# Florida State University, Department of Statistics

# STA 2122 Introduction to Applied Statistics

# Spring 2020, Section 16 & 37 Syllabus

## Course information

Meeting Location: TUL B001
Meeting Time: MWF      8:00 AM - 8:50 AM for Section 37
Meeting Time: MWF      9:05 AM - 9:55 AM for Section 16
Final Exam: Tuesday April 28th at 12:30 PM -2:30 PM

## Instructor: Qingying Zong

Email Address: qz16b@my.fsu.edu
Office Location: Love building 0431 (James Jay Love Building)
Office Hours: Monday 10:10 AM – 12:10 PM, or by appointment.

## Course description

**Prerequisite:** A grade of "C-"or better in MAC1105 College Algebra (or equivalent).

**Credit Hours: 3**

**Special Note:** No credit given for STA2122 if a grade of "C-"or better is earned in

STA2171, STA3032 or QMB3200.

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 STA2122, 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

• **Recommended Textbook** (Optional): *Introduction to the Practice of Statistics*, Ninth Edition, 2017, by Moore McCabe Craig, Publisher: W. H. Freeman.

• **Class notes:** Lecture Notes will be provided online. You may print them out by yourself and bring them to the lecture. Textbook is NOT required for this class, however, you will need to read each set of class notes carefully after each lecture.

• **Writing materials:** Notepaper and sharpened pencils.

• **Calculator:** TI-84 or equivalent (**Required**)

## Grading

**Attendance (10%)**:

• There will be 10 random attendance checks throughout the semester.

**Quizzes (50%)**:

• There will be 5 pop quizzes during the semester. The lowest quiz score will be dropped. Each quiz will be equally weighted.

• You may use **ONE** self-planned self-handwritten back-and-front 8½"x11" original sheet of notes for each quiz.

**LSQA (10 %)**

• There will be one **Liberal Studies Quantitative Assessment** between weeks 7-10, instructor will inform students previously.

• You may use **ONE** self-planned self-handwritten back-and-front 8½"x11" original sheet of notes for the LSQA.

**Final (30 %)**

• You may use **TWO** self-planned self-handwritten back-and-front 8½"x11" original sheet of notes for the final.

**Grade Composition:**

| Graded Assessment | Percentage |
|---|---|
| Attendance | 10% |
| LSQA | 10% |
| Quizzes | 50% |
| Final exam | 30% |
| Total | 100% |

**Overall course grade:**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FSU does not award A + | | B+ | 87-89 | C+ | 77-79 | D+ | 67-69 | | | |
| A | 93+ | B | 83-86 | C | 73-76 | D | 63-66 | F | <60 |
| A- | 90-92 | B- | 80-82 | C- | 70-72 | D- | 60-62 | | | |

• Any grade with decimals will be rounded up to the closest integer, e.g. 80.2 will be rounded up to 81.

## Penalties for missed quizzes and exams

• *Assessments that are not taken, and assignments that are not submitted, will receive a grade of zero. When a missed assessment/assignment is made up, the zero will be replaced with the earned grade.*
• You may make up your quiz with reasonable excuse and documents are **required**. However, make-ups usually need to be done **within one week**. **Also, no make-ups are allowed after the final teaching week.**

## Excused Absence Make Up Policy

If provided with eligible documents, students missed any quizzes may be made up in my office during my office hours. If you miss any lecture, you may come to my office to ask specific questions or get help from your classmates.

## 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.

## 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/academic-resources/academic-integrity-and-grievances/academic-honor-policy.)

## 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/

## 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.

## Sexual Misconduct and Title IX Reporting

As an instructor, I am obliged to report all instances of sexual misconduct that I become aware of; 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/).

## 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.

## Tentative Pacing Schedule, STA 2122 – 16&37, Spring 2020

| week | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| 1 | Syllabus<br>Prerequisite math skill<br>Jan 6 | 7 | Prerequisite math skill<br>Introduction<br>8 | 9 | Introduction<br>Summary statistics<br>10 |
| 2 | Summary statistics<br>Jan 13 | 14 | Summary statistics<br>15 | 16 | Quiz 1<br>17 |
| 3 | MLK Jr Day<br>Jan 20 | 21 | Summary statistics<br>22 | 23 | Normal Distributions<br>24 |
| 4 | Normal Distributions<br>Jan 27 | 8 | Normal Distributions<br>29 | 30 | Quiz 2<br>31 |
| 5 | Normal Distributions<br>Feb 3 | 4 | Central Limit Theorem<br>5 | 6 | Central Limit Theorem<br>7 |
| 6 | Central Limit Theorem<br>Feb 10 | 11 | Central Limit Theorem<br>12 | 13 | Quiz 3<br>14 |
| 7 | One-sample Confidence Interval<br>Feb 17 | 18 | One-sample Confidence Interval<br>19 | 20 | One-sample Confidence Interval<br>21 |
| 8 | One-sample Confidence Interval<br>Feb 24 | 25 | One-sample Hypothesis Tests<br>26 | 27 | LSQA<br>28 |
| 9 | One-sample Hypothesis Tests<br>Mar 2 | 3 | One-sample Hypothesis Tests<br>4 | 5 | One-sample Hypothesis Tests<br>6 |
| 10 | One-way Anova<br>Mar 9 | 10 | One-way Anova<br>11 | 12 | One-way Anova<br>13 |
| 11 | Spring break<br>Mar 16 | Spring break<br>17 | Spring break<br>18 | Spring break<br>19 | Spring break<br>20 |
| 12 | One-way Anova<br>Mar 23 | 24 | Simple Linear Regression<br>25 | 26 | Quiz 4<br>27 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13 | Simple Linear Regression<br><br>Mar 30 | | Mar 31 | Simple Linear Regression<br><br>Apr 1 | 2 | Simple Linear Regression<br><br>3 |
| 14 | SLR Inference<br>Apr 6 | 7 | | SLR Inference<br>8 | 9 | **Quiz 5**<br>10 |
| 15 | SLR Inference<br>Apr 13 | 14 | | SLR Inference<br>15 | 16 | Chi-Square Tests<br>17 |
| 16 | Chi-Square Tests<br>Apr 20 | 21 | | Chi-Square Tests<br>22 | 23 | Wrap up<br>24 |