

STA 2122 INTRODUCTION TO APPLIED STATISTICS

Section 19

Fall 2021

Department of Statistics

Florida State University

COURSE INFORMATION:

Class Meeting Time/Place: MoWeFr 03:05PM - 03:55PM for section 0019 in OSB 0108

Class URL: <https://fsu.instructure.com/>

Class Number: STA 2122 - 0019

INSTRUCTOR: Mr. Jingze Liu

E-mail: jl17j@my.fsu.edu

Office: 209 E, Oceanography/Statistics Building

Office Hours: Monday 2-3 pm or by appointment

COURSE DESCRIPTION:

Prerequisite: A grade of "C-" or better in MAC 1105 College Algebra (or equivalent).

Credit Hours: 3

Special Note: Subsequent credit for STA 5126 is not permitted. No credit given for STA 2122 if a grade of "C-" or better is earned in STA 2171, STA 3032 or QMB 3200.

The course covers Normal distributions, sampling variation, confidence intervals, hypothesis testing, one-way and two-way analysis of variance, correlation, simple and multiple regression, contingency tables and chi-square tests, non-parametric statistics.

The purpose of this course is to prepare students for further study and job preparation in the field of Natural Sciences. It will emphasize understanding of data and interpretation of statistical analyses. It will require students to think of data, and report the results of their analyses, in context.

COURSE OBJECTIVES:

This course has been approved to meet FSU's Liberal Studies **Quantitative and Logical Thinking** requirements and is designed to help you become a critical analyst of quantitative and logical claims.

In order to fulfill the State of Florida's College mathematics and computation requirement the student must earn a "C-" or better in the course.

By the end of the course, students will demonstrate the ability to:

(1) Select and apply appropriate methods (i.e., mathematical, statistical, logical, and/or computational models or principles) to solve real-world problems.

(2) Use a variety of forms to represent problems and their solutions.

The above two competencies will be assessed in the Liberal Studies Quantitative Assessment for STA 2122, which includes a written summary of results.

- (3) Use descriptive statistics and graphical methods to summarize data accurately.
- (4) Use inferential statistics to make valid judgments based on the data available.
- (5) Select the appropriate statistical tools to analyze a particular problem.
- (6) Describe the goals of various statistical methodologies conceptually.
- (7) Develop a healthy skepticism toward statistical studies and their results based on a sensible consideration of the techniques employed.

REQUIRED MATERIALS:

A textbook is **not** required for this class, however, you will need to read each set of class notes carefully after we cover them in lecture and before the quiz that follows. Optional textbook: Introduction to the practice of STATISTICS (9th edition)

Class notes: You will need to print out or use your laptop/Pad system to visualize class notes from our university learning management system (<https://fsu.instructure.com/>) STA2122 FALL2019 DOCS website and bring them to class on a regular basis, so please budget some money for printing or bring a laptop/Pad system. The current estimate of your printing costs for the entire term is \$80.00 (about 400 pages @ 20 cents/page).

Calculator: TI-84 Plus or equivalent.

Alternative to Physical Calculator: You will need a TI-84 Plus calculator (or equivalent) for this class. The TI-84 Plus calculator is available electronically as the TI-SmartView Emulator Software for the TI-84 Plus Family. It generally costs less than a physical calculator.

A free 90-day trial version can be downloaded from [https://urldefense.com/v3/_https://education.ti.com/en/software/details/en/FFEA90EE7F9B4C24A6EC427622C77D09/sda-ti-smartview-ti-84-plus_!!EpnwITfSMW4!4jDF2stdRFSIHqT6lktHZzll0rgPXAqwdynWJSyuap2WU_tBAQQsweg0kH50qm9g\\$](https://urldefense.com/v3/_https://education.ti.com/en/software/details/en/FFEA90EE7F9B4C24A6EC427622C77D09/sda-ti-smartview-ti-84-plus_!!EpnwITfSMW4!4jDF2stdRFSIHqT6lktHZzll0rgPXAqwdynWJSyuap2WU_tBAQQsweg0kH50qm9g$.).

It would be possible to extend the 90 days to cover the entire semester if you uninstall the Emulator when you're studying a chapter that doesn't require special statistical functions, and reinstall it when you need special statistical functions. FYI, if you have the emulator uninstalled for at least 20 days between Aug 23rd and Dec 10th inclusive, then it should last you the entire semester, including finals week."

Writing materials: Notepaper and sharpened pencils.

