MW 2:00 – 3:20 p.m., Room OHE 120

Professor: Cesar Acosta Ph.D.
Office: GER 216
Office hours: TBD
e-mail: acostame@usc.edu

Teaching Assistant: TBD
Office: TBD
Office hours: TBD
e-mail: TBD

Course References:
Ross, S., *An Elementary Introduction to Mathematical Finance,* Cambridge Univ. Press, 3 ed., 2011
Bjork, T., *Arbitrage Theory in Continuous Time,* 3 ed., Oxford University Press, 2009
Shiryaev, A. N., *Essentials of Stochastic Finance,* World Scientific, 1999.
Mikosch T., *Elementary Stochastic Calculus*, World Scientific, 1999.

Pre-requisites: Required, ISE 220 Probability Concepts in Engineering or equivalent.
Strongly recommended, ISE 331 Introduction to Operations Research, Probability Models,
ISE 460 Engineering Economy, MATH 225 Linear Algebra & Differential Equations or equivalent courses.

Course Objectives: To familiarize students with investment problems and the mathematical tools needed to solve them. Investment problems such as assets pricing, portfolio selection and optimization, hedging, and optimization of financial strategies. In particular the use of derivative instruments to reduce investments risk. To attain this objective the knowledge of some advanced mathematical tools is required. This course will familiarize the students with stochastic processes and stochastic calculus as they are required to price derivative assets.

Week	Topic
1	Introduction
2-3	Portfolio Management
4-5	The Arbitrage Theorem
6	Modeling Derivatives in discrete time
7-8	The Binomial model & Black & Scholes Formula
8	Midterm TBA
9-10	Brownian Motion
11-12	Martingales
13-14	Stochastic Calculus
15-16	Ito's lemma, Black & Scholes Formula

Grading Policy:
There are regular homework assignments and will count for 30% of grade. The midterm exam accounts for 30% of the grade, and the final examination accounts for 40% of the grade. Exams are closed books and notes.

Academic Integrity. The Viterbi School of Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus (www.usc.edu/dept/publications/SCAMPUS/). Students are expected to be aware of and to observe the academic integrity standards described in SCampus, and to expect those standards to be enforced in this course.

Students with Disabilities. Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776