R. A. Podar College

of

Commerce and Economics

(Autonomous), Matunga,

Mumbai.

Syllabus
and
Question Paper Pattern
of
B.Com. in Actuarial Studies
Programme
Third Year (Semester *V* and *VI)*
Under Choice Based Credit System
To be implemented from Academic Year 2021-2022

Faculty of Commerce

B.Com. (Actuarial studies) Programme

Under Choice Based Credit, Grading and Semester System

T.Y.B.Com. (Actuarial Studies)

(To be implemented from Academic Year- (2021-2022)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
	Discipline Related Elective (DRE) Courses		***1***	***Discipline Related Elective (DRE) Courses***	
1	Advanced Financial Mathematics paper I	**03**	1	Advanced Financial Mathematics Paper II	**03**
2	Investment Analysis-Paper I	**03**	2	Investment Analysis-Paper II	**03**
3	Business Communication in German– I	**03**	3	Business Communication in German– II	**03**
4	Life Contingencies - Paper I	**03**	4	Life Contingencies-Paper II	**03**
	Core Courses (CC)		***2***	***Core Courses (CC)***	
5	Customer Relationship Management –Paper I	**04**	5	Customer Relationship Management –Paper II	**04**
	****Project Work***		***3***	****Project Work***	
6	Project Work I	**04**	6	Project Work II	**04**
	Total Credits	**20**		**Total Credits**	**20**

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester V

1. Discipline Related Elective (DRE) Courses

1. Advanced Financial Mathematics –I (03 Credits)

Objectives

1. In-depth understanding of interest rates, duration of assets and liabilities, studying of actuarial models.
2. Understanding and application of distributions used for calculating losses and risk models.

Modules at a Glance

Advanced Financial Mathematics - I		
Sr. No.	**Modules**	**No. of Lectures**
1	Interest rate yield curves	15
2	Principles of actuarial modelling.	15
3	Fundamentals of frequency and severity models	15
4	Fundamentals of aggregate models	15
	Total no. of Lectures:	**60**

Total number of lectures to be engaged 60 Lectures plus 30 Notional Lectures= 90 Lectures= 3 Credits

Sr. No.	Modules
1	**Interest Rate Yield Curves**
	i. Demonstrate a clear understanding of interest rates underlying a bond yield curve. ii. Spot rate from ZCYC, b) Forward rate, c) Link between the two, d) Instantaneous forward rate, e) Link between a, b and d, f) Par yield, g) Yield to Maturity, h) Gross and Net Redemption Yield (arising from the tax implication from the differential treatment of capital gain and interest). iii. Calculate duration of liabilities and assets using first principles. iv. Apply differentiation techniques to calculate modified duration and convexity of a bond portfolio. v. Explain the principles underlying the immunization of net assets and liability driven investment of a pension fund. vi. Describe the properties of various stochastic models of the term structure of interest rates. vii. Explain the limitations of the models described above and describe attempts to address them.
2	**Principles of Actuarial Modelling**
	i. Describe why and how models are used including, in general terms, the use of models for pricing, reserving, and capital modelling. ii. Explain the benefits and limitations of modelling. iii. Explain the difference between a stochastic and a deterministic model, and identify the advantages/disadvantages of each. iv. Describe the characteristics of and explain the use, of scenario-based models. v. Describe, in general terms, how to decide whether a model is suitable for any particular application. vi. Explain the difference between the short-run and long-run properties of a model, and how this may be relevant in deciding whether a model is suitable for any particular application. vii. Describe, in general terms, how to analyze the potential output from a model, and explain why this is relevant to the choice of model. viii. Describe the process of sensitivity testing of assumptions in a life insurance reserving model and explain why this forms an important part of the modelling process. ix. Explain the sensitivity testing of assumptions in a defined benefit pensions model from a review Ind AS 19 disclosures from published financial statements of companies. x. Produce an audit trail enabling detailed checking and high-level scrutiny of a model. xi. Explain the factors that must be considered when communicating the results following the application of a model and produce appropriate documentation.

3	**Fundamentals of Frequency and Severity Models**
	i. Explain the characteristics of distributions suitable for modelling frequency of losses, for example: Poisson, mixed Poisson, binomial, negative binomial, and geometric distributions. ii. Identify applications for which each distribution may be used; explain the reasons why; and apply the distribution to the application, given the parameters. iii. Recognize classes of distributions, including extreme value distributions, suitable for modelling the distribution of severity of loss and their relationships. iv. Apply the following techniques for creating new distributions: multiplication by a constant, raising to a power, exponentiation, mixing. v. Calculate various measures of tail weight and interpret the results to compare the tail weights.
4	**Fundamentals of Aggregate Models**
	i. Compute relevant moments, probabilities and other distributional quantities for collective risk models. ii. Compute aggregate claims distributions and use them to calculate loss probabilities. iii. Evaluate the effect of coverage modifications (deductibles, limits and coinsurance) and inflation on aggregate models.

References:

1. ActEd Study Material Subject CM2 2019 Actuarial Education Company, acted@bpp.com
2. Actuarial Mathematics, Bowers, L. Newton, et. al., ISBN 0938959468, Society of Actuaries USA
3. An introduction to the mathematics of finance by McCutcheon, J. J., Scott, W. F., Heinemann, 1986. ISBN: 043491228X
4. Mathematics of Finance 2nd Edition Schaum's Outline Series Peter Zima, Robert Brows Tata McGraw-Hill Publishing Company Ltd.
5. Derivatives Markets (3rd edition), by Robert McDonald, Pearson India.
6. Options, Futures and Other Derivatives, by John Hull and S. Basu, 9789352866595, Pearson Education.
7. John Freund's Mathematical Statistics with Applications by Miller, 131427067, Prentice Hall.
8. The Term Structure of Interest Rates, by Robert A. Jarrow, Annual Reviews 2009.
9. Elementary Statistics by Mario Triola 9780321369185, Prentice Hall.
10. Descriptive Statistics by R. J. Shah, Sheth Publishers.
11. Statistical Methods by R. J. Shah, Sheth Publishers.

