2019 Spring ST502 002: Fundamentals of Statistical Inference II (3 credits)

Class meeting times and locations:

- Lectures, MW 3:00-4:15pm, 2235 SAS Hall
- Problem session (attendance not required): T 4:30-5:30 (SAS 5270)

Course instructor: Luo Xiao

Contact: (919) 513-4859, email: lxiao5@ncsu.edu

Office hours: TW 2-3pm, or by appointment, 5242 SAS Hall

Teaching assistant: Stephanie Chen email: stchen3@ncsu.edu

Office hours: M 4:15-5:30pm, W 10-11:30am, Th 10-11am, Tutorial Center, 1101 SAS Hall

Background and goals: Second of a two-semester sequence in probability and statistics taught at a calculus-based level. ST 502 is designed to provide the basic tools of statistical inference to graduate students. It should prepare the students to understand the foundations behind statistical inference, and enable them to formulate appropriate statistical procedures.

Prerequisite: ST501

Required textbook: Mathematical Statistics and Data Analysis, Third Edition. Author: John A. Rice.

Content (coverage and order are subject to change):

- Survey sampling: Sections 7.1–7.3
- Statistical estimation: Sections 8.1–8.9
- Statistical tests: Sections 9.1-9.6, 9.8-9.10
- Two samples: Sections 11.1-11.3
- Categorical data: Sections 13.3-13.4

Course website: Course materials, homework assignments and scores will be posted on "moodle" (`https://wolfware.ncsu.edu/`).

Software: Students in this course will use R statistical software. This software is free open source. 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 emails regularly for course announcements.

Course policies:

- Attendance is expected at all lectures.
- Students are expected to check moodle regularly for assignments and grades.
- Please turn off or silence all cell phones/PDAs before class begins.

Problem session: The session will be run by the TA and used for practice problem-solving, R tutorials and exam reviews. The instructor or TA will inform students of any changes to the schedule, either in class or on the course website.

Grade components

- Homework – 10%
  - There will be 6 homework assignments, which will be posted on the moodle along with the due date. The lowest homework score will be dropped.
- 3 group R projects – 15%
  - Information about each project will be given as the class goes.

- 2 midterm exams – 25% each
- Final exam – 25%

Letter grade: Final letter grades will be assigned on the basis $97 \leq A+ \leq 100$, $93 \leq A < 97$, $90 \leq A- < 93$, $87 \leq B+ < 90$, $83 \leq B < 87$, $80 \leq B- < 83$, and so on. The instructor reserves the right to make adjustments to the overall grading policy, but the letter grade cutoffs will be no stricter than those advertised above.

Exam

- All exams are closed book and closed notes. However, students will be provided with a formula sheet by the instructor for each exam so that memorization is not required. **Each exam and the final are cumulative.** The second exam will focus on newer material but the class is inherently cumulative.
- A calculator may be used on all exams. Cell phones, tablets, or other electronic devices may not be used as calculators on the exams.
- Requests for re-grading of exams must be made in writing. These requests should contain a complete description of the reason for grade adjustment and the student's name. The request should be attached to the exam and submitted to the instructor within one week of the day you receive exam scores.

Late assignments: In principle no late homework will be accepted and no make-up exams will be given. Exceptions to this rule may be made if discussed with the instructor in advance.

Grading: Disputes about homework/R project/ exam grading must be brought to the instructor's attention within one week from when the graded paper is returned.

Academic integrity

1. NCSU has a policy on academic integrity, which you may find in the Code of Student Conduct (`http://policies.ncsu.edu/policy/pol-11-35-01`).
2. It is the understanding and expectation of the instructor that the student's signature on any test or examination means that the student neither gave nor received unauthorized aid.
3. Students may discuss the homework problems with others. However, each student must submit their own independent write-up of the solutions. *Copying someone else's work–including on-line resources–is not acceptable and may result in disciplinary action.* The instructor is committed to upholding the University policy on academic integrity, as described in the Code of Student Conduct

N.C. State University Polices, Regulations, and Rules (PRR): Students are responsible for reviewing the PRRs which pertain to their course rights and responsibilities. These include: `http://policies.ncsu.edu/policy/pol-04-25-05` (Equal Opportunity and Non-Discrimination Policy Statement), `http://oied.ncsu.edu/oied/policies.php` (Office for Institutional Equity and Diversity), `http://policies.ncsu.edu/policy/pol-11-35-01` (Code of Student Conduct), and `http://policies.ncsu.edu/regulation/reg-02-50-03` (Grades and Grade Point Average).

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 the Disability Services Office at Suite 2221, Student Health Center, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG 02.20.01).

Course calendar

- Jan 21: Holiday; no class
- Late Feb (date TBA): Midterm 1, covers Chapters 7&8
- Mar 11-15 (M-F): Spring break; no classes
- Early Apr (date TBA): Midterm 2, covers up to Chapter 9
- Apr 26 (F): last day of class
- **April 29, 2019: Final exam 1-4pm in our regular classroom**