focus is chapters 6 through 11 of the text.

1. Probability: random variable, expectation, inequalities, and convergence

2. Inference: Parametric and nonparametric models, empirical distribution function, bootstrap, maximum likelihood and related methods, properties of MLEs and related methods, hypothesis testing and p-values, causal inference, simulation.

Grading Scheme:

Assignments – 50%
Midterms – 10% each of 2
Final – 30%

Grading is subject to change.

Revised June 26, 2013