SYLLABUS for STATISTICAL METHODS

DATE: Spring 2023
COURSE NUMBER AND TITLE: PSYC/SS/ECON 300.01/.02 Statistical Methods
CREDIT HOURS: 3
TIME AND PLACE: Section 01 7:30 a.m. - 8:45 a.m. Mon/Wed, ACW 133
Section 02 9:00 a.m. - 10:15 a.m. Tues/Thurs, SAC 115
INSTRUCTOR: Teri Rust, Ph.D.
OFFICE: Spalding 219, phone: 792-2276, e-mail: trust@lcsc.edu
OFFICE HOURS: Mon/Wed: 9:00-10:15, Tues/Thurs: 1:30-2:45 *and by appointment*

Course Description: This course is designed to provide students with a basic understanding of the fundamentals of statistics. The emphasis will be on understanding, application, and problem solving, not on extensive computations and the memorization of formulas. The concepts considered in this course are those related to the representation of information (descriptive statistics and graphs) and those concepts related to drawing conclusions based on sample data (inferential statistics, including probability, the normal distribution, and hypothesis testing—independent t, dependent t, correlation, chi square, ANOVA).

Text: ***An Introduction to Statistics***: *An Active Learning Approach*, 2nd edition, Carlson & Winquist (You will need to bring this to class daily.)
"Worksheets" booklet available at bookstore

Required Equipment: A calculator with a square root key, and one YOU know how to operate. You may NOT use a calculator on a phone or other communication/internet device.

Prerequisite: Completion of the general education math requirement prior to enrollment.

General Course Objectives

We will cover the following major concepts so that upon completion of the course, you will:

1. be familiar with the various scales of measurement;
2. be familiar with the calculations, uses, and interpretations of the three measures of central tendency;
3. be familiar with the calculations, uses, and interpretations of measures of variability;
4. be familiar with the uses and interpretations of percentile ranks;
5. be familiar with the normal curve model, using the normal curve table, and the basics of probability;
6. be familiar with the basic theory behind hypothesis testing, including the concept of statistical significance;
7. be able to follow the steps to carry out different types of t-tests and interpret the results;
8. be familiar with the concepts of Type I and Type II errors;
9. demonstrate an understanding of correlation, including the limitations of conclusions that can be drawn;
10. be able to follow the steps to carry out one-way and two-way chi square analyses and interpret the results;
11. be able to follow the steps to carry out a one-way ANOVA and interpret the results;
12. be able to select the appropriate inferential analysis;

A note to persons with disabilities. If you need course accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My office location and office hours are printed above.

Diversity Vision Statement: Regardless of race, color, age, sex, religion, national origin, disability, veteran status, or sexual orientation, you will be treated and respected as a human being.

Program requirements: Students have the responsibility for knowing their program requirements, course requirements, and other information associated with their enrollment at LCSC. Students should review the LCSC General Catalog and the LCSC Student Handbook for more information.

Academic Dishonesty: Academic dishonesty, which includes cheating and plagiarism, is not tolerated at LCSC. Individual faculty members may impose their own policies and sanctions regarding academic dishonesty after offering the student an opportunity to explain his or her actions. Sanctions imposed by the faculty member are limited to grades on the assignment(s) in question and/or on the course grade. On matters of academic dishonesty, faculty members do not have the authority to dismiss a student from class indefinitely nor to disenroll a student from a program without corroboration from a Division Chair (or program ethics committee where applicable), the appropriate instructional dean, and the Vice President for Student Affairs. Students who are accused of being academically dishonest may be referred to the VP for Student Affairs for official disciplinary action.

Masks: Face covering expectations at Lewis-Clark State College:

- You may choose to wear cloth or disposable face coverings while on campus.
- Vaccination is encouraged, and there are opportunities to get conveniently vaccinated/boosted in our community.
- If you test positive or have COVID-type symptoms, please stay home.

