4. Varshney, P.N., Banking VidhievamVyavahar, S.Chand, New Delhi
5. Banking Products and Services by IIBF, Taxman Publication.
6. Digital Banking by IIBF, Taxmann Publication.

DISCIPLINE SPECIFIC ELECTIVE COURSE _ 12: FOUNDATION OF AN ACTUARIAL ANALYSIS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Foundation of an Actuarial Analysis DSE-12	4	3	1	0	-	-

Learning Objectives:

The course has been designed to provide an in-depth knowledge of Actuarial Science concepts in the field of banking and insurance. Students are able to know the concepts of probability, principles and models for an actuarial, mortality model and the uses and carrier paths for an actuary.

Learning outcomes:

At the end of this course, students would be able to:

➢ Learn the basics function of an actuary.
➢ Understand the basic knowledge of Statistical Methods of testing and drawing inference.
➢ Comprehend the principles of an actuarial modelling.
➢ Ascertain the mortality model.

Unit 1: Basics of Actuarial Science (9 Hours)

Meaning of an Actuary and Actuarial Science, Functions of the Actuaries, Applications of an Actuarial Science in banking and insurance, Pension Funds; Importance of an Actuarial Science, Career in Actuarial science, who should become an Actuary and How?

Unit 2: Probability and Mathematical Statistics (12 Hours)

Concepts of Probability, Bayes' theorem, Concepts of Random Variable, Probability Distribution, Distribution Function, Expected Value, Variance and Higher Moments, Basic, Discrete and Continuous Distributions, Central Limit Theorem, Statistical Inference and Sampling Distribution, Confidence Intervals for unknown parameters; Test hypotheses, Concepts of Analysis of Variance.

Unit 3: Models (12 Hours)

The Principles of Actuarial Modelling, General Principles of Stochastic Processes, Markov Chain, Markov Process, Concept of Survival Models, Estimation Procedures for Lifetime Distributions, Maximum Likelihood Estimators for the transition intensities in models of transfers between states with piece wise constant transition intensities.

Unit 4: Mortality Model (12 Hours)

Binomial Model of Mortality, Derive a Maximum Likelihood Estimator for the Probability of Death, How to Estimate Transition Intensities depending on age, or using the Census Approximation, How to test Crude Estimates for consistency with a standard table or a set of graduated estimates, the process of Graduation.

Essential Readings:

1. Leung, A. (2021). *Actuarial Principles: Lifetables and Mortality Models*. Academic Press.
2. Dickson, D. C., Hardy, M. R., & Waters, H. R. (2019). *Actuarial mathematics for life contingent risks*. Cambridge University Press.
3. Szabo, F. (2012). *Actuaries' survival guide: how to succeed in one of the most desirable professions*. Academic Press.
4. Agarwal, O. P. (2019). *Actuarial Analysis in Banking and Insurance.* Himalaya Publishing House.
5. Levin, R. I., & Rubin, D. S. (2021). *Statistics for management*. Pearson.

References

1. Glen, N. (2013). *Actuarial Science - An Elementary Manual.* Davies Press.

2. Trowbridge, C. L. (1989). *Fundamental concepts of actuarial science*. Actuarial Education & Research Fund.

3. Macdonald, A. S., Richards, S. J., & Currie, I. D. (2018). *Modelling mortality with actuarial applications*. Cambridge University Press.

4. Stine, R., & Foster, D. (2017). *Statistics for Business: Decision Making and Analysis* (3rd ed.). Pearson.

Note: Latest edition of the readings may be used.

> **DISCIPLINE SPECIFIC ELECTIVE COURSE – 13: MUTUAL FUNDS AND INVESTMENT BANKING**

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Prerequisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Mutual Funds and Investment Banking DSE-13	4	3	1	0	-	-

Learning Objectives:

The objective of this paper is to know the different aspects of Investment banking and financial services such as Issue Management, Leasing, Hire Purchase, Factoring and Forfaiting, Insurance, Credit Rating, Securitization and Venture Capital Financing, Mergers and acquisition and the detailed SEBI guidelines on issue management. The course is being designed to provide basic knowledge about the Growth and Role of Mutual funds, Investors Protection and Regulation of Mutual funds etc.,

Learning outcomes: