

1.2.1.Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

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1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

Programme Code	Programme Name	Year of Introduction	Status of implementation of CBCS / elective course system (Yes/No)	Year of implementation of CBCS / elective course system	Link to the relevant document
MBA	Master of Business Administration	1998	YES	2004 - 2005	Session 2021: https://ptu.ac.in/wp-content/uploads/2022/08/MBA-Upto-4th-Sem.-2021-onwards-affiliated-colleges.pdf Session 2004: https://ptu.ac.in/wp-content/uploads/2020/10/mba-04.pdf
MCA	Master of Computer Applications	2002	YES	2003 - 2004	Session 2021: https://ptu.ac.in/wp-content/uploads/2022/05/MCA-2021-Upto-4th-Sem.pdf Session 2003: https://ptu.ac.in/wp-content/uploads/2020/10/mca-03.pdf
BBA	Bachelor of Business Administration	2005	YES	2018 - 2019	Session 2021: https://ptu.ac.in/wp-content/uploads/2022/08/BBA-upto-6th-Sem.-2021-onwards-1.pdf Session 2018: https://ptu.ac.in/wp-content/uploads/2022/08/BBA-1-6-semester-Batch-2018-and-onwards-Main-campus.pdf
BCA	Bachelor of Computer Applications	1999	YES	2018 - 2019	Session 2021: https://ptu.ac.in/wp-content/uploads/2021/04/BCA-1st-to-6th-1.pdf Session 2018: https://ptu.ac.in/wp-content/uploads/2021/12/BCA-2021.pdf
B.Com.(H.)	Bachelor of Commerce(Honours)	2020	YES	2018 - 2019	Session 2018: https://ptu.ac.in/wp-content/uploads/2020/10/B_Com_%20Hons%20Batch%202018%20(15-06-2020).pdf

Study Scheme and Syllabus of
Master of Business Administration
(MBA)

Batch 2021 onwards
Affiliated Colleges



Department of Academics
IK Gujral Punjab Technical University

I.K.G. Punjab Technical University
MBA Batch 2021 onwards

Courses & Examination Scheme:

First Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
MBA 101-18	Core Theory	Foundations of Management	4	0	0	40	60	100	4
MBA 102-18	Core Theory	Managerial Economics	4	0	0	40	60	100	4
MBA 103-18	Core Theory	Quantitative Techniques	4	0	0	40	60	100	4
MBA 104-18	Core Theory	Accounting for Management and Reporting	4	0	0	40	60	100	4
MBA 105-18	Core Theory	Business Environment and Indian Economy	4	0	0	40	60	100	4
MBA 106-18	Core Theory	Business Ethics and CSR	4	0	0	40	60	100	4
MBA 107-18	Core Theory	Business Communication for Managerial Effectiveness	4	0	0	40	60	100	4
	TOTAL		28	0	0	280	420	700	28

Second Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
MBA 201-18	Core Theory	Business Analytics for Decision Making	4	0	0	40	60	100	4
MBA 202-18	Core Theory	Legal Environment for Business	4	0	0	40	60	100	4
MBA 203-21	Core Theory	Marketing Management	4	0	0	40	60	100	4
MBA 204-18	Core Theory	Human Resource Management	4	0	0	40	60	100	4
MBA 205-18	Core Theory	Production and Operations Management	4	0	0	40	60	100	4
MBA 206-21	Core Theory	Corporate Finance and Policy	4	0	0	40	60	100	4
MBA 207-18	Core Theory	Entrepreneurship and Project Management	4	0	0	40	60	100	4
MBAGE 201-18	General Elective	Computer Applications for Business	2	0	0	40	60	100	2
	TOTAL		30	0	0	320	480	825	30

Note: After second semester every student will be required to undergo summer training of six weeks duration in the corporate sector.

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Third Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
MBA 301-18	Core Theory	Organizational Behaviour & Design	4	0	0	40	60	100	4
MBA 302-18	Core Theory	Marketing Research	4	0	0	40	60	100	4
	Specialization X	Elective-I	4	0	0	40	60	100	4
		Elective -II	4	0	0	40	60	100	4
	Specialization Y	Elective -I	4	0	0	40	60	100	4
		Elective -II	4	0	0	40	60	100	4
HVPE101-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules	3	0	0	40	60	100	3
HVPE 102-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules (Lab/ Seminar)	0	0	2	25	--	25	1
MBA 303-18	Core Theory	Seminar on Summer Training Report	2			50	-	50	2
MBA 304-18		Comprehensive Viva-Voce				-	50	50	2
	TOTAL		27	0	2	355	470	825	32

Note:

- ✓ Students will opt any two of the following specialization groups (Dual specialization) and he/she must study 02 papers of each of these specializations as electives in Semester III.
- ✓ For conducting Viva -voce Experts must be called as per IKG PTU norms

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
MBA 941-18	Elective	Data Mining for Business Decisions	4	0	0	40	60	100	4
MBA942-18	Elective	E-Commerce and Digital Markets	4	0	0	40	60	100	4

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Specialization V: Operations Management

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
MBA 951-18	Elective	Operations Strategy	4	0	0	40	60	100	4
MBA 952-18	Elective	Operation Research Applications	4	0	0	40	60	100	4

Specialization VI: Business Analytics

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
MBA 961-18	Elective	Marketing Analytics	3	1	0	40	60	100	4
MBA 962-18	Elective	Data Sciences Using R	3	1	0	40	60	100	4

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Fourth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
MBA 401-18	Core Theory	Corporate Strategy	4	0	0	40	60	100	4
	Specialization X	Elective -III	4	0	0	40	60	100	4
		Elective -IV	4	0	0	40	60	100	4
	Specialization Y	Elective -III	4	0	0	40	60	100	4
		Elective -IV	4	0	0	40	60	100	4
MBA 402-18	Project / Dissertation	Viva-Voce for Project / Dissertation	4			--	100	100	4
MBA 403-18	Core Theory	Workshop on Indian Ethos	2	0	0	40	60	100	2
	TOTAL		22	0	4	240	360	600	26

Note:

- Further two papers each of the two specialization groups (as chosen in the 3rd Semester) will also be studied as electives in the 4th semester.
Thus the student must study a **total of 04 papers of each of the Dual specialization (in MBA in 3rd and 4th Semester)**
- For conducting Viva -voce Experts must be called as per IKG PTU norms

Specialization I: Marketing

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
MBA 923-18	Elective	Integrated Marketing Communication and Sales Management	4	0	0	40	60	100	4
MBA 924-18	Elective	Retail Management	4	0	0	40	60	100	4
MBA 925-18	Elective	International and Social Media Marketing	4	0	0	40	60	100	4
MBA 926-18	Elective	Product and Brand Management	4	0	0	40	60	100	4

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Specialization II: Finance

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
MBA 913-18	Elective	Behavioural Finance	4	0	0	40	60	100	4
MBA 914-18	Elective	Mergers, Acquisition and Corporate Restructuring	4	0	0	40	60	100	4
MBA 915-18	Elective	International Finance and Financial Derivatives	4	0	0	40	60	100	4
MBA 916-18	Elective	Taxation and Personal Financial Planning	4	0	0	40	60	100	4

Specialization III: Human Resource Management

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
MBA 933-18	Elective	International Human Resource Management	4	0	0	40	60	100	4
MBA 934-18	Elective	Strategic HRM	4	0	0	40	60	100	4
MBA 935-18	Elective	Leadership and Team Dynamics	4	0	0	40	60	100	4
MBA 936-18	Elective	Performance and Compensation Management	4	0	0	40	60	100	4

Specialization IV: Management Information Systems

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
MBA 943-18	Elective	Managing Software Projects	4	0	0	40	60	100	4
MBA 944-18	Elective	Managing Digital Information and Transformation	4	0	0	40	60	100	4
MBA 945-18	Elective	IT Consulting	4	0	0	40	60	100	4
MBA 946-18	Elective	Strategic Management of IT	4	0	0	40	60	100	4

Specialization V: Operations Management

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
MBA 953-18	Elective	Supply Chain & Logistic Management	4	0	0	40	60	100	4
MBA954-18	Elective	Quality Toolkit For Managers	4	0	0	40	60	100	4

Specialization VI: Business Analytics

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
MBA 963-18	Elective	Data Visualization for Managers	3	1	0	40	60	100	4
MBA964-18	Elective	Business Forecasting	3	1	0	40	60	100	4

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Program Educational Objectives (PEOs)

PEO1: To inculcate knowledge in students with experiential learning and prepare the for advance study and life long learning.

PEO2: To develop strategic understanding of fundamental principles of business and competencies in the area of accounts, marketing, interpersonal skills, human resource management and entrepreneurship.

PEO3: To train the students for dynamic business environment and apply their perspectives through innovation and creativity.

PEO4: To develop competencies in qualitative and quantitative techniques to analyse the business data as well as developing an understanding of economic, legal and social environment of Indian business.

PEO5: To inculcate leadership skills, professionalism, effective communication skills, interpersonal skills and team work in students so as to enable them to manage and collaborate in diverse work environments.

PEO6: To develop responsiveness to social issues and ability to identify business solutions to address the same. Students will also be able to understand the issues of business ethics.

Program Outcomes (POs)

The program outcomes specify the knowledge, skills, values and attitudes students are expected to attain in courses or in a program. The six outcomes of MBA program are as below:

1. **Business Environment and Domain Knowledge:** Economic, legal and social environment of Indian business.. Graduates are able to improve their awareness sand knowledge about functioning of local and global business environment and society. This helps in recognizing the functioning of businesses, identifying potential business opportunities, evolvment of business enterprises and exploring the entrepreneurial opportunities.

2. **Critical thinking, Business Analysis, Problem Solving and Innovative Solutions:**Competencies in quantitative and qualitative techniques. Graduates are expected to develop skills on analysing the business data, application of relevant analysis, and problem solving in other functional areas such as marketing, business strategy and human resources.

3. **Global Exposure and Cross-Cultural Understanding:** Demonstrate a global outlook with the ability to identify aspects of the global business and Cross Cultural Understanding.

4. **Social Responsiveness and Ethics:** Developing responsiveness to contextual social issues / problems and exploring solutions, understanding business ethics and resolving ethical dilemmas. Graduates are expected to identify the contemporary social problems, exploring the opportunities for social entrepreneurship, designing business solutions and demonstrate ethical standards in

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organizational decision making. Demonstrate awareness of ethical issues and can distinguish ethical and unethical behaviors.

5. Effective Communication: Usage of various forms of business communication, supported by effective use of appropriate technology, logical reasoning, articulation of ideas. Graduates are expected to develop effective oral and written communication especially in business applications, with the use of appropriate technology (business presentations, digital communication, social network platforms and so on).

6. Leadership and Teamwork: Understanding leadership roles at various levels of the organization and leading teams. Graduates are expected to collaborate and lead teams across organizational boundaries and demonstrate leadership qualities, maximize the usage of diverse skills of team members in the related context.

(Source: Model Curriculum for Management programs (MBA) January, 2018, AICTE, New Delhi. www.aicte.india.org)

MBA 101-18

FOUNDATIONS OF MANAGEMENT

Objective: This course presents a thorough and systematic coverage of management theory and practice. The course aims at providing fundamental knowledge and exposure of the concepts, theories and practices in the field of management. It focuses on the basic roles, skills and functions of management, with special attention to managerial responsibility for effective and efficient achievement of goals.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Describe fundamental concepts and principles and conventions of accounting.

CO2: Explain the role and responsibilities of managers and adapt to the various styles of management across organizations.

CO3: Develop analytical abilities to face the business situations.

CO4: Apply various tools that would facilitate the decision making process in the business.

CO5: Develop peer based learning and working in groups and teams.

CO6: To comprehend the application of various controlling techniques in management.

Unit I

Introduction: Definition, nature, scope, importance, Functions of management and manager, Managerial roles and skills.

Evolution of management thought and Management thinkers: Classical Approach, Neo Classical Approach, Quantitative approach, Behavioral approach, Systems approach, Contingency approach. Contributions of F. W. Taylor, Henry Fayol, Mary Parker Follet, Chester Bernard, Max Weber, Peter, F. Drucker, Gilbreths, Henry Gantt, Abraham Maslow, Herzberg and McGregor.

Unit II

Planning: Importance, types of plans, and process of planning, business forecasting, MBO: Concept, importance, process, benefits and limitations.

Strategic management: Nature, importance, purpose, types, process and major kinds of strategies, McKinsey's 7-S Approach.

Decision-Making: Importance, types, steps and approaches, Decision Making in various conditions, Decision tree.

Unit III

Organizing: Concept and process of organizing, Formal Vs Informal organization, Organizational structure: Types of Organizational structure, Bases of Departmentalization. **Line & Staff:** concept, line-staff conflict.

Authority & Power: concept, responsibility and accountability. **Delegation:** concept, importance, factors affecting delegation, effective delegation, Span of Management,

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Decentralization and centralization, **Staffing**, importance and process. **Coordination:** Concept, importance, difficulties and techniques to ensure effective coordination.

Unit IV

Control: Concept, importance, characteristics, process of control, types and techniques of control.

Comparative study: Japanese Management and Z-culture of American Companies, Chinese Style Management,

Modern management techniques: an overview of various latest techniques: Business process Re-engineering, Business outsourcing, knowledge management, E-Business Management.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- Harold Koontz, and Heinz Weihrich, *Essentials of Management: An International Perspective*, New Delhi, McGraw-Hill, 2010.
- Richard L Daft, *The New Era of Management*, New Delhi, Thomson, 2007.
- Stephen P Robbins, Mary Coulter and Neharika Vohra, *Managemnt*, New Delhi, Pearson, 2011.
- V S P Rao & V H Krishna, *Management*, Excel Books
- P.Subba Rao, *Principles of Management*, Himalaya Publishing
- Dubrin, *Management: Concepts & Cases*, Cengage Learning
- Ferrell, *Business: A Changing World*, Tata McGraw Hill
- Mukherjee, *Principles of Management and Organisational behaviour*, Tata McGraw Hill.
- Bateman, T. S., and Snell, S. A. (2008). *Management* TMH

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**MBA 102-18
Managerial Economics**

Objective: The objective of the paper is to acquaint the students with the economic concepts and principles and to enable them to use them to address business problems in a globalized economic environment.

Course Outcomes: After completing this course,, students shall be able to:

CO1: Understand the basic concepts of economics and relate it with other disciplines and identify the importance of economics in managerial decision making.

CO2: Measure price elasticity of demand, understand the determinants of elasticity and apply the concepts of price, cross and income elasticity of demand.

CO3: Analyze the demand and supply conditions and assess the position of a company and explain the concepts of factors of production, collective bargaining and the underlying theories of factors of production.

CO4: Recognize the relationship between short-run and long-run costs and will also be able to establish the linkage between production function and cost function

CO5: Compare and contrast four basic types of market i.e. perfect, monopoly, monopolistic and oligopoly and can determine price and output under different market types.

CO6: Understand basic concepts of macroeconomics and shall be able to measure national income using different approaches.

Unit-I

Introduction to Managerial Economics: Managerial Economics: Meaning, Nature, Scope & Relationship with other disciplines, Role of managerial economics in decision Making, Opportunity Cost Principle, Production Possibility Curve, Incremental Concept, Scarcity Concept.

Demand: Demand and its Determination: Demand function; Determinants of demand; Demand elasticity – Price, Income and cross elasticity, Use of elasticity for analyzing demand, Demand estimation. **Demand forecasting,** Demand forecasting of new product.

Indifference Curve Analysis: Meaning, Assumptions, Properties, Consumer Equilibrium, Importance of Indifference Analysis, Limitations of Indifference Theory.

Unit-II

Production Function : Production function Meaning, Concept of productivity and technology, Short Run and long run production function, Isoquants; Least cost combination of inputs, Producer's equilibrium; Returns to scale; Estimation of production function. **Theory of Cost:** Cost Concepts and Determinants of cost, short run and long run cost theory, Modern Theory of Cost, Relationship between cost and production function. **Revenue Curve:** Concept of Revenue, Different Types of Revenues, concept and shapes of Total Revenue ,Average revenue and marginal revenue,

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Relationship between Total Revenue ,Average revenue and marginal revenue, Elasticity of Demand and Revenue relation.

Unit-III

Market Structure: Market Structure: Meaning, Assumptions and Equilibrium of Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly: Price and output determination under collusive oligopoly, Price and output determination under non-collusive oligopoly, Price leadership model. **Supply:** Introduction to supply and supply curves. **Pricing:** Pricing practices; Commodity Pricing: Economics of advertisement costs; Types of pricing practices. **Factor Pricing:** Demand and supply of factors of production; Collective bargaining, Concept of rent, profit, interest- Rate of return and interest rates; Real vs. Nominal interest rates. Basic capital theory–Interest rate and return on capital, Measurement of profit.

Unit-IV

Product market: Saving and Investment function, Consumption function, Aggregate supply and Aggregate demand, Investment multiplier, Foreign trade and budget multiplier. **Money market:** Motive for holding money; Liquidity preference, Money demand, Money market equilibrium. IS-LM Analysis: Derivation of nominal IS-LM and equilibrium. **National Income:** Conceptual Framework, Measures of National Income, Methods of Measurement, Limitations of National Income. **Consumption Function:** Meaning, and Nature, Determinants and Measures to Raise Propensity to Consume. Keynes Psychological Law of Consumption - Meaning, Properties and Implications, **Inflation:** Meaning, Types, Theories, Causes, Effects and Control, Unemployment Trade off, **Trade Cycles:** Concept and Theories of trade cycles.

Note: Relevant Case Studies will be discussed in class.

Suggested Readings/ Books:

- ✓ D. M. Mithani, *Managerial Economics Theory and Applications*, Himalaya Publication
- ✓ Peterson and Lewis, *Managerial Economic*, Prentice Hall of India
- ✓ Gupta, *Managerial Economics*, Tata McGraw Hills
- ✓ Geetika, *Managerial Economics*, Tata McGraw Hills
- ✓ Froeb, *Managerial Economics*, Cengage Learning
- ✓ Koutsoyiannis, A, *Modern Micro Economics*, Palgrave Macmillan Publishers, New Delhi. 2.
- ✓ Thomas Christopher R., and Maurice S. Charles, *Managerial Economics – Concepts and Applications*, 8th Edition,
- ✓ Peterson and Lewis, *Managerial Economics*, 4th Edition, Prentice Hall of India Pvt. Ltd., New Delhi.
- ✓ Shapiro, *Macro Economics*, Galgotia Publications.
- ✓ H. L Ahuja *Advanced Economic Analysis*, S. Chand & Co. Ltd, New Delhi. 7.
- ✓ G.S Gupta, *Managerial Economics*, Tata McGraw Hill.
- ✓ Goel Dean, *Managerial Economics*, Prentice Hall of India, Pvt. Ltd., New Delhi
- ✓ K.K. Dewett, *Modern Economic Theory*, S. Chand Publication

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MBA 103-18
QUANTITATIVE TECHNIQUES

Course Objective: The objective of this paper is to acquaint the students with quantitative and operations research techniques that play an important role in managerial decision-making.

CO1: To have a deeper and rigorous understanding of fundamental concepts in business decision making under subjective conditions.

CO2: To apply the concepts of central tendency and variation in managerial decision making.

CO3: To enhance knowledge in probability theory and normality and its distribution concepts.

CO4: To understand the concept of correlation regression analysis and their applications.

CO5: To apply the learnt techniques to build the best fit route of transportation for carrying schedule of activities.

CO6: To apply the operations techniques in reality to market scenario.

Unit I

Introduction to Statistics: Meaning, Definition in singular and plural sense, Features of statistics, Importance, Functions, Scope and Limitations of Statistics.

Measures of Central Tendency: Mathematical averages including arithmetic mean, geometric mean and harmonic mean, properties and applications. Positional Averages: Mode and median (and other partition values including quartiles, deciles and percentile. Graphic presentation of measures of central tendency.

Measures of Variation: Absolute and relative measures. Range, quartile deviation, mean deviation, standard deviation and their coefficients. Properties of Standard Deviation and Variance. Moments Concept, calculation and Significance. Skewness: Meaning, Measurement using Karl Pearson and Bowley Measures. Concept of Kurtosis.

Unit II

Simple Correlation Analysis: Meaning of Correlation: Simple, multiple and partial, linear and non linear correlation, correlation and causation, scatter diagram, Pearson's correlation coefficient, calculation and properties of coefficient, Rank Correlation.

Simple Regression Analysis: Meaning of Regression, Principle of least square and regression analysis, Calculation of regression coefficient, properties of regression coefficient, Relationship between correlation and regression coefficient.

Theory of Probability: Meaning of Probability, Approaches to the calculation of probability, calculation of event probabilities, Addition and Multiplication Laws of Probability (Proof not required), Conditional Probability and Bayes' Theorem (Proof not required).

Unit III

Probability Distribution: Binomial Distribution, Poisson Distribution and Normal Distribution with their properties and applications.

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Linear Programming: Formulation of linear programming problems. Solution by Graphic method and by using Simplex method algorithm including Big-M method. Business applications of LP. Degeneracy. Duality. Post-optimality analysis.

Game Theory: Two-person zero-sum games. Games of pure strategies and Games of mixed strategies. Rule of dominance. Graphic solution to games. Business applications.

Unit IV

Transportation: Transportation problem: Initial feasible solution using North-west Corner Rule; Least Cost Method; and Vogel's Approximation Method. Testing optimality using MODI method.

Assignment Problems: Assignment problem: Solution using Hungarian Assignment Method.

Project Scheduling: PERT/CPM: Project networks. Scheduling of projects with known activity times – Critical path and scheduling of activities.

Suggested Readings:

- Levin, Richard and David S. Rubin. "*Statistics for Management*". 7th Edition, Prentice Hall of India, New Delhi.
- Render, B. and Stair, R. M. Jr., "*Quantitative Analysis for Management*", 7th Edition, Prentice-Hall of India, New Delhi.
- Siegel, Andrew F, *Practical Business Statistics*. International Edition, 5th Edition (2001), McGraw Hill Irwin.
- Berenson, L.M., Krehbiel, T.C., Vishwanathan, P.K. and Levine, D.M., "Business Statistics: A First Course", 4th Edition (2008), Pearson Education.
- Anderson, David R., Dennis J. Sweeney and Thomas A., Williams, *An Introduction to Management Science*, South-Western.
- Taha, Hamdy A, *Operations Research – An Introduction*, Prentice-Hall of India Private Ltd., New Delhi.
- Hillier, Frederick S. and Gerald J. Lieberman, *Introduction to Operations Research*, McGraw Hill India (Pvt) Ltd.
- Vohra, N.D., *Quantitative Techniques in Management*, McGraw Hill Education Private Limited, New Delhi.
- Sharma, J. K., *Operations Research; Theory and Applications*, Macmillan Indian, New Delhi.
- Winston, Wayne L., S. Christian Albright and Mark Broadle, *Practical Management Science*, Duxbury – Thompson learning, Australia.
- Gupta C B, Gupta V, "*An Introduction to Statistical Methods*", 23rd Edition (1995), Vikas Publications.

Note: Latest edition of the readings may be used.

MBA 104-18
ACCOUNTING FOR MANAGEMENT AND REPORTING

Objective: This course aims to familiarize the students with various accounting concepts, tools and techniques and its application in managerial decision making. It also acquaints the students with the latest accounting practices and reporting standards.

Course Outcomes:

CO1 – To familiarize the students about the basic concepts, principles and process of accounting and to make them aware about the formats of financial statements of public limited, banking and insurance companies.

CO2 – To explain the students about the concepts of cost and various intricacies for preparing the cost sheet.

CO3 – To acquaint students about the decision making techniques using the concepts of marginal costing, standard costing and budgetary control.

CO4 – To enable the students to analyse financial statements using various tools for financial analyse and interpret the financial position of a business organization.

CO5 – To familiarize the students about the contemporary developments in the accounting.

CO6 – To make students aware about the recent developments in financial reporting and regulations so that they may understand and appreciate the concept and process of harmonization of financial reporting practices.

Unit I

Introduction to Accounting: Accounting as an information system, Accounting Process, concepts, convention and principles of Accounting, Role of accountant in an organization. Branches of accounting: Financial, Cost and Management Accounting and their inter-relationships, Exposure to format of schedule VI of Public Limited, Banking and Insurance Companies.

Unit II

Cost Accounting: Meaning, Objectives, Scope and Classification of costs, Preparation of Cost Sheet. **Marginal Costing** –Concept of Marginal Cost; Marginal Costing Vs Absorption Costing; **Cost-Volume-Profit Analysis;** Break-Even Analysis; Assumptions and its practical applications for managerial Decision making with special reference to pricing, make or buy decisions, selection of Sales-Mix.

Standard Costing: Introduction, Variance Analysis, types of Variances- Materials and Labour Variances. **Budgetary Control-** Types of Budgets Master budget Zero base budgeting, Fixed Budget and Flexible Budgets, Zero Base Budget, Participative Budget and Performance Budget.

Unit III

Financial Statement Analysis: Concepts and objectives, **Tools of Financial Analysis:** trend analysis, common size statements, comparative statements, Ratio analysis- Liquidity, solvency, profitability, turnover ratios, Cash flow statements and funds flow statements.

Unit IV

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Recent Developments in Accounting: Introduction to concept of Price Level Accounting, Human Resource Accounting, Transfer Pricing. Target Costing, Kaizen costing, Activity based costing, Life Cycle Costing.

Financial Reporting and Regulations: Meaning, objectives, principles and environment of financial reporting; Introduction to Accounting Standards issued by ICAI, US GAAPs, International Accounting Standards, IFRS, Applicability of various accounting standards, comparison and the process of harmonization.

Suggested Readings:

- Ahuja, N. L. and Dawar, V. 'Financial Accounting and Analysis' Taxmann Publishers
- Khan and Jain, 'Management Accounting', Tata McGraw.
- J. Madegowda, 'Accounting for Managers', Himalaya Publishing.
- 4. Horngren, Charles T., Gary L. Sundem and William O. Stratton, "Introduction to Management Accounting", Pearson Education Asia.
- Ramchandran, 'Financial Accounting for Management', Tata McGraw
- Jawahar Lal, 'Accounting for Management', Himalaya Publishing
- Pandey, I.M, "Essentials of Management Accounting", Vikas Publishing House.
- Sehgal, A. and Sehgal, D., '*Advanced Accounting – Financial Accounting I*', Taxmann Publications
- Shukla, M.C. and Grewal, T.S. *Advanced Accounts Vol. I & Vol. II*, S. Chand and Co.
- Horngren, C. T., Sundem, G. L. and Stratton, W. O., '*Introduction to Management Accounting*', Pearson Education
- Elliott, B. and Elliott, J., '*Financial Accounting and Reporting*', Pearson
- Gibson, C. H., '*Financial Reporting Analysis (Using Financial Accounting Information)*', South-Western Publications
- Christopher, N. and Parker, R., '*Comparative International Accounting*', Prentice Hall
- Bhattacharya, S.K. and John Dearden, "Accounting for Management – Text and Cases", Vikas Publishing House.
- Arora, M.N., "Cost Accounting – Principles and Practice", Vikas Publishing House.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 105-18
BUSINESS ENVIRONEMENT AND INDIAN ECONOMY

Course Objective: This course aims at providing knowledge of the environment in which businesses operate, the economic, political, legal and social framework with a basic idea of the Indian Economy.

Course Outcomes: At the end of the course, student should be able to

CO 1: Outline how an entity operates in a complex business environment.

CO 2: To systematically learn impact of legal & regulatory, macroeconomic, cultural, political, technological, global and natural environment on Business enterprise.

CO 3: To examine the critical opportunities and threats that arise from an analysis of external business conditions by applying scenario planning to synthesize trends prevailing in the external environment.

CO 4: To describe how various types of economic systems play a significant role in the success of a business.

CO 5: To understand the nature of Indian Economy and various issues relating to Indian Economy having a direct or indirect impact on business environment.

CO6: To discuss various development strategies in India.

UNIT I

Business Environment: Meaning, Types: Internal Environment; External Environment; Micro and Macro Environment, Components of Business Environment. **Political Environment:** Three political institutions: Legislature, Executive and Judiciary, Fundamental rights, Directive Principles, Rationale and extent of state intervention.

Economic Environment: Concept, features of various economic systems, New Industrial policy and industrial licensing, new economic policies, aspects of economic reforms and their effects on business and emerging economies. Effect of recession on Business and remedies for that, Economic Planning in India: Objectives, Strategies and Evaluation of current five year plan, Monetary and Fiscal Policy.

UNIT II

Legal Environment: Company Regulatory Legislations in India, FEMA, EXIM policy, Competition Law, Right to Information Act 2005.

Public Sector in India: Concepts, Philosophy and Objectives, Performance, Problems and Constraints. Disinvestment and Privatisation, Joint sector and Cooperative sector in India, Deficit Financing and its implications for the Indian Economy; Analysis of current year Annual Budget.

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Consumerism: Role of Consumer Groups with Special Reference to India; Consumer Protection Act, 1986 with Latest Amendments.

Ecological Environment: Concepts of Green Management, Global Warming, Carbon Foot Printing, The Environment Protection Act 1986.

UNIT III

Technological Environment: Impact of Technology on Business, Technological Policy, Intellectual Property Rights, Import of Technology, Appropriate Technology, Problems in Technology Transfer.

International Environment: Emergence of Globalisation, Control of Foreign Direct Investment, Benefits and Problems from MNCs. WTO, its role and functions, Implications for India. Trading Blocks, Foreign Trade: SEZ (Special Economic Zones), EPZ (Export processing zone), EOU (*Export Oriented Units*), Dumping and Anti-Dumping measures.

Introduction to Indian Economy: Colonialism and Development of Indian Economy, Framework of Indian Economy, Demographic Features and Indicators of Economic Growth and Development, Rural-Urban Migration and issues related to Urbanization, Poverty debate and Inequality, Nature, Policy and Implications.

Unit IV

Unemployment-Nature, Central and State Government's policies, policy implications, Employment trends in Organized and Unorganized Sector

Development Strategies in India: Agricultural- Pricing, Marketing and Financing of Primary Sector, Changing structure of India's Foreign Trade. The Economic Policy and Infrastructure Development: Energy and Transport, Social Infrastructure- Education, Health and Gender related issues, Social Inclusion, Issues and policies in Financing Infrastructure Development.

Suggested Readings:

- Paul Justin, Business Environment, Latest Edition, McGraw Hill Education, New Delhi.
- V.K. Puri & S.K. Misra, Economic Environment of Business, Latest Edition, Himalaya Publishing House, New Delhi.
- A.C. Fernando, Business Environment, Latest Edition, Pearson Publication, New Delhi.
- V. Neelamegam, Business Environment, Latest Edition, Vrinda Publications, Delhi.
- Francis Cherunilam, Business Environment, Latest Edition, Himalaya Publishing House, New Delhi.
- K. Aswathappa, Essentials of Business Environment, Latest Edition, Himalaya Publishing House, New Delhi.
- Govt. of India, Five Years Plan Documents.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 106-18
BUSINESS ETHICS AND CORPORATE SOCIAL RESPONSIBILITY

Objective: This Paper introduces students to the relationship between business and ethics, and tries them to understand how ethical principles could influence management decisions. It also signifies the concept of CSR and its implications on business.

Course Outcomes: At the end of the course, the student will be able to:

CO1: To integrate and apply contemporary Ethics & Governance issues in a business context

CO2: To analyse and apply ethics to contemporary business practices.

CO3: To analyse key perspectives on corporate social responsibility and their application.

CO4: To evaluate different corporate ownership structures and their key governance features.

CO5: To understand the ethical decision making, ethical reasoning, the dilemma resolution process.

CO6: To analyse and apply corporate governance perspectives to contemporary business practices.

Unit I

Business Ethics: Characteristics, Principles, Types, Importance, Factors highlighting the importance of Business Ethics, Myths about Business Ethics. Ethical Values, Theories of Ethics, Absolutism verses Relativism, Teleological approach, the Deontological approach, Kohlberg's six stages of moral development (CMD), Code of Ethics.

Business Ethics and Social Responsibilities of the firm - relationship of the firms with customers, competitors, stockholders, dealers and suppliers. Ethics v/s Ethos, Indian v/s Western Management, Globalisation and Business Ethics. Emerging issues of Business Ethics.

Unit II

Ethical Dilemma; Characteristics, ethical decision making, ethical reasoning, the dilemma resolution process.

Ethical Considerations in Marketing, Ethics in Accounting and Finance, Ethical Implications at Top Level. Ethical considerations in Human Resource Management, Environmental Ethics.

Note: Relevant Case Studies regarding ethical issues in Marketing, HRM, Accounting and Finance and Environment Management should be discussed in the class.

Unit III

Corporate Social Responsibility: Concept, Definition, Need, Arguments in favour of and against CSR. Historical Phases of Corporate Social Responsibility, Perspectives of CSR. Models of CSR, Drivers of CSR, Corporate Governance, Business Ethics and CSR.

Corporate Social Responsibility and Corporate Sustainability: Meaning, Need and importance of Sustainability, Sustainability Case Studies-Triple Bottom Line (TBL).

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Corporate Sustainability Reporting Frameworks- Global Reporting Initiative Guidelines, National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business.

Unit IV

Corporate Social Responsibility within the organisation, CSR and Society, Strategic Planning and CSR, Environmental Aspects of CSR, CSR under the Companies Act, 2013, CSR Practices in India, Case Studies of Major CSR Initiatives.

Corporate Governance: Introduction, Need, Models.

References:

- ✓ Fernando, A. C. (2010). *Business Ethics and corporate governance*. Pearson Education.
- ✓ Velasquez, M. G. (2011). *Business Ethics: Concepts and Cases..* PHI Learning.
- ✓ Gosh, B. N. (2009). *Business Ethics and Corporate Governance*. Tata McGraw Hill. T
- ✓ Thomas M. Garrett - *Business Ethics* - The times of India Press Bombay.
- ✓ Peter Pratley - *The essence of Business Ethics* - prentice Hall of India (P) Ltd., New Delhi.
- ✓ Chackraborty S.K. - *Ethics in Management - Vedantic Perspectives* - Oxford University Press, Delhi.
- ✓ Keith Davis *Business and Society* Mc Graw Hill.

BUSINESS COMMUNICATION FOR MANAGERIAL EFFECTIVENESS

Objective: This course presents communication as integral to management and as a critical component for success in the workplace. The students will develop a foundation for designing effective messages, both written and oral, from concept to delivery. They will use various communication models to identify objectives, analyze audiences, choose information, and create the most effective arrangement and channel for that message. Particularly, the course emphasizes elements of persuasive communication: how to design messages for diverse and possibly resistant audiences and how to present that information in a credible and convincing way.

Specifically, students will practice drafting and editing clear, precise, and readable written business documents as well as learn to design documents to make information easily accessible to a busy, executive-level reader. In addition, they will develop and deliver an individual presentation, using appropriate and effective visual support, in which they will present a persuasive argument that demonstrates relevance and benefits to an audience at different levels of expertise or interest and will learn and practice group communication.

Course Outcome:

Course Outcomes: At the end of the course, the student will be able to:

CO1 - To understand the basics of communication and its process, and the various barriers in the communication.

CO2 – To learn the listening skills and comprehend the value of business etiquettes

CO3– To comprehend Non – Verbal communication skills and its application for effective Communication.

CO4 – To learn the skills of writing effective business messages, letters and reports

CO5– To develop the presentation skills and learning to organize and structure a Presentation using visual aids

CO6 – To prepare the students for interview , employment messages and resume writing skills

UNIT - 1

Understanding the Foundations of Business Communication: Business Communication concept, Communication Models, Communication Process, Characteristics of effective business communication, Barriers in communication environment, Communication and Ethics, Cross Cultural Communication;

Guidelines for successful collaborative writing, Social networking technologies in business communication, Importance of listening, business etiquette & nonverbal Communication

UNIT - II

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The Three-Step Writing Process: Importance of analyzing the situation before writing a message, Information-gathering options, Information organization, Writing Business Communication: Adapting to your audience, Crafting brief messages, Crafting messages for electronic media, Writing routine and positive messages, Writing negative messages; Planning, Writing, and Completing Reports and Proposal and Emails.

UNIT – III

Designing and Delivering Oral and Online Presentations: Developing oral and online presentations, Enhancing presentations with slides and other visual aids, Just-A-Minute Presentation, Individual/Group Presentations, Feedback and overcoming Glossophobia, Group discussion.

UNIT - IV

Writing Employment Messages and Interviewing for Jobs: Employment strategy, Planning, writing and completing your resume, Applying and Interviewing for Employment: Understanding, preparing and follow-up, Role Play and Simulation games – Employer - employee and Interviewer – interviewee relationship.

Suggested Readings:

- Penrose/Rasberry/Myers *Business Communication for Managers (5th edition)* Cengage Learning.
- Courtland/John/Roshan *Business Communication Today (13th edition)* Pearson
- Rizvi *Effective Technical Communication* Tata Mcgraw Hills
- Raymond/Marie/Kathryn/Neerja *Business Communication* Tata Mcgraw Hills

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MBA Batch 2021 onwards
MBA 201-18

Business Analytics for Decision Making

Course Objective: The course aims at equipping students with an understanding of the research process, tools and techniques in order to facilitate managerial decision making.

Course Outcomes: At the end of the course, the student will be able to:

CO1: To have a deeper and rigorous understanding of fundamental concepts in business decision making under subjective conditions

CO2: To enhance knowledge in probability theory and normality and its distribution concepts

CO3: To conduct research surveys through multiple regression and multiple correlation

CO4: To design a good quantitative purpose statement and good quantitative research questions and hypotheses

CO5: To know the various types of quantitative sampling techniques and conditions to use.

CO6: To utilize the time series method to predict the future of sales in a concern.

Unit I

Introduction to Statistics: Meaning, Importance, Applications of inferential statistics in managerial decision making. **Collection of Data:** concept of primary data and secondary data, sources of primary data and secondary data, **Classification and Tabulation of Data:** Concept and types of classification, construction of frequency distributions, tabulation of data: role of tabulation, parts of table, rules of tabulation, review of table, types of table.

Sampling: Concept, definitions, census and sampling, probability and non probability methods of sampling, relationship between sample size and errors.

Unit II

Sampling Distributions: Concept and standard error.

Hypothesis Testing: Formulation of hypothesis, procedure of hypothesis testing, errors in testing of hypothesis, tests of significance for large samples, tests of significance for small samples, application of t-test, Z-test, F-test and Chi-square test and Goodness of fit, ANOVA.

Techniques of association of attributes.

Unit III

Business Forecasting: Introduction, Role of forecasting in business, Steps in forecasting and methods of forecasting.

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Correlation: Partial and Multiple correlation.

Regression Analysis: Multiple regression analysis, Testing the assumptions of regression: multicollinearity, heteroscedasticity and autocorrelation.

Unit IV

Index Number: Definition, importance of index number in managerial decision making, methods of construction, tests of consistency, base shifting, splicing and deflation, problems in construction.

Time Series Analysis: Meaning, component and, methods of time series analysis. Trend analysis: Least square method, linear and non linear equations, applications of time series in business decision making.

Suggested Readings:

- ✓ Levins, Krehbiel, *Business Statistics*, Pearson Berenson
- ✓ Levin & Rubin, *Statistics for Management*, Prentice Hall
- ✓ S P Gupta, *Statistical Methods*, Sultan Chand
- ✓ Beri, *Business Statistics*, Tata Mc Graw Hill
- ✓ Croucher, *Statistics: Making Business Decisions*, Tata McGraw Hill
- ✓ C.R. Reddy, *Quantitative Techniques for Management Decisions*, Himalaya Publishing
- ✓ Anderson Statistics for Business & Economics, Cengage Learning
- ✓ Levin, Richard and David S. Rubin. “*Statistics for Management*”. 7th Edition, Prentice Hall of India, New Delhi.
- ✓ Render, B. and Stair, R. M. Jr., “*Quantitative Analysis for Management*”, 7th Edition, Prentice–Hall of India, New Delhi.
- ✓ Siegel, Andrew F, *Practical Business Statistics*. International Edition, 5th Edition (2001), McGraw Hill Irwin.
- ✓ Berenson, L.M., Krehbiel, T.C., Vishwanathan, P.K. and Levine, D.M., “*Business Statistics: A First Course*”, 4th Edition (2008), Pearson Education.

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MBA Batch 2021 onwards

MBA 202-18
Legal Environment for Business

Course Objective: The objective of this paper is to give an exposure to students about important commercial, corporate and taxation laws, so that they are able to relate the impact of these legal enactments on business in an integrated manner.

Course Outcomes: Following are the expected outcomes of the course:

1. Students shall be able to understand the legal and regulatory framework of business environment.
2. Students shall be able to identify the fundamental legal principles behind contractual agreements.
3. Students shall be able to understand the legal provisions of sales of goods.
4. Students shall be able to understand the concept of negotiable instruments as well as rules pertaining to crossing, transferring and dishonouring of negotiable instruments.
5. Students shall have understanding of legal rules governing admission, retirement and death of partner and dissolution of partnership firm.
6. Students shall be able to understand the legal framework relating to the process of incorporation of Joint Stock Company

UNIT-I

Introduction to Business Laws:- Business Management and Jurisprudence; Structure of the Indian Legal Systems: sources of Law. **Law of Contract:** Definition, features of a valid contract, offer and Acceptance, Consideration, Capacity of parties, Free consent, Legality of Object, Performance and Discharge of Contract, breach of a contract and its remedies. Meaning and types of agents. Special Contracts-Laws of Agency; Principal-Agent Problem-Bailment, Pledge, Guarantee and Indemnity.

UNIT-II

Sales of Goods Act- Principles of Sales of Goods- Transfer of Ownership& Property– Performance of contract.

Unit III

Partnership Act: Introduction to Partnership Act, admission of partner, retirement and death of partner, dissolution of partnership firm.

Negotiable Instrument: Bills of Exchange, Promissory Note, Cheque and Rules Regarding the Crossing of Cheques, Dishonour of cheques and liability of banker and drawer.

UNIT-IV

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Company law: Definition and features of company; concept of corporate veil; distinction between company and partnership firm; type of companies, Process of formation and incorporation of Company, Memorandum of Association and Articles of Association, Definition, qualification, rights, duties and position of Directors, Constitution of Board of Directors, Chairman of Board, independent and executive directors, Introduction to meetings and resolution.

SUGGESTED READINGS:

1. Bansal, C. L. 'Business Laws' Taxmann Publishers (Edition-2011)
2. Kuchhal, M. C. and Kuchhal, Vivek-'Business Legislations for Management' Vikas Publications (4th Edition 2014).
3. Maheshwari, S.N. and Maheshwari, S.K.-A Manual of Business Laws- Himalya Publishing House Pvt. Ltd. (7th Edition-2018)
4. Singhanian, V. and K., Singhanian, K. and Singhanian, M. 'Direct Taxes – Law & Practice', Taxmann's Publication, Pvt. Ltd. (60th Edition 2018-19)
5. **Swain, Dr. Anil Kumar and Agrawal, Mr. Gopal Prasad**, GST Concepts and Applications, Himalya Publishing House Pvt. Ltd. (1st Edition-2018)
6. Tulsian, P.C. and Tulsian, Bharat, Business Laws, McGraw Hills Education, (3rd Edition-2014)

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MBA Batch 2021 onwards
MBA 203-21
Marketing Management

Course Objective: The course aims at making students understand concepts, philosophies, processes and techniques of managing the marketing operations of a firm in turbulent business environment. This course will provide better understanding of the complexities associated with marketing functions, strategies and provides students with the opportunity to apply the key concepts to practical business situations.

Course Outcomes: At the end of the course, the student will be able to:

CO1 - To learn the basics of marketing, selling, marketing mix and its core concepts.

CO2 – To understand the intricacies of the marketing environment and marketing information systems for effective marketing planning and strategies.

CO3– To equip the students with necessary skills for effective market segmentation, targeting and positioning

CO4 – To prepare the students for understanding the various components of product mix, product life cycle and comprehend the new product development process.

CO5– To develop an understanding of promotion mix and strategies for successful promotion

CO6 – To gain knowledge about the emerging trends in marketing and pyramid marketing.

Unit –I

Understanding Marketing and Consumers: Introduction to Marketing Management. Definition, Importance, Scope, Basic Marketing Concepts, Marketing Mix, Marketing vs Selling, Customer Value, techniques and relevance. **Marketing Environment and Competition:** Analyzing Marketing Environment-Micro, Macro, Impact of environment on marketing. **Corporate Strategic Planning:** Defining role of marketing strategies, marketing planning process. **Marketing Information System:** Concept and Components. **Consumer Behaviour:** Consumer buying process, Factors Influencing Consumer Buying Behaviour,

Unit –II

Market Segmentation & Targeting: Product differentiation, Positioning for competitive advantage, Product Decisions: Product Mix, Packaging and Labelling Decisions, Branding, Brand value & Brand Equity. **New Product Development,** Consumer Adoption Process, Product Life Cycle and marketing mix strategies. **Services Marketing** and 7Ps framework.

Unit –III

Pricing Decisions: Objectives, Factors Affecting Pricing Decisions, Pricing Methods, Price Changes, Pricing Strategies.

Promoting Product : Concept of Personal Selling Personal Selling Process, Managing the Sales Force. **Promotion Mix:** Advertising, Sales Promotion, Public Relations.

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Unit -IV

Supply Chain Decisions Nature, Types, Channel Design and Channel Management Decisions, Retailing, Wholesaling

Emerging Trends in Marketing: Green Marketing, Event Marketing, Network Marketing, Social Marketing, Buzz Marketing/ Viral Marketing, Customer Relationship Management (CRM), Global Marketing, Rural Marketing, E- Commerce, Understanding Digital Marketing, Understanding **Bottom of Pyramid Marketing**

Suggested Readings:

- Kotler & Koshy, *Marketing Management*, Pearsons Education
- Ramaswamy & Namakumari, *Marketing Management*, McMillian.
- McMEtzl, Walker, Stanton, and Pandit, *Marketing Management*, Tata McGraw Hill
- Kurtz & Boone, *Principles of Marketing*, Cengage Learning
- Kotler & Armstrong, *Principles of Marketing*, Prentice Hall
- Biplab S. Bose, *Marketing Management*, Himalaya Publications
- Subhash c. Jain, *Marketing Management*, Cengage Learning
- Rajan Saxena,, *Marketing Management*, Tata McGraw Hill.

MBA 204-18

Human Resource Management

Course Objective: The objective of the paper is to make student aware of the various functions and importance of HR department in any organization. It is basically concerned with managing the human resources, whereby the underlying objective is to attract retain and motivate the human resources in any organization.

Course Outcomes: At the end of the course, the student will be able to:

CO1- To explain the basics of Human Resource Management and analyse the evolution of HRM.

CO2- To comprehend the environment of HRM.

CO3: To appraise various functions of HRM that facilitate employee hiring viz. human resource planning, job analysis recruitment and selection.

CO4: To understand the role of training, development, career planning and performance appraisal functions in human resource development.

CO5: To examine the provisions of employee health, safety and welfare.

CO6: To analyse the concerns of government, employees and employers in establishing Industrial relations.

CO7: To illustrate mechanisms adopted by the organizations for settlement of disputes and grievances

Unit I

Human Resource Management (HRM): Nature, Scope, Objectives and functions of HRM. Evolution of HRM, HR as a factor of competitive advantage. Organization of HR department, Line and staff responsibility of HR managers, competencies of HR Manager. Personnel Policies and Principles. **Strategic HRM:** Introduction, Integrating HR strategy with Business Strategy, Difference between SHRM and HRM. HRM Environment and Environment Scanning. **Human Resource Planning:** Meaning, Process and importance, factors affecting Human Resource Planning. **Job Analysis:** Process, methods of Job Description & Job Specification.

Unit 2

Recruitment & Selection: Meaning & Concept, Process & Methods Recruitment & Selection, Induction & Placement. **Training & Development:** Meaning & Concept of Training & Development, Methods of Training & Development, Evaluating training effectiveness. HRM vs. HRD. **Career Planning & Development:** concept of career, career planning, career development, process of career planning and development, factors affecting career choices, responsibilities of Employers / managers, organization and employees in career planning and development, career counseling. **Internal Mobility:** Promotion, Transfer, Demotion, Separation, downsizing and outplacement.

Unit 3

Performance Appraisal: Meaning & Concept of Performance Appraisal, Methods & Process of Performance Appraisal, Issues in Performance Appraisal, Potential Appraisal. **Compensation Management-** Concept and elements of compensation, Job evaluation, Wage / Salary fixation, Incentives Plans & Fringe Benefits. **Quality of work life (QWL):** Meaning, Concept, Techniques to improve QWL. Health, Safety & Employee

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Welfare, Social Security. **Quality Circles:** Concept, Structure, Role of Management, QCs in India.

Unit 4

Industrial Relations: Government's concerns, Union's concerns, Management concerns; Approaches of IR; Dispute Resolution Machinery. **Collective Bargaining:** Meaning, Scope, Objectives, Issues and Strategies, steps of collective bargaining, negotiation skills. Participative Management, Grievance Handling, Disciplining and Counseling of employees, HRIS, HR Audit. Ethical Issues in HRM. Human Resource Management practices in India.

Suggested Readings:

- ✓ Dessler, Gary, "Human Resource Management", New Delhi, Pearson Education Asia. 2017 15th Edition
- ✓ Aswathappa, K.. Human Resource Management, Text and Cases (7th ed.). Mc Graw Hill.
- ✓ Flippo, E. Human Resource Management (5th ed.). McGraw Hill.
- ✓ Ivancevich, J. Human Resource Management (12th ed.). Tata Mc Graw Hill.
- ✓ Gomez Mejia, L. Managing Human Resources (8th ed.). Pearson Education.
- ✓ Bratton, J. and Gold, J. Human Resource Management: Theory and Practice (6th ed.). Palgrave.
- ✓ Mirza S. Saiyadain. Human Resources Management (4th ed.). Tata McGraw Hill.
- ✓ Dale Yoder, Personal Management & Industrial Relations, Tata McGraw Hill

MBA 205-18

Production & Operations Management

Course Objective: It is a subject where a student learns various steps of product design, development, production, plant location, storage, production planning and control. The students are motivated to apply concepts and principles of management to become more effective professional

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand ever growing importance of Production and Operations management in uncertain business environment.

CO2: Gain an in-depth understanding of resource utilization of an organization.

CO3: Appreciate the unique challenges faced by firms in services and manufacturing.

CO4: Understand the subject as a crucial part of functional management.

CO5: Develop skills to operate competitively in the current business scenario.

CO6: Understand the concepts of inventory and purchasing management.

Unit- I

Operations management: concept, functions, transformation process model: inputs, process and outputs; classification of operations; responsibilities of operations manager, contribution of Henryford, Deming, Crossby, Taguchi.

Facility Location – importance, factors in location analysis, location analysis techniques.

Product Design and Development – product design and its characteristics, product development process (technical), product development techniques. **Process selection-** project, job, batch, mass and process types of production systems. operations management in corporate profitability and competitiveness

Unit- II

Facility Layout – Objectives, Advantages, Basic Types of Layouts, Problems in facility layout. **Production Planning & Control (PPC):** –Concepts, Objectives, and Functions, work study – Productivity: Method study; Work measurement. **Capacity Planning** – Concepts, Factors affecting Capacity Planning, Capacity Planning Decisions.

Unit- III

Quality Management: Introduction, Meaning, Quality Characteristics of Goods and Services, Juran's Quality Trilogy, Deming's 14 principles, Tools and Techniques for Quality Improvement, Statistical Process Control Chart, Quality Assurance, Total Quality Management (TQM) Model Concept of Six Sigma and its Application. **Acceptance Sampling** – Meaning, Objectives, Single Sample, Double Sample and Multiple Sample Plans with sated risk, Control charts for variables – Averages and Ranges, Control Charts for Defectives – Fraction Defective and Numbers Defective.

Unit- IV

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JIT and Lean Production System: JIT Approach, Implementation requirements, Services, Kanban System. **Inventory Management:** Concepts, Classification, Objectives, Factors affecting Inventory Control Policy, Inventory Costs, Basic EOQ Model, Re-order level, ABC analysis. Logistics and Franchising. **Purchasing Management** – Objectives, Functions, Methods, Procedure.

Value Analysis: Concepts, Stock Control Systems, Virtual Factory Concept and Production Worksheets.

Note : Relevant Case Studies should be discussed in class.

Suggested Readings / Books:

- ✓ Mahadevan B, Operations Management: Theory and Practice (2nd Ed.). Pearson Education
- ✓ Krajewski & Ritzman, Operations Management (5th Ed.) Pearson Education
- ✓ Buffa & Sarin, Modern Production/Operations Management, (8th Ed.) John Wiley
- ✓ Chary, Production and Operations Management, Tata McGraw-Hill
- ✓ Johnston R et al , Cases in Operations Management, Pitman
- ✓ McGregor D, Operations Management, McGraw-Hill
- ✓ Nair, Production & Operations Management. Tata McGraw

MBA 206-21

Corporate Finance and Policy

Course Objective: To provide an in-depth understanding of the core finance functions and decisions in the area of corporate financial management. Further provide a practical and problem insight for effective financial decision-making.

Course Outcomes: After completing the course, the students shall be able to:

CO1- To explain the evolution, objectives and functions of corporate finance and interface of corporate finance with other functional areas.

CO2- To illustrate the concept of time values of money and valuation of securities.

CO3: To comprehend the significance of capital structure theories in capital structure decisions.

CO4: To facilitate sound investment decisions based on capital budgeting techniques.

CO5: To understand the applications of approaches of working capital management.

Unit I

Introduction to Financial Management and Corporate Finance: Meaning, evolution, objectives, functions and scope of corporate finance. Interface of financial management with other functional areas, Role of financial manager.

Time Value of Money-Introduction, types of cash flows, future value of single cash flow, multiple flows and Annuity. **Valuation of Securities:** Concept of Valuation, Methods for valuation of equity, debt and hybrid securities.

Sources of Finance—Different sources of finance; long term and Short term.

Unit II

Cost of capital: concept, significance of cost of capital, specific costs and weighted average cost of capital,

Capital Structure Decision-Capital Structure Theories: Meaning and features of capital structure decision, Net Income Approach, Net Operating Income Approach, Traditional Approach, Modigliani-Miller Hypotheses with special reference to the process of arbitrage and Agency Cost. Determinants of Capital Structure Decision - Approach to Estimating the Target Capital Structure, EBIT / EPS Analysis and ROI / ROE Analysis

Unit III

Leverage—Business Risk and Financial Risk— Operating and financial leverage, Trading on Equity

Capital Budgeting Decision: Nature of investment decisions; process of capital budgeting, investment evaluation criteria: Discounted and Non-Discounted Methods (Pay-Back Period, Average rate of return, Net Present Value, Benefit Cost Ratio and Internal Rate of Return). Risk analysis in capital budgeting and Capital rationing.

UNIT IV

Dividend Decision:- Issues in dividend decisions. forms of dividend, theories of relevance and irrelevance of dividends.

Management of Working Capital: Meaning, nature, objectives and Approaches of Working Capital (Conservative, Matching and Aggressive approaches), Static vs. Dynamic View of Working Capital. Factors determining the amount and composition of Working Capital .Methods for financing of working capital.

Suggested Readings:

1. Pandey, I. M. (2015). Financial Management, 11th Edition. Vikas Publishing

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House.

2. Khan, MY. and Jain, PK. (2014). Financial Management, 7th Edition. Tata McGraw Hill, New Delhi.
3. Chandra, Prasanna. (2015). Financial Management: Theory and Practice, 9th Edition. Tata McGraw Hill, Delhi.
4. Van Horne. J.C. and J.M. Wachowicz. (2015). Fundamentals of Financial Management, 13th Edition. Prentice Hall, Delhi.
5. Brealey, Richard A; Stewart, C. Myers and Allen, F. (2017). Principles of Corporate Finance, 11th Edition. McGraw Hill, New York.
6. Bhole, L. M. (2017). Financial Institutions and Markets, 6th Edition. McGraw Hill.
7. Srivastava, R. M and Divya, N. (2014). Management of Indian Financial Institutions, 9th Edition. Himalaya Publishing House.
8. Varshney, P. N. and Mittal, DK. (2010). Indian Financial System, 11th Edition. Sultan Chand & Sons.

MBA 207-18

Entrepreneurship Development and Project Management

Course Objective: To provide a comprehensive understanding of the concept of an Entrepreneur and intricacies involved in managing entrepreneurial projects. The prime aim is to imbibe the necessary entrepreneurial competencies among students and motivate them choose Entrepreneurship as a feasible and desirable career option.

Course Outcomes: After completing the course, the students shall be able to:

CO1- To explain the characteristics, functions and traits of an entrepreneur.

CO2- To illustrate the concept of corporate entrepreneurship and development of the same in the organizations.

CO3: To comprehend the significance of women entrepreneurs, rural entrepreneurship and social entrepreneurship.

CO4: To examine entrepreneurial strategies to explore new entry opportunities, methods of enhancing creativity and generation of ideas.

CO5: To be able to develop an effective business plan.

CO6: To explain the basic concepts of project management and analyse different phases of project management viz. generation and screening of project ideas, project analysis, selection, financing, implantation and review.

Unit I

Introduction to Entrepreneur: Concept, Characteristics, functions of an entrepreneur, Entrepreneur Vs Manager, Types of entrepreneurs, Entrepreneurial Mind Set, Key attributes of an entrepreneur, desirable and acquirable traits and behaviours, Readiness of the entrepreneur: Right age, right time and right conditions, Myths and Realities of entrepreneurship. **Entrepreneurship and Intrapreneurship:** Similarities and variance, Developing Corporate Entrepreneurship.

Women entrepreneurs:- Meaning, role, problems for women entrepreneurs, **Rural entrepreneurship, social entrepreneurship,** Entrepreneurship Development, Entrepreneurial support systems and role of government in Entrepreneurship Development.

Unit II

Entrepreneurial Motivation: Concept and Theories, **Entrepreneurial Strategy: Generating and Exploiting New Entry Opportunities,** Generation of new Entry Opportunity, entry Strategy, Risk reduction strategies for New Entry Exploitation

Creativity and Business Idea Generation: Concept of creativity, ideas from trend analysis, sources of new ideas, Methods of generating new ideas, Creative problem solving, creativity and entrepreneurship. **Entrepreneurial Innovation:** Concept and types, Opportunity Recognition and opportunity assessment plan, product planning and development process.

Unit III

Protecting Ideas and Legal issues for the entrepreneur. Concept of IPR, Patents, Trademarks, Copyrights, Licensing, Product Safety, Other Legal Issues in Setting Up An Organisation. **Business Plan Creating and Starting the Venture:** Concept of Business Plan, Scope and Value, Writing the business plan, Using and implementing business plan. **Succession Planning and Strategies for Harvesting and Ending Venture:** Exit Strategy , succession of Business, Selling off, bankruptcy

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Reasons of failure of business plan, Reasons for the failure of entrepreneurial ventures.

Unit IV

Project Management: Concept, facets and Key Issues of project management. **Generation and screening of project ideas, Project Analysis:** Market and demand analysis, Technical analysis, Financial estimates and projection, **Project Selection:** Investment criteria, Risk analysis, Social Cost Benefit analysis.

Project Financing: Financing of projects, Concept of Venture Capital in detail, Difference between Venture Capital and Private Equity. **Project Implementation:** Project planning and control, Network techniques for project management: PERT and CPM Models, **Project Review:** Post Audit and Administrative Aspects.

Relevant case studies related to the topics should be discussed.

Suggested readings:

- ✓ Chandra, P. (2017). *Projects: Preparation, Appraisal, Budgeting and Implementation*. New Delhi: 8th Edition, Tata McGraw .
- ✓ Desai, V. (2017). *Project Management and Entrepreneurship*. New Delhi: 2nd Edition, Himalaya Publishing House.
- ✓ Fyffe, D. S. (2001). *Project Feasibility Analysis*. New York: John Wiley and Sons.
- ✓ Hisrich, R. D, Peters, M.P, and Shephers, D.A.(2016). *Entrepreneurship*. New Delhi: 10th Edition, Tata mc grow.
- ✓ Mohanty, Sangram Keshari (2017). *Fundamentals of Entrepreneurship*, Revised Edition, PHI Learning Pvt Ltd.
- ✓ Natrajan, K. and Gordon, E. (2017). *Entrepreneurship Development*. New Delhi: 6th Edition , Himalaya Publishing House.

MBAGE 201-18

Computer Applications for Business

Course Objective: The purpose of this course is to provide a through exposure to the operating and office management tools available in different packages. A student can be exposed to the working knowledge of Windows based operating systems and software packages such as Windows-95, 98, 2000-Professional, windows -XP and MS -Office.

Course Outcomes: After completing the course, the students shall be able to:

- CO1: Develop understanding of computer fundamentals, functions and their classifications
- CO2: Develop a clear understanding and knowledge about the functioning of a Computer software and window operating system
- CO3: Demonstrate proficiency in Microsoft word & Excel.
- CO4: Apply formatting and editing features to enhance worksheets.
- CO5: Use styles, themes, and conditional formats to customize worksheets.
- CO6: apply the concepts of data base and Access for editing Data; managing reports and labels, Managing Multiple Tables.

Unit I

Introduction to Computer: Definition of Computer, Features of Modern Computer, Classification of Computer on the Basis of Generation.

Components of Computer: Input Unit, Output unit, Central Processing Unit Various Input Devices and Output Devices, Internal and External Memory Storage, RAM, ROM, PROM, EPROM, Hard Disc, Magnetic Tapes

Unit II

Operating System: Concepts, Definition of Operating System (as Resource Manager, Processor Manager and Information Manager)

Window: Introduction to Window (Working of Windows, Manipulation of Icon, Menus and opening different applications simultaneously), Various Versions of Windows, Basic commands of windows (Creating, Moving, Renaming, Deleting Files/Folders). **MS-**

Office: Introduction, Components of Office.

Unit III

MS-Word: History, Creating, Saving, Opening, Importing, Exporting and Inserting document, Formatting pages, Alignment, Paragraphs and Sections.

Indents and Outdents, creating lists and numberings Formatting Commands: Headings, Styles, Fonts and Size editing, Viewing Text, Finding and Replacing text, Headers and Footers, Inserting page breaks, Page numbers, Special Symbols and Dates Mail merge, Preview and Printings command.

MS-PowerPoint: History, Creating, Saving, Opening, existing presentation, Creating and Saving a Presentation using Auto Content Wizard, Design Template, Blank

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Presentation the Slide Sorter View, Slide Show, Inserting pictures and graphics and Printing Slides.

Unit IV

MS-Excel: Introduction, Components of Excel History, Creating, Saving, Opening, Spreadsheet, Formatting numbers and Text, Graph and Chart Formatting Commands, Menu Bar, Toolbars, Producing Charges, Protecting Cell Macro and Printing Operation, Spell Checking, Cell Editing, Calculation of various Financial and Statistical Functions using Formulas.

MS Access: Introduction to Data Base and Access: Viewing and Editing Data; Sorting and Indexing Printing Reports and Labels, Managing Multiple Tables. Forms, Queries, Reports.

Suggested Readings:

- ✓ Ram, B.(2018).*Computer Fundamentals Architecture and Organization*. New Delhi: Age Publications
- ✓ Sinha, P.K. and Sinha, P. (2017).*Foundation of computing*. New Delhi: BPB Publications.
- ✓ Arora, A.(2015) *Computer fundamentals and applications*. Vikas Publishing.
- ✓ Rajaraman, V.(2014).*Fundamentals of Computers*. Delhi: Prentice-Hall.
- ✓ Roger,J. (2010).*MicrosoftAccess2010*.Delhi:PearsonEducation.
- ✓ Forouzan,(2009).*Basics of Computer Science*. India: Cengage Learning
- ✓ Levi, D.S., Kaminsky, P. (2007) *Designing and Managing the Supply Chain*. McGraw Hill
- ✓ Turban, E., Aronson JE., Liang, TP. (2005). *Decision Support Systems and Intelligent Systems* (7th Edition). Pearson Publishers.

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MBA 301-18
Organizational Behaviour & Design

Course Objective: The course aims to provide an understanding of basic concepts, theories and techniques in the field of human behaviour at the individual, group and organizational levels in the changing global scenario at workplace.

Course Outcomes: Upon completion of this course, students will be able to:

CO1- To explain the basics of Organizational behaviour and various challenges for OB in national and global environment.

