**ST790-001**

**Advanced Bayesian Inference**  
**Spring Session, 2013**

(a pdf version of syllabus)

<table>
<thead>
<tr>
<th>Course:</th>
<th>ST790C: Advanced Bayesian Inference</th>
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<tbody>
<tr>
<td>Time:</td>
<td>TH from 11:45AM to 1:00PM</td>
</tr>
<tr>
<td>Place:</td>
<td>1108 SAS Hall</td>
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</tbody>
</table>

**Instructor:** Sujit Ghosh  
**Email:** sujit.ghosh@ncsu.edu  
**Telephone** 515-1950  
**Office:** 5112 SAS Hall  
**Office hours:** Tue/Thu 3:00 - 5:00 p.m. or by appointment

**Class links:**  
Lectures Slides | Course resources | Ask a question (use Message board)

**Course prerequisite:** ST522 and corequisite: ST740

**Suggested Texts:**  


**Homework:** Homework will normally be assigned at the end of class on alternate Tuesdays. Homeworks will not be graded.

**Examinations:** There will be no in-class examinations. Students are however required to submit two project works.

**Project schedule:**

<table>
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<th>Midterm project</th>
<th>Friday, March 01 by 5:00p.m.</th>
<th>Electronic submission</th>
<th>Project description</th>
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<tr>
<td>Final project</td>
<td>(Abstract due March 22) Friday, May 03 by 5:00p.m.</td>
<td>Electronic Submission + In-class presentations</td>
<td>Project description</td>
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**Asking questions:** If you have questions about lectures, assignments, exams, procedures or any other aspect of the course please log onto http://courses.ncsu.edu/st790/, and click on "Message Board". Then click on "Post New Topic", enter your question in the Message box, and click on "Submit Message". You will receive a response from me or another student. Everyone in the class will be able see your question and the response.

**Anonymous mail:** If you wish to send me an anonymous suggestion or reminder, send email to ST790-001@wolfware.ncsu.edu. The system will remove mail headers, but you must remember to remove your signature and other identifying information.

**Grading System:** Final grade will be based on:

- Basics Bayesian Inference (about 5 lectures): See lecture slides
Final Semester Score = \( \frac{CP + 4 MP + 5 FP}{10} \)

where CP is based on class participation and MP and FP are the scores (out of 100) on the midterm and the final projects, respectively. Grades will be assigned on the +/- scale.

Auditing: Auditors are expected to attend class regularly and submit midterm on the same schedule as the other students. The final grade for auditors (AU or NR) will be based on their midterm scores. A midterm score of 75 or better is required for an AU.

Policy on Academic Integrity: The University policy on academic integrity is spelled out in Code of Student Conduct. For a more thorough elaboration see the NCSU Office of Student Conduct website. For this course group work on homework is encouraged. However copying someone else's work and calling it your own is plagiarism, so the work you turn in should be your own.

Students with Disabilities: Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students (DSS), 1900 Student Health Center, CB# 7509, 515-7653.

Reference material (Have requested these be on reserve at DH Hill Library):


Monte Carlo methods for Bayesian computation (about 10 lectures): Materials are primarily based on the following sections of the Robert & Casella's book titled "Monte Carlo Statistical Methods:"

- Chap.2: 2.1.2, 2.3, 2.4
- Chap.3: 3.2, 3.3.1, 3.3.2
- Chap.4: 4.1, 4.2, 4.3
- Chap.6: 6.2, 6.3.1, 6.4.3, 6.5, 6.6, 6.7, 6.9.3, 6.9.4
- Chap.7: 7.2, 7.3, 7.4, 7.5
- Chap.8: 8.1, 8.2, 8.3
- Chap.9: 9.1.2, 9.2.2, 9.2.3
- Chap.10: 10.1.1, 10.1.2, 10.2.1, 10.2.2

Bayesian Large Sample Methods (about 3 lectures): Materials are primarily based on the following sections of the Ghosh and Ramamoorthi's Book:

- Chap.1: 1.2.2, 1.3
  (excluding 1.3.3), 1.4

Bayesian Nonparametric Methods (about 10 lectures): Materials will be primarily based on the following sections of an upcoming book by Ghosal & van der Vaart:

- Chap.1: 1.1.2, 1.2
- Chap.2: 2.1, 2.2, 2.3, 2.4.2, 2.4.4
- Chap.3: 3.1, 3.2, 3.5, 3.6
- Chap.4: 4.1, 4.4, 4.5, 4.6, 4.8.1, 4.9.2

Last updated on: December 17, 2012