Evaluation scheme

I. **Continuous Assessment (C.A.)**– 40 Marks

1) Assessment 1 (20 Marks)

2) Assessment 2 (20 Marks)

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester V
1. Discipline Specific Elective (DSE) Courses
2. Investment Analysis-I (03 Credits)

Objectives

1. Understanding of different asset classes, economic influences on assets, relationship between risk and return.
2. Understanding investment policy for Indian savings, employee benefit plans, insurance companies.
3. Analysing measures of investment risk and asset valuation.

Modules at a Glance

Investment Analysis-I		
Sr. No.	**Modules**	**No. of Lectures**
1	Investments and markets	15
2	Investment policy in long-term savings and employee benefits	15
3	Behavioural finance for investment and measures of investment risk	15
4	Equity and bond valuation	15
	Total No. of Lectures:	**60**

Total number of lectures to be engaged 60 Lectures plus 30 Notional Lectures= 90 Lectures= 3 Credits

Sr. No.	Modules
1	**Investments and Markets**
	i. Describe the characteristics of the main investment assets and of the markets in such assets ii. Describe the characteristics of the main derivative investments (including forwards, futures, options and swaps) and of the markets in such investments iii. Explain the principal economic influences on investment market price levels and total returns. iv. Describe and explain the theoretical and historical relationships between the total returns and the components of total returns on the main asset classes and key economic variables.
2	**Investment Policy in Long-Term Savings and Employee Benefits**
	i. Regulation and investment policy in India: banks, insurers, approved provident funds, approved superannuation (pension) funds, approved gratuity funds, mutual fund schemes, national pension scheme, overseas investment ii. Investment environment: Anti-money laundering, ESG (Environmental, Social and Governance), taxation of dividend and capital gains, special purpose vehicles relevant in actuarial work e.g., tax-approved superannuation funds, provident funds, gratuity funds. iii. Assess the investment avenues for life insurance companies viz. participating fund, non-participating fund, pension plans, unit-linked plans, controlled fund. iv. Assess the investment avenues for general insurance companies. v. Assess the investment avenues for PFRDA registered pension funds. vi. Explain the investment risk-seeking avenues of the special purpose vehicles in actuarial work e.g., tax-approved superannuation funds, provident funds, gratuity funds.
3	**Behavioural Finance for Investment and Measures of Investment Risk**
	1. Testing behavioural finance theories in investment decisions i. The herd instinct ii. Anchoring and adjustment iii. Self-serving bias iv. Loss aversion v. Confirmation bias vi. Availability bias vii. Familiarity bias. 2. Explain and analyse the various measures of investment risk. i. Variance of return

	ii. Downside semi-variance of return iii. Shortfall probabilities iv. Value at Risk (VaR) v. Tail VaR (also referred to as Expected Shortfall).
4	**Equity and Bond Valuation**
	i. Use the Capital Asset Pricing Model to calculate the required return on a particular asset, given appropriate inputs, and hence calculate the value of the asset. ii. Use a multifactor model to calculate the required return on a particular asset, given appropriate inputs, and hence calculate the value of the asset. iii. Explain the concepts of: efficient market, complete market, no-arbitrage, hedging. iv. Apply the Efficient Markets Hypothesis to the Indian equity markets: Strong-, semi-strong and weak-form. v. Evaluate the features of modern bond price models. vi. Calculate the risks of a government bond portfolio viz. modified duration. vii. Explain how the risks of a bond vary with the bond's term, coupon and yield to maturity. viii. Apply techniques of interest rate risk measurement to hedging and mismatch strategies.

References :

1. ActEd Study Material Subject CM1 2019 Actuarial Education Company, acted@bpp.com
2. ActEd Study Material Subject CM2 2019 Actuarial Education Company, acted@bpp.com
3. Derivatives Markets (3rd edition), Robert McDonald, Pearson India
4. Options, Futures and Other Derivatives, by John Hull and S. Basu, 9789352866595, Pearson Education.
5. An introduction to the mathematics of finance by McCutcheon, J. J., Scott, W. F. Heinemann, 1986. ISBN: 043491228X.
6. Behavioural Finance, by Prasanna Chandra, ISBN 9389811287, McGraw Hill India.
7. The Behavioural Investor by Daniel Crosby, ISBN 9388423623, Jaico Publishers.
8. Pension Fund ESG Risk Disclosures: Developing Global Practice, International Actuarial Association 2020.
9. The Term Structure of Interest Rates, by Robert A. Jarrow, Annual Reviews 2009.

Evaluation scheme

I Continuous Assessment (C.A.)– 40 Marks

1) **Assessment 1** (20 Marks)
2) **Assessment 2 (20 Marks)**

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme

With effect from the Academic Year 2021-2022

Semester V

1.Discipline Specific Elective (DSE) Courses

3. Business Communication in German– I

(03 Credits)

Objectives:

1. To prepare young adults for German business communication
2. To prepare young adults to deal with German clients in business situations

Course Outcome:

Students will

1. learn vocabulary and basic grammar for business situations
2. learn about portraits of German companies
3. be able to understand basic business conversations
4. be able to write business emails in German

Modules at a Glance

Business Communication in German– I		
Sr. No.	**Module**	**No. of Lectures**
1	Induction of new employee	20
2	Establishment of a new office	10
3	Official and personal work time	10
4	Report Writing	10
	Total No. of Lectures:	50

Total number of lectures to be engaged 50 Lectures plus 40 Notional Lectures= 90 Lectures= 3 Credits

