STAT 451: Summer 2015
Intro to Probability Theory

Course Information

Course: Stat 451: *Intro to Probability Theory*

Time/Place: Monday, Wednesday, Thursday 2:00-4:05pm   MP 008

Instructor: Dr. Liz Stanwyck

Office: MP 404

Email: estanwy1@umbc.edu

Office Hours: Monday, Wednesday 5-6 pm or by appointment

Text book: Introduction to Mathematical Statistics

               By Hogg, McKean, Craig; 6th edition or 7th edition OK, Pearson

Course Description

By the end of this course, students will be able to understand probability measure, random variables, and their distribution functions; they will be able to master many of the distribution finding techniques, such as transformation and moment generating methods; and they will be very familiar with special distributions such as binomial, poisson, normal, gamma, and beta distributions.

Prerequisite: MATH 251 (Multivariable Calculus)

Main Topics

- Probability and distributions
- Random variables and expectations
- Multivariate distributions
- Conditional distributions
- Independent random variables
- Special distributions (binomial, poisson, gamma, beta, normal, t, F)
- Order statistics, confidence intervals, tolerance limits

Grading Method

Homework	0%
Quizzes (weekly on Mon.)	20%
Participation (Wednesdays)	10%
Exam I (Thursday 23 July)	20%
Final (Thursday 13 August)	30%

Graded work

Homework: Homework will be assigned weekly. It is expected that students will complete the homework before the next class, but homework is not collected or graded.

Participation: Students will come to the board and demonstrate the homework problems. Attend regularly and come to class prepared to do problems on the board to get full credit for participation.

Quizzes: A short quiz will be given at the beginning of class on Monday, based on the homework assigned the previous classes. Quizzes are closed book, closed notes. The lowest (one) quiz grade will be dropped.

Exams and Final: There is one midterm and one final. The exams are not comprehensive, but due to the sequence of concepts developed in the course, later exams will require you to understand and retain materials from previous exams. All exams are closed book and closed notes.

Tentative Calendar

Note: The dates below are *very* tentative and subject to change. This is just a general plan for the course.

We will cover chapters 1, 2, and 3 from the textbook, with additional topics from chapter 5 if there is time.

Contents

intro/calculus review

set theory

prob. set function

conditional probability

random variables, discrete and continuous

expectations & special expectations

inequalities

multivariate distributions

distribution and expectation of 2 random variables

bivariate transformations

conditional distributions

correlation coefficient

independent random variables

multivariate extensions

special distributions: binomial, poisson, gamma, beta, normal

Blackboard

Course materials (syllabus, homework) will be posted on the Blackboard website for this course. Important announcements will be posted to Blackboard, so make sure to check regularly. Blackboard is also a good place to keep track of your grades. When figuring grades, make sure to use the weights on this syllabus (the "totals" column in Blackboard is not an accurate reflection of your grade).

The Official UMBC Honor Code

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal.

To read the full Student Academic Misconduct Policy, consult the UMBC Student Handbook.