

## NEW COURSE

### ESI 6912: RISK MANAGEMENT STRATEGIES

Spring 2005

Section Number: 7860X

**Class hours:** Tuesday 8th and 9th periods,  
Thursday 9th period

**Classroom:** Weil 234

**Instructor:** Prof. Farid AitSahlia  
Industrial and Systems Engineering

#### **Course Objectives:**

The purpose of the course is to present a set of modeling techniques that have been used in the financial markets on contracts devised to tailor risk to specific requirements. These products are at the heart of the significant growth witnessed in the last few years under the label of financial engineering. Although most of the course (roughly 80 %) will focus on financial markets, we will spend a reasonable amount of time on the application and modification of these techniques to risk strategies in the context of engineering risk management (e.g. oil field exploration, product development, etc.) and supply chain operations. As the latter applications are only beginning to emerge, the relevant material will be drawn from recent papers while the main course content will be covered mostly from the textbook below.

#### **Textbook:**

Joshi, M. S. *The Concepts and Practice of Mathematical Finance*. Cambridge University Press, 2003 (ISBN 0-521-82355-2).

#### **Additional Reference (mostly used for mathematical background):**

Steele, J. M. *Stochastic Calculus and Financial Applications*. Springer, 2001 (ISBN 0-387-95016-8).

#### **Pre-requisites:**

Though, ideally, I would expect students to be familiar with elementary notions of Brownian motion and martingale theory, as well as basic results from stochastic calculus (e.g. Ito's formula, martingale property of certain stochastic integrals, etc.), I will spend about a couple of weeks at the beginning of the term covering/reviewing these elementary results.