Third Year B.Com
Semester – V

Business Communication in German– I

Sr. No.	Units
Unit I	**Induction of new employee**
	Business Etiquettes: conversations with colleagues and clients **i.** Learn about Greetings and salutations in Germany and German speaking countries. ii. Introducing oneself and others iii. Learning to spell name (semantics) iv. name a profession v. visiting cards format vi. personal data and fill a personal data form vii. To understand private emails about new job and colleague viii. To close conversations ix. Contributions by German mathematical scientists: Carl Friedrich Gauss , Wilhelm Leibniz and Albert Einstein .
Unit II	**Establishment of a new office**
	i. To understand articles of a noun (Grammer) ii. To name office furniture and colors iii. To fill basic details in graphics of quality analysis iv. To select and order office stationery v. To frame private emails and messages on social media
Unit III	**Official and unofficial meetings**
	Differences between official and unofficial clock hour To understand how to make official and unofficial appointments Vocabulary: Weekdays, months, seasons Grammar: Negative with nicht, preposition of time, conjunctions aber denn und oder
Unit IV	**Report Writing**
	i. To understand an email regarding industrial visit ii. To understand rules and regulations of an industrial visit iii. To fill in an organization chart iv. To talk about one's firm v. To describe about an industrial visit in a short email

References:

1. DaF im Unternehmen A1 Kurs – und Übungsbuch, Klett Verlag

Teaching pedagogy:

1. Guided listening and reading compression at individual level
2. Practicing oral skills in pairs
3. Discussions in group

Evaluation scheme

I Continuous Assessment (C.A.)– 40 Marks

1) **Assessment 1** (20 Marks)
2) **Assessment 2 (20 Marks)**

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester V
1.Discipline Specific Elective (DSE) Courses
4. Life Contingencies-I
(03 Credits)

Objectives

1. Studying mortality, Markov processes and survival models.
2. Using Microsoft Excel for modelling functions relevant to mortality and pension valuation.

Modules at a Glance

Life Contingencies paper I		
Sr. No.	**Modules**	**No. of Lectures**
1	Mortality studies	15
2	Stochastic processes	15
3	Survival models	15
4	Spreadsheet skills	15
	Total No. of Lectures:	**60**

Total number of lectures to be engaged 60 Lectures plus 30 Notional Lectures= 90 Lectures= 3 Credits

Sr. No.	Modules
1	**Mortality Studies**
	i. Various mortality functions. Probabilities of living and dying. The force of mortality. Estimation of μ_x from the mortality table. ii. Crude death rate, Age specific death rate and Standardized death rate. iii. Crude birth rate, General fertility rate, Age specific fertility rate & Total fertility rate. Gross & Net Reproduction rates. iv. Explain the principles of graduation for the construction of mortality tables v. Apply mortality experience of a pensioners' cohort to proportionately modify standard mortality rates to be used in a pension fund valuation vi. Evaluate the standard mortality table as a population model. vii. Calculate curtate and complete expectation of a life at various ages.
2	**Stochastic Processes**
	i. Apply multiple state Markov chain and Markov process models. ii. Derive maximum likelihood estimators for the transition intensities in models of transfers between states with piecewise constant transition intensities. iii. Apply the Cox regression model to appropriate hazard situations. iv. Understand time homogenous and time inhomogenous processes.
3	**Survival Models**
	i. Explain the concepts of survival models. ii. Calculate and interpret standard probability functions including survival and mortality probabilities, force of mortality, and complete and curtate expectation of life. iii. For models dealing with multiple lives and/or multiple states, explain the random variables associated with the model; calculate and interpret marginal and conditional probabilities, and moments. iv. Describe the principal forms of heterogeneity within a population and the ways in which selection can occur. v. Estimate empirical survival and loss distributions, e.g., using: a. Kaplan-Meier estimator, including approximations for large data sets b. Nelson Aalen estimator vi. Estimate transition intensities depending on age, exactly or using large sample approximations.
4	**Microsoft Excel**
	i. Logical, financial and statistical functions relevant to mortality tables and life expectancy at various ages. ii. Logical, financial and statistical functions relevant to life insurance contract's pricing iii. Logical, financial and statistical functions relevant to a pension fund valuation

	iv. Logical, financial and statistical functions relevant to an ESOP valuation

1. Actuarial Mathematics, Bowers, L. Newton, et. al. 2nd ISBN 0938959468, Society of Actuaries
2. Survival models and their estimation 1988 Actex Publications
3. Mathematics of Finance 2nd Edition Schaum's Outline Series Peter Zima, Robert Brows Tata McGraw-Hill Publishing Company Ltd.
4. Mortality Studies, WF Scott 2000 available at https://www.coursehero.com/file/8346708/Mortality-Studies-WF-Scott/
5. Life Contingencies by Alistair Neill, Institute of Actuaries Textbook, ISBN 978-0750609173, published by Butterworth-Heinemann Ltd
6. Modelling, analysis, design, and control of stochastic systems, by Kulkarni, Vidyadhar G. Springer
7. Life Contingencies by E. P. Spurgeon ISBN 1107648092, Cambridge University Press.
8. Learn Excel 2019 Essential Skills with the Smart Method, Mike Smart. ISBN 978-1909253346
9. Excel formulas and functions, M L Humphrey ISBN 978-1637440322

Evaluation scheme

I. Continuous Assessment (C.A.)– 40 Marks

1) **Assessment 1** (20 Marks)
2) **Assessment 2 (20 Marks)**

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester V
2.Core Courses (CC)
5. Customer Relationship Management Paper-
(04 Credits)

Objectives:

1. To help the Learners to understand the concepts of CRM and e-CRM.
2. To know the CRM practices in service sectors.
3. To understand the values of customer.

