Semester Lecture Plan

Name of the college: Government college of Arts Science and Commerce ,Sankhali

Name of Faculty: Ms. Dhweta Sawant | **Subject:** Mathematics

Paper code: MAT-623 Mathematics for Financial Management and Insurance | **Program/Course: M.Sc. Part II** | **Division:**

Academic year: 2024- 2025 | **Semester:III** | **Total Lectures: 48**

Course Objectives:

This course introduces the basic concepts of Financial Management such as Insurance and Measurement of returns under uncertainty situations. The philosophy of this course is that Time value of Money - Interest rate and discount rate play a fundamental role in Life Insurance Mathematics – Construction of Morality Tables.

Expected course Outcome:

Student will be able to

1. Demonstrate knowledge of the terminology related to nature, scope, goals, risks and decisions of financial management.
2. Predict various types of returns and risks in investments and take necessary protective measures for minimizing the risk.
3. Develop ability to understand, analyze and solve problems in bonds, finance and insurance.
4. Build skills for computation of premium of life insurance and claims for general insurance using probability distributions.

Student learning outcome: This course introduces the basic concepts of Financial Management such as Insurance and Measurement of returns under uncertainty situations.

Month	Lectures From:	To:	No. of lectures allotted	Topic, Subtopic to be covered	Exercises/ assignment	ICT Tools	Reference books
July	15/07/2024	20/07/2024	04	Financial Management – overview. Nature and scope of financial management. Goals and main decisions of financial management.		Smart board PPT	Ross, S. M. An Introduction to Mathematical Finance. Cambridge University Press, 2019.

July	22/07/2024	27/07/2024	04	Difference between risk, Speculation and gambling. Time value of Money - Interest rate and discount rate		Smart board PPT	Ross, S. M. An Introduction to Mathematical Finance. Cambridge University Press, 2019.
August	29/07/2024	03/08/2024	04	Present value and future value discrete case as well as continuous compounding case. Annuities and its kinds.		Smart board PPT	Elliott, R. J. and Kopp, P. E. Mathematics of Financial Markets. Sprigner Verlag, New York Inc, 2018.
	05/08/2024	10/08/2024	04	Meaning of return. Return as Internal Rate of Return (IRR). Numerical methods like Newton Raphson method to calculate IRR. Measurement of returns under uncertainty situations. Meaning of risk.		Smart board PPT	Damodaran, A. Corporate Finance - Theory and Practice. John Wiley & Sons, Inc, 2012.
	12/08/2024	17/08/2024	04	Difference between risk and uncertainty. Types of risks. Measurements of risk.		Smart board PPT	Damodaran, A. Corporate Finance - Theory and Practice. John Wiley & Sons, Inc, 2012.
	19/08/2024	24/08/2024	04	Calculation of security and Portfolio Risk and Return-Markowitz Model.		Smart board PPT	Hull, J. C. Options, Futures, and Other Derivatives. Prentice-Hall of India Private Ltd, 2010
	26/08/02024	31/08/2024	04	Sharpe Single Index Model Systematic Risk and Unsystematic Risk.		Smart board PPT	Hull, J. C. Options, Futures, and Other Derivatives.

							Prentice-Hall of India Private Ltd, 2010
September	02/09/2024	06/09/2024	04	Insurance Fundamentals – Insurance defined. Meaning of loss. Chances of loss, Peril, Hazard, proximate cause in insurance.		Smart board PPT	Neftci, S. N. An Introduction to the Mathematics of Financial Derivatives. Academic Press, Inc,1991
	07/09/2024	14/09/2024	-	**Ganesh Chaturthi**			
	16/09/2024	21/09/2024	04	Costs and benefits of insurance to the society and branches of insurance-life insurance and various types of general insurance. Insurable loss exposures- feature of a loss that is ideal for insurance.		Smart board PPT	Dorfman, M. S. Introduction to Risk Management and Insurance. Prentice Hall, Englwood Cliffs, New Jersey, 1999.
	23/09/2024	28/09/2024	04	Life Insurance Mathematics – Construction of Morality Tables. Computation of Premium of Life Insurance for a fixed duration and for the whole life.		Smart board PPT	Daykin, C. D., Pentikainen, T. and Pesonen, M. Practical Risk Theory for Actuaries. Chapman & Hall, 2008.
October	30/09/2024	05/10/2024	04	Determination of claims for General Insurance – Using Poisson Distribution and Negative Binomial		Smart board PPT	Daykin, C. D., Pentikainen, T. and Pesonen, M. Practical Risk Theory for Actuaries.

				Distribution the Polya Case.			Chapman & Hall, 2008.
	07/10/2024	12/10/2024	04	Determination of the amount of 15 Claims of General Insurance – Compound Aggregate claim model and its properties, Claims of reinsurance. Calculation of a compound claim density function F, Recursive and approximate formulae for F		Smart board PPT	Daykin, C. D., Pentikainen, T. and Pesonen, M. Practical Risk Theory for Actuaries. Chapman & Hall, 2008.

*** Assessment Rubrics**

Component	Max Marks
ISA 1	20
ISA 2	20
ISA 3	20
Project	-
Semester End Exam	40