Data Analysis and Modeling
CSE 5301

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CSE2315: Discrete Structure

• Instructor: Jean Gao
  – gao@uta.edu
• Office hours: Tues & Thus, 12:30pm-1:30pm,
or by appointment
• Office Location: Engineering Research Building (ERB), Room 538
• Course Website:

  http://crystal.uta.edu/~gao/CSE5301_DataAnalysis/Syllabus.html
  Or from Blackboard.

The lecture notes will be posted on-line the day before class.
Please have them ready when coming to class.
Course TA Info

- TA: Fariba Khoshghalbvash
- Email: fariba.khoshghalbvash@mavs.uta.edu
- Office: ERB 545
- Office Hour: Tue & Thu, 3:30pm - 5pm or by appointment

Grading Scale

- Homework Assignments (~6) 10%
- Quizzes (3) 15%
- Three Exams 75%
Grading Scale (cont’d)

- Class attendance is required which will help you to keep pace with the class material and understand course content.
- HW assignments are due in or before class on the date indicated on the class website. Late assignments will not be accepted and extensions will only be granted in extreme situations.
- Homework assignments will be graded based on the completeness. So please try your best to finish them.
- There will be 3 fifteen-minutes quizzes. Each quiz will cover materials since last quiz day. (Closed book, closed notes, no internet/phone access, no calculator usage.)

Grading Scale (cont’d)

- Discussions on homework are encouraged for understanding the techniques, however you are supposed to provide the solutions independently.
- Exams are closed book, closed notes (No phones or any other internet access. Basic calculators are allowed. Two double-sided cheat sheets will be permitted.). All the exams will be one hour and 20 minutes long. None of them will be comprehensive.
- It is the student’s responsibility to read and review the assigned sections in the textbook.
- There will be NO make-up exams or quizzes unless the instructor has been notified in advance.
Course Readings

Required Textbook:


This week read:

Chap. 2

References:

Additional course materials will be available electronically through the course website.

Honesty

• No collaboration on tests or quizzes.
• Academic dishonesty will not be tolerated and violations will result in severe penalties for all parties involved.
• You are expected to know the University's definitions and policies regarding academic dishonesty.
Goal of this Course

- To provide students the basic data analysis and modeling concepts and methodologies using probability theory.

- Students successfully completing this course will have formed an important basis solving practical statistics and data analysis related problems.

Tentative Topics to be Covered:

- Basic probability:
  Discrete and continuous random variables, independence, covariance, central limit theorem, Chebyshev inequality, diverse continuous and discrete distributions.

- Statistics, Parameter Estimation, and Fitting a Distribution:
  Descriptive statistics, method of moments, maximum likelihood estimation

- Computer Simulation and Stochastic Processes:
  Sampling of continuous distributions, Monte Carlo methods, Markov Processes, Poisson Process
Tentative Topics to be Covered: (cont’d)

• Hypothesis Testing:
  Type I and II errors, rejection regions; Z-test, T-test,
  Bayesian test, Confidence Intervals
• Data Modeling:
  Hidden Markov Models, Bayesian Network,
  Regression, Queuing systems