

Course Syllabus: ST793 Advanced Statistical Inference
Fall 2019
Prof. Ana-Maria Staicu

Logistics

Lecture: Tues, Th 11:45-1:00PM 5270 SAS Hall

Contact info: 5220 SAS Hall, astaicu@ncsu.edu Phone: (919) 515 - 0644

Webpage: <http://www4.stat.ncsu.edu/~staicu/>

Office Hours: Tues **1-2:15PM** and Th **1-2:15PM**

Course webpage: <https://st793s19.wordpress.ncsu.edu/home/>

Problem session (not required): TBA in SAS Hall 5270

Teaching Assistant: Salil Koner, skoner@ncsu.edu

Office Hours (room 1101 SAS Hall) Mon 11-12PM , Wed 3-4PM

Background and Goals: ST793 is for students who have had a first year graduate level mathematical statistics course. It prepares them to handle statistical inference in a wide range of problems at an advanced level.

Prerequisites: ST 702

Required Texts:

Essential Statistical Inference: Theory and Methods, 2013, Boos, D.D. and Stefanski, L.A. The book is available online for all NCSU students at:

<https://link.springer.com/book/10.1007%2F978-1-4614-4818-1>

The following chapters will be covered: Ch 1-3, Ch 5-11 and possibly Ch 12 (coverage is subject to change).

Other suggested references are:

Theoretical Statistics, D. R. Cox and D. V. Hinkley (1974)

Approximation Theorems of Mathematical Statistics, R. J. Serfling (1980)

An Introduction to the Bootstrap, B. Efron and R. J. Tibshirani (1995)

The Jackknife and Bootstrap, J. Shao and D. Tu (1995)

Software: Students in this course will use R statistical software. This software is open source and free to anyone. It is widely used in statistics and is especially great for visualizations and custom analyses. You may also want to download R studio.

Communication: Students are expected to check their NCSU email regularly to receive course announcements. Students who do not use their NCSU email should arrange to have this email forwarded to an account they do use. Due to university regulations the instructor can send course announcements only to NCSU email addresses.

Grading: Homework 20%, midterm 1 30% (October 03), midterm 2 30% (November 19), group R project 18%, participation 2%. This course uses the grading scale:

Grade	F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
Score	<60%	60%- 63%	63%- 67%	67%- 70%	70%- 73%	73%- 77%	77%- 80%	80%- 83%	83%- 87%	87%- 90%	90%- 93%	93%- 97%	>97%

Homework: There will be around 6 homework assignments, roughly every other week. **Late homework is not accepted.** The worst homework score will be dropped. Any request for re-grading of your assignment should be submitted **within a week** of the returned assignment.

You are allowed and encouraged to discuss homework with each other, but ultimately the questions should be solved and written independently. Identical homework assignments will receive no credit and lead to serious consequences. Any form of plagiarism and other forms of academic dishonesty on the homework and exams will not be tolerated and can result in failing the course.

R project: The project will be done in small groups of 3-4 students. The goal of the project is to choose a topic that interests you, use Monte Carlo simulation to illustrate theoretical properties we discuss in class, clearly formulate the question you address, describe your setting, discuss the results, prepare a presentation to be given in class, and write a formal report due at the end of term.

The first step for the project is to form a group and write a one-page project proposal: check the website for deadlines. Feedback on the proposals will be provided to make sure the group is on the right track.

Exams: Exams are given during the class time. Calculator apps on mobile devices are strictly forbidden. You are allowed with a two-page cheat sheet (i.e. front and back). Missing exam means automatic zero without documented medical reason plus prior permission (except in emergency situations).

Participation: The participation grade will be assigned based on asking and answering questions in class, or online participation in answering other students' questions about R or on the course material. This grade will also be influenced by your **participation in the reading assignments** evaluated through quizzes. Attendance will not be taken.

Classroom courtesy: You are expected to attend the class, arrive in time and participate in activities such as in-class problem solving. Please put all mobile devices in the silent mode, refrain from eating or drinking and help maintain proper classroom atmosphere. If you are going to miss a class for a reasonable cause, notify the instructor in advance as a courtesy. See university's Attendance Regulation (REG02.20.03) for the list of excused absences.

Audit Policy: Class attendance and participation, homework (at least 80% score required for passing grade). Auditing students are exempted from taking the midterms and the final.

Accommodation for 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 at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.01).

Integrity: University regulations require that every course syllabus remind students that the Code of Student Conduct denotes a university policy on academic integrity already pledged by each student. Instructors assume that the students' names on their submitted work imply compliance with this policy. See <http://www.s.ncsu.edu/ncsulegal/41.03-codeof.htm>