

# **SEMESTER- III**

## Business Mathematics

### BCH: DSC- 3.1

**Objective:** The course aims to familiarize the learners with the basic mathematical tools with special emphasis on applications to business and economic situations.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. analyse how matrices are used as mathematical tools in representing a system of equations.
2. explain differential calculus to solve simple business problems.
3. evaluate business problems involving complex linear relationships between decision variables and their determining factors.
4. explain mathematical formulation and solution of problems related to finance including different methods of interest calculation, future and present value of money.
5. develop programming for business problems involving constrained optimisation.

#### Course Contents:

Unit	Unit wise weightage of marks (in %)	C&K*	A&A**
<b>Unit 1: Matrices and Determinants</b>	20	√	√
<b>Unit 2: Basic Calculus</b>	15	√	√
<b>Unit 3: Advanced Calculus</b>	25	√	√
<b>Unit 4: Mathematics of Finance</b>	20	√	√
<b>Unit 5: Linear Programming</b>	20	√	√

\*C&K- Comprehension & Knowledge

\*\*A&A – Analysis & Application

#### Unit 1: Matrices and Determinants

Overview of Matrices. Solution of a system of linear equations (having a unique solution and involving not more than three variables) using matrix inversion method and Cramer's Rule

Leontief Input Output Model (Open Model Only).

#### Unit 2: Calculus-I

Concepts and rules of differentiation. Concept of Marginal Analysis: Marginal Revenue, Marginal Cost. Concept of Elasticity of demand and supply.

Application of Maxima and Minima problems: Revenue, Cost, Profit, Economic Order Quantity, Optimal trade in time.

### **Unit 3: Calculus-II**

Partial Differentiation: Partial derivatives up to second order. Homogeneity of a function and Euler's theorem. Production Function: Returns to factor, Returns to scale. MRTS and Elasticity of Substitution.

Application of Maxima and Minima problems involving two independent variables.

Integration: Nature of commodities and partial elasticity of demand, Applications of marginal analysis, Consumer Surplus and Producer Surplus.

### **Unit 4: Mathematics of Finance**

Rates of interest: nominal, effective and their inter-relationships in different compounding situations.

Compounding a sum using different types of rates. Applications relating to Depreciation of assets and average due date.

Types of annuities: ordinary, due and deferred - Discrete and continuous. Perpetuity. Determination of future and present values using different types of rates of interest. Applications relating to Capital Expenditure and Leasing.

### **Unit 5: Linear Programming**

Formulation and Assumptions of LPP, Solution by Simplex Method- maximization and minimization cases. Shadow prices of the resources. Special Cases: Identification of unique and multiple optimal solutions, unbounded solution, infeasibility and degeneracy.

### **Practical Exercises:**

The learners are required to:

1. identify the decision-making variables and assess their functional relationship with other variables affecting the decision in a hypothetical business and economic situation.
2. assess how the use of matrices help in deciding about competing alternatives.
3. identify and solve business problems as an application of linear programming.
4. gather information about various deposit and loan schemes of banks to find out interest rate differentials, and compounded value.
5. gather information about annuity schemes in the investment markets like periodic home mortgage payments, insurance payments and pension payments, life insurance products as an annuity.

### **Assessment Criteria**

The Assessment for this paper would include a theory exam of 50 marks, Practical Exam of 25 marks and Internal assessment of 25 marks. Internal assessment will include 20 marks for class tests/assignments, and 5 marks for attendance. There shall be 3 Credit Hrs. for Lectures + one Credit Hr. (Two Practical Periods per week per batch) for P.Use of a simple calculator is allowed. Proofs of theorems/ formulae are not required.

**Suggested Readings:**

- Anthony, M., & Biggs, N. (1996). Mathematics for Economics and Finance. Cambridge: Cambridge University Press.
- Ayres, F. J. (1963). Theory and Problems of Mathematics of Finance. New York: McGraw Hill Publishing.
- Budnick, P. (1986). Applied Mathematics for Business, Economics, & Social Sciences. New York: McGraw Hill Publishing.
- Dowling, E. (2011). Introduction to Mathematical Economics. New York: McGraw Hill Publishing Kapoor.
- Ghosh & sinha(2018). Business Mathematics and statistics. Oxford University Press.
- S.K. Sharma and Kaur, Gurmeet. Business Mathematics. Sultan Chand & Sons (P) Ltd, New Delhi.
- Singh, J. K., Business Mathematics, New Delhi, Himalaya Publishing House.
- Thukral, J. K., Mathematics For Business Studies, New Delhi, Mayur Paperbacks.
- V. K., & Sancheti, D. C. (2014). Business Mathematics, Theory & Applications. Delhi: S. Chand Publishing.

