



FINANCIAL MATHEMATICS

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IIT Roorkee

PRE-REQUISITES : Basic Mathematics, Probability

INTENDED AUDIENCE : Interested Learners

INDUSTRIES APPLICABLE TO : Useful for most of the companies, especially for managers and persons in investment and finance sectors

COURSE OUTLINE :

The course on Financial Mathematics focuses on the mathematical properties and relations between concepts of financial and currency markets in investment and other economic activities. The course aims to enthuse confidence in participants to be able to address issues related to globalization of financial markets, development and feasibility of financial transactions, the increasing complexity of portfolio investments, analyzing and forecasting market developments etc. Students in the course will gain an in-depth understanding of advanced economics concepts as well as knowledge of how the financial and banking sectors operate.

ABOUT INSTRUCTOR :

Prof Pradeep K. Jha is presently working as Associate Professor in the Department of Mechanical & Industrial Engineering at IIT Roorkee. He has been teaching the courses related to manufacturing technology and theory of production processes to undergraduate and postgraduate students for more than 12 years. He is actively involved in research work related to production processes, tundish steel making process, mold solidification in continuous casting etc.

COURSE PLAN :

Week 1: Mathematical introduction, Growth and decay curves

Week 2: Simple interest, bank discount

Week 3: Compound interest, discrete compounding

Week 4: Compounding frequency of interest, Economic equivalence

Week 5: Method of comparison of alternatives, Project balance

Week 6: Credit and loan, Cost of credit and amortization

Week 7: Depreciation and depletion

Week 8: Breakeven analysis, Leverage

Week 9: Stocks and bonds, Valuation of stocks and bonds

Week 10: Mutual funds, Options, Cost of capital and ratio analysis

Week 11: Decision under risk & uncertainty, Risk premium, Portfolio diversification

Week 12: Life Insurance, Endowment and annuities, Insurance policies