Course Outcome:

After completion of this course, the student will be able to

- Apply the concept of CRM, the benefits delivered by CRM, the contexts in which it is used, the technologies that are deployed and how it can be implemented.
- Implement how CRM practices and technologies enhance the achievement of marketing, sales and service objectives throughout the customer life-cycle stages of customer acquisition, retention and development whilst simultaneously supporting broader organizational goals.
- Implement various technological tools for data mining and also successful implementation of CRM in the Organizations
- design customer relationship management strategies by understanding customers' preferences for the long-term sustainability of the Organizations.

Modules at a Glance

Sr.No.	Modules	No. of Lectures
1	Introduction of CRM and its Fundamentals	20
2	Customer Acquisition	20
3	Customer Retention	20
4	CRM Mechanics	20
	Total	80

Total number of lectures to be engaged 80 Lectures plus 40 Notional Lectures= 120 Lectures= 4 Credits

TYBCom – Actuarial studies

Semester- V
Customer Relationship Management Paper-I

Sr.No.	Modules/Units
Unit I	**Introduction of CRM and its Fundamentals**
	i. Concept and Context of Relationship Management: Internal and External relationship management, Need and Importance of relation with customers and other stakeholders ii. Approach towards Marketing: A Paradigm Shift- Transition from Product focus to Customer focus, Transactional Vs Relationship Marketing, Linkage between customer satisfaction-Customer Loyalty and business performance, Relationship Management Theories, Building Brands through Relationship Marketing, Service Level Agreements. iii. Defining CRM, Levels of CRM, CRM as a strategic marketing tool, CRM significance to the stakeholders, Strategic CRM, Operational CRM, Analytical CRM, Collaborative CRM, and Models of CRM.
Unit II	**Customer Acquisition**
	i. Acquisition of new customer, understanding customer value, sources of customer value, Values from products, services, people, physical evidence, customer communication, Channels etc., customer value estimates, KPI of a customer acquisition program, Customer Touch Points, Customer Equity. ii. Conceptual frame work of Customer Relationship and its Management. Evaluation customer Relationship Marketing, Types of CRM – Win Back, Prospecting, Loyalty, Cross Sell and Up Sell, Significance and Importance of CRM in Modern Business Environment. iii. Concept of Loyalty at CRM: Definition of Loyalty, Customer Loyalty and Customer decency, Process of Developing Customer Loyalty. Status of CRM in India.
Unit III	**Customer Retention**
	i. Concept of Customer retention. Role of CRM in Customer in retention, Economics of customer retention, Managing customer retention or value retention/ Strategies of customer retention, ii. KPI of customer retention program, Terminating customer relationship and its strategies, Concept and Significance of Customer Loyalty. iii. Customer Life Cycle and Customer Life Time Value (CLTV), Recency, Frequency and Monetary Value (RFM) Analysis, Customer Loyalty

	Ladder, Impact Of Customer Defections, Types of Defectors, Strategies to reduce customer defections, CRM Framework- Switching.
Unit IV	**CRM Mechanics**
	i. Maintaining customer database, Desirable database attributes, Data marts, Data warehousing, Data integration, Data mining and Privacy issues. ii. Customer Portfolio Management-Concept and basic disciplines, Market segmentation-sales forecasting and CPM, CPM in B2B, Seven core customers' management strategies. **iii.** CRM and Customer Experience Management: Concept of Customer experience, experiential marketing strategies and Tactics, Customer experience and Role of CRM.

RECOMMENDED BOOK

Jagdish N Sheth, Parvatiyar Atul, G Shainesh, Customer Relationship Management: Emerging Concepts, Tools and Applications, 1st Edition, Tata McGraw Hill, June 2008

REFERENCE BOOKS

Judith W .Kincaid , Customer Relationship Management Getting it Right, Pearson Education

H.Peeru Mohamed , A Sagadevan, Custmer Relationship Management, A Step by Step Approach, Vikas Publishing House

Customer Centricity –Focus on right customer for strategic advantage, by Peter Fader, Wharton Digital Press, 2012

Evaluation scheme

I. Continuous Assessment (C.A.)– 40 Marks

1) Assessment 1 (20 Marks)

2) Assessment 2 (20 Marks)

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester V
3. Project Work I (04 Credits)

Objectives

1. Understanding the process of doing research is conducted from introduction to conclusion.
2. Learning about research methodology, literature review, data analysis and project appraisal.

Modules at a Glance

Project Work I		
Sr. No.	**Modules**	**No. of Lectures**
1	Introduction to research paper writing and Literature Review	15
2	Research Methodology and data analysis	15
3	Review papers	15
4	Project report and Presentation	15
	Total No. of Lectures:	**60**

Total number of lectures to be engaged 60 plus hours in Library, Field visit and Research Work = 120 Lectures= 3 Credits

Sr. No.	Modules
1	**Introduction to Research Paper Writing and Literature Review**
	Introduction- In this chapter Selection and relevance of the problem, historical background of the problem, brief profile of the study area, definition/s of related aspects, characteristics, different concepts pertaining to the problem etc can be incorporated by the learner.
2	**Research Methodology**
	i. A student is expected to generate independent knowledge, ideas, and dimensions as well as distil the existing theory from the research papers listed below.
3	**Review Papers**
	Literature Review- This chapter will provide information about studies done on the respective issue. This would specify how the study undertaken is relevant and contribute for value addition in information/ knowledge/ application of study area which ultimately helps the learner to undertake further study on same issue.
4	**Report and Presentation**
	Students are expected to draft two reports based on the three research paper options as provided below.

Viva will be conducted on the day of presentations.

