

INTERNATIONAL MANAGEMENT INSTITUTE, BHUBANESWAR

Post Graduate Diploma in Management (PGDM)

Financial Engineering and Risk Management (FN607)

CREDIT: Full (three credits)

SESSION DURATION: 90 Minutes

TERM: IV

YEAR: 2016-2018

BATCH: II

FACULTY: Dr. Ansuman Chatterjee

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Office hours: 9:30 AM – 5:30 PM

**Course Introduction:** 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: 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.

**LEARNING OUTCOME:**

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:

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

**Course Pedagogy:** The course would be based on the classroom lectures and spreadsheet modeling intended to create a student centric experiential learning.

**Course Readings**

1. Hull, J. C. & Basu, S., Options, Futures and Other Derivatives, Pearson Education India, 2010.
2. Veronesi, P., Fixed Income Securities-Valuation, Risk and Risk Management, Wiley India, 2010.
3. Hull, J. C., Risk Management and Financial Institutions, 3<sup>rd</sup> Edition, Wiley India, 2013 (Low Price Edition).

**Course Evaluation criteria (%):**

Quizzes (2)	15
Class Presentation	15
Mid-term Exam	20
Class Participation	10
End-term Exam	40
Total	100

**Session Plan:**

Session No.	Topic	LEARNING OUTCOME	Reading from text book
1	Introduction to Derivatives	LO 1, 2, 3	Hull: Chapter 1 (Text book)
2-3	Mechanics of Futures Markets; Interest Rate Futures	LO 2, 3	Hull: Chapter 2 & 6 (Text book)
4-6	Interest rates & Interest rate risk management	LO 2, 3	Hull: Chapter 4 (Text book)
7-9	Interest rate swaps, Forward Rate Agreements & Currency Swaps	LO 2	Hull: Chapter 4 & 7 (Text book)
10	Mechanics of Options Markets	LO 2	Hull: Chapter 8 (Text book)
11-13	Binomial Trees & The Black-Scholes-Merton Model; Trading Strategies involving Options	LO 1, 2, 3	Hull: Chapter 10, 11 & 13 (Text book)
14	Measuring Volatility; Value at Risk Measure, Market risk measurement (Historical Simulation Approach)	LO 1, 3	Hull: Chapter 13 & 20 (Text book)
15	Market Risk VaR: Model Building approach	LO 1	Hull: Chapter 20 (Text book)
16-18	Financial Engineering-Basics of Mortgage Backed Securities, Collateralized Mortgage Obligations	LO 3, 4	Veronesi: Chapter 8
19-20	Presentations & Review of the Course		

Note: The session plan is subject to change.