Rev. 2

STA 3033, Section U03, Class Ref #81850, Fall C 2024 (August 26, December 7, 2024)

(Introduction to Probability & Statistics for CS and Engineering)

(Days: Tuesdays and Thursdays, Time: 11:00 AM - 12:15 PM; Room: PC213; Credit Hours: 3)

Teaching Modality: in-Person (F2F)

Short Course Outlines & Policies

Important Comments About the Course:

1. This is an In-Person course offered in MMC and requires that students attend classes regularly. There will be no Simultaneous Zoom classes or recording of the Lectures. You should take this course only if you intend and are able to attend classes in person and comply with Policies stated in this "Short Course Outline and Policies".

Instructor:

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Office hours:

> **Tuesdays & Thursdays: 10:00AM 10:50AM and 4:00PM - 4:50PM and 6:30PM - 7:00PM.**
>
> **Other Times & Days:** by appointments subject to availabilities.
>
> ***Feel free to consult with me as often as you need, and whenever problems arise.***

Textbook:

> "Probability and Statistics for Engineers" by J. Devore, 9th edition 2016, Cengage Learning. The Book package deal comes with additional course materials for students.

Coverage & Objectives:

> We will cover most of the topics in chapters 1, 2, 3, 4, 5 (only sections 5.3 and 5.4), 6, 7, 8 plus some additional related topics in the form of class notes. This is an introductory, calculus based, undergraduate course in basic probability and statistical inference based on a single variable for Computer Science and Engineering Majors. The course is intended to teach students some basic ideas and techniques in descriptive statistical analysis, random events, and their probabilities, commonly used univariate discrete and continuous probability models, statistics

and sampling distributions, point estimations, interval estimations and testing hypotheses for some most used parameters.

(For more details, please see the included short course syllabus and read the Introduction for each covered Chapters that are posted on Canvas.)

Assignments:

Graded Review Assignments, and Self-correcting Recommended Homework Problems from the textbook. See the list of suggested homework problems from the textbook and other supporting materials on Canvas.

Tentative Exams:

Possible Quizzes: TBA (maybe online)

Exam I: Thursday, September 26, 11:00 AM – 12:15 PM, PC213

Exam II: Thursday, October 31, 11:00 AM – 12: 15 PM, PC213

Final Exam: Thursday, December 12, 9:45:00 - 11:45, PC213

* You should not register for courses that have a time conflict with this course.

Grading:

25% Review Assignments & Quizzes & attendance, 25% Exam I, 25% Exam II, 25% Final Exam (mandatory*).

Approximate Grade Scaling:

[95 - 100] A [90 – 95) A- [85 - 90) B+ [80 - 85) B [75 - 80) B-

[70 - 75) C+ [60 - 70) C [50 - 60) D [0 - 50) F

*Note: Anyone who does not take the final exam could receive an F for the course

Course Policies & Remarks:

1. All FIU students enrolled in the class must have a valid FIU (picture) ID card and be ready to show the ID on professor's request, for example, when taking the exams.

2. This is a Web Assisted Course using Canvas, any student enrolled in this course is expected to have a valid FIU Email Account and be familiar with basics of internet use. Note that this is neither an online nor a remote teaching course, the purpose of web-based materials in this course is to enhance and compliment the in-person class lectures and textbook, to post review notes and formulas and to do web-based review quizzes on Canvas environments to facilitate and enhance teaching and. Note that Canvas materials are not intended to substitute the classroom lectures and students are expected to attend the in-class sessions regularly.

3. Exams are based on all the materials covered and discussed in lectures, homework, review quizzes, assignments, and any possible web-based projects. So, students are strongly advised to attend all the lectures and to be on time. No late Assignments will be accepted.

4. Anyone who misses any exam/ or review quiz will receive an F (score of 0) for that exam/ or quiz.

5. A makeup exam will be given only if the student misses an exam due to those emergency cases which meet all the University's requirements, such as the student illness. See the FIU students' handbook for details.

6. Note that failure to hand in any possible project assignment on time may result in the reduction of points from the overall grade. Failure to complete and submit any web-based graded Review Quiz or graded

Assignment Withing its Given Deadline Would Result in an F (score of 0) grade for that review quiz or assignment.

7. Make sure to keep at least 3 decimal places for al your numerical answers. You could lose points for Quizzes or Exams if fail to do so.

8. Make sure to completely cross out any work which you do not want to show to the instructor on your work. If you provide multiple solutions to the same problem, the worst one will be considered for grading. Do not use a red pen. Instructor will use this color for grading.

9. No active Beepers, Cellular phones or any other Smart Medias are allowed during exams.

Academic Misconduct:

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook. The Following Statement is Required by the University: Plagiarism and cheating are serious offensive punishable by expulsion from the university.

