



## **SOCL2201: Introduction to Statistical Analysis (4 credits) Fall 2024**

**Professor:** Hope Xu Yan (Xu Yan)

**Email:** [xyan10@lsu.edu](mailto:xyan10@lsu.edu)

**Office:** 17B Stubbs

**Office hours:** Tue 3:00 pm – 5:00 pm or by appointment

### **Sections 3 & 4**

**Meeting time:** Tue & Thu 12:00 pm – 1:20 pm

**Place:** 208 Williams

**Lab time:** Wed 1:30 pm – 3:20 pm

3:30 pm – 5:20 pm

First lab: Sep 4

**Lab location:** 102 Stubbs

**TA/Lab instructor:** Nunnally Zou

**Office:** 110 Stubbs

**Office hours:** Fri 2:15 pm – 4:15 pm /by appt

### **Sections 5 & 6**

**Meeting time:** Tue & Thu 1:30 pm – 2:50 pm

**Place:** 201 Williams

**Lab time:** Mon 1:30 pm – 3:20 pm

3:30 pm – 5:20 pm

First lab: Sep 9

**Lab location:** 239E LSU Library

**TA/Lab instructor:** Tarikat Khan

**Office:** 17A Stubbs

**Office hours:** Fri 10:00 am – 12:00 pm /by appt

### **Supplementary instruction**

**SI leader:** Mollie Schloss

**SI sessions & location:** Mon 4:30 pm – 6:00 pm & Wed 12:30 pm – 2:00 pm at B26 Hatcher

**SI office hours & location:** Tue 8:00 am – 9:00 am at Shell Tutorial Center LSU library (first floor)

## **Welcome to Sociology 2201!**

This is an introductory course in statistical methods used in the social sciences. Instead of focusing on the mathematics of statistics, we will emphasize statistics as a tool for improving our understanding of social phenomena. The material covered will 1) help you critically interpret quantitative information encountered in academic, professional, and everyday settings, 2) prepare you for more advanced courses, and more importantly, 3) build your abilities to explore more advanced statistical knowledge through self-learning.

Topics to be covered include basic concepts related to descriptive statistics, sampling distributions, statistical inference, hypothesis testing, correlation, and regression.

**Course prerequisite(s):** MATH 1021 or equivalent

### **Course objectives:**

After this course, you should be able to:

1. Describe, analyze, and evaluate quantitative survey data.
2. Recognize which type of statistical techniques, if any, apply to various situations.
3. Understand fundamental concepts of statistical analysis such as standard error and statistical significance.
4. Calculate confidence intervals.
5. Create and test hypotheses.
6. Interpret results from statistical inference in context.
7. Understand and conduct basic quantitative research.
8. Evaluate statistical claims.

## Course Materials

### Textbooks & Readings

No textbook is required in this course. However, the following books may help you better understand class contents:

*Introductory Statistics*. This is a free online textbook. You can access it online here: <https://openstax.org/details/books/introductory-statistics>.

Lock, Robin H., Patti Frazer Lock, Kari Lock Morgan, Eric F. Lock, and Dennis F. Lock. 2020. *Statistics: Unlocking the Power of Data*. Third edition. Wiley.

<https://www.wiley.com/en-us/Statistics%3A+Unlocking+the+Power+of+Data%2C+3rd+Edition-p-9781119674160>

I will upload a reading list and/or some reading materials on Moodle for most classes. You are encouraged to read them.

### Data

One critical part of this course is to conduct analysis using real-life data. We will use data from the General Social Survey (GSS). The GSS data can be accessed and downloaded through: <https://gssdataexplorer.norc.berkeley.edu/home>. Basic data analysis can be conducted using an online platform: <https://sda.berkeley.edu/sdaweb/analysis/?dataset=gss18>.

## Course Requirements

### Assignments and exams

There are three types of assignments for this course: In-class assignments, Homework, and Exams.

**In-class assignments:** *These assignments will be given in some of our classes.* We will learn new materials in classes. At the end of the class, you will practice applying that material. You will work in groups and submit your in-class assignment at the end of class. You will receive 100% for making a good-faith effort to answer the questions.

