**A graduate course offered in <u>Fall 2015</u>**

# MTH550     Probability and stochastic processes

**Description:** This is a graduate course in probability theory and random processes for students in mathematics, engineering, finance, and computer science.

We will introduce the basic concepts, gain factual knowledge and learn the terminology, fundamental principles, and common methods used in probability theory as well as some of its applications. Emphasis will be placed on fundamental principles, thinking probabilistically, and methods and results of modern probability theory. This should provide you with the necessary background for further graduate courses.

Topics will include (time permitting): basic properties of probability measures, discrete and continuous random variables, distributions, random walks, generating functions, limit theorems, large deviations, Markov chains and Markov processes, branching and Poisson processes, martingales, Brownian motion. To illustrate the general theory the course will include applications (taking into account interests of the audience) to mathematics (e.g. discrete mathematics, percolations), engineering (e.g. signal processing), computer science (e.g. analysis of random(ized) algorithms), and mathematical finance.

**Instructor:** L. Thoma, Department of Mathematics, Lippitt 101F
If you would like to get more information, do not hesitate to contact me at thoma@math.uri.edu

**Schedule:** <u>Fall 2015:</u> TuTh 2.00 – 3.15pm, Lippitt Hall 201

**Prerequisites:** MTH 435 or 437; and MTH 451