Instructor: Dr. Richard Lockhart

Textbook:

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

Course Description:

Advanced mathematical statistics. A survey of basic concepts in point estimation, interval estimation and hypothesis testing. Principles of inference.

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 19, 2012