*Late in-class assignment submissions will not be accepted.*

**Homework:** *Homework will be due weekly at a time specified in class/lab.* The homework assignments require your time and attention so do not wait until the last minute to work on them. You must show your work process such as what equations you used and how the answers are calculated. You may work in groups on homework assignments, but clear copying will result in 0 points on that assignment for all involved.

For each homework question, you will receive 50% for making a good-faith effort to answer it, an extra 30% for answering it partially correctly, and another 20% for answering it correctly. Homework answer keys will be released shortly after the assignments have been turned in.

*Late homework submissions will incur a grade deduction.* You will receive a 10% reduction if submitted within 24 hours after the deadline, a 20% reduction if submitted within 48 hours after the deadline, and so on, until you receive 0 points for that assignment. A grade deduction may be exempted if you have legitimate reasons for late submissions (e.g., illness with a doctor's note, confirmed emergency, etc.). Your lab instructor will decide whether the reason is legitimate. Submitting an assignment after the answer key has been released will result in 0 points for that assignment.

**Exams:** *There are two exams.* Both exams will include all materials learned prior to the exam. Exams will begin with multiple-choice questions and move on to more complex questions such as calculating statistics and interpreting data analysis results.

Both exams are closed-book. However, a calculator (graphing calculators are not allowed) and one page of notes (letter-size paper on both sides) are permitted. Notes need to be turned in at the end of the exam. Any form of cheating or communication with other students during an exam will result in 0 points on that exam for all involved.

*Make-up exams are not guaranteed.* If you are absent, this absence must be officially excused, approved by me and your lab instructor, and communicated as soon as possible.

## **Grading**

Grades are important but not everything. Because grades are still widely used to measure our performance in the university, we must assign them. However, if you attend all the classes, labs, and SI sessions, try your best on the assignments, and communicate with me and your lab instructor if you are having a hard time with course material or in your life outside the classroom, you will pass. The course assignments will be weighted as follows:

In-class assignments	10%
Homework	40%
Exam 1	25%
Exam 2	25%

Letter grades will be assigned using the following guidelines:

Letter grade	A	B	C	D	F
Numerical range	90-100	80-89	70-79	60-69	Below 60
	A+ 97-100	B+ 87-89	C+ 77-79	D+ 67-69	
	A 93-96	B 83-86	C 73-76	D 63-66	
	A- 90-92	B- 80-82	C- 70-72	D- 60-62	

Grades will be rounded (e.g., if your grade ranges between 96.1-96.9, it will be rounded to 97).

### Re-grading

If you believe that your work has been graded inaccurately, you have 48 hours from the day the assignment is returned to submit a request for a re-grade. *Please email your lab instructor within 48 hours to discuss re-grading.* If you ask for a re-grade, your whole assignment (not just one question) will be subject to re-grading.

### Course Expectations

I expect you to attend all classes, labs, and SI sessions, and participate actively in class exercises and discussions. I expect all absences to have legitimate excuses (i.e., illness with a doctor's note, confirmed emergency, etc.). I expect all electronic devices to be silenced.

LSU policy states that for each credit hour, students should plan to spend at least two hours working on course-related activities outside of class. Since this course is for four credit hours, you should expect to spend **a minimum of eight hours outside of class each week** working on assignments for this course. More information on this expectation can be found [here](#).

### This Course is for All Students

I aim to provide a welcoming environment and equitable learning experience for all students. If you face difficulties in this course, please let me know.

#### Build an inclusive class environment

Members of this class represent a rich variety of backgrounds and perspectives. I am committed to providing an inclusive atmosphere for learning that respects diversities. I would like all members to:

- Respect each other's unique experiences, values, and beliefs. Appreciate the opportunity to learn from each other in this community.
- Respect the right of students to be addressed by the names and pronouns that correspond to their gender identities, including the use of non-binary pronouns.
- Keep confidential any discussions that the community has of a personal or professional nature, unless the speaker gives explicit permission to share what they have said.