Research paper review

At the end of the course, students should write a 750 words paper review on any two of the following three research papers :

1. Assessing the enabling environment for disaster risks financing – a country diagnostic toolkit, Asian Development Bank, 2020.

https://www.think-asia.org/bitstream/handle/11540/12131/disaster-risk-financing-country-diagnostics-toolkit.pdf?sequence=1

a. An appreciation of the principles of disaster risks financing,
b. The role of various types of insurance for disaster risks financing,
c. A country's macro- and meso-level interventions to finance disaster risks,
d. Tools to assess a country's macro- or public finance-readiness for disaster risk,
e. Coordinates of the tool to assess a country's meso- or insurance industry-readiness for disaster risks: Government Policy, Economic Conditions & Support Functions, Product

Availability & Affordability, Credibility of Insurance & Capital market stakeholders, Social Protection Policy, and Unlicensed & Informal Players.

2. Teaching ethics to actuaries, AF Marais, Actuarial Society of South Africa (2015). https://actuarialsociety.org.za/convention/convention2015/wp-content/uploads/2015/10/2015-Marais.pdf

a. Arguments for ethics education especially in the actuarial profession,
b. An appreciation of the 'value' proposition within normative skills,
c. A comparison of ethics education embodied in the medical and accounting professions,
d. Sequential integration of ethics into technical subjects,
e. Ethical dimensions: Cognitive competence, behavioural competence, managerial competence.

3. A Mathematician's Apology, G H Hardy, 1940. https://www.math.ualberta.ca/mss/misc/A%20Mathematician%27s%20Apology.pdf

a. Mathematics as an art and beauty as the first test of mathematics,
b. A commentary on the great mathematicians' contributions,
c. An appreciation of the difference between pure and applied areas,
d. The principles underlying elegant, timeless theorems viz. Euclid's "Infinity of primes", Fermat's "Two squares theorem on primes", Pythagoras' proof of "Irrationality of $\sqrt{2}$."
e. Skills that are relevant and irrelevant to pure mathematicians.

Evaluation scheme for Project- 04 Credits

Continuous Assessment (C.A.)– 40 Marks

3) Class test- 1 (20 Marks)

4) Class test-2 (20 Marks)

Semester End Examination (SEE)- 60 Marks

Two Paper review submission (750 words approx.)

The review should comprise:

- Outline of the theme
- Key ideas of the paper
- Own comprehension of a few ideas
- Relevance of the discussed ideas to actuarial work.

Viva will be conducted for both the submissions.

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme

With effect from the Academic Year 2021-2022

Semester VI

1. Discipline Specific Elective (DSE) Courses

1. Advanced Financial Mathematics II

(03 Credits)

Objectives

1. Capital requirement, capital modelling and time series.
2. Valuation and Pricing of options using different models like Black-Scholes model, binomial model. Learning in detail about credit risk.

Modules at a Glance

Advanced Financial Mathematics II		
Sr. No.	**Modules**	**No. of Lectures**
1	Capital and economic modelling	15
2	Option theory-1	15
3	Option theory-2	15
4	Credit risk models	15
	Total No. of Lectures:	**60**

Total number of lectures to be engaged 60 Lectures plus 30 hours in Notional Lectures = 90 Lectures= 3 Credits

Modules at a glance

Sr. No.	Modules
1	**Capital and Economic Modelling**
	i. Explain why financial institutions need capital and describe different capital measures, including regulatory capital and economic capital. (B2) ii. Describe the process of capital modelling iii. Describe different methods of risk aggregation and explain their relative advantages and disadvantages. iv. Describe and apply the main concepts underlying the analysis of time series models.
2	**Option Theory-1**
	i. Option pricing and valuations. ii. State what is meant by arbitrage and a complete market. iii. Outline the factors that affect option prices. iv. Show how to value a forward contract. v. Develop upper and lower bounds for European and American call and put options. vi. Explain what is meant by put-call parity. vii. Show how to use binomial trees and lattices in valuing options and solve simple examples. viii. Derive the risk-neutral pricing measure for a binomial lattice and describe the risk-neutral pricing approach to the pricing of equity options. ix. Explain the difference between the real-world measure and the risk-neutral measure. Explain why the risk-neutral pricing approach is seen as a computational tool (rather than a realistic representation of price dynamics in the real world). x. State the alternative names for the risk-neutral and state-price deflator approaches to pricing.
3	**Option Theory-2**
	i. Demonstrate an understanding of the Black–Scholes derivative-pricing model. ii. Explain what is meant by risk-neutral pricing and the equivalent martingale measure. iii. Derive the Black–Scholes partial differential equation both in its basic and Garman–Kohlhagen forms. iv. Demonstrate how to price and hedge a simple derivative contract using the martingale approach. v. Show how to use the Black–Scholes model in valuing options and solve simple examples. vi. Discuss the validity of the assumptions underlying the Black–Scholes model. vii. Describe and apply in simple models, including the binomial model and the Black–Scholes model, the approach to pricing using deflators and demonstrate its equivalence to the risk-neutral pricing approach. viii. Demonstrate an awareness of the commonly used option structures.

4	**Credit Risk Models**
	i. Explain the various approaches to bond valuation e.g., statistical factor-based, intensity-based (e.g., generator matrix), and capital-structure based (e.g., Merton model). ii. Evaluate the value of a bond using the structure based and intensity models. iii. Examine the transformation of transition intensity to probability of a bond's default and thereby on value. iv. Appreciate a bond's rating to its default transition intensity and probability.

References :

1. ActEd Study Material Subject CM1 2019 Actuarial Education Company, acted@bpp.com
2. ActEd Study Material Subject CM2 2019 Actuarial Education Company, acted@bpp.com
3. Derivatives Markets (3rd edition), Robert McDonald, Pearson India
4. Options, Futures and Other Derivatives, by John Hull and S. Basu, 9789352866595, Pearson Education.
5. An introduction to the mathematics of finance by McCutcheon, J. J., Scott, W. F., Heinemann, 1986. ISBN: 043491228X.
6. Pension Fund ESG Risk Disclosures: Developing Global Practice, International Actuarial Association 2020.
7. The Term Structure of Interest Rates, by Robert A. Jarrow, Annual Reviews 2009.