Student Honesty Statement:

FIU defines academic misconduct in the Student Conduct and Honor Code (Code) as, "any act or omission by a student, which violates the concept of academic integrity and undermines the academic mission of University in violation of the Code." Code violations include, but are not limited to academic dishonesty, bribery, cheating, commercial use, complicity, falsification, and plagiarism. The codes are available here:

https://studentaffairs.fiu.edu/get-support/student-conduct-and-academic-integrity/student-conduct-and-honor-code/index.php.

Some Selected Important Dates (Fall 16-Weeks C Term):

Classes Start:	*Monday, August 26, 2024*
Labor Day Holiday (No Classes):	*Monday, September 2, 2024*
Last Day to Add /Drop:	*Tuesday. September 3, 2024*
Last Day to Drop with a DR Gade:	Monday, November 4, 2024
Veteran Day Observed (NO Classes):	*Monday, November 11, 2024*
Thanksgiving Day (No Classes):	Thursday, November 28, 2024
Thanksgiving Break (No Classes):	*Friday-Saturday, November 29-30, 2024.*
Last Regular Class Day (Classes End):	Saturday, December 7, 2024
Final Week of the Term*:	*Monday-Saturday, December 9-14, 2024.*
End of Term:	*Saturday, December 18, 2024*

Grades available for Students: Thursday, December 19, 2024

For a Complete FIU Academic Calendar please visit: http://onestop.fiu.edu/academic-calendar

STA 3033 (Intro. To Probability & Statistics for CS and Engineering)

Course Syllabus

Prerequisite: Calculus II; Terms Offered: Fall, Spring and Summer

Current Textbook:

Probability and Statistics for Engineers, by Jay L. Devore, 9h edition, Cengage Learning.

Recommended References if needed:

1. "Probability and Statistics for Engineering and Sciences" by Schaeffer, Mulekar, McClave, 5th edition

2. "Probability and Statistics in the Engineering and Computer Sciences", by J.S. Milton and J.C. Arnold.

Topics Coverage:

Overview and Descriptive Statistics:

Introduction, Basic ideas, and tools for summarizing, displaying, and analyzing data sets. Populations, Samples and Processes, Pictorial and Tabular Methods in Descriptive Statistics, Measurers of Locations, Measures of Variability, Other Measures. (Approximately 1.5*)

Probability:

Introduction, Sample Spaces and Events, Axioms, Interpretations and Properties of Probability, Counting Techniques, Conditional Probability, Independence. (Approximately 2 weeks*)

Discrete Random Variables and Probability Distributions:

Introducing, Concepts of a Random Variable, Probability Distributions for Discrete Random Variables, Cumulative Distribution Function, Expected Values, The Bernoulli and Binomial Distributions, Geometric Distribution, Negative Binomial Distribution, Poisson Distribution, Hypergeometric Distribution. (Approximately 2 Weeks*)

Continuous Random Variables and Probability Distributions:

Introduction, Probability Density Functions, Cumulative Distribution Functions; Expected Values, The Normal Distribution, The Exponential and Gamma Distributions, Other Contiguous Distributions (such as Beta Distribution, Weibull Distribution, Probability Plots) (Approximately 2 weeks*)

Statistics and Sampling Distributions:

Introduction, Statistics and Their Distributions, The Distribution of the Sample Mean (Additional Topics: Sampling Distribution of a Sample Variance, Central Limit Theorem, Normal Approximation to the Binomial Distribution) (Approximately 1.5 week*)

Point Estimation:

Introduction, Some General Concepts of Point Estimation (Unbiasedness, Consistency, Minimum Variance Estimators, ..., etc.) (Approximately 1.5 Weeks*)

Statistical Intervals Based on a Single Sample:

Introduction, Interval Estimators, Basic Properties of Confidence Intervals, Large-Sample confidence Internals for a population Mean and Proportion, Confidence Intervals Based on a Normal Population Distribution, Confidence Interval for the Variance and Standard Deviation of a Normal Population, (Some other Common Confidence Intervals)

Tests of Hypothesis Based on a Single Sample:

Introduction, Hypothesis and Test Procedures, Z-Tests for Hypotheses about a population Mean, One Sample T-Test, Tests Concerning a Population Proportion

Inferences (Tests of hypotheses and Confidence Internals) Based on Two Samples

Z Tests and Confidence Interval for a Difference Between Two Population Means, Two Sample T Tests and Confidence Intervals for Difference between Two Population Means, Analysis of Paired Data, Inference Concerning a Difference Between Two Population Proportions, Inference Concerning two Population Variances Testing the mean, the proportion p, the variance, testing the difference between two means, the difference between two proportions, paired t-test, testing the ratio of variances. (Approximately 1.5 Weeks*)

** T*he listed times on covered topics are approximate times in weeks for a typical 16-weeks term. However, the actual time spent on each topic may slightly vary depending on the class size and the specific term that course is offered.*

Important Remark:

This course outline is subject to possible changes. In case of any possible changes, you will be notified in advance.