### **Make this course accessible to students with physical or mental difficulties**

Navigating education can often be more challenging if you have physical or mental difficulties. I want you to achieve your highest capacity in this class. Please let me know if you have difficulties, for example, in understanding course materials, engaging with other students, or demonstrating your skills and knowledge on assignments.

### **Support students with responsibilities outside the classroom**

Students may have responsibilities outside the classroom such as caregiving and employment, which set barriers for attending classes and completing coursework. If you are struggling with multiple roles and are comfortable to reveal your current status and the challenges you face, I am happy to solve problems with you together and make you feel supported when striving for school-family-work balance.

## **Policies and Resources**

**Academic honesty:** Academic dishonesty in any form will not be tolerated. See <http://saa.lsu.edu/code-studentconduct> for LSU's Code of Conduct. You are responsible for reading and understanding university policies on academic honesty. If you violate the code of conduct, sanctions will be applied. Any violations will be reported to the Dean of Students.

**Use of AI:** AI tools such as ChatGPT can be helpful for studying statistics. You can use these tools to better understand class contents and even to aid with your homework. However, keep in mind that AI can make errors, and you will not have access to them during exams.

**Missing class:** Class attendance is the responsibility of the student. Students are expected to attend all classes. A student who finds it necessary to miss class assumes responsibility for obtaining lecture notes and otherwise compensating for what may have been missed. Network with other students so that you can get notes and any other important information distributed in class. The course and lab instructors determine the validity of a student's reason(s) for absences and will assist those students who have valid reasons as outlined in [LSU Policy Statement 22](#).

**Disabilities:** Louisiana State University is committed to providing reasonable accommodations for all persons with disabilities. The syllabus is available in alternate formats upon request.

Students with disabilities: If you are seeking classroom accommodations under the Americans with Disabilities Act, you are required to register with Disability Services in 115 Johnston Hall. Their phone number is 225-578-5919 and their website is [www.lsu.edu/disability](http://www.lsu.edu/disability). To receive academic accommodations for this class, please obtain the proper Disability Services forms and meet with me at the beginning of the semester.

**Health and well-being:** If you are feeling ill or overwhelmed with anxiety, you can contact the [LSU Student Health Center](#) for medical advice and mental health support. General health care and mental health support are available for all enrolled students through telehealth appointments.

If you need assistance in class or help navigating school resources, you can always ask me. You do not need to tell me why you are asking for help or whether you are asking for a friend, another student, or yourself.

## Course Schedule

Date	Topic
1. Aug 27	Introduction
2. Aug 29	Sampling from a population
3. Sep 3	Descriptive statistics 1
4. Sep 5	Descriptive statistics 2
5. Sep 10	Descriptive statistics 3
6. Sep 12	Normal distributions
7. Sep 17	Sampling errors and standard errors
8. Sep 19	Confidence intervals 1
9. Sep 24	Confidence intervals 2
10. Sep 26	Hypothesis testing 1
11. Oct 1	Hypothesis testing 2
12. Oct 3	Hypothesis testing 3
13. Oct 8	Catch-up Day
<b>14. Oct 10</b>	<b>Mid-term exam</b>
15. Oct 15	Single sample mean 1
16. Oct 17	Fall Holiday
17. Oct 22	Single sample mean 2
18. Oct 24	Difference of two means 1
19. Oct 29	Difference of two means 2
20. Oct 31	ANOVA
21. Nov 5	Chi-square 1
22. Nov 7	Chi-square 2
23. Nov 12	Correlation 1
24. Nov 14	Correlation 2
25. Nov 19	Simple linear regression
26. Nov 21	Simple linear regression and more
27. Nov 26	Independent study day
28. Nov 28	Thanksgiving

29. Dec 3	Experiments & observational studies
30. Dec5	Catch-up Day
<b>31. Dec 9/Dec 11</b>	<b>Final exam</b>

Note: The schedule is subject to modification. We may spend more time on difficult topics.