Attendance: Attendance is extremely important. Everything is cumulative, so if you miss class you will have a difficult time. Attendance is taken every day. It is **your** responsibility to sign in. If you know you will be gone, please let me know in writing (on sign-in sheet or e-mail) or leave a voice-mail message. If you miss class, please do not delay a future class asking me to cover what you missed. Attendance is expected, and 6 absences will result in an F regardless of points earned or the reasons for the absences. If there are circumstances that will interfere with your attendance, please register for the online version of the course. **No texting, cell phones, or internet activity** during class. Using a computer to take notes is not allowed, given the nature of formulas and computations.

This is an in-person class. I do not plan to offer Zoom as an option for attendance. It is NOT an optimal way to attend or learn, for those on Zoom or for those in the classroom.

Withdrawing: The deadline for withdrawing from the class with a W on your transcript is Thursday, Apr 6, 2023. After that, a petition is required, it costs money, and it is not necessarily approved. Withdrawing can negatively impact your financial aid, so please be aware of all consequences.

Assignments: There are consistently outside practice assignments, particularly reading the text. These are to facilitate your understanding of the concepts. It is *highly unlikely* you can pass the course without doing the practice. Anticipate spending approximately 3 hours outside of class for every class period. Some assignments will be submitted for points (homework-for-points). They are due **in class** the class period after they have been assigned. Late assignments are accepted for up to 1 week, but they lose 10% for every day they are late. I **do not** accept **any** submissions

after 5:00 p.m. on the Friday (May 5, 2023) before finals' week. If an assignment is to be submitted as hard copy, and you submit it electronically (for whatever reason), you will lose 10% of the points.

I will try to explain concepts thoroughly in class. I am happy to address questions during class and outside of class. You need to do more than follow along in class--**reading the text and** extra practice are **consistently** required. You must be able to complete the practice worksheets *without* using your notes, text, or previously worked problems. You must be able to understand the **vocabulary** of statistics.

Required Service Activity: You must complete 1 service activity between Jan 6 and May 5. Ideally this will be in the Valley community. Clear any exceptions with me before submitting your paper. **Required Learning Activity**: You must complete 1 learning activity (outside normal classroom learning) between Jan 6 and May 5. Becoming involved in these ways in the local and campus communities enhances the college experience and improves collegiate success. Some options will be posted in Canvas for these activities, but there are other acceptable options. Please send an e-mail to ask if a particular option is acceptable if it is not posted in Canvas. You must submit a 1-page, double-spaced summary of the activity and your reaction to it **within 4 weeks of the activity**. These papers must be submitted through Canvas, by 11:59 p.m. Friday, May 5, 2023. Do NOT wait until the last minute and expect me to find an activity for you or approve of activities not posted or previously approved. Given the due date, the Required Service and Required Learning Activities will be not accepted late.

Tests: The four exams include a combination of **multiple choice (requiring knowing the vocabulary!)**, short answer, and worked problems. The only acceptable reasons to miss an exam are *extreme* illness, absence while representing the college, or death in the family. In any case, I **MUST** be notified prior to the beginning of class to take a make-up. Make-ups are taken in the Testing Center in the Library building. The Testing Center requires an appointment for proctored exams. A 24-hr notice and ID are required (208-792-2100, testing@lcsc.edu). **All exams are cumulative**!!!!! If English is not your first language, you may use a web-based translation dictionary by taking your tests at the Testing Center. Please arrange this through me at least a week before test time.

- Test 1, Chpts 1-4 (80 pts)
- Test 2, Chpts 5-7 (90 pts)
- Test 3, Chpts 8-10 (100 pts)
- **Final**, Chpts 11, 13-14 (130 pts)

I do not allow tests to be taken early. I also do not allow students to do anything "more" once final exam week begins. Do not ask.

Quizzes: There are 3 e-mail quizzes worth 5 points each. They will follow within a week of tests 1, 2, and 3. There will also be multiple (at least 12) in-class quizzes, and I will count your 5 highest scores. Research shows that testing/quizzing improves retention of information (McDaniel et al., 2007). If you are absent on a day we have an in-class quiz, that will just be a quiz that "drops out" and won't be counted as one of your best 5. You cannot take them late.