**Note: Learners are advised to use the latest edition of readings.**

## Financial Management

### BCH: DSC- 3.2

**Objective:** The course aims to enable students to acquire knowledge of principles and practice of financial management.

**Learning Outcomes:** After completion of the course, learners will be able to:

1. analyse the conceptual framework of financial management and will have an insight into the concept of time value of money and risk and return.
2. analyse the capital budgeting process and demonstrate decision making abilities using different techniques of capital budgeting.
3. compute the cost of capital; critically analyse and understand different capital structure theories and factors affecting capital structure decision of a firm.
4. analyse and understand different theories of dividend and factors affecting dividend policy.
5. examine the concept of working capital and estimate working capital requirements of a firm; critically examine and decide optimum credit policy for a firm.

**Course Contents:**

Unit	Unit wise weightage of marks (in %)	C&K*	A&A**
<b>Unit 1: Financial Management: An Overview</b>	10	√	√
<b>Unit 2: Capital Budgeting Decision</b>	25	√	√
<b>Unit 3: Cost of Capital and Financing Decision</b>	30	√	√
<b>Unit 4: Dividend Decision</b>	15	√	√
<b>Unit 5: Working Capital Decision</b>	20	√	√

\*C&K- Comprehension & Knowledge

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#### **Unit 1: Financial Management: An Overview**

Nature, scope and objectives of financial management. An overview of time value of money and risk and return.

#### **Unit 2: Capital Budgeting Decision**

The Capital Budgeting Process, Cash Flow Estimation, Different techniques of Capital budgeting: Payback Period Method, Discounted Payback Period Method, Accounting Rate of Return, Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index.

#### **Unit 3: Cost of Capital and Financing Decision**

**Cost of Capital:** Estimation of components of cost of capital: Method for calculating cost of equity, Cost of retained Earnings, Cost of Debt, Cost of Preference Capital, Weighted Average Cost of Capital (WACC) and Incremental (Marginal) Cost of Capital.

**Capital Structure:** Theories of Capital Structure (Net Income, Net Operating Income, MM Hypothesis, Traditional Approach). Operating, Financial and Combined Leverage. EBIT-EPS Analysis. Determinants of Capital Structure.

#### **Unit 4: Dividend Decision**

Theories for relevance and irrelevance of dividend decision for corporate valuation- MM Approach, Walter's Model, Gordon's Model. Determinants of Dividend policy.

#### **Unit 5: Working Capital Decision**

Concepts of Working Capital, Operating & Cash Cycles, Risk-return Trade off, working capital estimation, Receivables Management.

**Note: Use of Spreadsheet should be encouraged for doing basic calculations for various topics in the course and giving students subject related assignments for their internal assessment purposes.**

#### **Suggested Readings:**

- Brealey, Richard A, Myers Stewart C, Allen Franklin, Mohanty, Pitabas. Principles of Corporate Finance. McGraw Hills Education.
- Khan, M.Y. and Jain, P.K. Financial Management: Text and Problems. Tata McGraw Hills, New Delhi.
- Kothari, R. Financial Management: A Contemporary Approach. Sage Publications Pvt. Ltd. New Delhi.
- Maheshwari, S. N. *Elements of Financial Management*. Sultan Chand & Sons.
- Maheshwari, S. N. *Financial Management – Principles & Practice*. Sultan Chand & Sons.
- Pandey, I. M. (2022). *Essentials of Financial Management*, (5<sup>th</sup> ed.). Pearson.
- Rustagi, R.P. *Fundamentals of Financial Management* Taxmann. New Delhi.
- Sharma, S.K. and Sareen, Rachna. *Fundamentals of Financial Management* Sultan Chand & Sons (P) Ltd. New Delhi.
- Singh, J.K. *Financial Management: Theory and Practice*. Galgotia Publishing House New Delhi.
- Singh, Surender and Kaur, Rajeev. *Fundamentals of Financial Management*. SCHOLAR Tech Press. New Delhi.
- Tulsian, P.C. and Tulsian, B. *Financial Management*, S. Chand. New Delhi.

#### **Additional Resources:**

- Chandra, P. *Financial Management: Theory and Practice*. Tata McGraw Hills, New Delhi.
- Ross, Stephen A, Westerfield, Randolph and Jefferey, Jaffe. *Corporate Finance*. Tata McGraw Hills.
- Srivastava, Rajeev and Mishra, Anil. *Financial Management*: Oxford University Press. UK.

- VanHorne, James, C, and John, Wachowicz. Fundamentals of Financial Management. Pearson Education.

