STATISTICS 217 - Introduction to Statistical Concepts and Methods
SECTION 08 - WINTER 2020 SYLLABUS

INSTRUCTOR:	Dr. Soma Roy (`soroy@calpoly.edu`)
PHONE:	805-756-5250 (my office), 805-756-2709 (Statistics Department)
CLASS MEETINGS:	8:10 to 9am, MW 14-252, TR 35-111B
OFFICE HOURS :	T: 12:10 to 1pm, and W: 3:10 to 4:00pm, in 25-104 (my office)
	R: 9:10 to 10am, in 35-220B (Kennedy Library)*, or by appt./email

*Note: The Thursday library office hours will be in the 220 fishbowl-room set. I can only reserve the room one-month ahead of time, but it'll be one of 220 (A, B, C, or D).

LEARNING OBJECTIVES: To understand statistical concepts and their uses, principles of data collection and how that influences what conclusions we can draw, how to describe data using graphical and numerical summaries, and how to carry out statistical inference. There will be an emphasis on effective communication and interpretation of statistics.

. . . for whenever you learn something new, the whole world becomes that much richer.

. . . but it's not just learning that's important. It's learning what to do with what you learn and learning why you learn at all that matters.

– Norton Juster, The Phantom Tollbooth

REQUIRED MATERIALS:
- **Computer Access**: All course materials will be available on *PolyLearn*, which can be accessed from http://my.calpoly.edu. You must have regular access to a computer and the internet.
- **Text**: *Introduction to Statistical Investigations*, N. Tintle, B. Chance, G. Cobb, A. Rossman, S. Roy, T. Swanson, J. VanderStoep (Wiley, 2015; 1e). Exercises and reading will be assigned from this text. This *eText* is available at this link: https://www.wiley.com/en-us/Introduction+to+Statistical+Investigations-p-9781119523819
- **Weekly Notes and Labs**: At the beginning of every week, be sure to print off that week's notes and bring them to every class period. On LAB days (Tuesdays and Thursdays), you must also print out and bring paper copies of Labs that you will complete in class.
- **Computing**: You will need access to web applets (Java and Java Script).
- **Other**: A calculator (not necessarily a graphing calculator); scratch paper; a stapler and staples.

GRADING SCHEME:

Knowledge Checks (online)	5%	Exams (3, each worth 15%)	45%
Quizzes (in class, frequently)	10%	Final Exam	22%
Assignments (Pre-labs, Minute papers, Weekly Reports)	15%	Class participation	3%

KNOWLEDGE CHECKS (KCs):
- There will be KCs posted every Thursday at 9am, which you will need to complete by noon on Friday. Typically, these will review the week's material, the recommended reading for the week, and help you prepare the report that's due on Monday, and prepare you for the next week's materials. No make-up will be available. You may use your class notes during these KCs. As with the pre-labs, 2 attempts will be permitted, and the higher of the two scores recorded. These will be worth 5% of your final course grade. There will be 9 KCs total, of which you will get to drop the lowest score. No make-up will be available.

QUIZZES:

- There will be in-class quizzes given on Mondays and Wednesdays. These will typically cover topics discussed during labs and class. Sometimes these quizzes will be held at the beginning of class, and at times at the end of class; depending on the quiz, you *may* be allowed to work with classmates on the quiz. To account for absences due to illness, etc., of the 20 or so quizzes given, the lowest two quiz scores will be dropped. No make-up will be available. You must be in class the day the quizzes are given. These will be worth 10% of your final course grade.

ABOUT PRE-LABS, MINUTE PAPERS, and WEEKLY REPORTS:

- PRE-LABS are short online segments of the upcoming labs that you will *individually* need to complete on *PolyLearn* before you come to lab on Tuesdays/Thursdays. Typically, there will be a window of about 24 hours during which you can complete these. The goal of Pre-labs is to ensure you are prepared for the upcoming lab. You will have 2 attempts to complete each pre-lab. The higher score of the two will be recorded. The second attempt is offered to ensure that you get a second chance in the event of technical issues to do with the internet, *PolyLearn*, etc. No pre-labs will be dropped.

