

Probability and Statistics I (3)

(Effective Fall 2020)

Prerequisite: Math 252, Math 314 or CSCI 301, and either Stat 325 or Engr 311.

Catalog Description: Discrete and continuous probability spaces, statistical independence, distributions, discrete and continuous random variables, expectations, moment generating functions, limiting distributions, estimation of parameters, confidence intervals, hypothesis testing with applications, linear regression and correlation, multiple linear regression.

Learning Outcomes for Major: This course addresses one or more of the student learning outcomes for the major.

Upon completion of his/her degree from the University of Tennessee at Martin with a major in mathematics, the graduate will be able to:

- i. apply mathematical concepts and principles to perform numerical and symbolic computations.
- ii. use technology appropriately to investigate and solve mathematical and statistical problems.
- iii. write clear and precise proofs.
- iv. communicate effectively in both written and oral form.
- v. demonstrate the ability to read and learn mathematics and/or statistics independently.

Teaching Objectives: The student will:

1. Summarize empirical data.
2. Apply the algebra of sets and use various counting techniques to determine elementary probabilities.
3. Calculate probabilities, means, variances, and moment-generating functions for discrete and continuous distributions.
4. Calculate probabilities, moments, correlations, and conditional and marginal distributions for multivariate discrete and continuous distributions.
5. Understand the basics of sampling distribution theory.

Text(s): Probability and Statistical Inferences Tenth Edition, Robert V. Hogg, Elliot A. Tanis and Dale L. Zimmerman, Pearson Publishing, 2019. ISBN: 978-0135189399.

Outline:

Chapter	Title (Sections)
1	Probability (1-5)
2	Discrete Distributions (1-6)
3	Continuous Distributions (1-3,4*)
4	Bivariate Distributions (1-3)
5	Distribution of Functions of Random Variables (1, 4-9)
6	Point Estimation (1-5, 7-8)

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