CO2- To illustrate the foundations of Individual Behaviour and analyse the influence of individual level factors viz. learning, personality, perception, attitude and motivation on behaviour in organizations.

CO3: To assess the significance of leadership and role of leadership styles in effectiveness of the team.

CO4: To examine the dynamics of group development, group properties and formation of organizational culture.

CO5: To demonstrate dimensions of organisational design and types of organisational structure and to analyse the influence of environment on organisational design.

CO6: To interpret the effect of political climate (conflict, power and politics) on human behaviour.

Unit 1

Organisational Behaviour: Meaning, foundations, contributing disciplines to OB, Challenges and opportunities for OB.

Individual Behaviour: Foundations of individual behaviour, Determinants of individual behaviour.

Learning and Reinforcement: Theories of learning, Schedules of reinforcement, Behaviour modification.

Emotions and Moods: Types and sources of emotions, emotional intelligence, managing emotions at work place.

Unit 2

Personality: Determinants of personality, The Myers-Briggs Type Indicator model of personality, The Big five model of personality, traits of personality.

Attitudes & Values: sources and types of attitude, cognitive dissonance theory, Types of attitudes at work place, attitude change.

Perception: factors influencing perception, process of perception, attribution theory of perception, perceptual distortions and improving perceptions.

Motivation: early and contemporary theories of motivation, application of motivation process.

Leadership: nature and significance of leadership, theories of leadership, behavioural styles of leaderships, leadership traits, transactional leadership, concept of charisma leaders.

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Unit 3

Transactional analysis: Ego states, life positions, Johari window model.

Foundations of Group Behaviour: Nature and concept of group, Group formation, stages of group formation, theories of group formation, Types of teams, issues in team management.

Group Properties: Roles, norms, status, size, cohesiveness and decisions making in groups.

Stress management: sources of stress, approaches for stress management.

Organizational culture: meaning, concept and dimensions of organizational culture, developing organizational culture, cultural differences.

Unit 4

Understanding Organisations: Meaning and importance of organisations, Organisational theory, Organizational life cycle. **Organization and environment:** General vs specific environment, actual vs perceived environment, environmental uncertainty. **Organisational Design:** Meaning, factors influencing organisational design: organizational strategy, size, technology, environment. Dimensions of Organizational design: Complexity, formalization, centralization. Common organizational designs: Traditional designs and contemporary designs. Organisational structure: Meaning and Types of organisational structures.

Conflict Management: Meaning, types and sources of conflict, Process of conflict management, approaches to conflict management. **Learning Organizations:** Meaning of learning organisations, creating learning organisations.

Power and politics in organizations: Nature & concepts, sources and types of power, tactics and techniques of politics.

Suggested Readings /Books:

- _ Robbins, *Organization Behaviour*, Pearson Education
- _ Luthans, *Organization Behaviour*, Tata McGraw Hill
- _ Newstrom, *Organizational Behaviour: Human Behaviour at work*, Tata McGraw Hill
- _ Kalliath, *Organization Behaviour*, The McGraw –Hill
- _ Griffin & Moorhead, *Introduction to Organisational Behaviour*, Cengage Learning
- _ Hersey, *Management of Organizational Behaviour*, Prentice Hall India
- _ Parikh, Gupta, *Organisational Behaviour*, Tata McGraw Hill
- _ Aswathappa, *Organization Behaviour*, Himalaya Publications
- _ Locum, *Fundamentals of Organisational Behaviour*, Cengage Learning.
- _ Saiyadain, M.S. : *Organization Behaviour*, Tata McGraw Hill
- _ Steven L. McShane, Mary Ann Von Glinow, Radha R Sharma, *Organisational Behaviour*, New Delhi, Tata McGraw Hill, 2007.
- _ Udai Pareek, *Understanding Organizational Behaviour*, New Delhi, Oxford University Press, 2007.
- P.G Aquinas, *Organization Structure and Design- Applications and Challenges*, New Delhi, Excel Books, 2010.
- Stephen, P. Robbins and Mary Mathew, *Organizational Theory- Structure, Design and Applications*, New Delhi, Pearson Education, 2009.

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MBA 302- 18
Marketing Research

Objective: The course aims to provide an understanding of basic concepts, theories and statistical techniques used in research. Students will also be given exposure to use and apply SPSS.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Understand the process of marketing research and its application in managerial decision making

CO2: Identify various sources of data for marketing research.

CO3: Examine different research methods and be able to apply them.

CO4: Identify different research designs and develop a research proposal.

CO5: Design an effective questionnaire and test reliability and validity of the scales.

CO6: Apply different methods of data preparation and data analysis.

Unit I

Marketing Research: Definition, Nature and Scope for marketing decision making. Marketing Research Process. Types of Research – Descriptive research, Exploratory Research and Causal Research.

Sources of Data: Commercial (Syndicated) and Non-commercial Sources of Secondary Data for Marketing Research.

Unit II

Casual Research Designs: Basic designs – After-only design, Before-After design, After only with control group design, Before-After with control group design, Time Series Design Latin Square Design, Factorial Design, Ex-Post Facto Design, Completely Randomized Design, Randomized Block Design.

Observation Research: Direct Observation, Indirect Observation, Observational Variables.

Developing Research Proposal: purpose, nature and evaluation, content and format.

Unit III

Questionnaire Design: Principles of Writing Questionnaire.

Reliability and Validity: Basic concepts; True Score Model; Measurement Errors in Marketing; Scales of Measurement – Nominal, Ordinal, Interval and Ratio; Coefficient Alpha and Internal Consistency; Types of Reliability – Test-retest Reliability, Alternative Forms and Split-Half Reliability; Types of Validity – Content, Criterion, Concurrent, Predictive Convergent, Construct, Discriminant and Nomological Validity; Concept of Generalizability.

Unit IV

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Data Preparation: Understanding SPSS, Creating SPSS Sheet; Entry of Data in SPSS; Basic computations of Descriptive Statistics.

Basic Data Analytic Techniques: Assessing Reliability; Computing Coefficient Alpha Scale Refinement and Item Analysis.

Advanced Data Analytic Techniques: Correlation Analysis, Factor Analysis, Regression Analysis.

Suggested Readings:

1. Malhotra N.K., Marketing Research, Pearson Education, New Delhi, 2012.
2. D R. Cooper, &P.S,Schindler, Business Research Methods, Tata McGraw Hill.
3. Thomas C. Kinnear and James R. Taylor, Marketing Research-An Applied Approach, McGraw Hill
4. Paul, E. Green and Donald, S. Tull, Research for Marketing Decisions, Prentice Hall of India Pvt. Ltd., Delhi.
5. Harper, W. Boyd, (Jr.), Ralph Westfall and Tandoy, F. Stasch, Marketing Research, All India Travelers Bookseller, Delhi, 2002.
6. RamanujMajumdar Marketing Research, Wiley Eastern Ltd., New Delhi, 1991.
7. David J. Luck and Ronald S. Rubin, Marketing Research, Prentice Hall of India, 1990.
8. Nargundkar R, Marketing Research, Tata McGraw Hill, New Delhi, 2002.
9. Churchill & Israel, Marketing Research, Cengage Learning
10. Zikmund, Essentials of Marketing Research, Cengage Learning.

HVPE 101-18
HUMAN VALUES, DE-ADDICTION AND TRAFFIC RULES

Course Objective: This introductory course input is intended

- a. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- b. To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Value based living in a natural way.
- c. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

Thus, this course is intended to provide a much needed orientational input in Value Education to the young enquiring minds.

Course Methodology

- ✓ The methodology of this course is universally adaptable, involving a systematic and rational study of the human being vis-à-vis the rest of existence.
- ✓ It is free from any dogma or value prescriptions.
- ✓ It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as proposal and the students are facilitated to verify it in their own right based on their Natural Acceptance and Experiential Validation.
- ✓ This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and within the student himself/herself finally.
- ✓ This self-exploration also enables them to evaluate their pre-conditionings and present beliefs.

Content for Lectures:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education [6]

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration—what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels

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Module 2: Understanding Harmony in the Human Being - Harmony in Myself! [6]

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - *Sukhand Suvidha*
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure *Sanyam* and *Swasthya*
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship [6]

13. Understanding harmony in the Family- the basic unit of human interaction
14. Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*;
Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
15. Understanding the meaning of *Vishwas*; Difference between intention and competence
16. Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
17. Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
18. Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj*), Universal Order (*SarvabhaumVyawastha*) - from family to world family!
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence [4]

19. Understanding the harmony in the Nature
20. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
21. Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
22. Holistic perception of harmony at all levels of existence
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics [6]

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct
25. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
26. Competence in professional ethics:
 - a) Ability to utilize the professional competence for augmenting universal human order,
 - b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,

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- c) Ability to identify and develop appropriate technologies and management patterns for above production systems.
- 27. Case studies of typical holistic technologies, management models and production systems
- 28. Strategy for transition from the present state to Universal Human Order:
 - a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers
 - b) At the level of society: as mutually enriching institutions and organizations

Text Book

R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

Reference Books

1. Ivan Illich, 1974, *Energy & Equity*, The Trinity Press, Worcester, and HarperCollins, USA
2. E.F. Schumacher, 1973, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
3. A Nagraj, 1998, *Jeevan Vidyaek Parichay*, Divya Path Sansthan, Amarkantak.
4. Susan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991
5. PL Dhar, RR Gaur, 1990, *Science and Humanism*, Commonwealth Publishers.
6. A.N. Tripathy, 2003, *Human Values*, New Age International Publishers.
7. Subhas Palekar, 2000, *How to practice Natural Farming*, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati.
8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth – Club of Rome's report*, Universe Books.
9. E G Seebauer & Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists & Engineers*, Oxford University Press
10. M Govindrajran, S Natrajan & V.S. Senthil Kumar, *Engineering Ethics (including Human Values)*, Eastern Economy Edition, Prentice Hall of India Ltd.
11. B P Banerjee, 2005, *Foundations of Ethics and Management*, Excel Books.
12. B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow. Reprinted 2008.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, <http://uhv.ac.in>
2. Story of Stuff, <http://www.storyofstuff.com>
3. Al Gore, *An Inconvenient Truth*, Paramount Classics, USA
4. Charlie Chaplin, *Modern Times*, United Artists, USA
5. IIT Delhi, *Modern Technology – the Untold Story*

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HVPE 102-18

Human Values, De-addiction and Traffic Rules (Lab/Seminar)

One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the Seminar atleast once during the semester. It will be binding for all the students to attend the seminar.

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MBA 303-18

SEMINAR ON SUMMER TRAINING REPORT

Guidelines for Summer Training Report:

Kindly refer to Annexure A for the suggested guidelines and evaluation criteria of Summer Training Report

MBA 921-18

Consumer Behaviour

Course Objective: The objective of this course is to help students understanding various factors affecting consumer behavior and to understand the process of consumer buying. Based on the understanding of consumer behavior, the students are expected to design the strategy.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Provide an understanding of how consumers make decisions.

CO2: Analyze personal and environmental factors that influence consumer decisions.

CO3: Understand the processes used when individuals, group or organizations make buying decisions.

CO4: Understand how and why marketers craft particular messages to appeal to consumers.

CO5: Understand the interrelationship with other functional areas of business as a part of the management process.

CO6: Assess the process of opinion leadership and its relationship with firm's promotional strategy.

UNIT – I

Introduction to Consumer Behaviour

Consumer Behaviour: Scope, importance and interdisciplinary nature. **Consumer Research Process:** Qualitative and Quantitative research. **Market Segmentation:** Uses and bases of segmentation. **Emerging trends in consumer behavior:** Consumer behavior in online space. Use of Information technology and AI in consumer profiling and engagement, concept of materialistic vs spiritualistic consumption.

UNIT – II

Individual Determinants of Consumer Behaviour

Motivation: Nature and Types of Motives, Process of motivation, types of Needs.

Personality: Theories, Product Personality, Self Concepts. **Consumer Perception:** Concept and Elements of Perception, Consumer Imagery, Perceived Risk.

Consumer Learning: Behavioural and Cognitive Learning Theories. **Consumer Attitude:** Functions of Attitude and Sources of Attitude Development, Attitude formation Theories (Tricomponent, Multi attribute and Cognitive Dissonance), Attitude Change Strategies.

UNIT – III

External Influences on Consumer Behaviour

Group Dynamics and Reference Groups: Consumer relevant groups, Types of Family: Functions of family, Family decision making, Family Life Cycle (Modern and Traditional)

Culture: Values and Norms, Characteristics and influence on Consumer Behaviour, sub culture, Cross cultural consumer behavior. **Social Class:** Categories, Measurement and Applications of Social Class.

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UNIT – IV

Consumer Decision Making

Process and models (Howard Sheth, Nicosia Model, Engel Blackwell and Kollat). **Personal Influence and Opinion Leadership:** Process of Opinion Leadership, Profile of Opinion Leader, Opinion leadership and Firm's Promotional Strategy. **Diffusion of innovations:** Diffusion Process, Adoption Process, and Profile of Consumer Innovators

Suggested Readings:

1. Schiffman, L.G. and Kanuk, L.L., Consumer Behavior, Prentice Hall of India
2. Loudon, D. and Bitta, D., Consumer Behaviour, Tata Mc Graw Hill
3. Assael, H., Consumer Behaviour in Action, Cengage Learning
4. Blackwell, R.D., Miniard, P.W. and Engel, J.F. , Consumer Behaviour, Thomson Learning

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MBA 922-18

Services Marketing

Course Objective: The objective of this course is to help students understanding various factors affecting consumer behavior and to understand the process of consumer buying. Based on the understanding of consumer behavior, the students are expected to design the strategy.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Understand the fundamental concepts of service marketing and its functions.

CO2: Identify the role and significance of various elements of service marketing mix.

CO3: Analyze customer requirement, measure service quality and design and deliver better service.

CO4: Analyze integrated services marketing communications and services marketing triangle.

CO5: Examine various pricing strategies and pricing approaches in service sectors.

CO6: Understand service marketing applications in different service sectors.

UNIT – I

Introduction to Services: Growth and development of service sector economy, contribution to the Indian economy, Service Characteristics, Service Classification, Service Marketing Mix.

Consumer Behavior in Services: Customer Expectation of Service, Customer Perceptions of Service. **Service Quality:** Integrated gaps model of service quality. Prescriptions for closing quality gaps

UNIT – II

Managing relationships in Services: Building customer loyalty, Complaint handling and Service recovery strategies. **Service development and design:** Challenges of service design, types of new services, core and supplementary elements, new service development process. **Service blueprinting:** Nature, need and process of blueprinting. **Physical evidence and the Servicescapes:** Nature, Importance and Types, role and its effect on Consumer behaviour.

UNIT – III

Delivering and performing service through employees and customers: service culture, employee's role, strategies to deliver quality, cycle of failure, mediocrity and success, self service technologies and Customer Participation. **Delivering services through intermediaries:** Nature and types of intermediaries, role of electronic channels in service delivery. **Managing demand and capacity:** Waiting line strategies integrated. **Integrated Services Marketing Communications and Services marketing triangle**

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UNIT – IV

Pricing of services: Pricing approaches, Pricing Strategies. **Service Marketing Applications:** Marketing of services in Financial, Healthcare and Hospitality sectors.

Suggested Readings:

1. Zeithmal A Valarie and Bitner Mary, Services Marketing, Tata McGraw Hill, New Delhi.
2. Lovelock, Christopher H. Services Marketing, Pearson Education, New Delhi
3. P.K.Sinha and S.C.Sahoo, Services Marketing, Himalaya Publishing House, New Delhi

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MBA 911-18

Investment Analysis and Portfolio Management

Course Objective: This course aims to acquaint students with the market microstructure of financial markets and understanding of economic, industrial and company analysis. It shall also enable them to understand the valuable linkage between modern theories of finance and the analytical techniques used by investors for valuing securities and construct portfolios to achieve investor's investment goals.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 – To familiarize the students about the basic concepts, various investment avenues, process of investment and market microstructure of financial markets.

CO2 - To enable students to understand the operation of primary as well as secondary markets in India and to understand the concepts of risk and its measurement.

CO3 – To familiarize the students with the concepts and process of fundamental analysis so that they may understand the impact of various environmental factors on investment valuation..

CO4 – To explain the concepts and process of technical analysis and enable the students to understand the role of daily price movements in portfolio management.

CO5 – To explain the concepts, process and techniques for portfolio construction, evaluation and revision.

CO6 – To familiarize the students about the financial derivatives and computation of their expected payoffs.

Unit I

Introduction: Concepts of investment, objectives of investment, various alternatives of investments, investment process, financial investments vs. real investments, differentiate investment, speculation and gambling. **Risk and Return:** Concept, types and measurement of risk and return.

Financial Markets - Primary and secondary markets. Introduction to primary market, design of primary market, its role and functions, types of offers in the primary market, SEBI guidelines on primary market

Secondary Market: Introduction, participants, trading and settlement Mechanism, types of orders, stop Loss, margin trading, short selling, price freeze, hair-cut, market wide circuit breakers, insider trading, bulk deals, block deals and arbitrage opportunity in the market.

Unit II

Fundamental Analysis: Meaning, scope and introduction to concept of intrinsic value. Process of conducting economic analysis; industry analysis and company analysis by using E-I-C and C-I-E approaches. Valuation of securities using fundamental analysis.

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Unit III

Technical Analysis: introduction, terminology of technical analysis, Dow theory, characteristic phases of Bull and Bear trends, critical appraisal of Dow theory, various types of charts, concept of trend, trend lines: support and resistance, Importance of trading volume, reversal patterns, continuation pattern, moving averages, other market indicators

Portfolio Management: Meaning, importance and approaches of portfolio management, portfolio analysis, portfolio evaluation and revision techniques.

Unit IV

Portfolio Theory: Markowitz Model, Capital Asset Pricing Model, Single-index model, Arbitrage Pricing Theory. Market Efficiency and Behavioral Finance

Derivatives: Introduction, features, derivative instruments, difference between forward and futures contracts, types of option contracts, computing payoffs of forward, futures and option contracts.

Suggested Readings

1. Reilly and Brown, Investment Analysis and Portfolio Management, Cengage, New Delhi
2. Bodie, Kane, Marcus and Mohanty, Investments, Tata McGraw Hill, New Delhi
3. Fisher DE and Jordon RJ, Security Analysis and Portfolio Management, PHI, New Delhi
4. Hirt and Block, Fundamentals of Investment Management, Tata McGraw Hill, New Delhi
5. V. A. Avdhani 'Security Analysis and Portfolio Management' Himalaya Publications
6. Preeti Singh 'Investment Management' Himalaya Publications

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MBA 912-18

Management of Financial Services

Course Objective: The objective of the course is to understand role of Financial Services in Business organizations and to give an insight into the strategic, regulatory, operating and managerial issues concerning select financial services. In addition, the course will examine the present status and developments that are taking place in the financial services sector and developing an integrated knowledge of the functional areas of financial services industry in the real services industry in the real world situation.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: To understand the concept of financial services and their importance.

CO2: To know the structure and schemes of mutual funds.

CO3: To understand the importance and process of Dematerialisation and rematerialisation.

CO4: To know the structure and system of credit rating ,leasing ,merchant banking and venture capital.

CO5: To know the process and importance of factoring and securitisation.

CO6: To understand the process of asset liability management and risk management in banks.

Unit I

Financial Services: Meaning, types and their importance. Financial sector reforms in India, Future challenges for Indian banks, Improving risk management systems, Banking and the Management of Financial Services

Mutual Funds and Pensions Funds, Insurance Services, Bank assurances, Reinsurances, Venture Capital –Private Equity –strategic secrets of private equity, Investment strategies, Hedge funds, E banking, Securitization –Indian Banking and Financial crisis, Asset Reconstruction Companies, Depositories, Credit Cards, Micro/Macro finance, Financial Inclusion, Behavioural Finance.

Depository – Introduction, Concept, depository participants, functioning of depository systems, process of switching over to depository systems, benefits, depository system in India, Dematerialization and Re materialization. Role, objectives and functions of SEBI and its guidelines relating to depository system.

Unit II

Credit rating: The concept and objective of credit rating, various credit rating agencies in India, Credit Rating Agencies –Importance, Issue, Difference in credit rating, Rating methodology and benchmarks, Are Indian Credit Rating Credible? International credit rating agencies –crisis of confidence?

Leasing: Concept and development of leasing, business, difference between leasing & hire purchase, types of leasing business, advantages to lessor and lessee. Tax aspect of leasing.

Merchant Banking: Origin and development of merchant banking in India scope, organizational aspects and importance of merchant bankers. Latest guidelines of SEBI w.r.t. Merchant bankers.

Venture Capital: Concepts and characteristics of venture capital, venture capital in India, guidelines for venture capital.

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Unit III

Debt Securitization: Meaning, Features, Scope and process of securitization.

Factoring: Development of factoring types & importance, procedural aspects in factoring, financial aspects, prospects of factoring in India.

Plastic Money: Concept and different forms of plastic money – credit and debit cards, pros and cons. Credit process followed by credit card organizations. Factors affecting utilization of plastic money in India.

Unit IV

Asset Liability Management: Significances, ALM process, Techniques – Gap, Duration, Simulation, Value at Risk value of equity and market value of equity perspective.

