Instructor:
Dr. Sujit K. Ghosh
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Webpage: http://www4.stat.ncsu.edu/~sghosh2/TEACHING/st794/
Office Hours: Wed 3:00 - 5:00 or by appointment. I am usually available most afternoons.

Teaching Assistant: Firstname Lastname, TBA Patterson Hall, tba@unity.ncsu.edu.

Goals and Objectives:
This course introduces mathematical methods in Statistics, demonstrates their usefulness in challenging settings, and shows how they can be used in practice.
Students will:
1. Understand the advanced methods of statistical inference based on both Bayesian and Frequentist framework,
2. Understand the rationality of using some fundamental concepts: Admissibility, Completeness and Sufficiency,
3. Understand the statistical decision theoretic framework,
4. Understand various statistical models: Parametric, Nonparametric and Semiparametric,
5. Broaden their toolkit of statistical procedures for challenging problems.

Textbook:
(Most of the home works will be assigned from the above textbook)

Course Organization and scope
This course features the following major topics with examples.
1. A brief review of advanced probability theory (Section 1.1-1.2)
2. Fundamentals of statistical inference (Section 2.1-2.4)
3. Unbiased estimation (Section 3.1)
4. Bayes decisions and estimations (Section 4.1)
5. Nonparametric models (Section 5.1)
6. Hypothesis tests (Section 6.1-6.4)
(Approximately two and half weeks will be devoted to each of the above major topics)

Suggested reading:

Course prerequisites:
1. ST 793: Advanced inference - I.
2. ST 778: Measure theory and advanced probability - I.
Homework:
Home works will usually be assigned approximately weekly. As a rule, usually late home works will not be accepted (however see the missed work policy). Assigned home works and submission deadlines will be posted on the course website.

Project:
The project consists of (i) reading an approved article(s) on a particular topic, (ii) write a short report (5-10 pages), and (iii) give a 10 minute in-class presentation using transparencies (similar to what you would present at a statistical conference).

Exams:
The midterm and final will be in-class and closed book exams.

Final exam: May 10, 2005 (8:00-11:00).

Exams will be based on the materials covered in the lectures and home works.

Attendance requirement:
At least 95% attendance is required. Class attendance score will largely be based on attendance (sampled randomly) during semester.

Grading policy:
The course grade will be based on Home Works (HW), Class Project (CP), Midterm Exam (ME) and Final Exam (FE). The relative weight given to each of these components is

\[
\text{HW: } 30\%, \quad \text{CP: } 10\%, \quad \text{ME: } 30\%, \quad \text{FE: } 30\%.
\]

Questions concerning the grading of homework and exams must be raised by the class period following their return. The final grade will be expressed as a percent between 0 and 100. Letter grade cut-offs (using +/-) will then be assigned. The following letter-grades are guaranteed:

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<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>96-100</td>
<td>A+</td>
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<tr>
<td>91-95</td>
<td>A</td>
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<td>89-85</td>
<td>A-</td>
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<td>81-78</td>
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<td>61-56</td>
<td>C</td>
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<td>59-0</td>
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Missed work policy:
Up to two late home works (due in class the following lecture period, or they will not be accepted at all) will be accepted without penalty. All other late home works will receive 75% of their potential score. Make-up exams will NOT be given. If appropriate documentation is given for a legitimate absence, the other exam will count that much more. At most one Exam may be missed in this fashion. If no exams are taken/turned in, 70% of the final grade will be based on home works submitted (and class presentations) and the remaining 30% will be lost.

Audit policy:
AU requires at least 50% grade on the home works.

Academic Integrity:
While submitting hard copies of HW, CP, ME and FE, the following Honor pledge should be signed at the top: “I have neither given nor received unauthorized aid on this test or assignment”. For details on student conduct, check out the web at

http://www.fis.ncsu.edu/ncsulegal/codeof.htm