

Subject Code: 1SC2040306	Subject Title: Financial Mathematics - I
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Course Objective:

- This is an introductory course in Financial Mathematics-I which provide a working knowledge of the Basic option theory, Different types of interest rates, a simple model for stock price and put call parity described in detail in the syllabus.

Teaching scheme (hours) per week		credit		Theory Marks		Practical Marks		Total
Theory	Tutorial	Theory	Tutorial	University Assessment	Cont. Assessment	University Assessment	Cont. Assessment	
4	1	4	1	60	40	-	-	100

Subject Contents			
Unit. No	Topic	Total Hours	Weight (%)
1	Basic option theory, European and American options, forward and future contracts, hedgers, speculators and arbitrageurs, hedging, arbitraging and speculation using options.	18	25
2	Types of interest rates: treasury rate, LIBOR rate, LIBID rate, Repo rate, continuously compounding interest rate, Forward rate, n-year zero interest rate, Stochastic Processes: Markov process, Wiener process, Ito process.	18	25
3	A simple model for stock price, Ito's lemma, the lognormal property. One step and two step Binomial models for European options, risk-Neutral valuation.	18	25
4	Partial differential equations. Put call parity, Black-Schole-Merton differential equation and its formulae, examples.	18	25

Course Outcome:

On successful completion of the course, students should be able to

- Students will be able to understand the concept of European and American options, forward and future Contracts, arbitraging and speculation using options.
- Students will be able to understand the concept of different types of interest rates.
- Students will be able to understand the concept of a One step and two step Binomial models for European options and Black-Schole-Merton differential equation and its formulae

List of References:

- P. Wilmott, S. Howison and J. Dewynne, The mathematics of financial derivatives, Cambridge Uni. Press, 1995.
- Sheldon M. Ross, An elementary introduction to mathematical finance, Cambridge Uni. Press, 2003.
- John C. Hull, Options, futures and other derivatives, 7th edition, Prentice Hall.
- Gupta S. L., Financial derivatives: theory, concepts and problems, Prentice Hall of India.