

STA 3033, Section U06, Class Ref # 81349, Fall 2022

(Introduction to Probability & Statistics for CS and Engineering)

(Time: 2:00 PM - 3:15 PM; Days: MW; Room: GL100; Credit Hours: 3)

Modality: in-Person (F2F)

### Short Course Outlines & Policies

#### **Important Comments About the Course:**

*1. This is fac to face course offered on 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. However, the modality may change if the University will cancel classes due to new emergencies.*

#### **Instructor:**

**Dr. H. Zahedi**

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**Web Page:** <http://faculty.fiu.edu/~zahedih>

**Canvas login:** [http://online.fiu.edu/login\\_uts.html](http://online.fiu.edu/login_uts.html)

#### **Formal Office hours:**

**Mondays & Wednesdays:** 10:00AM – 10:50AM and 3:30 PM – 4:30 PM

**Other Times:** by appointments subject to availability

**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 the 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 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 commonly 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 (online)

**Exam I:** Wednesday, September 21

**Exam II:** Wednesday, October 26

**Final Exam:** Wednesday, December 7, 12:00 PM – 2:00 PM

**\* You should not register for courses that have an exam conflict with this course.**

**Grading:**

**30% Review Assignments & Quizzes, 20% Exam I, 20% Exam II, 30% Final Exam (mandatory\*).**

**Approximate Grade Scaling for those who have taken both Midterm and the Final Exams:**

[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 are 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 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 the grading. Do not use red pen. Instructor will use this color for grading.
9. **No active Beepers, Cellular phones or any other Smart Medias are allowed during exams.**
10. Any failing student who has missed more than 60% of the classes may receive F0 instead of F.

**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 offenses 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 Important Dates:**

**August 22 Monday:**

**August 29, Monday:**

**September 5, Monday:**

**September 16, Friday:**

**September 19, Monday:**

**November 11, Friday:**

**November 24, Thursday:**

**November 25, Friday:**

**December 3, Saturday:**

**December 5-10, M-S:**

**December 10 Saturday:**

**December 15, Thursday:**

**Classes Begin**

Last day to add courses; last day to drop courses or withdraw from the University without incurring financial liability for Tuition and Fees.

Labor Day Holiday (University Closed).

Last day to withdraw from the University with a 25% refund of Tuition.

**Last day to drop a course with a DR grade or to withdraw from the university with a WI grade.**

Veterans Day (University Closed)

Thanksgiving Day (University Closed)

Thanksgiving Break (University Closed)

Fall Session Classes End

Final week of the semester. Final exams and other course assessment activities are scheduled during this week.

End of Fall Session

**Complete grades report available to students by web**

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

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

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

### Course Syllabus

Rev: summer 2021

**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, Measures 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\*)

\* Remark: The approximate times in weeks that are listed for each topic is intended for the course when it is offered in a regular semester which has half of contact hours per week than short semester. In a short semester such as Summer A or Summer B, which meets twice as many hours per week than the regular long semester such as Fall/Spring/ summer C, the amount of the times in weeks per chapter will be about half of the above listed times.