CSUB, Department of Mathematics

Math 4200 Mathematical Statistics Course Syllabus

Spring 2020

Instructor	Dr. Bilin Zeng Email: bzeng@csub.edu Office: Science III 205 Office Phone: 661-654-6519 Office Hours: Monday/Wednesday: 1:45pm-2:45pm Tuesday: 11:30pm-2:30pm or by appointments
Lectures	Tuesday/Thursday: 9:50am-11:30am at Science III 107
Textbook	***Mathematical Statistics***, 7st edition, by Wackerly, Mendenhall and Scheaffer
Prerequisites	Math 3200 or Math 340 (Quarter prerequisite)
Course Description	This course provides an introduction to the fundamentals of statistical inference including estimation, confidence intervals, hypothesis testing, and basic Bayesian methods. Topics and activities include distribution of sample statistics; t, chi-squared and F distributions; estimation theory that covers sufficiency, efficiency, consistency, method of moments, maximum likelihood; hypothesis and Bayesian testing; likelihood ratio test; confidence and credible intervals; prior and posterior distributions; inference using large data sets with R; simulation aspects of topics in inference with R. Other topics may include linear models and analysis of categorical data.
Objective	Students should be able to: • Be able to recognize important sampling distributions. • Gain thorough knowledge of commonly used estimators, confidence intervals, and hypothesis testing. • Be able to interpret the results of statistical analysis. • Know how many common statistical techniques were developed. • Be able to objectively judge between different estimators, hypothesis tests, and methods when multiple options are available. • Be able to use R to perform statistical inference with real data.
Computer	This course also makes use of the open-source statistical program R. R is free and open source! You can easily download and install it on your personal computer, thus are not confined to the computer labs on campus. R is freely available for Mac, Windows, and Linux. This course is not

meant to teach you to program or conduct complex data task or analysis using R. Instead, this course will teach you to use R at a basic level in order to perform statistical inference with real data and carry out simulations to illustrate concepts.

Lectures

You are expected to attend every class period. It is your responsibility to find out what you missed in lectures, pick up any returned test, etc. Repeated tardiness and/or absences will result in point deductions from your homework assignments. Bring your textbook and notes to every class. During lectures, we will discuss the reading assignment which I will specify at the end of the previous section. You are encouraged to read the corresponding sections on textbook or any suggested reading materials before the start of the new section.

Student Activity

You might be given a group assignment of three to five students during the lecture occasionally. You are encouraged to discuss the SA problems with others in the class. But each of you needs to hand in the work individually and the work you hand in must be your own. The SA assignments are usually due by the end of the class. You will not receive credit for SA assignment if you miss the SA day. **There will be no make-up SA assignments unless there is a documented medical emergency.**

Homework

There will be problem sets assigned every week. Homework will be posted on the course webpage and typically due on once a week at the beginning of the lecture. Homework problems will be the combinations of some selected textbook exercises and a few problems that are not from the textbook. Homework solutions submitted for grading should be legible and neat. Some collaboration on homework is acceptable, and you are encouraged to discuss the homework with others in the class. If you do work with others, you must list your collaborators on the paper you hand in. The work you hand in must be your own. **Late homework will not be accepted and will receive a score of zero unless there is a documented medical emergency.**

Course Webpage

Important information about the course will be available on the course webpage: http://www.csub.edu/~bzeng/4200/math4200.shtml. Information you can find on this site includes: syllabus, announcements, homework assignments, activities, handouts and other information. Please check the course webpage regularly as it will be updated continuously throughout the quarter.

Exam

There will be two midterm-exams and a comprehensive final. The exams are **tentatively** scheduled on Feb 27th and April 9th, respectively. The final is scheduled on Tuesday, May 19th from 11am-1:30pm. For this class, the final schedule and time cannot be modified. All exams will be closed book, but you may bring one sheet of handwritten notes to the midterm exams

and two sheets to the final exam. You will also need a calculator for the exams. *All work on exams must be entirely your own and academic dishonesty will not be tolerated.* It is just as dishonest to give help as to receive it. **There will be no make-up exams or final unless there is a documented medical emergency.**

Important Dates

- Feb 17: Last day to withdraw from classes without a "W" being recorded
- Feb 27: Exam 1
- March 31: Holiday-Cesar Chavez Day Observed
- April 6: Last day to withdraw from classes for a serious and compelling reason.
- April 9: Exam 2
- April 13-19: Spring Break
- May 19: Final Exam

Grading Policy

Weighting Scheme			Scale:
HW/SA	30%	A	90-100%
Exams 1	20%	B	80-89%
Exam 2	20%	C	70-79%
Final	30%	D	60-69%
		F	0-59%

Note that plus and minuses will be given.

Disabled Student Program (DSP)

Students who need special accommodations for this course must notify the office of Services for Students with Disabilities (SSD), SADM 140, at 654-3360. SSD's website is www.csub.edu/univservices/ssd.

Academic Integrity

Academic dishonesty includes, but is not limited to cheating, plagiarism, or sabotage. Any student caught cheating on an exam or the final will receive an F for the course. Academic dishonesty is not tolerated and will be dealt with as specified in the California State University, Bakersfield policy. This policy is located online at the following address: http://www.csub.edu/studentconduct/documents/academicintegrity.pdf.

Changes to Syllabus

I reserve the right to make changes to this syllabus. Any such changes will be announced in class.