Number:	**STAT/CS/SE 3341.001**
Title:	**Probability and Statistics in Computer Science and Software Engineering**
Term:	Spring 2025
Hours:	Monday & Wednesday, 11:30 – 12:45 pm
Classroom:	ECSS 2.410

Instructor Information

Name:	**Octavious Smiley**, Assistant Professor of Instruction
Email:	`Octavious.Smiley@UTDallas.edu` Please include the course and section number when emailing me
Office:	FN 3.118B
Hours:	Wednesday 1-2pm

Teaching Assistant Information

Name:	**Yaga Sara Thomas**
Email:	`Yaga.Thomas@utdallas.edu`
Tutoring:	The Student Success Center Peer Tutoring program is offering drop-in tutoring (but not one-on-one appointments)

Course Information

Pre-requisite:	(MATH 1326 or MATH 2414 or MATH 2419), and (CE 2305 or CS 2305) and (MATH 2418)
Description:	Axiomatic probability theory, independence, conditional probability. Discrete and continuous random variables, special distributions of importance, and expectation. Simulation of random variables and Monte Carlo methods. Central limit theorem. Basic statistical inference, parameter estimation, hypothesis testing, and linear regression. Introduction to stochastic processes.
Required text:	*Probability and Statistics for Computer Scientists, 2nd edition* by Michael Baron
Non-required text:	*Probability and Statistics* by Morris H. DeGroot, *Probability and Statistics: The Science of Uncertainty* by Michael J. Evans (The answers are in the back of the book)

Learning Outcomes

Probability:	• Apply the fundamental probability rules and concepts. • Apply common discrete and continuous probability distributions. • Relate calculus to probability to solve probability problems. • Learn the basics of stochastic processes and its classical applications.
Statistics:	• Understand common numerical summaries and exploratory analyses of data. • Choose the appropriate statistical analysis method to answer a typical statistical question. • Construct confidence intervals and perform tests of significance to make statistical inferences.

Grading Policies

Summary:

- **40**%: Homework
- **10**%: Exam 1
- **10**%: Exam 2
- **10**%: Exam 3
- **10**%: Exam 4
- **20**%: Final Exam

Homework:

- Individual-based
- Must submit a pdf document (convert photos)
- Submit to eLearning
- Due 15 minutes prior to the start of class on the due data
- Lowest homework score will be extra credit
- No late assignments will be accepted under any circumstance

Exams:

- Individual-based
- One side of 3x5 NoteCard is allowed
- In-class
- Required supplies to bring: SCANTRONS, form F-1712-PAR-L (one for each exam; you will also need a no.2 pencil and a good eraser)
- No make-ups will be given under any circumstance

Final Exam:

- Individual-based
- Two sides of 3x5 NoteCard is allowed
- In-person
- Required supplies to bring: SCANTRONS, form F-1712-PAR-L (you will also need a no.2 pencil and a good eraser)
- If the final is not your lowest exam score, the final will replace your lowest exam score
- If your final is your lowest exam score, it will be replaced by the average of the other 4
- No make-ups will be given under any circumstance

Grading Criteria

Grade	Percentage Range
A+	100+
A	[90, 100)
B+	[87, 90)
B	[80, 87)
C+	[70, 80)
C	[60, 70)
D+	[50, 60)
D	[40, 50)
F	[0, 40)

Course Schedule (Tentative)

Date	Topic	Due on this Date
Wed, Jan 22	Course overview + Probability Basics	
Mon, Jan 27	Probability Basics + Typical Probability Questions	
Wed, Jan 29	Combinatorics	
Mon, Feb 3	Conditional Probability and Independence	HW1
Wed, Feb 5	Bayes Theorem + Monty Hall and Simpson's Paradox	HW2
Mon, Feb 10	Discrete Random Variables and an Introduction to Distributions	
Wed, Feb 12	Joint Distributions and Marginal Distributions	HW3
Mon, Feb 17	Exam 1 (Mandatory Class Attendance)	
Wed, Feb 19	Expectations and Variance + practice questions	
Mon, Feb 24	Families of Discrete Distributions	HW4
Wed, Feb 26	Continuous Random Variables	
Mon, Mar 3	Families of Continuous Random Variables + practice questions	HW5
Wed, Mar 5	The Central Limit Theorem	
Mon, Mar 10	Poisson, Exponential, and Gamma Connection	HW6
Wed, Mar 12	Exam 2 (Mandatory Class Attendance)	
Mon, Mar 17	Spring Break	
Wed, Mar 19	Spring Break	
Mon, Mar 24	Markov Processes and Markov Chains	HW7
Wed, Mar 26	Counting Processes	
Mon, Mar 31	Introduction to Statistics + Parameter Estimation	HW8
Wed, Apr 2	Parameter Estimation + Confidence Intervals	
Mon, Apr 7	Exam 3 (Mandatory Class Attendance)	
Wed, Apr 9	Confidence Intervals	
Mon, Apr 14	Introduction to Hypothesis Testing	HW9
Wed, Apr 16	Z and T-Test	
Mon, Apr 21	χ^2 Distribution and Corresponding Tests	
Wed, Apr 23	Correlation and Regression	HW10
Mon, Apr 28	Course Review	
Wed, May 7	Exam 4 (Mandatory Class Attendance)	

Course Policies

Electronic devices:	Calculators are permitted for exams, but not cell phones, computers, tablets, etc. Limit the use of all devices during class.
Make-up exams:	No make up exams will be given
Late work:	No late homework will be accepted.
Special assignments:	No special assignment is available.
Class attendance:	Although attendance is not mandatory, you are encouraged not to miss any class as the course will move at a fast pace. The instructor will not make any accommodations for missing a class.
Comet Creed:	This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same: "As a Comet, I pledge honesty, integrity, and service in all that I do."
UT Dallas syllabus policies and procedures:	The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to http://go.utdallas.edu/syllabus-policies for those policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the instructor.