Risk Management in Banks: Credit risk management, Operational risk management, Market risk management, Corporate treasury management, Liquidity risk management, Governance risk and compliance, Asset Liability Management and Basel 2 – Basel 1 and 2, IPR and Basel 2, Three Pillars, ALM and Interest rate swaps, Swaps as a risk management tool, ALM and Capital Adequacy, ALM Software's.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. M Y Khan 'Financial Services' Tata McGraw-Hill.
2. L M Bhole 'Financial Institutions & Markets' Tata McGraw-Hill
3. S Gurusamy 'Financial Services & System' Thomson Publications
4. V. A. Avdhani 'Financial Services in India' Himalaya Publications
5. Gordon & Natarajan 'Financial Markets & Services' Himalaya Publications
6. Vasant Desai 'Financial Markets & Financial Services' Himalaya Publications
7. Harrington, S. E. (2004). Risk management and insurance: Instructor manual (2nd ed.). New York: McGraw- Hill Publishing Company.
8. Madura, J. (2009). Financial markets and institutions (9thed.). USA: South Western College.
9. McDonald, S. S., & Koch, T.W. (2009). Management of banking (7thed.). USA: Cengage Learning.
10. Mishkin, F.S., & Eakins, F.S. (2009) financial markets and institutions. (6thed.). New Delhi: Pearson Education.
11. Rose, P.S. (2008). Bank management and financial services (8thed.) USA: McGraw-Hill Education.
12. Saunders, A., & Cornett, M.M. (2007). Financial institutions management: A risk management approach (6th ed.). New Delhi: McGraw-Hill.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 931-18
Organizational Change and Development

Course Objective: This course aims to introduce students to theories and concepts of organizational change and development and also it enhances the knowledge and understanding of organizational interventions terminology and provides students with the opportunity to apply the key concepts to practical organizational situations.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Develop understanding of organization change and Define, explain and illustrate theories of planned change, their relevant foundations, strengths and weaknesses.

CO2: Recognize and comment on issues and problems arising out of organizational change initiatives.

CO3: To Understand concepts related to system theory, Action Research and Models,

CO4: Understand the role of various intervention strategies in organizational development.

CO5: Facilitate organizational change; and apply diagnostic models and concepts to change issues at the organizational, group and individual levels.

CO6: Examine various issues in the relationship between client and consultant relationship.

Unit –I

Introduction to Organizational Change and Development; Definitions & its distinguishing characteristics, Dynamics of planned change, models and theories of planned change, triggers for change, strategies for implementing organizational change.

Foundations of OD: Conceptual Framework of OD, Historical background of OD, Values, assumptions and beliefs in OD, Systems theory, Participation and Empowerment, Teams and Teamwork, Strategies of change, Inter-Disciplinary Nature of OD.

Unit –II

Action Research and OD, Action Research: A Process and an Approach. **Managing OD Process:** Diagnosis, The Six-Box Model, Third Waves Consulting, Nature of OD intervention, Analysis of Discrepancies, Phases of OD Program, Model of Managing Change, Creating Parallel Learning Structures.

OD Interventions: An overview, characteristics of OD interventions. Structural Interventions, Training Experience: T-Groups, Behavioral Modeling and Career Anchors.

Unit –III

Team Interventions, Intergroup and Third-Party Peace-Making Interventions.

Comprehensive Interventions, Power, politics and OD: Power defined and explored, theories about the sources of Power, Organizational Politics in the practice of OD.

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Unit –IV

Issue in Consultant-Client Relations: Entry and contracting, defining the client system, trust, the nature of the consultant's expertise, diagnosis and appropriate interventions, depth of intervention, on being absorbed by the cultural, the consultant as a model, the consultant team as a microcosm, the dependency issue and terminating the relationship, ethical standards in OD, Implications of OD for the Client. Contemporary Issues in OD. OD and Quality Movement, OD- Now and Beyond.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Wendell L. French, Cecil H. Bell : Organization Development Prentice Hall
2. Richard Beckhard: Organization Development Strategies & Models Tata Mc Graw Hill.
3. Blake, Robert & Mouton : Building a Dynamic Corporate through Grid OD, Homewood
4. Thomas H, Patten Organization Development through Team Building , Thomas Publication
5. Edgar F. Huse : Organization Development & Change, Thomas Publication
6. Burke W.W.: Organization Development Principles & Practice, Sage Publication
7. S. Ramnarayan & Kuldeep Singh and T.V. Rao: OD – Interventions & Strategies, Response Books, New Delhi.
8. S. Ramnarayan, and T.V. Rao : OD – Accelerating Learning & Transformation, Sage, New Delhi

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MBA Batch 2021 onwards
MBA 932-18
Employee Relations

Course Objective: The aim of this course is to help students to understand basics of labour laws and industrial relations applicable in various business houses.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Understand establishing & maintaining a sound relationship between the worker & the employer.

CO2: Understand the significance & functioning of Trade Unions.

CO3: Identify the simmering issues which might take the form of a dispute in the workplace.

CO4: Examine various provisions laid down by laws to settle disputes in the organizations.

CO5: Assess the importance of various Acts in Industrial Relations.

CO6: Comprehend the concept and classification of labour welfare.

Unit –I

Industrial Relations-Concept, Theories and Evolution, System approach to IR-Actors, Context, Web of Rules & Ideology, Trade Unionism, impact of trade unions on wages, The Trade unions Act ,1926 (with amendments), Factories Act, 1947 (with amendments).

Unit –II

Anatomy of industrial disputes. Dispute Settlement Machinery: Conciliation- Concept, Types, Conciliation Procedure and Practices in India; Adjudication – Concept and types; Arbitration: Approaches and types. Sexual Harassment.

Industrial Disputes Act 1947, Provisions in Industrial Disputes- Lay Off, Termination Retrenchment, Closures, VRS, Anatomy of Industrial disputes, Managing foreign nationals in Indian organizations.

Unit –III

Social Security: Concept, Social Assistance, Social Insurance.

Payment of wages Act, 1936, Payment of Bonus Act, 1965, Workman's Compensation Act, 1923, Payment of Gratuity Act 1982.

Unit –IV

Maternity Benefit Act, 1961, ESI Act 1948, Provident Fund and Miscellaneous Provisions Act, 1951.

I.L.O and social Security. The concept of Labour welfare: definition, Scope and Objectives, classification of welfare work, agencies for welfare work. Agencies for administering labour welfare laws in India.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

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MBA Batch 2021 onwards

1. Venkata Ratnam, C.S. “Industrial Relations”, Oxford University Press, New Delhi, 2006.
2. Srivastava, S. C. “Industrial Relations and Labour Laws”, Vikas Publishing House Pvt Ltd, New Delhi, 2008.
3. Sinha, P.R.N., Sinha, InduBala and Shekhar, Seema Priyadarshini, “Industrial Relations, Trade Unions, and Labour Legislation”, Pearson Education, New Delhi, 2004.
4. Sen Ratna, “Industrial Relations in India”, MacMillan, New Delhi, 2003.
5. Mamoria, Mamoria and Gankar. “Dynamics of Industrial Relations”, Himalaya Publishing House, New Delhi, 2007.
6. MonappaArun, “Industrial Relations”, Tata McGraw Hill Edition, New Delhi, 2007.
7. Davar, R S, Personnel Management and Industrial Relation, Vikas Publishing House Pvt. Ltd, New Delhi; 1999.
8. Sivarethnamohan, R, Industrial Relations and Labour Welfare- Text and Cases, PHI Learning Pvt. Ltd, New Delhi, 2010.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards

MBA 941–18 : Data Mining for Business Decisions

Objective: The objective of this paper is to acquaint the students with an introduction to data analytics, data mining, and data-driven decision making. Data mining enables one to extract useful insights, which then can be utilized for data-driven decision-making and competitive advantage. Data mining and data analytics involve a collection of techniques for extracting patterns and trends in large databases to present results to stakeholders in terms of the business objectives set, and how the information learned can be used to add value to the business. For this course, two software packages that are commonly used throughout industry are: WEKA, a well-established, highly popular data mining application, and R, a powerful open-source statistical language.

Course Outcomes: Upon completion of this course, students will be able to:

- CO1: To understand the opportunities, techniques and critical challenges in using data mining and predictive modelling in a business setting.
- CO2: Use research-based knowledge and methods including company analysis, primary and secondary data collection, analysis and interpretation of data to find solution to business problems
- CO3: To understand and translate business challenges into data mining problems.
- CO4: To become familiar with the processes needed to develop, report and analyze business data.
- CO5: To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.

Unit I

Need for strategic information, difference between operational and informational data stores
Data warehouse : definition, characteristics, role and structure, Introduction to Business Intelligence. Introduction to OLAP and its Operations, Data mart, Building a data warehouse, Introduction to Dimensional Modelling and ETL Process.

Unit II

Introduction to Data mining Process, Data Mining functionalities, various kinds of Data mining (Text mining, Web mining, Pattern Mining, Sequence Mining, Context Based Mining), Introduction to Data Visualization, Predictive Data Mining and descriptive data mining. Need of Data analytics for business intelligence

Unit III

Regression and correlation; Classification : Decision trees; Clustering – Neural networks; Market basket analysis – Association rules – Genetic algorithms and link analysis, Support Vector Machine Bayesian Classification: Bayes theorem, Bayesian belief networks Naive Bayesian classification, Other classification methods: k-Nearest Neighbour, case based reasoning, Genetic algorithms, Fuzzy set approach

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Unit IV

Introduction to prediction: linear and multiple regression, Clustering: types of Data in cluster analysis: interval scaled variables, Binary variables, Nominal, ordinal, and Ratio-scaled variables; Major Clustering Methods: Partitioning Methods: K-Mean and K-Medoids, Hierarchical methods: Agglomerative, Density based methods: DBSCAN

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- Data Mining: Concepts and Techniques By J.Han and M.Kamber Publisher Morgan Kaufmann Publishers
- Modern Data Warehousing, Mining and Visualization By George M Marakas, Publisher Pearson

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MBA Batch 2021 onwards

MBA 942 – 18 : E-Commerce and Digital Markets

Objective: The objective of this paper is to acquaint the students with the effectiveness of ecommerce and digital marketing. Students will learn about the implications of an increasingly technological Society and to provide insights on how to implement marketing in a digital world.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: To understand of various applications and scope of ecommerce.

CO2: To know the working of various payment modes used in ecommerce today.

CO3: Understand how and why to use digital marketing for multiple goals within a larger marketing and/or media strategy, Developing effective digital and social media strategies

CO4: Understand the major digital marketing channels - online advertising: Digital display, video, mobile, search engine, and social media

CO5: Students will be able to explore the latest digital ad technologies

Unit I

Need and Origin of E-Commerce, Factors affecting E -Commerce, Business dimension and technological dimension of E-Commerce, E-Commerce framework

Electronic Commerce Models, Value Chains in Electronic Commerce. Internet and E-Business Introduction to Internet and its application, Intranet and Extranets. World Wide Web, Internet Architectures, Internet Applications, Business Applications on Internet, E - Shopping, Electronic Data Interchange, Components of Electronic Data Interchange, Creating Web Pages using HTML.

Unit II

Technology for Online Business: Internet, IT Infrastructure, Middleware Contents, Text and Integrating E-Business Applications, Mechanism of Making Payment Through Internet, Online Payment Mechanism, Electronic Payment Systems, Payment Gateways, Visitors to Website, Tools for Promoting Website, Plastic Money, Debit Card, Credit Card, Laws Relating to Online Transactions. Applications in E-commerce: E-commerce Applications in Manufacturing, Wholesale, Retail and Service Sector

Unit III

Understanding Digital Marketing Process, Digital marketing vs. Traditional marketing, Website Planning Process: Understanding Domain names & Domain extensions, Search Engine Optimization: Understanding SEO, SEO Keyword Planning, On Page SEO, Off Page SEO, Local SEO, Social media marketing, Understanding the existing Social Media paradigms & psychology, How social media marketing is different than others Forms of Internet marketing, Google analytics: Introduction to Google Analytics, how Google Analytics works, Google AdWords & Online Display advertising

Unit IV

Email marketing : Need, working and challenges faced in sending bulk emails, Types of email marketing- Opt-in & bulk emailing, Lead Generation for Business: Understanding lead generation for business and its importance. Landing page vs website, Content marketing, Affiliate marketing: Sources to Make Money Online, Selecting Affiliate Program, Blogging & freelancing to make money, AdSense, approval process and AdSense Administration. E Business Entrepreneurship.

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MBA Batch 2021 onwards

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- Whitley, David, “E-Commerce Strategy, Technologies and Applications”, Tata McGraw Hill.
- Gary P. and Perry, James T., “Electronic Commerce, Schneider”, Thomson Learning.
- Bajaj, Kamlesh K & Nag, Debjani, “E-Commerce: The Cutting Edge of Business”, McGraw Hill
- Laudon and Traver, “E-Commerce: Business, Technology & Society”, Pearson Education
- Damian Ryan, Calvin Jone. Kogan Page; “Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation”.
- Kent Wertime, Ian Fenwick; “DigiMarketing: The Essential Guide to New Media and Digital Marketing”
- Seema Gupta, Digital Marketing, McGraw Hill

MBA 951-18 OPERATION STRATEGY

Course Objective: The course aims at providing fundamental knowledge of strategy and its implications in operations management. The course will cover strategy concepts, issues and techniques for efficient and effective operations.

Course Outcomes: At the end of the course, student shall be able to learn the following:

CO1: Understand the strategic role of operations management in creating and enhancing a firm's competitive advantages.

CO2: Analyze, evaluate and recommend changes in the operations strategy of an organization.

CO3: Demonstrate a managerial point of view i.e. capacity for analyzing operations problems on a functional, business and company wide basis.

UNIT-I

Introduction to operations strategy: how does it fit with the firm's overall strategy; competitive positioning and the value chain; operations strategy decision areas. Resources and core capabilities. Relationship between grand business strategy and operation strategy. Location and capacity strategy. **Enterprise Resource Planning:** concepts, scope and its implications.

UNIT-II

Development Strategies: Product development strategy, Service development strategy and implications for the organization. **Inventory management:** Inventory concepts, reasons for holding inventory, types of inventory, inventory reduction tactics and Inventory turnover ratio. Selective **Inventory management:** ABC, VED, and FSN analysis etc., identifying critical items with selective inventory management.

UNIT-III

Vertical integration and outsourcing, Process technology strategy, Information technology and operations. Dimensions of operations for competitive advantage. **Maintenance Strategies:** Classification of maintenance programs, corrective, preventive and predictive maintenance, comparison of maintenance programs, preventive maintenance concept functions, benefits, limitations.

UNIT-IV

Global Sourcing, trends in global sourcing. Outsourcing and off shoring strategy. Global Supply Chain Strategy, Materials Requirements Planning. Innovation management. Environment and social sustainability strategy.

Recommended books:

1. L.R. Higgin. 'Maintenance Planning and Control', McGraw Hill Book Company.
2. K. Bedi. Production and operation Management, Oxford Publishing

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3. Supply Chain Management – 2001, Strategy, Planning & Operation. Sunil Chopra & Peter Meindl; Pearson Education Asia, ISBN: 81-7808-272-1.
- 4 Designing & Managing the Supply Chain -David Simchi Levi, Philip Kaminsky& Edith Simchi Levi; McGraw Hill
5. Krajewski L J and Ritzman L P, “Operations Management”, Pearson Education Asia, Sixth Edition (2004)

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MBA Batch 2021 onwards
MBA952-18 OPERATION RESEARCH APPLICATIONS

Course Objective:

The course aims at familiarizing the students with quantitative tools and techniques, which are frequently applied to business decision-making & to provide a formal quantitative approach to problem solving and an intuition about situations where such an approach is appropriate.

Course Outcomes:

CO1: Be able to understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.

CO2: Model Formulation and applications that are used in solving business decision problems.

CO3: Be able to design new simple models, like: CPM, PERT to improve decision –making and develop critical thinking and objective analysis of decision problems.

UNIT-I

Introduction: Historical Developments in Operations Research; Managerial applications of Optimization; Optimization techniques – classical and advanced techniques. Art of Modeling Origin of OR and its role in solving industrial problems: General approach for solving OR problems. Classification of mathematical models: various decision making environments.

UNIT-II

Linear Programming and its applications: Formulation of linear mathematical models: Graphical and simplex techniques for solution of linear programming problems, Motivation of simplex method, Simplex algorithm and construction of simplex tableau; Simplex criterion; Minimization versus maximization problems, Big-M method and two phase method, Introduction to duality theory and sensitivity analysis.

UNIT-III

Transportation & Assignment Models and its applications: Various initial basic feasible solutions methods, Optimization of transportation and assignment using different methods considering the concept of time and cost function. **Dynamic Programming:** Characteristics of dynamic programming problems, deterministic dynamic programming, and probabilistic dynamic programming. **Queuing Theory:** Basic structure of queuing model, Types of queuing situation: Queuing models with Poisson's input and exponential service, their application to simple situations.

UNIT-IV

Network Models: Shortest route and traveling sales man problems, PERT & CPM, analysis of time bound project situations, construction of networks, identification of critical path, slack and float, crashing of network for cost reduction. **Non-linear Programming Models:** Graphical illustration to non-linear programming problems, introduction to different types of non-linear programming problems. Problems related to the topic.

Recommended books:

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1. H.A. Taha, 'Operations Research', Prentice Hall of India, New Delhi.
2. H.M. Wagner, 'Principles of Operations Research', Prentice Hall.
3. P.K. Gupta and D.S. Hira, 'Operations Research', S. Chand & Co.
4. F.S. Hiller and G.I. Libermann, 'Introduction to Operation Research', Holden Ray.
5. Wiest& Levy, 'A Management Guide to PERT/CPM', Prentice Hall.

MBA 961-18 Marketing Analytics

Course Objective: The objective of this paper is to acquaint the students with Product Management, Digital Marketing and analysis of market conditions.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: To learn how to analyse market conditions in the era of social media.

CO2: To learn to apply statistical tools on marketing data metrics.

CO3: Understand how the “first principles” of marketing strategy helps firms organize the analytics opportunity and challenge in today’s data era, and

CO4: Use and execute data analytic techniques, and case studies to understand how to solve marketing analytics problems in a scientific and process-driven manner.

Unit I

Understanding Data : Introduction to analytics, Basics of Statistics and Data Interpretation on MS EXCEL.

Market Analysis : Sales Forecasting, Market Share Analysis; Other Market performance Indicators like Penetration, Usage, Brand Performance, Satisfaction.

Customer Analysis : Customer Choice Analysis, Customer Profitability Analysis, Lifetime Value; Acquisition and Retention Costs and Rates

Product Analysis : Product Portfolio Analysis, New Product Sales Forecasting; Cannibalization Analysis

Unit II

Pricing Analysis Understanding Price; Price Sensitivity; Price-Volume Equation; Price Promotion, Price-Value Equation /Analysis, How to Price

Sales and distribution analysis Sales Force Sizing, Effort (Call Planning), Territory Planning, Target Setting, Compensation Planning; Performance Appraisal. Distributor, Numbers, Margin and Profitability, Performance Appraisal and People analytics

Unit III

Advertising and sales promotion Performance of Ads, Media Planning, Setting Advertising and Sales Promotion Budget. Measuring Retail Lift and Promotional Lift

Social Media Analysis, Understanding the Metrics behind Social Media Spends

Brief information about following : Descriptive Analytics, Diagnostic Analytics, Predictive Analytics, and Prescriptive Analytics.

Unit IV

E-Marketing : Introduction, Objectives, Definition, History, Scope, Benefits and Problems; E-marketing Techniques and Digital Marketing; Components of E-Marketing; E-Customers - Introduction & Objectives, Dealing with Customers’ and Online Buying Process; Types & Applications of E-Market

E-Marketing Tools : Introduction, Objectives, E-Mail Marketing, Creating a Website, Social Media Marketing, Pay-Per-Click Advertising, Search Engine Optimization or Paid Search Engine Listing Search Engine Marketing, Blogging and Classified Advertising.

E-Marketing Plan: Introduction, Objectives, Definition of E-Marketing Plan, Situational Analysis, Setting Objectives, Marketing Mix Decision, Budget Allocation, Action Plan, Measuring Success

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Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Open Intro Statistics 3e, available at: <https://www.openintro.org/stat/textbook.php>
2. "Regression Analysis," David Bell, Harvard Business Review 1993
3. "Logistic Regression," Rajkumar Venkatesan and Shea Gibbs, Darden Business Publishing
4. "Customer Profitability and Lifetime Value", Elie Ofek, Harvard Business Review 2014 [CSULB_CBA_2017_06_22] Page 3 of 4 The following articles can be recommended as an introduction: "Big Data: The Management Revolution," Andrew McAfee and Erik Brynjolfsson
5. Harvard Business Review 2012 "Keep Up with Your Quants," by Thomas H. Davenport, Harvard Business Review 2013
6. "Data Scientist: The Sexiest Job of the 21st Century," Thomas H. Davenport and D.J. Patil, Harvard Business Review 2012
7. "Making Advanced Analytics Work for You," Dominic Barton and David Court, Harvard Business Review 2012
8. "Marketing As Strategy: Understanding the CEO's Agenda for Driving Growth and Innovation," Nirmalya Kumar, Harvard Business Press 2004
9. "Should You Sell Your Digital Privacy?" John Deighton, Harvard Business Review 2003
10. "When Folly Is Forever," Adam Keiper, Wall Street Journal 2009
11. Darden Business Publishing, University of Virginia: store.darden.virginia.edu/
12. Harvard Business School Publishing: <https://cb.hbsp.harvard.edu/cbmp/pages/home>
13. Ross School of Business, Global Lens, University of Michigan: wdi-publishing.com/
14. INSEAD Case Publishing: cases.insead.edu/publishing/
15. Ivey Cases, Western University: www.iveycases.com/Default.aspx
16. Kellogg Case Publishing, Northwestern University

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MBA Batch 2021onwards
MBA 962-18 Data Sciences using R

Objective: The objective of this paper is to acquaint the students with availability of plethora of data in organizations that need to be analysed to discover the hidden pattern used for solving business problems. This is done through the field of Data Science. After studying this course students will be able to relate the applications of data science with real life business problems in organizations and will be able to provide solutions after rigorous analysis of data through it.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Know advanced aspects of big data analytics, applying appropriate machine learning techniques to analyse big data sets

CO2: Assess the statistical significance of data mining results, basic statistical modelling and analysis using the open-source tool R

CO3: Describe what Data Science is and the skill sets needed to be a data scientist.