- MINUTE PAPERS will typically be collected at the end of every lab (Tuesdays and Thursdays). Typically, these will ask you to answer a short question based on the lab that you worked on that day. Of all the minute papers given, the two lowest scores will be dropped.

- WEEKLY REPORTS are investigative reports based on data analysis performed using the skills that you acquire during labs and in lectures. These reports will typically be due on Mondays, *no later than the start of the class period.* You will be graded on correctness of discussion and interpretation of statistics, quality of presentation (such as, style, readability, grammar, and spelling), and effective integration of computer output. For effective learning, it is *highly recommended* that you work with one (and only one) other member of your class on each report. You are expected to be responsible for making sure that both team members do the work for every report. You should work together on the analysis and the write-up. Submit one write-up for the team, with both names and section numbers. You will get to drop your lowest scoring report from the final grade calculation.

- **No late work will be accepted. No make-up.**

EXAMS:

- There will be three (3) exams (each 50 minutes long) during the quarter. The tentative dates for the exams are listed at the end of the syllabus. Each exam is worth 15% of your final course grade.
- A calculator, and one (1) 8.5 inches x 11 inches sheet of paper (one side only), with only definitions and formulae you find helpful, may be brought to each of these exams. This must be hand-written in your own handwriting.
- There will be a final exam that will be given during the Finals Week. This will be worth 22% of your final course grade.
- Two sheets of paper (front and back, as described for the in-quarter exams) and a calculator may be brought to the final exam.
- No make-up exams will be given unless you have University approved reasons for missing the exam, and have documented proof, and/or have made arrangements with me prior to the beginning of the exam.

PRACTICE EXERCISES (PE): Practice exercises (PE) will be assigned weekly (posted on PolyLearn). PE is required, but not collected. Solutions to all problems will be posted on PolyLearn so that you may check your understanding. I *strongly encourage* you to do these problems as a review of the material covered each day. They will help you to prepare for quizzes and exams. Most students find that doing the PE aids with understanding of the course material and enables success.

E-MAIL CORRESPONDENCE: All course e-mail correspondence must be done through a valid Cal Poly account.

FULL CREDIT POLICY: Full credit for each investigation or exam question can only be earned through showing your justification for or work on each response, unless otherwise specified.

FINAL COURSE GRADES: Once course grades are posted at the end of the quarter, they can only be changed to correct administrative errors. Professors are not allowed to regrade work or give extra work for more credit. Please do not ask to have your grade changed. It is against University policies, and not possible. See University policy here: http://registrar.calpoly.edu/content/stu_info/grade_changes

ACADEMIC INTEGRITY: Every student is expected to produce original and independent work for quizzes and exams. Academic misconduct will not be tolerated and will be dealt with procedurally in accordance with University Rules. The usual penalty for cheating is a grade of "F" and referral to the Office of Student Rights and Responsibilities. Go to http://www.academicprograms.calpoly.edu/academicpolicies/Cheating.htm for information on the CPSU academic honesty policy.

COMMUNICATION DEVICES: Please ensure that cell phones and other communication devices, as well as, iPods, etc. are turned off or on "silent" mode and not visible during class. Every time your cell phone goes off or you are seen using your cell phone during class, you buy donuts for the class. No cell phone calculators will be allowed during exams. (Note: This also applies to iPods, iPads and other communication devices with calculator functions.)

CLASSROOM CONDUCT: Please help maintain an academic environment of mutual respect, fair treatment, and personal growth. Any behavior that hinders the learning process of any student or students is considered disruptive, and action may be taken against the student(s) engaging in such behavior.