Evaluation scheme

I. Continuous Assessment (C.A.)– 40 Marks

1) **Assessment 1** (20 Marks)
2) **Assessment 2 (20 Marks)**

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester VI
1.Discipline Specific Elective (DSE) Courses
2. Investment Analysis II (03 Credits)

Objectives

1. Understanding asset Liability modelling, risk budgeting, portfolio management, mean-variance portfolio theory.
2. Learning about investment disclosure, financial accounting, and unitisation.

Modules at a Glance

Investment Analysis II		
Sr. No.	**Modules**	**No. of Lectures**
1	Investment strategy and performance measurement	15
2	Investment accounting and disclosures	15
3	Portfolio management	15
4	Unitisation	15
	Total No. of Lectures:	**60**

Total number of lectures to be engaged 60 Lectures plus 30 Notional Lectures= 90 Lectures= 3 Credits

Sr. No.	Modules
1	**Investment Strategy and Performance Measurement**
	i. Explain how asset/liability modelling can be used to develop an appropriate investment strategy ii. Explain methods of quantifying the risk of investing in different classes and sub-classes of investment iii. Explain the use of a risk budget for controlling risks in a portfolio iv. Analyse the performance of an investment portfolio relative to a benchmark v. The greater decision between asset allocation and stock selection especially in efficient markets vi. Risk decomposition between diversifiable and non-diversifiable components vii. Adjusted optimization techniques for risk-adjusted returns.
2	**Investment Accounting and Disclosures**
	i. Disclosures in India: Fact sheets (MF, life insurers), under IFRS-adapted accounting standards for proprietary assets, employee benefit fund assets. ii. Examine the mapping of disclosures to appropriate regulator guidance. iii. Disclosure trends: NGFM (Network for Greening the Financial System), TCFD (Task force on Climate related Financial Disclosures) iv. Assess the use of valuation models for accounting of equity, debt, property, ESOP, etc. v. Assess the accounting for financial instruments e.g., Ind AS 109 (financial investments' measurement and recognition on Balance Sheet), vi. Accounting under Ind AS 102 (share based payments measurement and recognition for accounting purposes)
3	**Portfolio Management**
	i. Explain the principles and objectives of investment management and analyse the investment needs of an institutional or individual investor ii. Describe methods for the valuation of asset portfolios and explain their appropriateness in different situations iii. Explain how to use mean-variance portfolio theory to calculate an optimum portfolio and describe the limitations of this approach iv. Use mean-variance portfolio theory to calculate the expected return and risk of a portfolio of many risky assets, given appropriate inputs v. Explain asset pricing models for modelling the required rate of returns (e.g., Capital Asset Pricing Model) and valuation of an equity share (e.g., dividend growth model). vi. Explain the properties of single and multifactor models of asset returns.

	vii. Explain the assumptions of mean-variance portfolio theory and its principal results
4	**Unitisation**
	i. Explain the basic techniques of unitization e.g., in mutual funds/ unit trusts and life insurance ii. Appreciate the benefits of unitization on transparency, monitoring and valuation iii. Evaluate the benefits and costs of unitization of financial assets iv. Examine the effect of unitization on secondary financial transactions e.g., duration measurement of bond funds, pledge of equities, bonds, mutual funds, ETF.

References :

1. ActEd Study Material Subject CM1 2019 Actuarial Education Company, acted@bpp.com
2. ActEd Study Material Subject CM2 2019 Actuarial Education Company, acted@bpp.com
3. Derivatives Markets (3rd edition), Robert McDonald, Pearson India
4. Options, Futures and Other Derivatives, by John Hull and S. Basu, 9789352866595, Pearson Education.
5. An introduction to the mathematics of finance by McCutcheon, J. J., Scott, W. F.
6. Heinemann, 1986. ISBN: 043491228X.
7. Behavioural Finance, by Prasanna Chandra, ISBN 938981287, McGraw Hill India.
8. The Behavioural Investor by Daniel Crosby, ISBN 9388423623, Jaico Publishers.
9. Pension Fund ESG Risk Disclosures: Developing Global Practice, International Actuarial Association 2020.
10. The Term Structure of Interest Rates, by Robert A. Jarrow, Annual Reviews 2009.

Evaluation scheme

I. Continuous Assessment (C.A.)– 40 Marks

1) Assessment 1 (20 Marks)

2) Assessment 2 (20 Marks)

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B. Com in Actuarial Studies Programme

With effect from the Academic Year 2021-2022

Semester VI

1.Discipline Specific Elective (DSE) Courses

3. Business Communication in German– II (03 Credits)

Objectives:

1. To prepare young adults for German business communication
2. To prepare young adults to deal with German clients in business situations

Course Outcome:

Students will

1. learn vocabulary and basic grammar for business situations
2. learn about portraits of German companies
3. be able to understand basic business conversations
4. be able to write business emails
5. be able to communicate with their business clients

Modules at a Glance

Sr. No.	Module	No. of Lectures
1	Business over lunch and visit to a client office	15
2	Celebration of milestones in a German company	15
3	Trainee: Experience in different departments	15
4	Organisational Visit and Report	15
	Total	60

Total number of lectures to be engaged 60 Lectures plus 30 Notional Lectures= 90 Lectures= 3 Credits

T. Y. B. Com
Semester – VI
German Business Communication Paper – II

Sr. No.	Units
Unit I	**Business meetings (outside office)**
	i. Planning a lunch discussion ii. understand and initiate a small talk on weather, family and hobbies iii. understand a menu card iv. select and ordering a German meal v. payment etiquettes in a restaurant
Unit II	**Celebration of milestones in a German company**
	i. To understand an invitation to company event and how to accept or decline it ii. to understand email about events management iii. to give suggestions and to make suggestions iv. to understand a welcome speech v. to understand a valedictory speech
Unit III	**Trainee: Experience in different departments**
	i. To understand a sitemap ii. To understand Timetable of Transportation iii. To match tasks with various departments iv. To understand protocols v. To understand a travel expense report vi. To give and understand computer commands vii. To understand a newspaper interview with a trainee viii. To answer questions during an interview
Unit IV	**Organisational visit and report**
	i. To understand flight and train connections ii. To understand weather charts and weather reports iii. To understand conversation about formal and informal clothing iv. To deliver a speech on company development

