Syllabus MA3160: Probability

- COURSE INFORMATION:
  - Class: Probability
  - Class Meetings: TuTh 11:00AM - 12:15PM (MONT 419)
- INSTRUCTOR:
  - Name: Prof. Fabrice Baudoin
  - Location: 338 MONT Building
  - Email: fabrice.baudoin@uconn.edu
  - Office hours: Wed 2-4 pm or by Appointment.
- TEXT

  No textbook is necessary for this class. Open source educational materials are provided at the url

  https://probability.oer.math.uconn.edu/3160-oer/
- CONTENTS
  - Combinatorics: product rule and permutations; combinations.
  - Axioms of Probability: sample spaces, events and set operations; probability axioms.
  - Conditional Probability and Independence: conditional probability and Bayes? rule; probability trees; independent events.
  - Discrete Random Variables: probability mass function (PMF), cumulative distribution function (CDF); expectation; variance, moments, moment generating function (MGF). Uniform, Bernoulli, Binomial, Poisson, Geometric, Hypergeometric distributions; expectation, variance, MGF of these RVs.

- Continuous Univariate Random Variables: probability density function (PDF), CDF, expectation, variance, moments, MGF. Uniform, Exponential, Gamma, Normal distributions; expectation, variance, MGF of these RVs. Transformations (functions) of continuous RVs. Jointly Distributed Random Variables: joint PMF/PDF, and CDF; marginal distributions; conditional PMF/PDF; conditional expectation and variance; covariance and correlation coefficients.
- Limit Theorems: Weak Law of Large Numbers, Central Limit Theorem, Normal approximations.

- EXAMS

  There will be two midterm exams and a final exam. Midterms will be scheduled in class (dates to be given later). Final exam date will be announced later.

- HOMEWORK AND QUIZZES

  Homeworks will be weekly assigned.

  Homeworks will not be collected, but there will be a 15 minutes quizz at the end of each Th class. Questions on the quizzes will be very close to HW questions.

- GRADING

  Quizzes 20% , Midterm 1 20%, Midterm 2 20%, Final 40%.