CO4: Understand concepts like Big Data, Data Mining, Data Analytics and Machine Learning

CO5: Understand various algorithm for data analysis (classification and Clustering)

Unit I

Data Science: Understanding Different Components of Data Science & their Roles (introduction to concepts like Big Data, data pre-processing, concepts of supervised and unsupervised learning, Data Mining, Data Analysis, Web Analytics, Machine Learning), Business Applications of Data Science (Internet Search Digital Advertisements, Recommender Systems, Price Comparison Websites, Fraud and Risk Detection, Roles and responsibilities of Data Scientists in Business analytics).

Introduction to R Software, Installation, basic Elements, R- Data Interfaces, R- Charts & Graphs, R- Statistics.

Basic statistics through R: Mean median, standard deviation, variance, correlation, and covariance.

Unit II

Probability Theory for Data science (Bays heorem), Regression- Linear, multiple and logistic regression.

Decision tree and Support Vector Machine (SVM).

Unit III

Ensemble methods: bagging, random forests, boosting. **Clustering:** K-mean Clustering , K-medoids, **Agglomerative**, Hierarchical clustering, X-means, Density-based spatial clustering of applications with noise (DBSCAN).

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Unit IV

Evaluation and validation: methods of estimating the performance of classifiers: cross-validation, Holdout Method and Bootstrap Method; Confusion Matrix, assessing the statistical significance of data mining results. **Selection of advanced topics such as:** scalable machine learning, big data related techniques, mining stream data, social networks.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking. First edition by Foster Provost, Tom Fawcett. ISBN-13: 978-1449361327 ISBN-10: 1449361323 O'Reilly Media Inc.
2. Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data -Hardcover 2015, John Wiley & Sons
3. Mohammed J. Zaki and Wagner Miera Jr. Data Mining and Analysis: Fundamental Concepts and Algorithms. Cambridge University Press. 2014.
4. Trevor Hastie, Robert Tibshirani and Jerome Friedman. Elements of Statistical Learning, Second Edition. ISBN 0387952845. 2009. (free online)
5. Jure Leskovek, Anand Rajaraman and Jeffrey Ullman. Mining of Massive Datasets. v2.1, Cambridge University Press. 2014. (free online)
6. Kevin P. Murphy. Machine Learning: A Probabilistic Perspective. ISBN 0262018020. 2013

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MBA401-18 Corporate Strategy

Course Objective: This course aims to familiarize the students with organization perspective from strategic viewpoint integrating different functional areas of management. The aim is to develop an understanding of how organizational strategies are formulated and implemented in a changing global environment.

Course Outcomes: After studying this course, the students should be able to:

CO1: Understand the concepts of strategic management process and strategic decision making process.

CO2: Discuss various techniques of external as well as internal environmental analysis of business.

CO3: Explain various business level and corporate level strategies for the growth of the business along with their implications.

CO4: Illustrate the issues involved in strategy implementation and the role of leadership, communication and organizational structure in implementation of strategy.

CO5: Develop various functional plans for successful implementation of strategy.

CO6: Understand organisational systems and techniques of strategic evaluation and control.

Unit I

Understanding Strategy and Strategic Management: Strategic Management Process, Strategic Decision Making, Levels of Strategy, Role of strategists, Benefits of Strategic Management, Mckinsey's 7 S model.

Defining Strategic Intent: Vision, Mission, Goals and Objectives.

External Environment Analysis: Concept of environment, Strategically Relevant Components of External Environment, Environmental Scanning Techniques- ETOP, PEST, SWOT, TOWS.

Unit II

Industry analysis- Porter's Five Forces Model; Strategic Group Mapping; Industry Driving Forces; Key Success Factors, External Factor Evaluation Matrix.

Internal Environment Analysis – Organisational capabilities in various functional areas and Strategic Advantage Profile. Resource based view of an organization: VRIO Framework; Value Chain Analysis; Competitive Advantage and Core Competency, Identification of Critical Success Factors (CSF). Internal Evaluation Factor Matrix.

Business Level Strategies – Porter's Framework of Competitive Strategies: Cost, Leadership, Differentiation and Focused Strategies, Location and timing tactics. Concept, Importance, Building and use of Core Competence.

Unit III

Corporate Level Strategies – Expansion (growth)-Horizontal and Vertical

Integration, Strategic outsourcing, Related and Un-related Diversification, International Entry Options, Corporate restructuring. Concept of Synergy, Mergers & Acquisitions, Stability, harvesting and Retrenchment and Combination strategies.

Strategic Analysis and choice (Multi Business Strategies: Portfolio Strategies) – BCG, GE Nine cell, Product life cycle Matrix).

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Unit IV

Strategy Implementation– Strategy- Structure Fit: Resource allocation, Projects and Procedural issues. Organisation structure and systems in strategy implementation. Leadership and corporate culture. Operational and derived functional plans to implement strategy. Integration of functional plans.

Strategy Evaluation and Control – Nature of Strategy Evaluation; Strategic control and operational Control. Organisational systems and Techniques of strategic evaluation, Strategy Evaluation Framework; The Balanced Score Card.

Suggested Readings:

- Thompson, Arthur A Jr.; Strickland A J III; Gamble, John E and Jain, Arun K. “Crafting and Executing Strategy. The Quest for Competitive Advantage - Concepts and Cases”, Tata McGraw, New Delhi.
- Kazmi, Azhar, Strategic Management, Tata Mc .Graw
- Wheelen Thomas L. & Hunger J. David; Concepts in Strategic Management and Business Policy; Pearson Education
- Pearce III, John A, Robinson, Jr., Richard B and Mittal, A “Strategic Management:Formulation, Implementation and Control. Tata McGraw Hill.
- David, R Fred, “Strategic Management- Concepts and Cases”, Pearson Education, India.
- Hill, Charles W L and Jones Gareth R, “An Integarated Approach to Strategic Management” Cengage Learning
- Pitts, Robert A and Lei, David. “Strategic Management Building and Sustaining Competitive Advantage”, Thomson, India
- Porter, M.E., Competitive Advantage: Creating and Sustaining Superior Performance, Free Press, New York.

I.K.G. Punjab Technical University
MBA Batch 2021onwards

MBA 923-18 Integrated Marketing Communication and Sales Management

Course Objective: This course will help the students to understand the principles and practices of marketing communication, tools used by marketers to inform consumers and to provide a managerial framework for integrated marketing communications planning as well as sales management.

Course Outcomes: After successfully completing this course, students will be able to:

CO1: Apply the key terms, definitions, and concepts used in integrated marketing communications.

CO2: Conduct and evaluate marketing research and apply these findings to develop competitive IMC Programme.

CO3: Examine the role of various promotional strategies such as advertising, direct marketing, sales promotion and PR in effectiveness of marketing communication.

CO4: Understand and apply the concepts of sales management and organization.

CO5: Develop sales related marketing policies such as product policies, distribution policies & pricing policies.

CO6: Explain various sales operations such as sales budget, sales territories, sales Quota's, control of sales, sales meeting and sales contest, organizing display, showroom and exhibition.

UNIT I

Role of IMC in marketing process: IMC planning model, IMC components. Communication process, steps involved in developing IMC programme, Effectiveness of marketing communications, Purpose, Functions, Types of IMC. **Advertising management:** Advertising appeals, advertising designs, Advertising agencies, Advertising Budgeting, Media planning and evaluation, Media strategy: Creativity, Elements of creative strategies and its implementation.

UNIT II

Direct Marketing: Features, Advantages/Disadvantages, strategies in Direct Marketing **Promotion:** Meaning, Importance, tools used, push pull strategies, **Publicity/ Public relations:** Meaning, Objectives, strategies and tools of public relations. **Corporate Advertising** Role, Types, Limitations, **Monitoring, Evaluation and control:** Measurement in advertising, various methods used for evaluation, Pre-testing, Post testing. **International Advertising:** Global environment in advertising, **Internet advertising:** Meaning, Components, Advantages and Limitations, Types of Internet advertising.

Unit- III

Sales Management and Organization: Objectives of sales management, sales executive as a coordinator, sales management and control, sales organization - it's purpose , setting up a sales organization , types of sales organization. **Objectives and theories of personal selling,** analyzing market potential, sales potential and sales forecasting method & evaluation, determining sales related marketing policies - product policies, distribution policies & pricing policies.

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Unit- IV

Sales Operations: Sales budget , sales territories, sales Quota's, control of sales , sales meeting and sales contest, organizing display , showroom and exhibition. **Sales manager-** Qualities and functions , types of salesman , psychology of customers .

Note: Relevant Case Studies should be discussed in class.

Suggested Readings

1. Kenneth . E. Clow and Donald Baack, “Integrated Advertising, Promotion and Marketing Communication”, Prentice Hall of India
2. Philip j. Kitchen and Patrick D. Pelsmacker, “Integrated Marketing Communication- A Primer”, Routledge London.
3. Spiro, Stanton and Rich “Management of a Salesforce”, Tata McGraw Hill; 11th Edition.
4. Richard R Still, Cundiff W Edward Govoni A P Norman, “Sales Management: Decision Strategy and Cases”, Pearson Education; 5th Edition.
5. Mark W. Johnston & Greg W. Marshall, ‘Sales Force Management’, Tata McGraw-Hill
6. Rosenbloom, Bert, ‘Marketing Channels: A Management View’, Cengage Learning,
7. Havaladar, K. K. and Cavale, VM. ‘Sales and Distribution Management’, Tata McGraw Hill,
8. Chunawalla, S.A. Sales and Distribution Management, Himalaya Publishing House

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 924-18 Retail Management

Course Objectives: This course enables students to understand the evolution of retailing and the strategic role of retailing in the distribution of consumer goods and services. The content of the course is useful for students interested in a retail career, working for companies that interface with retailers, or interested in owning or running a retail business.

Course Outcomes: After studying this course, the students should be able to:

CO1: Understand opportunities and challenges in retail management and retail management decision process.

CO2: Examine various types of retail formats and comprehend the application of theories of retail development on business models in retail.

CO3: Discuss and apply various function of store management.

CO4: Recognize the importance of store design and apply the concepts of store design to determine store layout and merchandising.

CO5: Understand the importance of customer service in improving retail service qualities.

CO6: Describe the applications of IT in retailing.

Unit - I

Introduction to Retailing: Economic Significance, Opportunities in Retailing, Retail Management Decision Process

Retailing in India: Evolution of Retail in India, Drivers of Retail Change and Challenges to Retail Development in India.

Unit-II

Types of retailers: Food Retailers, General Merchandise Retailers, Non-Store Retail Formats, Services Retailing, Types of Ownership.

Retail Models & Theories of Retail Development: Evolution of Retail Formats, Theories of Retail Development, Concept of Life cycle in Retail, Business Models in Retail

Unit-III

Managing the Store: Store Management Responsibilities, Recruiting & Selecting Store Employees, Socializing & Training New Store Employees Motivating, Managing & Evaluating Store Employees.

Store Layout, Design & Visual Merchandising: Objectives of Good Store Design, Store Layout. Space Planning and Merchandise Presentation Techniques. Atmospherics.

Unit-IV

Customer Service: Strategic Advantages Through Customer Service, Customer Evaluation of Service Quality, GAPS Model for improving Retail Service Quality.

Application of IT to Retailing: Growing Role of IT in Retailing, IT for Competitive Advantage, Data Mining, Database Marketing, Business Intelligence. International Retailing: International Retail Structures, MotiChain Integration.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

I.K.G. Punjab Technical University
MBA Batch 2021onwards

1. Levy, Michael and Barton A. Weitz (2003), Retail Management, Tata McGraw Hill, 5th Edition.
2. Sinha, P. K. and Uniyal, D. P. (2007), Managing Retailing, Oxford, 1st Edition.
3. Newman, Andrew J. and Peter Cullen (2007), Retailing: Environment and Operations, Thomson,
4. 1st Edition.
5. Pradhan, Swapna (2007), Retail Management – Text and Cases, Tata McGraw Hill, 2nd Edition.
6. Cox, Roger and Paul Brittain (2004), Retailing – An Introduction, Pearson Education, 5th Edition.
7. Gilbert, David (1999) Retail Marketing Management, Prentice Hall, 1st Edition.
8. Dunne, Patrick M; Robert F. Lusch and David Griffith (2002), Retailing, Thomson

I.K.G. Punjab Technical University
MBA Batch 2021onwards

MBA 925-18 International and Social Media Marketing

Course Objectives: The course aims at acquainting students with the concepts and procedures for international marketing and trains them to develop and implement plans and strategies for entering international markets and managing overseas operations. The course also helps students to understand the basics in Social Media Marketing and Blogging.

Course Outcomes: After successfully completing this course, students will be able to:

CO1: Assess the challenges in international marketing and understand various international market entry strategies.

CO2: Evaluate international marketing environment and identify various international trade barriers and regional blocks.

CO3: Develop international product, pricing and communication policy and examine international distribution system.

CO4: Discuss the evolution of social media marketing and identify various benefits and applications of social media.

CO5: Explain how to develop effective social media marketing strategies for various types of industries and businesses.

CO6: Describe the major social media marketing portals that can be used to promote a company, brand, product, service or person.

Unit-I

Definition and challenges of international marketing, Reasons for going international, International Market Segmentation and Positioning; **International Market Entry Strategies:** Screening and Selection of Markets; Methods to enter International markets. **International Marketing environment:** political, legal, environmental, socio Cultural and Technological environment, Country Risk Analysis, **International Economic environment:** IMF, WTO, International Monetary System, **International Trade Barriers:** Tariff and Non-Tariff. **Regional Blocks:** European Union, NAFTA, SAARC, ASEAN, International Marketing Research.

Unit-II

EXIM policy of India, export promotion organizations, incentives, Export documents. organisation and structure of export and import houses. **International product and pricing policies:** Product standardization & adaptation, international pricing strategies. **International distribution system:** International distribution channels, types, role of internet in international distribution **International communication policy:** communication strategies in international marketing, international promotion mix.

Unit III

Introduction to Social Media Marketing: Evolution, from traditional to Modern marketing, Rise of internet and E concepts. Emergence of social media marketing as a tool. **Social media Channels:** Types and models, Social media benefits and applications. Social media marketing framework. **Consumer behavior on the Internet:** Basics, evolution of the digital consumer, managing consumer demand. IMC. **Social media marketing strategies:** Introduction, defining social media marketing mix, social media marketing planning, social media marketing marketing channels.

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Unit IV

Social media marketing campaign: Elements of marketing campaigns, implementing social media marketing campaigns, SEM, SEO, Content marketing, Social media execution, campaign analytics and ROI, **Managing social media marketing revenue:** social media marketing revenue sources, managing service delivery and payments, **Emerging trends in social media marketing:** Big data, IOT, Content Creation and Sharing: Blogging, micro blogging, Streaming Video, Podcasts, and Webinars.

Note: Relevant Case Studies should be discussed in class.

Suggested readings

1. Czinkota M, Ronkaine I, Sutton Brady, C. and Beal, T. International Marketing, Cengage Learning.
2. Cherunilam F, International Trade & Export Management, Himalaya Publishing.
3. Cateora& Graham, International Marketing, McGraw Hill.
4. Dan Zarella, Social media marketing , O reilly.
5. R Solomon and Tracy , Social Media Marketing: Pearson New International Edition

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 926-18 Product and Brand Management

Course

Objective: To create understanding among students for concepts, process, techniques of product and management. The course also aims to familiarize students with the concept of a 'brand', the role of branding in marketing strategy; brand equity, its importance and measurement, how to create and retain brand equity; operational aspects of brand management.

Course Outcomes: After studying this course, the students should be able to:

CO1: Understand what a product is, the various levels which make it up, and different types of products.

CO2: Examine various challenges and issues involved in product planning and development.

CO3: Discuss and apply the concepts of test marketing and market entry of a product.

CO4: Recognize the features and importance of a brand and conduct branding research.

CO5: Understand the concept of brand loyalty and measuring brand performance.

CO6: Describe the role of various branding strategies in brand equity management.

Unit I

Product management: meaning, importance of the product manager's job, planning and control systems for product management, product portfolio planning and analysis, Mapping, understanding company product/brands and competitive brand market position, Impact of global forces on products.

Unit II

Product planning and development: Meaning, objectives, Strategic reasons, processes challenges and issues, Forecasting demand, Estimating market opportunity, test marketing, types, design issues, Evaluation of test marketing results, Market entry decisions-Launching new product

programs, National launching of new products, Tracking the launch, absorbing the new product in the mix.

Unit III

Basic understanding of brands: concepts and process, significance of a brand, brand mark and trade mark, **Different types of brand:** family brand, individual brand, private brand, Co-branding, selecting a brand name. **Functions of a brand:** branding decisions, influencing factors. Understanding customer-based brand equity. Monitoring brand performance. **Branding research:** Designing and implementing branding research, Brand design and structures.

Unit IV

Brand loyalty: loyalty programs, Building strong brands. Measuring brand performance, Brand extensions. **Brand Equity Management:** Brand Equity Measurement, Brand Leverage, Global Branding strategies, Brand Audit, Role of Brand Manager, Branding challenges &

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MBA Batch 2021 onwards

opportunities. **Brand rejuvenation and re-launch**, brand development through acquisition takes over and merger, relaunching the brand, need, methods and success rate

Note: Relevant Case Studies should be discussed in class.

Suggested readings:

1. Keller, Kevin Lane, Strategic Brand Management : Building, Measuring and Managing Brand Equity, Prentice Hall of India, Third Edition, (2008).
2. Aaker, David A., Managing Brand Equity: The Free Press, (1991).
3. Kapferer, Jean-Noel, The New Strategic Brand Management, Kogan Page 3rd Edition, (2008).
4. Sengupta, Subroto, Brand Positioning, Tata McGraw-Hill Publishing, 2nd Edition, (2005).
5. Venugopal 'Product and Brand Management' Himalaya Publications

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 913-18 Behavioural Finance

Course Objective: The primary objective of the course is to make the students understand how behavioural bias affects the classical financial theory.

Course Outcomes: After studying this course, the students should be able to:

CO1: Understand and differentiate between different theories of behavioural finance. **CO2:** Examine the concepts of bounded rationality.

CO3: Discuss various anomalies in the market giving rise to behavioural bias.

CO4: Describe the basis of behavioural bias of professional investors trading in market.

CO5: Understand the concept of market efficiency and will be able to relate it with the concept of behavioural finance.

CO6: Describe the challenges to the efficient market hypothesis.

Unit I

Introduction: Meaning, features and scope of behavioural finance. Rational Expectations Paradigm and the Behavioural Challenge

Theories of Behavioural Finance: Agency theory, Prospect theory, Reasoned emotions; Overreaction and optimism, Rationality to psychology, Neo-classical finance and Efficient Market Hypothesis

Unit II

Behavioural aspects of Investing: Heuristics and biases, self- deception, Emotional Factors and Social Forces and Neuro-scientific and Biological Perspective, Small / Medium / Large firm effect, Momentum Vs Reversal, Noise trader risk in financial market, Attitude to risk, Expected utility, Mental accounting, Over confidence, Emotion and reasoning, Excessive risk taking, Behavioural explanation for anomalies, Excessive volatility, Loss aversion, Gamblers' fallacy

Unit III

Investor behaviour: Types of investors – on the basis of risk appetite and investment exposure, Conformity, Contrarian investing, Social forces selfishness or altruism, Group psychology on Board, Resistance to recognising failure, Conflict of interest. Value investing and growth investing. Stock market bubbles.

Unit IV

Model of Investor Sentiment

Market Efficiency and Biases in Brokerage Recommendations

Evidence on the Characteristics of Cross-sectional Variation in Stock Returns

Behavioural Corporate Finance and Wisdom from Other Sources

Suggested Readings:

1. Chandra, P. (2017) 'Behavioural Finance', McGraw Hill.
2. Parikh, P (2017), 'Value Investing and Behavioural Finance: Insights into Indian Stock Market Realities', Tata McGraw Hill.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards

3. Davies, G. B. and Servigny, A. D. (2010), 'Behavioural Investment Management: An Efficient Alternative to Modern Portfolio Theory', McGraw Hill.
4. Forbes, W. (2011), 'Behavioural Finance', John Wiley and Sons Ltd.
5. Sulphrey, M. M. (2014), 'Behavioural Finance', PHI Learning.
6. Ackert, L. F. and Deaves, R. (2012), 'Understanding Behavioural Finance', Cengage Learning.
7. Graham, B. (2013), 'The Intelligent Investor' Harper and Brothers.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards

MBA 914-18 Mergers, Acquisitions and Corporate Restructuring

COURSE OBJECTIVE: The main objective of this course is to enable the students to understand, evaluate, and interpret the significance of Mergers, Acquisitions and Corporate Restructuring in the current global business environment, and enable them to appreciate how these strategic decisions are affected by various issues like valuation, regulatory environment and methods of payment.

Course Outcomes:

- 1) To explain the popularity of merger and acquisition strategies in firms competing in the global economy.
- 2) To describe the reasons why firms use an acquisition strategy to achieve strategic competitiveness.
- 3) To describe the issues that are significant in valuation decisions, and the factors which work against achieving success when using an acquisition strategy.
- 4) To define the restructuring strategy and distinguish among its common forms.
- 5) To explain the regulatory aspects of mergers, acquisitions and corporate restructuring.