References:

1. DaF im Unternehmen A1 Kurs – und Übungsbuch, Klett Verlag

Teaching pedagogy:

1. Guided listening and reading compression at individual level
2. Practicing oral skills in pairs
3. Discussions in group

Evaluation scheme

I Continuous Assessment (C.A.)– 40 Marks

1) **Assessment 1** (20 Marks)
2) **Assessment 2 (20 Marks)**

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester VI
1. Discipline Specific Elective (DSE) Courses
4. Life Contingencies II (03 Credits)

Objectives

1. Projecting expected cashflows of contingent contracts like life insurance or pensions.
2. Accounting requirement of defined benefit pensions and employee benefit schemes.\
3. Using "R" software to construct models.

Modules at a Glance

Life Contingencies II		
Sr. No.	**Modules**	**No. of Lectures**
1	Actuarial applications I	15
2	Actuarial applications II	15
3	Defined benefits pensions: measurement, recognition and disclosures	15
4	'R' software	15
	Total No. of Lectures:	**60**

Total number of lectures to be engaged 60 Lectures plus 30 Notional Lectures= 90 Lectures= 3 Credits

Sr. No.	Modules
1	**Actuarial Applications** -1
	i. Define simple contracts for contingent payments dependent on the state of a single entity (for example life insurance or annuity benefits) on the occurrence of a particular event; develop and evaluate formulae for the means and variances of the present values of the payments under these contracts, assuming constant deterministic interest. ii. Apply survival models to simple problems in long-term insurance, pensions and banking such as calculating the premiums and reserves for a life insurance contract, and the potential defaults on a book of loans for a bank.
2	**Actuarial Applications**-11
	i. Define simple contracts for contingent payments dependent on the state of multiple entities; develop and evaluate formulae for the means of the present values of the payments under these contracts, assuming constant deterministic interest. ii. Describe and apply methods of projecting and valuing expected cash flows that are contingent upon multiple decrement events. iii. Describe and apply projected cash flow techniques in pricing, reserving, and assessing profitability of contracts for contingent payments with appropriate allowance for expenses (including life insurance and pension fund applications).
3	**Defined Benefits Pensions: Measurement, Recognition and Disclosures**
	i. Accounting requirements of Measurement, Recognition and Disclosures under Ind AS 19, IAS 19 and ASC 715 (US GAAP) ii. Difference between Ind AS 19, IAS 19 and ASC 715 (US GAAP) on measurement, recognition and disclosures. iii. Explain the differences in the results on earnings and other comprehensive income arising from the varying treatment under Ind AS 19, IAS 19 and AS 715 (US GAAP).
4	**'R' Software**
	i. Construct simple models in 'R' using standard Indian mortality tables ii. Apply 'R' in longevity studies by taking sample data of joint and single lives and analysing the effect on a population's longevity. iii. Explain how 'R' could be applied for high intensity financial data e.g., using daily stock prices for volatility estimates and efficient markets hypothesis testing. iv. Use 'R' to construct a term structure of interest rates.

References:

1. Actuarial Mathematics, Bowers, L. Newton, et. al. 2nd ISBN 0938959468, Society of Actuaries
2. Survival models and their estimation 1988 Actex Publications
3. Mathematics of Finance 2nd Edition Schaum's Outline Series Peter Zima, Robert Brows Tata McGraw-Hill Publishing Company Ltd.
4. Mortality Studies, WF Scott 2000 available at https://www.coursehero.com/file/8346708/Mortality-Studies-WF-Scott/
5. Life Contingencies by Alistair Neill, Institute of Actuaries Textbook, ISBN 978-0750609173, published by Butterworth-Heinemann Ltd
6. Modelling, analysis, design, and control of stochastic systems, by Kulkarni, Vidyadhar G. Springer
7. Life Contingencies by E. P. Spurgeon ISBN 1107648092, Cambridge University Press.
8. Practical Data Science with R, Nina Zumel and John Mount
9. Data Mining Applications with R, Yanchang Zhao; Yonghua Cen
10. R for Everyone: Advanced Analytics and Graphics, Jared P. Lander
11. Statistics Using R by Purohit, Gore and Deshmukh, 2008, Narosa Publications
12. Actuarial Statistics- An Introduction Using R, Shailaja R Deshmukh

Evaluation scheme

I. Continuous Assessment (C.A.)– 40 Marks

1) **Assessment 1** (20 Marks)
2) **Assessment 2 (20 Marks)**

II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester VI
2.Core Courses (CC)
5. Customer Relationship Management Paper-II (04 Credits)

Objectives (for the learners):

1. To help the Learners to understand Future Trends in CRM and e-CRM.
2. To know the framework of evolving CRM.
3. To understand CRM in B2C and B2B Market.

