Course:	**STAT/CS/SE 3341.HON**
Title:	**Probability and Statistics in Computer Science and Software Engineering**
Term:	Fall 2022
Hours:	Tuesday & Thursday, 11:30am – 12:45pm
Classroom:	FO 1.502

Instructor Information

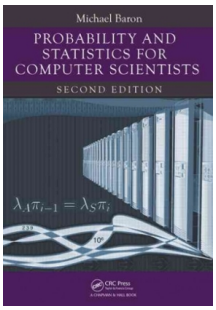
Name:	**Noirrit Kiran Chandra**, Assistant Professor of Statistics in Math Sciences
Email:	`noirrit.chandra@utdallas.edu`
Office:	In person & Microsoft Teams
Hours:	Wednesday, 4:00 – 5:00pm or by appointment.

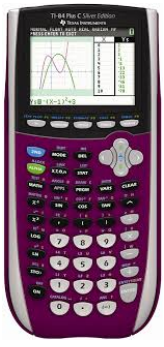
Teaching Assistant Information

Name:	Jiacheng Li
Email:	`Jiacheng.Li@utdallas.edu`
Office:	FN 3.118M or by appointment
Hours:	Wednesday, 2:30 – 3:30pm.

Course Information

Pre-requisite:	(MATH 1326 or MATH 2414 or MATH 2419), and (CE 2305 or CS 2305)
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.
Suggested text:	*Probability and Statistics for Computer Scientists, 2nd edition* by Michael Baron
Calculator:	TI84 graphing calculator (or equivalent) is required (no phones or other devices permitted during exams)





Learning Objectives

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:
- **30**%: Homework
- **20**%: Quizzes
- **25**%: Exam #1
- **25**%: Exam #2

Homework:
- Assigned on Wednesday and due by 11:59 pm on Tuesday. All HWs will be submitted via eLearning and solutions are also needed to be uploaded.
- Two homework assignments will be counted as extra credit. If you do not complete them, then consider these two assignments as dropped.
- Students are encouraged to collaborate on homework problems, but what you turn in should reflect your own effort.

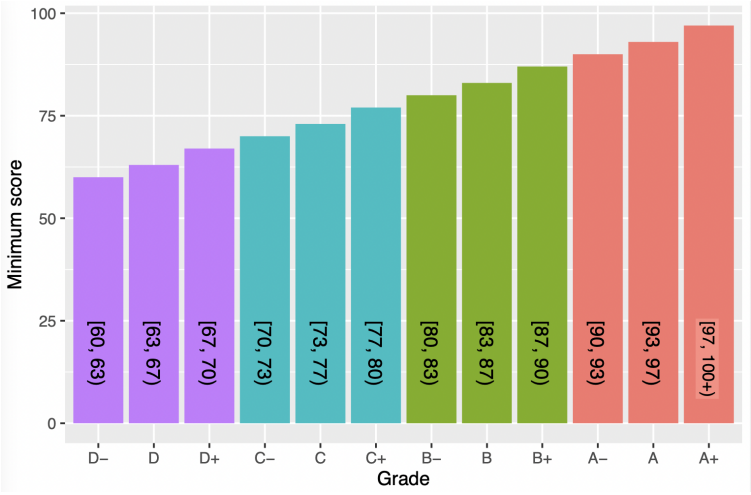
Quizzes:
- Will be graded. Answer as many as possible to get full credits.
- Given in class but and needs to be completed with limited time.
- There can be *unannounced* quizzes as well.
- Calculators are always allowed but no WiFi device.
- One quiz grade will be dropped.

Exams:
- Given in class only. No exceptions.
- Calculators are always allowed but no WiFi device.
- Closed book, closed notes.
- Missing an exam results in a grade of zero.
- Dates:
  - Exam #1 (Oct 13): Topics from weeks 1-7.
  - Exam #2 (Dec 6): Topics from weeks 9-15.

Course Schedule (Tentative)

Week	Date	Topic	Chapter	Assignment
1	Class 1	Course overview + probability basics	2	
1	Class 2	Rules of probability	2	
2	Class 1	Conditional Probability and Independence	2	HW1
2	Class 2	Law of Total Probability and Bayes Rule	2	
3	Class 1	Introduction to random variables	-	HW2
3	Class 2	Discrete Random Variables (R.V.), Combinatorics	3	
4	Class 1	Bernoulli & Binomial R.V.	3	HW3
4	Class 2	Geometric & Poisson R.V.	3	
5	Class 1	Continuous R.V. & Uniform R.V.	4	HW4
5	Class 2	Exponential and Gamma R.V.	4	
6	Class 1	Normal R.V.	4	HW5
6	Class 2	Normal R.V. & Central Limit Theorem	4	
7	Class 1	Intro to Stochastic Processes	5	HW6
7	Class 2	Stochastic Processes	5	
8	Class 1	Review for Exam #1	-	HW7
8	Class 2	**Exam #1**	-	
9	Class 1	Intro to Statistics	8	
9	Class 2	Intro to Statistics	8	
10	Class 1	Point Estimation	9	HW8
10	Class 2	Point Estimation	9	
11	Class 1	Confidence Intervals for Proportions	9	HW9
11	Class 2	Confidence Intervals for Means & t-distribution	9	
12	Class 1	Intro to Hypothesis Testing	9	HW10
12	Class 2	Significance Tests: Means	9	
13	Class 1	Significance Tests: Proportions	9	HW11
13	Class 2	Significance Tests: Categorical Data	10	
14	Class 1	*Fall Break - no classes*	-	
14	Class 2	*Fall Break - no classes*	-	
15	Class 1	Linear Regression	11	HW12
15	Class 2	Linear Regression	11	
16	Class 1	Review for Exam #2	-	
16	Class 2	**Exam #2**	-	

Grading Criteria



Course Policies

Modality:	In-person only unless official changes are made by UTD.
eLearning:	Course notes, announcements, assignments, etc., will be posted weekly. It is suggested that you check eLearning and your school email on a daily basis to stay up-to-date.
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:	If you know ahead of time that you will be missing an exam, you must contact the course instructor by email at least 4 days in advance of the scheduled exam. Be prepared to bring appropriate documentation as evidence in support of your request.
Late homework:	Not accepted.
Class attendance:	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. Those who do not attend class regularly are inviting scholastic difficulty.
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 link constitutes the University's policies and procedures of the 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.