STATISTICS 6302  THEORY OF STATISTICAL ANALYSIS  SPRING 2013

INSTRUCTOR:  Professor Doug Critchlow  e-mail:  critchlow.1@osu.edu
OFFICE:  Cockins Hall Room 440C  Office Phone:  292-3888
OFFICE HOURS:  Wednesdays and Fridays 1 - 2 p.m.

COURSE TEXT:  Mathematical Statistics and Data Analysis (Third Edition) by John A. Rice

COURSE OUTLINE (and Corresponding Textbook Sections):

Review of Probability Models and Random Samples

Estimating Parameters of a Probability Model: Method of Moments and Maximum Likelihood Estimation (8.1 - 8.5.2)

Efficiency, Cramer-Rao Lower Bound, Sufficiency (8.7, 8.8, 8.9)

Confidence Sets, including Approximate and Bootstrap Confidence Intervals (8.5.3 and supplemental material)

Hypothesis Testing: Basic Principles, Most Powerful Tests, Uniformly Most Powerful Tests (9.1, 9.2)

Generalized Likelihood Ratio Tests, Likelihood Ratio Tests for the Multinomial Distribution, Duality between Confidence Intervals and Tests (9.4, 9.5, 9.3)

Inferences for Comparing Two Samples (11.1, 11.2.1, 11.2.2, 11.3.1)

Contingency Table Analysis (13.1 - 13.4)

Additional Topics such as the Nonparametric Bootstrap (10.4.6 or other sections)

NOTE:  Several important theoretical topics will be covered in lecture in much greater depth than in the textbook.  These topics include: the invariance property of method of moments estimators and of MLE's, pivotal quantities and the systematic development of confidence intervals (based on one sample or two samples), the power function, determining the sample size necessary to achieve the desired power, uniformly most powerful tests, and generalized likelihood ratio tests for two-sample problems.  You are responsible for all the material presented in lecture.

GRADING SCHEME (Tentative):

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework Assignments</td>
<td>20%</td>
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<tr>
<td>Two Midterm Examinations (20% each)</td>
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<tr>
<td>Final Examination</td>
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The final exam is on Tuesday, April 30 from 8:00 AM – 9:45 AM. No "early" final exams will be given, so make your travel plans accordingly.

Classroom Policies: Use of personal computers, cell phones, etc. is prohibited during lecture. Please do not read the newspaper or other extraneous materials during lecture. Homework will be due at the start of class; please do not work on the homework during lecture.

Attendance Policy: In accordance with University Rules, a student who is absent from three or more (not necessarily consecutive) classes, without contacting the instructor with a valid excuse, may be reported for
possible disenrollment. To prevent disenrollment, the instructor should be contacted (e-mail: critchlow.l@osu.edu) within 24 hours of the third (and any subsequent) absence.