Course Outcome:

After completion of this course, the student will be able to

- Apply the concept of CRM in B2C and B2B.
- Implement how CRM practices and technologies enhance the achievement of marketing, sales and service objectives throughout the customer life-cycle stages of customer acquisition, retention and development whilst simultaneously supporting broader organizational goals.
- Apply principles underlying the requirements of the professional standards and guidance relevant to actuaries practising in Indian health and care operations
- Privacy, Ethics issues of CRM

Modules at a Glance

Sr.No.	Modules	No. of Lectures
1	Overview of CRM in B2C and B2B Market	20
2	Implementation of CRM and Future Trends in CRM	20
3	CRM emerging concepts and perspective –	20
4	Architecture of CRM	20
	Total	80

Total number of lectures to be engaged 80 Lectures plus 40 Notional Lectures= 120 Lectures= 4Credits

TYBCom – Actuarial studies
Semester- VI
Customer Relationship Management Paper-II

Sr.No.	Modules/Units
Unit I	**Overview of CRM in B2C and B2B Market**
	i. Service business characteristics and classification, Service recovery, CRM in Banking Industry, Hospitality Industry, Aviation Industry, Telecom and Retail industry. ii. CRM in Consumer durable Industry and its application. - White Goods, common CRM Tools in Practice and improvisation for Quality Service Assurance. iii. Importance of CRM in B2B markets, Key Account Management, Supply channel Management, Internal CRM and Employee relationship management
Unit II	**Implementation of CRM and Future Trends in CRM**
	i. CRM Implementation Process, Evaluation of CRM process, Challenges in CRM implementation, Customer Care Management through Information Technology Tools – Electronic Point of Sales (ePOS) , Sales Force Automation ii. Emerging trends in CRM, Social CRM, e-CRM, Challenges involved in formulating and implementing e-CRM strategies, iii. Multichannel CRM, Role of Social media in CRM, Six E's of e-CRM,, Mobile CRM, Artificial Intelligence (AI) with CRM System.
Unit III	**CRM emerging concepts and perspective –**
	i. Introduction : A cost benefit analysis –CRM benefits, CRM Cost-customer value- customer life time value-issues in calculating CLV Customer profitability ii. principles underlying the requirements of the professional standards and guidance relevant to actuaries practising in Indian health and care operations iii. Privacy, Ethics issues of CRM

Unit IV	Architecture of CRM
	i. CRM Technology and Data Platforms, Database and Data Management, and the role of Business Intelligence (BI) in CRM. ii. Customer relationship management practices in Indian service sectors- Relevance of CRM for Hospital Services; Customer Relationship Management in Banking and Financial Services; CRM in Insurance Sector iii. Careers in industry

References:

- Customer Relationship Management – Concepts and Technologies by Francis Buttle, 2nd Edition, Butterworth Heinemann, Elsevier
- Relationship Management – Text and Cases, S. Shajahan, TMGH.
- J N Sheth, AtulParvatiyar, G. Shainesh, 2001, Customer Relationship Management, Tata McGraw Hill
- Customer Relationship Management: Concepts and Cases, Second Edition, Alok Kumar Rai PHI learning Pvt Ltd, New Delhi

Suggested Reference Books:-

Handbook of Relationship Marketing by JagdishSheth and AtulParvatiyar, Response Books, Sage Publications.

Zikmund, McLEOD, Gilbert, Customer Relationship Management

Customer Relationship Management- Concepts and Technology, Second Edition, Francis Buttle, Elsevier, Sabre foundation

Brown, Stanley A 2001, Customer Relationship Management, John Wiley& Sons

Anderson, Kristin , 2002, Customer Relationship Management, Tata McGraw-Hill

Suggested URL: 1. https://swayam.gov.in/nd2_imb20_mg09/

Evaluation scheme

I. Continuous Assessment (C.A.)– 40 Marks

1) Assessment 1 (20 Marks)
2) Assessment 2 (20 Marks)
II .Semester End Examination (SEE)- 60 Marks

QUESTION PAPER PATTERN OF SEE

Maximum Marks: 60 Marks

Time: 2 Hours

Note: 1)Attempt all Questions

2) All Questions carry equal marks

Question No	Particulars	Marks
Q-1 (Unit I)	A) B) C)	15 Marks
Q-2 (Unit II)	A) B) C)	15 Marks
Q-3 (Unit III)	A) B) C)	15 Marks
Q4 (Unit IV)	A) B) C)	15 marks

Syllabus of courses of T.Y.B.Com in Actuarial Studies Programme
With effect from the Academic Year 2021-2022

Semester VI

3. Project Work I (04 Credits)

Project Work

Aim: To equip students to independently write a 4000-6000 words research paper with an actuarial or insurance or investment or pension. The paper can be either theoretical or application oriented. The paper should comprise a) An abstract with a title and key words, b) The definition of the idea or problem, c) Exposition of the idea or problem, d) e) Findings, and e) Conclusion. It is expected that the paper is supported by appropriate citations/ references, and figures/ tables.

The learner is required to select **any one topic** from the three elective options given below:

- Advanced Financial mathematics
- Investment analysis
- Life contingencies

A Model Structure of the Project Work will be shared with the learners by the Research Guide.

Project Work (Model Structure of the Project Work)

• Chapter No. 1: Introduction In this chapter Selection and relevance of the problem, historical background of the problem, brief profile of the study area, definition/s of related aspects, characteristics, different concepts pertaining to the problem etc can be incorporated by the learner.

• Chapter No. 2: Research Methodology This chapter will include Objectives, Hypothesis, Scope of the study, limitations of the study, significance of the study, Selection of the problem, Sample size, Data collection, Tabulation of data, Techniques and tools to be used, etc can be incorporated by the learner.

• Chapter No. 3: Literature Review This chapter will provide information about studies done on the respective issue. This would specify how the study undertaken is relevant and contribute for value addition in information/ knowledge/ application of study area which ultimately helps the learner to undertake further study on same issue.

• Chapter No. 4: Data Analysis, Interpretation and Presentation This chapter is the core part of the study. The analysis pertaining to collected data will be done by the learner. The application of selected tools or techniques will be used to arrive at findings. In this, table of information's, presentation of graphs etc. can be provided with interpretation by the learner.

• Chapter No. 5: Conclusions and Suggestions In this chapter of project work, findings of work will be covered and suggestion will be enlisted to validate the objectives and hypotheses. Note: If required more chapters of data analysis can be added.

• Bibliography

• Appendix