Catalog description: An introduction to the mathematics of basic probability theory. Topics include general probability concepts, random variables, and discrete and continuous probability distributions.

Prerequisites: Successful completion of MTH 241 and MTH 250

Required texts: are available via links and downloadable pdfs on D2L

Goals:

- Understand mathematical probability in terms of an axiomatic system. State the axioms and prove basic theorems that can be derived from the axioms.
- Use and develop probability models to obtain good estimates for events.
- Find and explain expected values and variances of probability distributions.
- Model situations using conditional probabilities as appropriate.

Objectives:

- Learn and explain some of the classic probability problems
- Solve problems using basic probability techniques
- Explain and use conditional probability as appropriate; explain and use Bayes Theorem
- Find the mean and variance of discrete and continuous random variables
- Describe, solve problems, and use the means and variances using the following probability distributions
  - Normal
  - Binomial
  - Hypergeometric
  - Negative Binomial
  - Geometric
  - Poisson
- Use Joint Probability Distributions to find probabilities, means, and variances for two or more random variables
Expectations:

- You are expected to prepare for each class. Preparation includes: reading the sections of the texts as listed in D2L and completing the assigned problems from these texts and problem sets.
- You are expected to attend each class and be an active participant in the class.
- You are responsible for the content covered in the listed prerequisite courses. I do not plan a formal review of this material.

Integrity: Central to the purpose and pursuit of any academic community is academic integrity. All members of the Westminster community, including students, faculty, staff, and administrators, are expected to maintain the highest standards of honesty and integrity, in keeping with the philosophy and mission of the College. Academic dishonesty is a profound violation of this code of behavior.

The paragraph above is taken from the Westminster College 2018-19 Undergraduate Catalog, page 60. It is imperative that you never submit the work of others as though it is your own work nor should you ever allow anyone else to use your work without giving credit to you. The penalty for academic dishonesty in this class is minimally the grade of 0 on the assignment and, except for unusual circumstances, a grade of F for the course. Any event of academic dishonesty is reported to the Dean of the College. Other details of violations and consequences are given in the Catalog.

Accessibility: Westminster College actively strives for the full inclusion of all our students. Students with disabilities who require access solutions for environmental or curricular barriers should contact Faith Craig, Director of Disability Resources, located in 414 Thompson Clark Hall.
Phone: 724-946-7192
e-mail: craigfa@westminster.edu

Assessment:

Exam 1 40%
Comprehensive Exam 2 40%
Four papers on classical probability problems, equally weighted 20%

- Classical probability problem due dates are no earlier than those as marked in the D2L calendar. Adjustments may be made as we progress through the seven weeks.
- First examination will be Feb. 11th and cover material taught through Feb. 6th.
- The final (second) exam will be on March 4th 2:00-4:00 as all of the class agreed to on January 14, 2019. You also agreed that you will notify all of your coaches and employers who expect you to be at practices or games or other activities that you are in an exam until 4 pm.
- I expect the first and second exams to consist of approximately 8-10 and 15-20 problems respectively. You will be expected to correctly answer some of those problems. You will have some (but not complete) choice of which problems will be graded.

Grade cutoffs will be no higher than A: 93, A-: 90, B+: 87, B: 83, B-: 80, C+: 77, C: 73, C-: 70, D: 60.

See you in class!