



**COURSE NAME: Financial Derivative and Risk Management (FN612)**  
**CREDIT: 3 CREDITS**  
**SESSION DURATION: 60 Minutes**

Term: V  
Year: 2021

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### **Course Introduction:**

Exponential growth in derivative markets has been observed in the last two decades in comparison of spot market thanks to importance of risk management, arbitrages, and speculation. The students will learn the fundamental concepts of derivative products, markets, pricing, and their application in hedging the risk associated with variety of financial instruments. The course will cover both the theory and the application of derivatives markets in portfolio allocation and risk management. Also, the course will cover a large variety of derivatives such as forwards, futures, swaps, options and credit and weather derivatives. The course is relevant for managing assets and liabilities of private enterprises, banks, insurance companies, pension funds, and other financial institutions. The course is also highly relevant for students considering a PhD degree in economics and finance.

**Course objectives:** This course gives students a conceptual knowledge and application of the derivative instruments and their applications in managing various types of financial risks. While doing so, students would understand the organizational aspects of those risk functions and their roles & responsibilities and attains problem solving ability. The emphasis is on mechanics, properties and valuation of forwards, futures, options and swap instruments. The student would learn how to value derivative instruments and use them for hedging, speculation, and arbitrage. The student would learn about risk management strategies and practices.

### **Learning Outcomes:**

At the end of the course, the student will be able to:

- Conceptually understand the mechanics of Forwards/Futures, Options and SWAP markets (LO 1)
- Comprehend and apply the hedging strategies using futures for real world situations (LO 2)
- Analyse the trading strategies involving options which help the student in understanding problem solving techniques. (LO 3)
- Get first-hand experience on valuation of Forwards/Futures, Options, and SWAPS which helps in interpreting and drawing inferences (LO 4)
- Understand the basics of exotic derivatives as well as other types of derivatives such as weather derivatives (LO 5)

**Course Pedagogy:** The framework of learning will be through classroom lectures, cases and exercises in the class.

**Prerequisite:** Exposure to financial market, financial products, probability, and statistics

### **Course Readings:**

**Text:**

*Hull, John C. & Basu, S., Options, Futures, and Other Derivatives, 8th Edition, Pearson, 2013. (JCH)*

**References:**

- Dubofsky, David A., Derivatives: Valuation and Risk Management, Oxford Publication.
- Sundaram, R. K and Das, S.R., Derivatives: Principles and Practice, McGraw Hill Publications.

**Course Evaluation Criteria:**

Quiz -1	10% (LO1 to LO 3)
Quiz- 2	10% (LO 4 to LO 5)
End Term Exam	40% (LO1 to LO 5)
Class Participation (CP)	10% (LO1 to LO 5)
Derivative Research Report writing	10% (LO1 to LO 5)
Project	20% (Either of LO 3, LO 4 or LO 5)

Session No.	Topic	Learning Outcomes	Reading
1-2	<b>Introduction to Financial Risk Management</b> <i>Why manages Risk? Industry Background Note (9-294-107)</i>	LO1	Note
3- 4	<b>Introduction to Derivative Instruments</b> various types of derivative instruments such as futures/forwards, options, swaps <i>Introduction to Derivative Instruments (295141)</i>	LO 2	Ch-1 (Hull & Basu)  <i>Live trading on NSE</i>
5-14	<b>Forwards and Futures</b> Differences between forwards and futures Functioning of the futures market Valuation of forwards/futures Futures on stock, index, and commodity Application of forwards & futures for risk management <i>Application of Financial Futures (9-286-109)</i>	LO 3	Ch-2 , 3 and 5 (Hull & Basu)
15- 21	<b>Options</b> The fundamentals and types of options Functioning of the options market Valuations of Options- BSM and Binomial Model Options trading strategies/Option Greeks  <i>The Keller Fund's Option Investment Strategy (9-295-096)</i>	LO 3	Chapter 8,9,10,11,13 and 17 (Hull & Basu)  <i>Developing option strategy using SENIBULL</i>
22-27	<b>Swaps</b> Interest Rate Swaps Currency Swaps Forward Rate Agreements (FRAs) Valuation of Swaps Application of Swaps <i>The B.F. Goodrich-Rabobank Interest Rate Swap (9-284-080)</i>	LO 4	Ch- 6 and 7 (Hull & Basu))
28	<b>Credit Derivatives</b> Credit Default Swaps Valuation of CDS Risk Management from the perspective of banks and investors	LO 5	Ch- 23 (Hull & Basu))
29	<b>Weather Derivatives</b> Importance of weather derivatives		Ch- 25 (Hull & Basu))

	DD scales Using futures, options, and swaps on DD scales		
30	Value at Risk (VaR) The VaR measure Historical simulation method Model building method Monte-Carlo simulation		Ch- 20 (Hull & Basu))

**Guidelines for project:** Each student needs to mandatorily undertake a project and make a presentation at the end of the term. Since it is a group project, the contribution of each member needs to be clearly delineated although it is expected that each member should know the project thoroughly. The final report needs to be submitted before the presentation with the following components:

- Title page (format same as that of SIP report)
- Index
- Introduction about the topic (about 500 words)
- Data Source
- Methodology and model used
- Discussion of result
- Conclusion

**Plagiarism:**

We are committed to upholding the highest standards of academic integrity and honesty. Plagiarism is the use of or presentation of ideas, works that are not one's own and which are not common knowledge, without granting credit to the originator. You may refer the already available content just for your reference and to get the basic ideas. Only 20% of such content is acceptable, above that comes under the definition of Plagiarism which is unacceptable in IMI and will be treated seriously. All such cases will be referred to the appropriate body of the Institute for suitable disciplinary action.