- Cell phones: should be turned off or to silent mode before class begins. Please do not text or answer your phone during class.
- Please do not wear sunglasses in class, unless you have a documented medical reason of which you should make me aware right away.
- Refrain from eating during class as it can be a distraction/annoyance to those sitting around you.
- Be on time! I will start and dismiss class on time. If you need to leave class early, please let me know in advance and sit close to the exit.
- Please take care of restroom breaks either before or after class. It is a distraction to your classmates to come and go during class.
- Refrain from reading the newspaper, working the crossword puzzle or studying material from other courses.
- Pay attention during class. Hold discussions with your neighbor(s) only when I have asked the class to work on team activities. When I am lecturing, I would much rather you interrupt me with a question than hold your own private conversation.
- Be respectful in your words and conduct both to me and your fellow classmates.
- Keep in mind that disruptive behavior on your part hurts not just others', but *your* learning process, too.

CLASS PARTICIPATION:

- Class (which <u>includes</u> T/R Lab meetings) participation will count for 3% of your course grade. This includes attendance, paying attention, participating in class discussions, working on the labs, and other activities which may not necessarily be graded, but will enhance your experiences in the course. If you are not regularly attending and participating, you will not receive these points at the end of the quarter. There will be no make-ups for these activities, discussions, and labs.

    – Bring the course notes and labs to class each day.

- Ask questions in class and lab. Participate in class and lab discussions.
- Do not use your cell phones to text or browse the internet – class/lab time is for you to learn the course material.
- Avoid engaging in disruptive behavior, such as, texting during class/lab, holding private conversations, working on material unrelated to this class/lab.

CLASS SUCCESS and STUDENT RESPONSIBILITY: You are responsible for your own learning. I am here solely to facilitate your learning and understanding of the discipline of statistics. I will help you as much as I can, but learning the material is ultimately up to you. This includes attending class meetings or getting assignments and notes from others if you miss class, asking questions when you have them, either in class or out of class, doing assignments on time and participating in class, and contacting me if you are having difficulties.

25-35: Spend approximately 4-8 hours/week outside of class reviewing and studying this material
- Read the assigned sections/chapters BEFORE coming to class.
- Review the notes after class each day and re-read the section/chapter; pay particular attention to the example problems.
- Work on the practice exercises (PE) immediately after the class period in which they are assigned.

In addition to putting in the time outside of class, I suggest the following to ensure success in this course:
- Attend class every day, and participate in class discussions.
- Do all of the assigned problems. Re-work problems that you get wrong.
- Visit me during office hours immediately if you encounter a problem.
- Bring your notes and calculator to class everyday – be actively engaged in doing class work, rather than watching others perform calculations, doing work, etc..

SCHEDULE: A detailed schedule of what we cover when, and which assignments are due when, will be maintained on *PolyLearn (PolyLearn > Overview > Schedule)*. Here is a tentative schedule:
- Exam 1: Thursday, January 23, 2020
- Exam 2: Thursday, February 13, 2020
- Exam 3: Thursday, March 5, 2020
- Final Exam: Monday, March 16, 7:10am - 10am

Week	Topics covered	MON	TUE (lab)	WED	THU (lab)	FRI noon
1 1/6 - 1/9	One-proportion hypothesis tests			Quiz		KC#1 due
2 1/13 - 1/16	Sampling, bias, random sampling	Report#1; Quiz		Quiz		KC#2 due
3 1/20 - 1/23	One-mean HT, Types of errors	No classes	Report#2; Quiz	Review Quiz	EXAM 1	
4 1/27 - 1/30	CIs for one mean and one propn.	Quiz		Quiz		KC#3 due
5 2/3 - 2/6	Types of studies, Two propn. inf.	Report#3; Quiz		Quiz		KC#4 due
6 2/10 - 2/13	Two propn. inf., Two mean inf.	Report#4; Quiz		Review Quiz	EXAM 2	KC#5 due
7 2/17 - 2/20	Two mean inf., Paired data	No classes	Report#5	Quiz		KC#6 due
8 2/24 - 2/27	Many means inf.	Report#6; Quiz		Quiz		KC#7 due
9 3/2 - 3/5	Many proportions inference	Report#7 due; Quiz		Review Quiz	EXAM 3	KC#8 due
10 3/9 - 3/12	Two quantitative variables	Report#8 due; Quiz	–	Quiz		