INTERNATIONAL MANAGEMENT INSTITUTE, BHUBANESWAR
FN607: Financial Engineering and Risk Management
PGDM 2014-16 Term V
CREDIT: Full (3 credits)
SESSION DURATION: 90 Minutes

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Course Introduction

The basic purpose of Financial Engineering and Risk Management course is to develop understanding of concepts, issues and strategies for management of risk. It will develop necessary skills to identify and measure risk, quantify risk and create risk response strategies for suitable decision making for market and credit risk.

Risk management is an underlying motivation behind the need to create the synthetic exposures through financial engineering. This may apply to a corporate with a hedging motivation that wants to reduce an existing risk exposure by engineering a synthetic with an opposite exposure. This may also apply to a corporate with a speculation motivation that wants to engineer a synthetic to take on a certain risk exposure based on a view of the uncertainty in the price of an underlying asset.

Course Objectives

This course assumes a detailed understanding of derivative instruments encompassing futures, swaps, and options. At the end of the course the students should be able:

- To measure an organization's risk exposure to market risk and credit risk
- To develop a hedging strategy in line with an organization's existing risk exposures
- To determine the custom exposures to risk factors an organization must take to implement its hedging strategy
- To value financially engineered instruments such as mortgage-backed securities and collateralized mortgage obligations.

Pedagogy
Classroom lectures and spreadsheet modeling.

Evaluation Criteria (%)

Quizzes (2)	20
ClassPresentation/ Assignment	10
Mid-term Exam	30
End-term Exam	40
Total	**100**

Reading Material

Text book

1. Hull, J. C., *Risk Management and Financial Institutions,* 3rd Edition, Wiley India, 2013 (Low Price Edition).

Reference books

1. Veronesi, P., *Fixed Income Securities-Valuation, Risk and Risk Management*, Wiley India, 2010.
2. Hull, J. C. & Basu, S., *Options, Futures and Other Derivatives*, Pearson Education India, 2010.

Session Plan

Session No.	Topic	Reading from text book
1-3	Interest rate risk management	Veronesi: Ch. 3, 4
4-5	Measuring Volatility	Hull: Chapter 10 (Text book)
6-8	Value at Risk Measure, Market risk measurement (Historical Simulation Approach)	Hull: Chapter 9 (Text book)
9-10	Market Risk VaR: Model Building approach	Hull: Chapter 15 (Text book)
11-12	Financial Engineering-Basics of Mortgage Backed Securities, Collateralized Mortgage Obligations	Veronesi: Ch.8
13-15	Credit risk: estimating default probabilities	Hull: Chapter 16 (Text book)
16-18	Credit VaR	Hull: Chapter 18 (Text book)
19-20	Operational Risk & Liquidity Risk	Hull: Chapter 20-21 (Text book)

(Some extra sessions on **Options, Option Pricing, Binomial Trees, Black-Scholes-Merton Model, Trading strategies involving options, Forwards and Futures** will be taken before starting this given course outline. For this portion Reference Book 2 will be used.)