

# VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B.Sc.

**Mathematics**

**MATH (CAN)**

**(MATHEMATICS IN FINANCE)**

**Financial Management** : Its nature and scope, Goals and decision of financial management, Difference between risk speculation and gambling Time, Value of money, Interest rate and Discount rate, Present value and Future value for discrete and continuous compounding case. Annuities and its kinds.

Meaning of return, Return as internal rate of return ( The RR ). Numerical methods to calculate IRR such as Newton Raphson method to calculate IRR, Measurement of returns under uncertainty situation, Meaning of Risk, Difference between risk and uncertainty, Types of risks, Management of risks. Calculation of security and portfolio, Risk Return-Markowitz model, Sharpe's single index model. Systematic and Unsystematic risk.

Bond valuation, Calculation of duration and convexity of bonds. Financial derivatives. Futures. Forward, Swaps and options, Call and Put options.

**Mathematics in Insurance** : Insurance. fundamentals, Meaning of loss, Changes of loss, peril, hazard and Proximate cause in insurance, , Cost and Benefit of insurance to the society, Life insurance and General insurance, Insurable loss exposure and feature of a loss that is ideal for insurance.

Life insurance Mathematics. Construction of mortality tables and computation of premium of life insurance for fixed duration and for the whole life, Determination of general claims of general insurance using Poisson distribution. Compound aggregate claim model and its properties.

**The course is covered by the following reference books :**

1. Aswath Damodaran : Corporate Finance — Theory and Practice, John Wiley & Sons.
2. John C. Hull : Options. Futures and other Derivatives, Prentice Hall of India Ltd.
3. Sheldon M. Ross : An Introduction to Mathematical Finance, Cambridge Uni. Press.
4. Marl. S. Dorfman : Introduction to Risk Management & Insurance, Prentice Hall, The Englewood Cliffs, New Jersey.
5. C.D. Daykin. T. Pentikainen M. Pesonen Practical Risk Theory for Actuaries, Chapman & Hall.