UNIT-I

Introduction to Mergers, Acquisitions and Corporate Restructuring: Evolution, Need and Reasons/Motives for Mergers and Acquisitions. Forms of Corporate Restructuring. Mergers and Acquisitions as Strategic Choice. Evaluation of Strategic Alternatives. Value Creation in Mergers and Acquisitions. Takeover Defence Strategies. Reasons for Failures of Mergers and Acquisitions.

UNIT-II

Demerger, Reverse Merger and Buyback of Shares. Strategic Alliances: Types, Structure and Problems in Strategic Alliances. LBO(Leveraged Buy Out):Characteristics, Categories, Financing. Types of LBO Sponsor. Restructuring of Sick Companies. Deal Valuation in Mergers and Acquisitions: Factors affecting valuation, Valuation Basics. Valuation of Intangibles.

UNIT-III

Methods of Payment and Financing Options in Mergers and Acquisitions. Impact on EPS(Earning Per Share).Determinants of Mergers and Acquisitions Financing Decisions. Accounting Aspects of Mergers and Acquisitions. Impact of Mergers and Acquisitions on Shareholder Wealth.

UNIT-IV

Tax Implications of Mergers and Acquisitions. The Process of Integration in Mergers and Acquisitions. International Mergers and Acquisitions: Motivations, Strategies and its Execution. Due Diligence in Mergers and Acquisitions. Regulatory Aspects of Mergers and Acquisitions

Suggested Readings:

1. Aurora, Rajinder S, Shetty, Kavita and Kale, Sharad, "Mergers and Acquisitions(2011)"Oxford Higher Education.
2. Kar,Rabi Narayan(2017), "Mergers, Acquisitions and Corporate Restructuring-Strategies and Practices",3rd Edition, International Book House Pvt. Ltd., New Delhi.

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MBA Batch 2021 onwards

3. Krishnamurti, Chandrashekar and Vishwanath, S R (2018), "Mergers, Acquisitions and Corporate Restructuring: Text and Cases", SAGE Publications.
4. Kapil, Sheeba & Kapil, Kanwal N. (2018), "Mergers and Acquisitions: Strategy, Valuation, Leveraged Buyouts and Financing" Wiley Publications.
5. Prasad G. Godbole (2013), "Mergers, Acquisitions and Corporate Restructuring", Vikas Publishing House.
6. Sharma, Dr. Manu (2015), "Mergers, Acquisitions and Corporate Valuation", Dreamtech Press.
7. Sudarsanam, S (2016), "Creating Value from Mergers and Acquisitions", Pearson Education.

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MBA Batch 2021 onwards
MBA 915-18 International Finance and Financial Derivatives

Course Objective: The primary objective of the course is to familiarize the students with the different aspects of finance in respect of international trading and investing and to equip them with the trading framework of different types of derivative contracts.

Course Outcomes: After studying this course, the students should be able to:

CO1: Understand the framework of international exchange rate system including factors influencing exchange rates.

CO2: Discuss the basics of different types of derivative contracts like futures, options and swaps.

CO3: Understand various types of risks / exposures in forex trading and their management.

CO4: Describe various theories underlying the concepts of international finance.

CO5: Understand trading strategies using options contracts.

CO6: Describe the regulatory framework of derivatives contracts in India.

Unit I

International Finance: An overview, importance, nature and scope, recent changes and challenges in IFM. International flow of funds: Balance of Payments (BoP), Fundamentals of BOP, Accounting components of BOP, Factors affecting international trade flows, Agencies that facilitate International flows. **International Monetary System:** Evolution, Gold Standard, Bretton Woods system, the flexible exchange rate regime, the current exchange rate arrangements, the Economic and Monetary Union (EMU).

Foreign Exchange Market: Function and Structure of the Forex markets, Major participants, Types of transactions and settlements dates, Foreign exchange quotations, Factors influencing foreign exchange rates.

Unit II

Parity Conditions in International Finance and Currency Forecasting: PPP, the Fisher effect, The International Fisher Effect, Interest Rate parity Theory, The relationship between forward and future spot rate.

International Sources of Finance: Long Term- International Capital Markets (ADR's, GDR's), Foreign Bond Market, Foreign Banks, Euro Markets, World Bank and IMF. Short Term: Banker's Acceptance, Discounting, Factoring, Forfating, EXIM Bank of India

Unit III

Derivatives: Meaning, Types, Importance, Principles and regulatory framework in India

Forward and Futures Contracts: Meaning, Difference between forward and futures contracts, pricing of futures contracts, determinants of value of futures contracts, Mark-to-Market, Payoffs of futures contracts. Speculation, Hedging and Arbitrage by using futures contracts.

Options Contracts: Meaning, type, importance, Black-Scholes Model for pricing options contracts, factors determining option prices, Payoffs of Call Option and Put Option contracts,

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MBA Batch 2021 onwards

Put-Call Parity. **Option Trading Strategies:** Covered call writing, protective puts, Straddles, Strangles, Strips, Straps, Spreads including butterfly spreads, calendar spreads etc.

Unit IV

Swaps and Swaptions: Meaning, types, importance and pricing of swaps and Swaptions. Factors determining price of swaps and Swaptions.

Credit Derivatives: Meaning, Importance, pricing models and strategies to hedge by using credit derivatives.

Foreign Exchange Risk Management: Measuring and managing Transaction exposure, Measuring and Managing Economic exposure, and Measuring and Managing translation exposure, Country Risk Analysis, Foreign Exchange and Derivative Markets: Currency Futures and option Markets, Swap and Interest rate derivatives.

Suggested Readings:

1. P. G. Apte, International Financial Management, Tata McGraw-Hill, New Delhi.
2. Alan C. Shapiro, Multinational Financial Management, Prentice Hall India Private Ltd,
3. Jeff Madura, International Financial Management, Thomson Publications.
4. Maurice D. Levi, International Finance, Tata McGraw-Hill, New Delhi.
5. S. EunChoel and Risnick Bruce, International Financial Management, Tata McGraw
6. Hill,Hull, John C.: Options, Futures and Other Derivatives, Prentice Hall of India
7. Walmsley, Julian: New Financial Instruments, Prentice Hall of India
8. Marshall, John F. and Bansal, Vipul K.: Financial Engineering, Prentice Hall of India
9. Strong, Robert A.: Derivatives – An Introduction, Thomson South-Western
10. Kumar, S.S.S: Financial Derivatives, Prentice Hall of India

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 916-18 Taxation and Personal Financial Planning

Course Objective - To enable the students to understand the importance of tax management and various methods available for tax planning. This course also aims to acquaint students with the importance and methods for personal financial planning.

Course Outcomes:

CO1 – The students will be familiarised with the concepts of tax management, tax avoidance and tax evasion and the methods of ways of tax planning.

CO2 – To acquaint students with the provision of the current finance act with regard to various head of income.

CO3 – To enable students to compute the tax liability of individuals after considering their residential status, various exempted incomes, permissible deduction, clubbing of income and setting off of losses.

CO4 – To familiarise students with the concept, objectives and importance of personal financial planning and enable the students to understand the implications of environmental factors and time value of money on the personal financial statements.

CO5 – To enable students to identify various types of risks any individual is exposed to and how they can hedge diversifiable risk.

CO6 – To familiarise students with various instruments available for investment by an individual for achieving their personal financial goals

UNIT I:

Tax Management: Introduction to tax management, features and scope of tax management. Differentiate between tax planning, tax avoidance and tax evasion.

Tax Planning: Meaning, need, scope, objectives and methods of tax planning.

UNIT II:

Tax planning for Five Heads of Income: Income from salary, house property, profits and gains from business or profession, capital gains and income from other sources.

Tax Planning with reference to Residential status, exempted incomes, permissible deductions, clubbing of income and setting off & carry forward of losses.

UNIT III:

Personal Financial Planning: Introduction, features, objectives and scope of personal financial planning.

Environmental Analysis: Screening and analysis of environmental factors affecting personal financial planning.

Time Value of Money and Personal Financial Statements: Meaning and calculation of present value and future value of money. Factors affecting the time value of money and its impact on the personal financial statements.

UNIT IV:

Personal Risk Management: Meaning of risk, measurement of risk and its identification (Risk taker, moderate risk taker, risk averter), introduction to life insurance and general insurance, differentiate between life insurance and investment. Insurance planning for the individual as well as family.

Investment Planning: Meaning and process of investment planning. Investment Planning objectives – Retirement planning, tax saving, capital growth, liquidity and safety

Investment Instruments for Personal Financial Management: Tax saving instruments (all investments covered u/s 80C like, Provident fund, PPF, ELSS, NPS etc.), Mutual fund schemes

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(open ended and closed ended; growth and dividend schemes), Fixed income securities (Government bonds, corporate debt securities, bank deposits, fixed income plans by mutual funds, post office saving schemes etc.), Capital market instruments (Equity shares, Preference shares, Debentures, Long-term Government as well as corporate securities, Derivatives etc.), Money market instruments (T-bills, Commercial papers, certificate of deposits etc.) and Real Assets (like Real estate, precious metals, antiques etc.).

Suggested Readings:

1. Mehrotra, H. C. and Goyal, S. P., 'Income Tax: Tax Planning and Management' Sahitya Bhawan Publications.
 2. Singhanian V.K., 'Direct Taxes: Law and Practice', Taxmann Publications
 3. Ahuja, G. and Gupta, R., 'Practical Approach to Direct and Indirect Taxes: Containing Income Tax and GST', Wolters Kulwer
- Gaur, V. P. and Narang, D. B., 'Income Tax Law and Practice'

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 933-18 International Human Resource Management

Course Objective: This course provides an understanding of the role of human resource management (HRM) in international contexts. The course is divided into three areas of study: the context of international HRM, strategic and functional HRM in international contexts, and comparative international contexts.

Course Outcomes:

CO1: Understand issues, opportunities and challenges pertaining to international HRM.

CO2: Develop competency in dealing with cross cultural situations.

CO3: Understand the strategic and functional roles of HRM in various international contexts, especially in areas such as recruitment and selection, performance management, training, learning and development, career management, compensation, motivation and repatriation;

CO4: Identify the role of cross cultural leadership in managing multicultural teams.

CO5: Understand external forces (e.g. globalisation, sociocultural changes, political and economic changes) that have the potential to shape international HRM.

CO6: Develop generic and transferable skills-especially in diagnosing international HRM issues critically and analytically and discussing specific cases relating to international HRM.

Unit –I

International Human Resource Management: Concept, Difference between Domestic and International HRM, Variables that moderate difference between Domestic and International HRM.

Sustaining International Business Operations: Approaches to Staffing, Transferring Staff for International Business Activities, Role of Expatriates and Non-Expatriates, Role of the Corporate HR function.

Recruiting and Selection Staff for International Assignments: Concepts, Issues in Staff Selection, Factors Moderating Performance, Selection Criteria, Dual Career Couples and Role of Women in International Management.

Unit –II

Re-entry and Career Issues: Concept and Repatriation Process, Individual Reactions to Re-entry, Multinational Responses, Designing a Repatriation Program.

Training and Development: Concept, Role of Expatriate Training, Expatriates or Local Managers, Components of Effective Predeparture Training Programs, Effective of Pre-Departure Training, Developing Staff through International Assignments. Staffing and Training for Global Operations, Global Staffing Choices, Dynamics of Cross-Cultural leadership, managing and motivating multi culture Teams.

Unit –III

Performance Management: Concept, Multinational Performance Management, Performance Management of International Employees, Performance of Appraisal of International Employees.

Compensation: Concept and Objectives of International Compensation, Key Components of an International Compensation Program, Approaches to International Compensation.

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MBA Batch 2021 onwards
Unit –IV

Knowledge Transfer within a Multinational Company: Organizational Knowledge and its Significance, Sources of Organizational Knowledge; Tacit and Explicit Knowledge; HRM and Organizational Knowledge; Transfer of Knowledge between and within organizations, Transfer of Knowledge within MNCs, Transfer of Knowledge across National Borders, Transfer of Managerial Know-how and HRM across National Borders.

Industrial Relations: Key issues in International Industrial Relations, Trade Union and International Industrial Relations, Responses of Trade Unions to Multinationals; Regional Integration: the European Union, Issue of Social Dumping, Impact of Digital Economy. National Context of HRM: HRM Practices in Japan, United Kingdom, United States, India and China.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings: -

1. Peter, J. Dowling and Denice, E. Welch (2007), International Human Resource Management, Thomson Publishers, New Delhi.
2. K .Aswathappa (2012) International Human Resource Management, McGraw Hill, New Delhi.
3. Monir H. Tayeb (2004), International Human Resource Management – A Multinational Company Perspective, Oxford University Press, New Delhi
4. Anne-Wil Harzing and Joris Van Ruysseveldt (1995), International Human Resource Management, SAGE Publications, New Delhi.
5. Ian Beardwell and Len Holdon (2001), HRM: A Contemporary Perspective, McMillan, New Delhi.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 934-18 Strategic Human Resource Management

Course Objective: The aim of this course is to help students to understanding the strategic approach to human resources as distinguished from the traditional functional approach, understanding the relationship of HR strategy with overall corporate strategy, strategic role of specific HR systems and appreciating SHRM in the context of changing form of organizations in the global environment.

Course Outcomes:

Upon completion of this course, students will be able to:

- CO1: Understand an integrated approach to the development of HR strategies that enable the organization to achieve its goals.
- CO2: Describe the process of strategic HRM.
- CO3: Discuss the strategic role of HR systems such as strategic staffing, strategic appraisal, strategic reward system etc.
- CO4: Explain various human aspects of strategy implementation.
- CO5: Identify the role of leadership in implementing strategic change.
- CO6: Understand Global HRM and role of global HRM in successful implementation of MNC strategy

Unit –I

Strategic HRM: Introduction to business and corporate strategies; Integrating HR strategies with business strategies, Analyzing HR Practices followed by different firms-Human Resource System-HR as a Strategic Partner. Strategic HRM: Scope and process of strategic HRM, traditional vs. strategic HR, typology of HR activities, best fit approach vs best practice approach, the role of national context, sectoral context and organizational context in HR strategy and practices, external and internal analysis for strategic HR management.

Unit –II

Strategic role of HR systems - Strategic staffing, strategic appraisal, strategic executive appraisal, strategic design of reward system, performance management strategies, integrating HR strategy and business strategy, HR strategies and practices in Indian industries and service sector, HR as distinctive competitive advantage, reward and compensation strategies, retrenchment strategies, downsizing strategies. Human Resource Environment- Technology, structure; Workforce diversity; Demographic changes, Temporary & contract labour; Recruitment & Retention strategies, training & development strategies.

Unit –III

Human aspects of strategy implementation: behavioural issues in strategic implementation - matching culture with strategy, leadership factor in strategy and implementing strategic change, HR strategy evaluation and control, IT and future directions in HR strategy, HR strategy in workforce diversity, employee engagement strategies, talent management and retention strategies

Unit –IV

I.K.G. Punjab Technical University
MBA Batch 2021 onwards

Global HRM: Role of global HRM in successful MNC strategy, HR planning for global demand and diversity at workplace, global staffing approaches - polycentric, ethnocentric, geocentric and region centric, recruitment and selection of human resources for global assignments, training and development imperatives for global workforce, expatriate problems and culture shock, repatriation issues, performance and compensation management for global workforce, global employee relations.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Dreher, Dougherty, G.F. & Thomas, W. (2005) Human Resource Strategy, Tata McGraw Hill.
2. Agarwal, Tanuja, (2007), "Strategic Human Resource Management", Oxford University Press, New Delhi.
3. Armstrong, M. & Baron, A. (2002) Handbook of Strategic HRM - The Key to Improved Business Performance, Jaico Publishing House.
4. Becker, B.E.(2001) The HR Scorecard: Linking People, Strategy & Performance, HarwardBussiness School Press.
5. Greer, C.R.(2001) Strategic Human Resource Management: A General Managerial Approach, Pearson Education Asia.
6. Holbeche, L.(2009) Aligning Human Resource and Business Strategy, Butterworth Heinemann.
7. Salaman, G.(2005) Strategic Human Resource Management - Theory and Practice, Sage Publications Ltd.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 935-18 Leadership and Team Dynamics

Course Objective: This course is designed to be an interactive exploration of team dynamics and leadership. Through the introduction of current theories and models, students will learn to work effectively in groups, increase their understanding of leadership, make effective decisions, and stimulate the development of new skills through demonstration and practice.

Course Outcomes:

- CO1: Understand the history of leadership and current leadership theories.
- CO2: Explain how leadership models are put into practice personally, locally, and globally.
- CO3: Discuss the knowledge of developing leadership abilities.
- CO3: Describe the concept of Strategic Leadership and ethical leadership.
- CO4: Explain composition, formation, and development of teams.
- CO6: Illustrate the dynamics of team Performance and motivation and the role of leadership in dynamics of team management and decision making.

Unit –I

Leadership: Meaning, definitions, Skills and Roles of a leader, analysis of leadership theory; Leadership traits and ethics: Personality traits and leadership, Leadership attitudes, ethical leadership, Leadership behavior and motivation, contingency leadership. Understanding the inspiration, dilemmas and issues in becoming a leader.

Unit –II

Leadership theories and styles, charismatic and transformational leadership, team leadership, organizational Leadership, strategic leadership, Leadership for Creating high performance culture, Leadership development through self-awareness and self-discipline, Development through education, experience and mentoring, Succession, Evaluation of leadership development efforts, leadership communication.

Unit –III

Strategic leadership, ethical leadership, the leader as social architect-creating vision and strategic direction, shaping culture and values, designing and leading a learning organisation, leading change, spiritual foundations of personal effectiveness, the habits of highly effective people.

Unit –IV

Team composition, formation, and development-Team Performance and Motivation-Team Conflict and Leadership-Team Decision Making , Discovering the interpersonal orientation through FIRO-B, Experiential learning methodologies-T- group sensitivity training, encounter groups, appreciative enquiry, Discovering facets of interpersonal trust through Johari window, communication skills, Negotiation skills and strategies for team building, , team morale, conflict resolution in teams, competitive vs collaborative behavior, developing collaboration.

I.K.G. Punjab Technical University
MBA Batch 2021 onwards

Note: Relevant Case Studies should be discussed in class.

Suggested Readings: -

1. Richard L.Hughes (2018), Leadership, McGraw-Hill. ed. 8
2. Bass, B.M. (1973) Leadership, Psychology and Organizational Behaviour, Greenwood Pub Group.
3. Northouse, P.G.(2018) Leadership - Theory and Practice, Sage Publications.
4. Purohit, S. & Nayak, S. (2003) Enhancing Personal Effectiveness: Training Instruments for Students, Teachers and Parents, Tata McGraw-Hill.
5. Tannenbaum, R., Weschler, I.R. and Hansen, J. (2015) Leadership and Organization: A Behavioral Science Approach, McGraw-Hill.

MBA 936-18 Performance and Compensation Management

Course Objective: The objective of the course is to impart relevant knowledge required to perform the functions of human resource planning in an organisation and equipping seekers with comprehensive and practical skills to manage employees' performance effectively, and to understand the structure and components of wages and salaries, and the wage administration in India

Course Outcomes: After completing the course, the student shall be able to:

CO1: Increase the awareness of the process and principles of performance Management / appraisal.

CO2: Identify the negative aspects of appraisal systems and consider how these might be overcome.

CO3: Discuss performance with regard to pay awards, and whether these should, or should not be automatically related to each other.

CO4: Demonstrate a familiarity with the appeal process relating specifically to the performance review.

CO5: Illustrate different ways to strengthen the pay-for-performance link and also learn the concepts of Payment and employee benefits issues for contingent workers.

CO6: Develop appropriate reward and compensation policies.

Unit –I

Performance Management - Performance management system, performance counseling, performance planning, performance appraisal, potential appraisal, problems and errors in performance appraisal. Performance monitoring, performance implementation, role of HR professionals in performance management, performance management through training and development, ethics in performance management.

Unit –II

Reviewing & Managing Performance—Performance Management and strategic planning, Alternative models for Assessing Performance-Balance score card; EFQM Model; Outcome metrics—Economic Value Added (EVA); other economic measures. Building a High- Performance Culture-Performance Management & Employee Development, Performance Management and Rewards-Ethics in Performance Management.

Unit –III

Compensation and Benefits Management: Job evaluation approach to compensation management- Bonuses- concept & methods of calculation-Pay for performance, competency-based pay, equity based rewards, team rewards-Reward strategy & psychological contract—Law relating to compensation-Executive compensation, Benefits administration, employee welfare and working conditions-statutory and voluntary measures.

Unit –IV

Executive compensation - Components, pay structure in India, linking salary with potential and performance, types of rewards and incentives, wage incentive schemes in India, wage incentive plans, employee benefits and services, special features of fringe benefits, benefit

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MBA Batch 2021 onwards

programmes for management and other employees, administration of benefits and services, recent trends in wages and salaries in Indian industries and service sector.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings: -

1. George T. Milkovich (2009), Compensation, McGraw-Hill Ryerson.
2. Goel, D. (2012) Performance Appraisal and Compensation Management: A Modern Approach, Prentice Hall of India Pvt. Ltd.
3. Henderson, R.I. (2006) Compensation Management in a Knowledge Based World, Prentice Hall.
4. Henderson, R.I.(1985) Compensation Management: Rewarding Performance in the Modern Organisation, Reston Publishing Co.
5. Kandula, S.R.(2006) Performance Management: Strategies, Interventions, Drivers, Prentice Hall of India.
6. Marshall, D.R.(1978) Successful Techniques for Solving Employee Compensation Problems, John Wiley & Sons.
7. Patten, T. H.(1977) Pay-Employee Compensation and Incentive plans, McGraw-Hill.
8. Rock, M. L. and Berger, L.A. (2015) Compensation Handbook: A State-of-the Art Guide Compensation Strategy and Design, McGraw-Hill.