Extra credit: There are options for extra credit in this course. In Unit 4 there will be a symbols quiz for 5 bonus points. You may also earn 5 bonus points for participating in one Service Activity and 5 bonus points for one Learning Activity in addition to the required activities and submitting a paper about each (a 1-page summary of the activity/event and your reaction to it). These papers must be submitted through Canvas, by 5:00 p.m. Friday, May 5, 2023. There may also be other opportunities, but please take advantage of them when they are available.

Grading: You may figure 90%, 80%, 70% cut-offs for grades. I do use +/- grading for scores that fall close to the cutoffs. You can monitor your grades through Canvas.

Assignments	Points
Stat Readiness Quiz	15
Required Service Activity	10
Required Learning Activity	10
3 e-mail quizzes @ 5 pts each	15
5 best in-class quizzes @ 5 pts each	25
Homework for points	115
Tests	400
Total	590

Points/assignments could change depending on circumstances.

Grades and what they mean:

Points	Grade	Meaning
531-590	A	Distinguished or Exceptional
472-530	B	Superior
413-471	C	Average or Minimal Expectation
354-412	D	Below Average
Less than 354	F	Failing

Please feel free to stop by my office, call, or e-mail, if you need any assistance.

McDaniel, M. A., Anderson, J. L., Derbish M. H., & Morrisette, N. (2007). Testing the testing effect in the classroom. *European Journal of Cognitive Psychology, 19*(4/5), 494-513. https://doi.org/10.1080/09541440701326154

SPRING 2023
Introduction to Statistics (MW, Section 1)

Day	Weekday	Date	Topic
1	Wed	Jan 18	Intro & Ch 1 Terms
2	Mon	Jan 23	Ch 1 & Ch 2: Central Tendency
3	Wed	Jan 25	Ch 2 & Ch 3: Variability
4	Mon	Jan 30	Ch 3 & Ch 4: z-scores
5	Wed	Feb 1	Ch 4: z-scores
6	Mon	Feb 6	Ch 4: z-scores
7	Wed	Feb 8	Finish
8	**Mon**	**Feb 13**	**Test 1: Ch 1-4**
9	Wed	Feb 15	Ch 5: Distribution of Sample Means
	Mon	*Feb 20*	*Pres Day – campus closed*
10	Wed	Feb 22	Ch 5 & Ch 6: Hypothesis Testing w/z-scores
11	Mon	Feb 27	Ch 6
12	Wed	Mar 1	Ch 7: Single-Sample t-test
13	Mon	Mar 6	Ch 7
14	**Wed**	**Mar 8**	**Test 2: Ch 5-7**
15	Mon	Mar 13	Ch 8: Confidence Intervals
16	Wed	Mar 15	Ch 8: Confidence Intervals
17	Mon	Mar 20	Ch 9: Related-Samples t-test
18	Wed	Mar 22	Ch 9: Related-Samples t-test
	Mon-Fri	*Mar 27-31*	*Spring Break*
19	Mon	Apr 3	Ch 10: Independent-Samples t-test
20	Wed	Apr 5	Ch 10: Independent-Samples t-test
21	**Mon**	**Apr 10**	**Test 3: Ch 8-10**
22	Wed	Apr 12	Ch 11: ANOVA
23	Mon	Apr 17	Ch 11: ANOVA/Ch 13: Correlation
24	Wed	Apr 19	Ch 13: Correlation
25	Mon	Apr 24	Ch 13: Correlation
26	Wed	Apr 26	Ch 14: Chi Square
27	Mon	May 1	Ch 14: Chi Square
28	Wed	May 3	Finish
Final	**Mon**	**May 8**	**7:30-9:30 am, Test 4: Ch 11, 13-14**
	Thurs	**May 11**	**9:00-11:00 am, Test 4: Ch 11, 13-14**