

Math 351 Probability (4 credits): Course goals

Course Goals

Students will be able to:

Elementary Theory

- Apply the theory of combinatorics to “count” using combinations and permutations and the multiplication principle.
- Apply the basic theory of probability to solve problems involving complements, unions or intersections of events and conditional probability.
- Use Baye’s Theorem to solve problems of conditional probability.

Univariate Theory

- Solve probability problems using given probability distributions with an emphasis on the binomial, Poisson, uniform, normal, and exponential distributions.
- Given a distribution find the mean, median, variance, standard deviation, cumulative distribution function, and moment generating function.
- Given one of a probability density function or a cumulative distribution function find the other.
- Find the new probability density function resulting from transformations of a given probability density function.

Multivariate Theory

- Solve probability problems using joint probability functions and probability distribution functions.
- Find marginal and conditional probability using joint distributions.
- Apply the central limit theorem to solve probability problems.