GRADING:

Quizzes:

- (1) There will be 4-5 quizzes throughout the semester. The quizzes are not cumulative. I will drop the lowest quiz grade. Each quiz will be equally weighted.
- (2) On quiz days you will need to bring a calculator and a pencil to write with. You may also bring one A4 (8.5''*11'', both sides) handwritten notes for reference.
- (3) If you miss a quiz you need to email me or talk to me within **7** days of the missed quiz or in advance to schedule a time to make it up. You can only make up a quiz with a valid documentation. If you do not communicate with me in time you will receive a penalty of 10% per day for that quiz, with 80% as the maximum. The make up quiz can only be scheduled in Monday 2pm or Wednesday 2pm or during the office hour.
- (4) If you disagree with a grade you obtained on a quiz you have one week to contact me about a re-grade. Otherwise the grade you received is final.

Attendance:

- (1) Attendance will be taken randomly throughout the semester.
- (2) If you have an excused absence, you must show me or TA the documentation within one week of the missed class or in advance.
- (3) If you miss one and don't show me the documentation in time, you will miss 2 points on the final grade. And the zero grade for this attendance is final, can not be changed.
- (4) Attendance will be taken on first day of class. Absentees will automatically drop the class according to university policy.

Final Exam:

- (1) The Final Exam will take place on Tuesday December 7th 3:00-5:00pm, the location is **TBD**.
- (2) The Final Exam is cumulative.
- (3) You will need to bring a calculator and a pencil to write with. You may also bring two A4 (8.5"*11", both sides) handwritten notes for reference.

Assessment:

- (1) Quiz 60%
- (2) Final Exam 30%
- (3) Attendance 10%
- (4) Rounded UP to the next higher whole number

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|-------|--------|-------|-------|-------|-------|-------|
| Grade | A | A- | B+ | B | B- | C+ |
| Score | 93-100 | 90-92 | 87-89 | 83-86 | 80-82 | 77-79 |
| Grade | C | C- | D+ | D | D- | F |
| Score | 73-76 | 70-72 | 67-69 | 63-66 | 60-62 | 0-59 |

EMAIL:

- (1) Please check your @my.fsu.edu email every day
- (2) Always include your full name, course code and section number when you email us — if we need to know this information in order to answer your query, and you have not provided it, you may not get a response
- (3) Send test-related questions at least 24 hours before the test is due to begin.
- (4) Be aware that email sent from outside the FSU domain may not get through to us, so if you email us and you don't get a response within two days, please try to meet us in person before class, or after class, or during office hours.

COURSE POLICY:

University Attendance Policy:

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Missed Attendance Checks:

Student who cannot attend the class when attendance check happens, tell TA before or within 24 hours after the class with acceptable document. Excused absences include documented illness, deaths in the family, documented crises, jury duty, religious holy days, and official University activities. Other situations will be considered on a case-by-case basis.

First day attendance is mandatory per university regulations. Thereafter attendance may be taken at unannounced times. We fully expect you to be present at every class meeting. Drop/Withdrawal deadlines are given in the University's academic calendar at http://registrar.fsu.edu/registration_guide/fall/academic_calendar/.

Missed Quizzes:

Either drop or make up one quiz within one week or in advance. Students have one chance to make up missed quizzes and students should have an acceptable document. For the student without an acceptable document will receive a penalty of 10% that quiz. Students cannot retake a quiz. Other situations will be considered on a case-by-case basis.

Final Exam Rescheduling Policy

You may not take the final exam before final exams week. Individual students who need to reschedule the final exam for a different time during final exams week will need to

- (i) talk to me about it first and get my permission to reschedule,
- (ii) fill out the "Request to Reschedule Final Examination" form at <https://artsandsciences.fsu.edu/students/undergraduate/forms-requiring-deans-approval/rescheduling-final-examination> and take it to the Dean of Arts and Sciences office at 010 LON to get it approved, and
- (iii) bring the approved form back to me by the last day of classes.

If you experience a documented emergency that prevents you from observing the above deadline, contact me as soon as you are able to, and we'll take it from there.

Liberal Studies for the 21st century:

Quantitative and Logical Thinking

The Liberal Studies for the 21st Century Program at Florida State University builds an educational foundation that will enable FSU graduates to thrive both intellectually and materially and to support themselves, their families, and their communities through a broad and critical engagement with the world in which they live and work. Liberal Studies thus offers a transformative experience. This course has been approved as meeting the Liberal Studies requirements for Quantitative and Logical Thinking and thus is designed to help you become a critical analyzer of quantitative and logical claims.