**Note: Learners are advised to use the latest edition of readings.**

## Principles Of Marketing

### BCH: DSC- 3.3

**Objective:** The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing and to provide knowledge about various developments in the marketing.

**Learning Outcomes:** After completing the course, learners will be able to:

1. develop understanding of basic concepts of marketing, marketing philosophies and environmental conditions affecting marketing decisions of a firm.
2. explore the dynamics of consumer Behaviour and process of market selection through STP.
3. analyse the process of value creation through marketing decisions involving product development.
4. analyse the process of value creation through marketing decisions involving product pricing and its distribution.
5. analyse the process of value creation through marketing decisions involving product promotion and also to equip them with the knowledge of various developments in marketing area that may govern marketing decisions of a firm.

#### Course Contents:

Unit	Unit Wise Weightage of Marks (in %)	C&K*	A & A**
Unit 1: Introduction to Marketing and Marketing Environment	20	√	√
Unit 2: Consumer Behaviour and Market Selection	20	√	√
Unit 3: Product Decisions and New Product Development	20	√	√
Unit 4: Pricing Decisions and Distribution Decisions	20	√	√
Unit 5: Promotion Decisions and	20	√	√



<b>Developments in Marketing</b>			
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\*C&K- Comprehension & Knowledge

\*\*A&A – Analysis & Application

### **Unit 1: Introduction to Marketing and Marketing Environment**

**Introduction to Marketing:** Scope and Importance; Core concepts of marketing; Marketing Philosophies; Services Marketing, Marketing Mix.

**Marketing Environment:** Need for studying marketing environment; Micro environmental factors- company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environmental factors – demographic, economic, natural, technological, politico-legal and socio- cultural.

### **Unit 2: Consumer Behaviour and Market Selection**

**Consumer Behaviour:** Need for studying consumer Behaviour; Stages in Consumer buying decision process; Factors influencing consumer buying decisions.

**Market Selection:** Choosing market value through STP. Market Segmentation- bases of segmenting consumer markets. Market Targeting, Product Positioning – concept and bases

### **Unit 3: Product Decisions and New Product Development**

**Product Decisions:** Concept and classification; Levels of Product. Designing value: Product-mix, Branding- types, significance, and qualities of good brand name; Packaging and Labeling- types and functions; Product support services.

**New Product Development:** New product development process; Product life cycle – concept and marketing strategies.

### **Unit 4: Pricing Decisions and Distribution Decisions**

**Pricing Decisions:** Objectives; Factors affecting price of a product; Pricing methods; Pricing strategies.

**Distribution Decisions:** Delivering Value: Channels of distribution- types and functions; Wholesaling and retailing; Factors affecting choice of distribution channel; Logistics decisions.

### **Unit 5: Promotion Decisions and Developments in Marketing**

**Promotion Decisions:** Communicating Value: Communication process; Importance of Promotion. Promotion-mix tools advertising, personal selling, sales promotion, public relations, publicity and direct marketing; Integrated Marketing Communication.

**Developments in Marketing:** Sustainable Marketing- concept and issues. Rural marketing- characteristics and rural marketing mix. Social marketing- concept and issues. Digital marketing- concepts and tools.

**Practical Exercises:**

The learners are required to:

1. analyse the marketing mix strategy of a durable good/ non-durable good/ service/ idea/ event/ organisation/ people.
2. select any product and analyse its segmentation strategy in comparison to its immediate competitive product.
3. examine the marketing strategies followed by companies to prolong the maturity stage and defer its decline.
4. suggest an appropriate distribution strategy of a product of your choice.
5. prepare a marketing mix for a product of your choice to be targeted to a rural market.
6. study the promotional strategies followed by companies selling products through digital mode.

**Suggested Readings:**

- Baines Et AL(2021).Fundamentals of Marketing.Oxford University Press.
- Etzel, M. J., Walker, B. J., Stanton, W. J., Pandit, A. (2010). Marketing. Mc Graw Hill.
- Jain, P & Singhal, N. Principles of Marketing. Scholar Tech Press, Delhi.
- Kapoor, N. (2021). Principles of Marketing. Prentice Hall of India.
- Kotler, P., Armstrong, G., Agnihotri, P. (2018). Principles of Marketing. Pearson Education. Indian edition.
- Kotler, P., Chernev, A., Keller, K. L. (2022). Marketing Management. United Kingdom: Pearson Education.
- Levy, M., Grewal, D. (2022). Marketing. United States: McGraw-Hill Education.
- Mamoria C.B., Bhatacharya A.,Marketing Management. Kitab Mahal, Delhi
- Sharma, K., Aggarwal S. (2021). Principles of Marketing. Taxmann Publications.