STAT 302 - INTRODUCTION TO PROBABILITY
Summer 2018

Description: Basic notions of probability, random variables, expectation and conditional expectation, discrete and continuous probability distributions, limit theorems.

Prerequisites: Math 200, 226, 217, 253, or 263

Notes: This course is the same as Mathematics 302.
Proofs are an important component of this course.

Audience: Undergraduates majoring in the mathematical sciences and in statistics, and students from other disciplines seeking an exposition of the basic elements of probability theory and an introduction to probabilistic modelling.

Textbook: A First Course in Probability (9th ed.) by Sheldon Ross, Prentice Hall.

Clickers: We will be using the i>Clicker in lectures. i>Clicker is a response system that allows you to respond to questions posed by instructors during class, and you will be graded on your participation and performance. You are required to purchase an i>Clicker remote for in-class participation.

Topics:

1. Principle of counting; permutation and combination (Chapter 1) 2 hours.

2. Basic notions of probability (Chapters 2 & 3) 6 hours.
   Definition and rules of probability, conditional probability, conditional independence.

3. Discrete and continuous probability distributions (Chapters 4 & 5) 15 hours.
   Random variables and their expected values, discrete distributions, continuous distributions, functions of random variables.

4. Bivariate and multivariate probability distribution (Chapters 6 & 7) 9 hours.
   Joint, marginal and conditional distributions, conditional expectations, multinomial distribution, moment generating functions.

5. Limit theorems (Chapter 8) 3 hours.
   Convergence in probability, convergence in distribution, the Central Limit Theorem.

NOTE: The above is a tentative schedule. The topics covered and the order in which they will be presented in this course may be modified.