



Syllabus: STA 2023 Statistics 1

Fall semester 2023

**POSTED July 5, 2022
SUBJECT TO CHANGE**

Course Information

Course Number and Title: STA 2023 Statistics 1
Credit Hours: 3
Current Academic Term: Fall 2023

Course Offerings and Instructors

MWF 4:00 – 4:50PM – Dr. Jikhan Jeong
MW 4:00 – 5:15PM – Mr. Kevin Calkins

Official Catalog Course Description: This course covers probability, random variables, hypothesis testing, confidence interval estimation, small sample methods, correlation, simple linear regression, and nonparametric statistics.

Gordon Rule (6A-10.030): No

Prerequisites: None

Required Text: *OpenIntro Statistics (4th Edition)* by David Diez, Mine Cetinkaya-Rundel & Christopher Barr ISBN: 9781943450077. A free PDF version is available for this book. See <https://www.openintro.org/book/os/>

Equipment and Material: Office 365 with Excel, R and RStudio (freeware), and Minitab are available through the MyApps Florida Poly portal (<https://apps.floridapoly.edu/>). No knowledge of these programs is assumed. Data- and computationally-based curricular materials available at the StatPREP site will also be explored (<http://www.statprep.org/LittleAppSite/Activities.html>)

Course Objectives:

This introductory course assumes no prior knowledge and presents the basic statistical concepts and real-world application emphasizing data collection and analysis. This course not only provides a conceptual foundation required for advanced upper-level classes but also helps the students become an educated data user and consumer. The first half of the course covers survey design and experiments to collect data from samples that are representative of a population and graphical and numerical representation of data using descriptive measures and relation between variables. The second half of the course focuses on inferential statistics where random samples are used to draw conclusions about the population of interest. The primary goal of this course is to help students understand the process of framing a research question, collect and analyze relevant data and interpret the results to find solutions to the posed research questions. Students will work either individually or as part of a team on a project where statistical and data analytics tools and concepts will be put into practice.

Course Learning Outcomes:

1. Identify and evaluate alternative sampling techniques that best fit the objectives of the data being

considered.

2. Apply the correct descriptive statistics to best address the data being analyzed.
3. Evaluate the appropriate data visualization that helps the audience to interpret the data.
4. Apply the principles of probability to quantify the likelihood of alternative outcomes.
5. Evaluate the appropriate inferential statistics to address the hypothesis under consideration.
6. Solve a real-world data analysis problem using statistical tools by working either individually or in teams of two on a final course project.

Course Policies

Attendance

- Students are expected to attend all class meetings unless sick or some other documented emergency prevents attendance.
- Class participation and presentation will represent a significant portion of the class grade.

Late Work/Make-up work

Make-up exams will be given only in extreme circumstances with a documented excuse. If you will miss an exam because you are participating in a College-sponsored activity, inform your instructor before the exam and provide them with documentation.

Grading Scale

The following grading scale will be used for this class.

A	93% – 100%	B	83% – <86%	C	73% – <76%	D	63% – <66%
A–	90% – <93%	B–	80% – <83%	C–	70% – <73%	D–	60% – <63%
B+	86% – <90%	C+	76% – <80%	D+	66% – <70%	F	0% – <60%

(See also [University Grading Policy](#)).

Assignment/Evaluation Methods

- Exams: There will be two midterm exams.
- Homework: There will be some homework assignments that may involve the use of the statistical programming tool or Excel.
- Final Project: This is a data analysis assignment that involves application of concepts covered in the course on a data set.
- Final Exam: There will be a cumulative final exam.

Assignment	Percentage
Participation & In-class Quizzes	10%
Homework	20%
Data Analysis Project	10%
2 Midterms	35% (17.5% each)
Comprehensive Final Exam	25%
Total	100%

Participation in all course activities is a very important element of this course and is a basic expectation. Course participation consists of active and respectful involvement in class discussions, peer feedback, postings, replies, projects, and other interactions. The participation grade considers quality, quantity, and timeliness of student participation.

Reasonable Accommodations

Florida Polytechnic University is committed to assisting students with disabilities and offering reasonable accommodations to those with documented eligibility. The Office of Disability Services (ODS) coordinates accommodations for students with disabilities in accordance with the ADA Amendments Act of 2008 (ADAAA), the Americans with Disabilities Act of 1990 (ADA), and Section 504 of the Rehabilitation Act of 1973. Reasonable accommodations are determined on an individual basis through an interactive process between you, ODS, and your instructor(s). If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course and communicate with your instructor about your approved accommodations at your earliest convenience. If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible.

The Office of Disability Services (ODS):

DisabilityServices@floridapoly.edu

(863)874-8770

ASC East building

[ODS website](http://www.floridapoly.edu): www.floridapoly.edu > Student Affairs > Health Wellness > Disability Services

Accommodations for Religious Observances, Practices and Beliefs

The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See [University Policy](#).)

Title IX

Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to your professor, but your professors have an obligation to report the incident to the Title IX Coordinator. It is an educational goal that you feel able to share information related to your life experiences in classroom discussions and in one-on-one meetings. However, it is requirement for university employees to share information with the Title IX Coordinator regarding disclosure. However, please know that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University [Ombuds Office](#), BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at [Peace River Center](#), 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment.

Academic Integrity

All students must commit to the highest ethical standards in completion of all academic pursuits and endeavors, whether in classroom or online environments: [Academic Integrity](#).

Student Record of Lectures

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use.

Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidentally, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action).

Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is prohibited.

Schedule of Topics by week

Week	Topic	Reading
1	Introduction to the course	
	Introduction to data: statistics, measurement levels, population vs sample	Ch. 1
2	Summarizing data: data collection, qualitative vs quantitative data, measures of central tendency	Ch. 2
3	Summarizing data: describing distributions, measures of variability	Ch. 2
	Introduction to probability	Ch. 3
4	Independent events, law of large numbers, sampling with and without replacement	Ch. 3
	Conditional probability, tree diagrams	Ch. 3
5	Random variables and expectation	Ch. 3
	Probability distributions: Bernoulli, binomial and geometric	Ch. 4
6	Probability distributions (cont.)	Ch. 4
	Exam 1	
7	Distributions of random variables: transformations, Z-scores, Normal distribution	Ch. 4
	Foundations for inference: sampling distribution	Ch. 5
8	Foundations for inference: Central Limit Theorem, Confidence intervals	Ch. 5
9	Foundations for inference: Hypothesis testing	Ch. 5
10	Exam 2	
	Project Assignment and statistical software demonstration	
11	Inference for categorical data: inferences for proportions, Chi-Square	Ch. 6
12	Inference for numerical data: t-distribution, paired distribution	Ch. 7
13	Inference for numerical data: non-paired distribution, power calculations	Ch. 7
14	Comparing many means with ANOVA	Ch. 7
	Introduction to linear regression. <i>Thanksgiving Break</i>	Ch. 8
15	Introduction to linear regression (cont.)	Ch. 8
16	Introduction to linear regression (cont.)	Ch. 8
	Final Project and Final Exam Review	

This is a tentative schedule, and it may be modified as required based on the progression of the class.