In order to fulfill the State of Florida's College mathematics and computation requirement the student must earn a "C-" or better in the course.

Syllabus Change Policy

Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.

Americans With Disabilities Act:

Students with disabilities needing academic accommodation should:

- (1) register with and provide documentation to the Student Disability Resource Center; and
- (2) bring a letter to the instructor indicating the need for accommodation and what type. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Student Disability Resource Center has been provided.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource
Center 874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
<http://www.disabilitycenter.fsu.edu/>

Academic Honor Policy:

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for

reading the Academic Honor Policy and for living up to their pledge to “. . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University.” (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/Academics/Academic-Honor-Policy>.)

Sexual Misconduct and Title IX Reporting

As an instructor, I am obliged to report all instances of sexual misconduct that I become aware of to the University’s Title IX Director; I cannot hold such information confidential. If you would like to discuss your situation in confidence, you may contact the Victim Advocate Program (<https://dos.fsu.edu/vap/>), the University Counseling Center (<https://counseling.fsu.edu/>), the Employee Assistance Program (<https://eap.fsu.edu/>), or University Health Services (<https://uhs.fsu.edu/>).

Statement on Public Health Protocols

In our classroom, I will expect everyone to wear a proper, well-fitting mask. As our President has informed the university community, FSU expects everyone on campus to use face-coverings. In regions where virus rates are high, the CDC recommends that even vaccinated individuals wear masks in public indoor spaces, like classrooms, especially where social distancing is not possible. Florida infection and hospitalization rates are greater now than they were at the height of the 2020 surge due to the Delta variant, a more infectious and easily transmissible version of the COVID-19 virus. The best way to protect against serious illness is to be fully vaccinated, but not everyone among us can be. Because the Delta variant can infect even vaccinated individuals and can be spread by them to others, it poses a special threat to members of the community with underlying health conditions and children at home who are too young for vaccination.

For these reasons, FSU expects each member of the community to comply with the public health protocols our President set forth on August 9, 2021, including (1) wearing masks in public indoor spaces, (2) getting fully vaccinated, (3) being tested for the virus if you have symptoms, and (4) staying home and away from others if you are sick. Please remember that you should NOT attend class in person if you have tested positive for COVID-19 or are quarantining after exposure. Finally, please bear in mind that the COVID-19 situation is fast-moving, and that university guidance on the issue may change at any time.

COURSE SCHEDULE:

| Week | Monday | Wednesday | Friday | Week | Monday | Wednesday | Friday |
|------|---|--|--|------|-----------------------------------|--|---|
| 1 | Syllabus; Introduction Aug.23 | Summary Statistics Aug.25 | Summary Statistics Aug.27 | 2 | Summary Statistics Aug.30 | Summary Statistics Sep.1 | Normal distribution Sep.3 |
| 3 | Labor Day Seq.6 | Normal distribution Sep.8 | Normal distribution Sep.10 | 4 | Normal distribution Sep.13 | Normal distribution Sep.15 | Central Limit Theorem Sep.17 |
| 5 | Central Limit Theorem Sep.20 | Central Limit Theorem Sep.22 | Central Limit Theorem Sep.24 | 6 | One Sample CI Sep.27 | One Sample CI Sep.29 | One Sample CI Oct.1 |
| 7 | One Sample CI Oct.4 | One Sample CI Oct.6 | One Sample HT Oct.8 | 8 | One Sample HT Oct.11 | One Sample HT Oct.13 | One Sample HT Oct.15 |
| 9 | One Sample HT Oct.18 | One-way ANOVA Oct.20 | Homecoming Oct.22 | 10 | One-way ANOVA Oct.25 | One-way ANOVA Oct.27 | Simple Linear Regression Oct.29 |
| 11 | Simple Linear Regression Nov.1 | Simple Linear Regression Nov.3 | Simple Linear Regression Nov.5 | 12 | Veterans' Day Nov.8 | Simple Linear Regression Nov.10 | Multiple Linear Regression Nov.12 |
| 13 | Regression Inference Nov.15 | Regression Nov.17 | Regression Nov.19 | 14 | Regression Inference Nov.22 | Thanksgiving Nov.24 | Thanksgiving Nov.26 |
| 15 | Chi-square Test of Independence Nov.29 | Chi-square Test of Independence Dec.1 | Chi-square Test of Independence Dec.3 | 16 | Final Week | Final Week/Exam Dec.7 | Final Week |