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MBA Batch 2021 onwards
MBA 943 – 18 : Managing Software Projects

Objective: The objective of this paper is to acquaint the students with major issues and techniques of Managing Software Projects. Understanding approaches for managing and optimizing the software development process and choosing an appropriate project development methodology (e.g. waterfall, spiral, agile etc.). Applying efficient techniques for managing each phase of the systems development lifecycle

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Understanding approaches for managing and optimizing the software development process

CO2: Examine contemporary software life cycle processes, activities and work products

CO3: Apply different methods to identify, analyze, and manage software project risks

CO4: Estimate software project effort, cost, and schedule for an intermediate size project

CO5: To make aware about the various software project teams in terms of roles and responsibilities and managers can plan their projects and minutely work out the cost and time overrun of projects.

Unit I

Software Development Process :Introduction to Software and Software Engineering; The Evolving Role of Software, Software: A Crisis on the Horizon and Software Myths, Software Engineering: A Layered Technology, Software Process Models, Water Fall Life Cycle Model, The Prototyping Model, The RAD Model, Evolutionary Process Models, Agile Process Model & Development, Component-Based Development, Product and Process. Choosing an appropriate Project Development Methodology.

Unit II

Managing Software Projects :Software Metrics (Process, Product and Project Metrics), Software Project Estimations, Software Project Planning, Project Scheduling & Tracking, Risk Analysis & Management (Risk Identification, Risk Projection, Risk Refinement and Risk Mitigation). Software Process Improvement and Project Management: Project planning infrastructure, process planning feasibility analysis cost and efforts estimation, models and technique.

Unit III

Software Quality Assurance and Management : Quality Concepts and Software Quality Assurance, Software Reviews (Formal Technical Reviews), Software Reliability, The Quality Standards: ISO 9000, CMM, Six Sigma for SE, SQA Plan, SCM activities and Project Management Plan.

Unit IV

Project management for special classes of software project : Component-Based Software Engineering, Client/Server Software Engineering, Web Engineering, Reengineering, Computer-Aided Software Engineering (CASE), Software Process Improvement, Outsourcing and Software Project Management Standards

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Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- ✓ Pankaj Jalote , “Software Project Management in Practice” Pearson publication
- ✓ Andrew Stellman and Jennifer Greene, "Applied Software Project Management", O'Reilly Media (2005).
- ✓ Hughes and cotterell, software project management, Tata McGraw-Hill Publication
- ✓ Pankaj Jalote, “CMM in practice”, Pearson Publication
- ✓ Pankaj Jalote, “An Integrated Approach to Software Engineering”, Narosa Publishing House
- ✓ R. Pressmen, “Software Engineering”, McGraw Hill Publication
- ✓ Ian Somerville, Software Engineering, Pearson Publication

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MBA 944 – 18 : Managing Digital Innovation and Transformation

Objective: The objective of this paper is to acquaint the students with introduction to digital transformations and innovation and build Digital Capabilities.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 : Identify how Digital Transformation impacts corporate strategies

CO2 : Understand Security Issues in Digital Transformations

CO3 : Understand the risk associated with evolving international clients and environment

CO4 : To learn Security Issues, Methods & Laws

CO5 : Understanding cloud computing

Unit I

Digital transformation & Capabilities : Digital transformation myths and realities. Various Types of digital transformations: Legacy transformation, strategic transformation, cloud first transformation, digital enterprise natives, and disruption embracers. Digitization and essential elements. Digital Disruption, Important causes of digital disruption and transformation. Digital Capabilities and Challenges going to digital transformation, Social media transformation and its benefits & threats. Types of social media and its impact on the business. Role of Digital media in the enhancement of business development skills.

Unit II

Security Issues in Digital Transformations : Security Overview, Digital Threats, Fundamentals of Encryption & Cryptography, Securing E-commerce Networks: Security Protocols such as HTTP, SSL, Firewalls, Personal Firewalls, IDS, VPNs, Public Key Infrastructure (PKI) for Security

Unit III

Security Issues, Methods & Laws : Digital Signature: Digital signature Certificate; Certifying Authorities and liabilities in the event of Digital Signature Compromise; E-Governance in India. Introduction To Information Technology Act, 2000 : Object; Scope; Scheme of the Act; Relevancy With Other Laws.

Unit IV

Digital Transformation Framework : Understanding cloud architecture, cloud computing vs peer- to peer architecture, cloud computing vs grid computing, cloud computing vs client server architecture, broad approaches to migrating into the cloud, seven step model of migration into a cloud, components of cloud computing, cloud types- private, public and hybrid; Models of Cloud Computing. Mobile cloud & Understanding cloud security

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- Neil Perkin, “Building the Agile Business through Digital Transformation”
- Oberoi, Sundeep, “e-Security and You”, Tata McGraw-Hill,

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MBA Batch 2021 onwards

- Kannamal, Fundamentals of Cloud Computing, Cengage Learning
- Cady, G H and Part McGreger, “The Internet”, BPB Pub.
- Carpenter Phil, “e Brands”, HBS Press, Boston, 2000
- Jayaswal, Cloud Computing Black Book. Wiley

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 945 – 18 : IT Consulting

Objective: The objective of this paper is to acquaint the students with role of IT Consulting in Business Processes. It shall enable them to understand Consulting Life Cycle, Consulting Projects, Service Level Agreements (SLA) and Ethics in Consulting.

Course Outcomes: Upon completion of this course, students will be able to understand:

CO1: To analyze the IT requirements of the organization and the underlying environment.

CO2: To advise IT solutions and services based on requirements.

CO3: To understand RFP Analysis.

CO4: To provide an understanding about SLA.

CO5: To be familiar with ethics in consulting.

Unit I :

Principles of Consultancy

Overview and principles of consultancy, role & competencies of the consultants; Consultancy models; Technology Management; Technology Life Cycles.

Unit II :

Life Cycle of Consultancy Assignment

The Life Cycle of a consultancy Assignment : Gaining entry, Contracting and assignment initiation, Identification of problems and business needs, Diagnosis and solution definition, Solution appraisal and evaluation, Implementation and taking action. Life Cycle Assessment (LCA): Evolution, Stages in product LCA. Code of good conduct for LCA.

Unit III :

Request For Proposal

Request For Proposal (RFP) : Introduction, Scope of Work, Proposal Requirements, Process for Proposal Preparation and Submission, Proposal Review/Evaluation/Selection, Rules, Optional/Possible Appendices.

Service Level Agreements (SLA) : Introduction, Importance, Preparation, Components of SLA. SLA Monitoring and Verification. SLA metrics, Periodic review,

Unit IV

Principles for Ethical Consulting, Different approaches to Ethics, Codes of Ethics, Consultant's Unethical and Avoiding Behaviors. Business Ethics, International business ethics, Ethics and Self-Interest, Responsibility and Accountability

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- ✓ Narayanan, V K. Managing Technology and Innovation for Competitive Advantage. 3rd Edition, Pearson Education.

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MBA Batch 2021 onwards

- ✓ Peter F. Drucker, 'Social Needs and Business Opportunities', in The Frontiers of Management, 1986
- ✓ Title: The Trusted Advisor Author: David Maister, Charles Green, Robert Gallford
Publisher: Free Press (Simon and Schuster) Publication Date: 2002 ISBN: 978-0743207768

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MBA Batch 2021 onwards
MBA 946 – 18 : Strategic Management of IT

Objective: The objective of this paper is to acquaint the students with the value of IT in strategic management and its processes. This course is designed to explore an organisation's vision, mission, examine principles, techniques and models of organisational and environmental analysis, discuss the theory and practice of strategy formulation and implementation such as corporate governance and business ethics for the development of effective strategic leadership through the use of IT.

Course Outcomes: Upon completion of this course, students will be able to:

- CO1: To develop an understanding of strategic management concepts and techniques and acquire the ability to apply the same in business situations
- CO2: Learning how to use IT as a tool to implement business strategies and gain competitive advantage, not merely to support business operations.
- CO3: In addition to familiarizing students with new technological changes in management, students are expected to integrate and apply their prior learning to strategic decision making in organisations
- CO4: Integrate and apply knowledge gained in basic courses to the formulation and implementation of strategy from holistic and multi-functional perspectives.
- CO5: Analyze and evaluate critically real life company situations and develop creative solutions, using a strategic management perspective.

Unit I

Strategic Management : Role of IT and IS in Business. Introduction to Executive Support System (ESS) Importance of Decision-Making Systems in the Business Organization Structure. Planning for IT support. Types of Strategic Management Planning: The Ad Hoc Approach, The Data Collection Approach, The Organization Chart Approach, The Top-down Approach and The Bottom-up Approach; Comparison of Top-Down and Bottom-up approach. Process for Strategic Management Approaches and Planning for Strategic IT Applications. Selecting the best approach and the factors playing pivotal roles in it.

Unit II

Strategic Management as Competitive Advantage : Introduction to Value Chain and Porter's Value Chain (Value Chain Model); Understanding the concept of Value chain Analysis and the Competitive Advantage of it to the business/organization. Value Chain Analysis and its advantages. Understanding Linkages and Interrelationships : Approach to IS/IT Strategy Formulation.

Unit III

Turning technology into business transformation. IT as a strategic source. IT as competitive : strategy, advantage and resource. Risks of Using IT Strategically; Inter-organizational systems (IOS) : Advantages and opportunities in strategic IT Applications. IOS and Competitive Advantage; Strategic Grid : Organizational movements around the Strategic Grid.

Unit IV

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Fundamental characteristics of industrial dynamics of strategic management and IT. Visioning of the strategic role of IT in the organization. Diversification of strategies : Digital transformation, success factors and implications. Factors for organizations shifting to digital and AI transformations.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- S.A. Kelkar, “Strategic IT Management: A Concise Study”, PHI, Eastern Economy Edition
- Sanjiva Shankar Dubey, “IT Strategy and Management”, Third Edition, PHI (EEE)
- J. David Hunger, Thomas L. Wheelen, “Essentials of Strategic Management”, 5th Edition, Prentice Hall
- L. M. Prasad, “Strategic Management”, 5th Edition, Sultan Chand & Sons
- Osterhage Wolfgang W., “IT Quality Management”, Springer, 2016
- Rogers David L., “The Digital Transformation Playbook”, Columbia Business School Publishing, 2016

MBA953-18 SUPPLY CHAIN & LOGISTIC MANAGEMENT

Course Objective: To make students understand about the growing recognition that the twin goals of cost reduction and service enhancement can be achieved through logistics and supply chain management.

CO1: Demonstrate a clear understanding of the key concepts applied in logistics and supply chain management.

CO2: To highlight the importance of all activities of the supply chain and an understanding of concepts like inbound and outbound logistics, offshore and inshore logistics.

CO3: To develop skills for planning, designing the operational facilities of supply chain with the analytical and critical understanding

UNIT-I

Building A Strategic Frame Work to Analyse Supply Chains: Supply chain stages and decision phases process view of a supply chain. Supply chain flows. Examples of supply chains. Competitive and supply chain strategies. Expanding strategic scope. Drivers of supply chain performance. Framework for structuring drivers – Inventory, Transportation, Facilities, Information. Obstacles to achieving fit. Case discussions.

UNIT-II

Designing The Supply Chain Network: Distribution Networking – Role, Design. Supply Chain Network (SCN) – Role, Factors, Framework for Design Decisions. **Facility Location and Network Design:** Models for facility location and capacity allocation. Impact of uncertainty on SCN – discounted cash flow analysis, evaluating network designed cisions using decision using decision trees. Analytical problems.

UNIT-III

Planning and Managing Inventories in A Supply Chain: Review of inventory concepts. Trade promotions, Managing multi-echelon cycle inventory, safety inventory determination. Impact of supply uncertainty aggregation and replenishment policies on safety inventory. Optimum level of product availability; importance factors. Managerial levers to improve supply chain profitability. Sourcing, **Transportation and Pricing Products:** Role of sourcing, supplier – scoring & assessment, selection and contracts. Design collaboration. Role of transportation, Factors affecting transportation decisions. Modes of transportation and their performance characteristics.

UNIT-IV

Coordination And Technology In The Supply Chain: The role of IT supply Chain, The Supply Chain IT framework, E-CRM, Internal SCM, SRM. The role of E-business in a supply chain, The E-business framework, E-business in practice. Case discussion. **Emerging Concepts:** Reverse Logistics; Reasons, Activities, Role. RFID Systems, Bar Codes, QR Codes;

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Components, applications, implementation. Lean supply chains, Implementation of Six Sigma in Supply Chains. Emerging concepts: Role of Block chain in supply chain.

Books recommended:

1. Supply Chain Management – 2001, Strategy, Planning & Operation. Sunil Chopra& Peter Meindl; Pearson Education Asia, ISBN: 81-7808-272-1.
2. Supply Chain Redesign – Transforming Supply Chains into Integrated Value Systems - Robert B Handfield, Ernest L Nichols, Jr., 2002, Pearson Education Inc, ISBN: 81-297-0113-8
3. Modelling the Supply Chain -Jeremy F Shapiro, Duxbury; 2002, Thomson Learning, ISBN 0-534-37363
4. Designing & Managing the Supply Chain -David Simchi Levi, Philip Kaminsky & Edith Simchi Levi; McGraw Hill
5. Going Backwards Reverse Logistics Trends and Practices -Dr. Dale S. Rogers, Dr. Ronald S. Tibben- Lembke, University of Nevada, Reno, Center for Logistics Management.

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MBA Batch 2021 onwards
MBA954-18 QUALITY TOOLKIT FOR MANAGERS

Course Objective: The course aims at giving an insight to students about a well-designed quality management system, that will help in identification of problems and help improve output quality to better meet the changing market scenario.

CO1: Evaluate the principles of quality management and to explain how these principles can be applied within quality management systems.

CO2: To provide students with the requisite knowledge of concepts and to impart practical skills and techniques required in the area of strategies for managing technology in business

CO3: Critically appraise the organizational, communication and teamwork requirements for effective quality management

CO4: Critically analyze the strategic issues in quality management, including current issues and developments, and to devise and evaluate quality implementation plans

UNIT-I

Introduction: Definition and Need of quality, Aspects of quality, Quality characteristic, Quality specification, Quality function, Economics of quality. **Inspection:** Its objectives and types, Inspection versus Quality Control, **Statistical Quality Control:** its Tools, Advantages, limitations and Applications.

UNIT-II

Control Charts: Concept of variability, Assignable and chance causes, Concept of specifications and tolerances, Definition and objectives of control charts, Control charts for variables and attributes and related problems, Variable charts vs attribute charts, Patterns on control charts, Type-I & Type-II Errors, Process capability and its methods of determination.

UNIT-III

Acceptance Sampling: Definition, Advantages over 100% inspection, Methods of taking samples, Operating characteristics curve & its characteristics. Single, Double and Multiple, Sequential Sampling Plan & Related problems. **Quality Assurance:** Need, Principles, Essentials and Advantages of Quality Assurance System, Quality Manual, Field complaints, Quality Audit & its types, Quality Assurance Methods, Quality Control vs. Quality Assurance.

UNIT-IV

Quality Systems: Description of ISO: 9000 series of standards, ISO: 9001–2000 Systems, ISO: 14000 Systems, Description of TQM, Concept of Quality Circles, JIT System, Taguchi's Concept of Quality, **Zero Defect Concept:** 6s Concept and 5S, Emerging concepts in Quality control.

Recommended Books

1. M. Mahajan, 'Statistical Quality Control', Dhanpat Rai & Co.

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2. AmitavMitra, 'Fundamentals of Quality Control', Pearson Education.
3. E.L. Grant & R.S. Leavenworth, 'Statistical Quality Control', McGraw Hill & Co.
4. Feigenbaum, 'Total Quality Control', McGraw Hill & Co.
5. D.C. Montgomery DC, 'Introduction to Statistical Quality Control', John Wiley & Sons Inc.
6. Stephan B. Vardeman, J. Marcus Jobe, 'Statistical QA Methods for Engineers', John Wiley & Sons Inc.
7. J.R. Taylor, 'Quality Control systems', McGraw Hill Int. Education.

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MBA Batch 2021 onwards
MBA 963-18 Data Visualization for Managers

Objective: The objective of this paper is to acquaint the students with Visualization Imperative like Message to Charts and Visual Perception. Also help students discover the power of storytelling and the way to make data an essential idea to enhance business as manager.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Employ best practices in data visualization to develop charts, maps, tables, and other visual representations of data.

CO2: Use Tableau's visualization tools to conduct data analysis, especially exploration of an unfamiliar dataset.

CO3: Create compelling, interactive dashboards to combine several visualizations into a cohesive and functional whole.

CO4: Utilize advanced Tableau features including parameters, data blending, custom SQL, very large datasets, custom date hierarchies, and others.

CO5: Use data visualizations, dashboards and Tableau Stories to support relevant communication for diverse audiences.

Unit I

Introduction to the Art and Science of Data Visualization; Brief History of Data Visualization.

Current visualization practitioners of note.

Overview of Data Visualization: The Shapes of Data; Marks and Channels; Common Visualization Idioms (Reusable Dynamic Components: Reusable Scatter Plot; Bar Chart : Vertical & Horizontal; Chart : Pie, Line and Area); Using Color and Size in Visualization; Data Reduction (Histograms & Crossfiltering)

Prepare the data for Visualization, Various visualisation techniques; Exploratory visualization, Standardized reporting & compliances, Decision Models - Pivot grid & chat

Unit II

Introduction to Tableau: Interactive Visualization Features, Importing Data / Connecting to External Sources Interface; Overview Creating Sheets and Dashboard.

Business Intelligence & Data Warehousing : Architectures, Components of D/W, Staging layer, Core layer (star schema /snowflake) & semantic layer; Data Integration & transformations (ETL Vs ELT); Predictive modelling.

Unit III

Design Fundamentals Design Principles, Colors, and "Chart Junk" Design perspectives from the experts The Shaffer 4 C's of Data Visualization.

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Creating a good data set for analysis Data modeling fundamentals for analytics Selecting data for your KPIs.

Unit IV

Storytelling using visualization : Importance of context, Choosing an effective visual tool, Focus audience's attention, Design Thinking, Dissecting model visuals, Prepare Lessons.

Dashboards vs. Storyboards vs. Info graphics - Designing with the user in mind

Scientific Design Choices in Data Visualization : Graphical visualization

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Cole Nussbaumer Knaflic, "Storytelling with Data: A Data Visualization Guide for Business Professionals", Audible Studios (Publisher)
2. Visualization Analysis & Design by Tamara Munzner (2014) (ISBN 9781466508910)
3. Winston Chang. R Graphics Cookbook: Practical Recipes for Visualizing Data. O'Reilly Media, 1st ed.
4. Hadley Wickham. Ggplot Elegant Graphics for Data Analysis. Springer, 2nd ed.
5. Intro to ggplot2 by Hadley Wickham, the creator of the package.
6. Scott Murray. Interactive Data Visualization for the Web: An Introduction to Designing with D
7. O'Reilly Media, 2nd edition – Beginners guide to interactive data visualization for the web using D3.
8. Alberto Cairo. The Functional Art: An Introduction to Information Graphics and Visualization. New Riders, 1st ed.
9. The Truthful Art: Data, Charts, and Maps for Communication. New Riders, 1 edition

I.K.G. Punjab Technical University
MBA Batch 2021 onwards
MBA 964-18 Business Forecasting

Objective: The objective of this paper is to acquaint the students with Forecasting Process, Exploratory Data and Regression Analysis. Students should learn Time Series Forecasting Models.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Understand the importance of forecasting in making accurate decisions in economic and business environments

CO2: Understand the basics in regression analysis, time series analysis and their applications in forecasting

CO3: Understand how to handle the trend, seasonal and cyclical issues in forecasting analysis.

CO4: Construct forecasting reports to higher level management for vital decision-making process.

CO5: Use the software packages for developing forecasting models.

CO6: Be prepared for more advanced study of economic and business forecasting

Unit I

Introduction to Forecasting & Demand Analysis: An Overview; Significance of Demand Analysis and Forecasting, Determinants of Demand, Elasticity of Demand, Revenue and Profit of a Firm Estimation of Demand, Forecasting Demand, Selecting a Forecasting Technique, Purpose of Forecast, Type of Users

Unit II

Marketing Research Techniques, Consumer Surveys, Consumer Clinics and Focus Groups Market Experiments in Test Stores, Statistical Estimations, Variable Identification, Time Series and Cross-Sectional Data Collection, Specification of the Model, Estimation of the Parameters, Interpretation of Regression Statistics, Time Series Regression; Forecasting with Regression Model: Unconditional Forecasting, Forecasting with Serially Correlated Errors, Conditional Forecasting

Unit III

Time Series Analysis, Smoothing and Extrapolation of Time Series, Simple Extrapolation Models, Smoothing and Seasonal Adjustment; Properties of Stochastic Time Series: Characterizing Time Series: The Autocorrelation Function, Stationarity, Random Walk, Co-integrated Time Series;

Linear Time Series: Moving Average Models, Autoregressive Models, Mixed Autoregressive and Moving Average Models, Homogeneous Non-Stationary Processes: ARIMA Models, Box-Jenkins Methodology, Specification of ARIMA Models, SARIMA, ARMAX Model

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MBA Batch 2021 onwards

Forecasting with Time Series Models: Computing a Forecast, The Forecast Error, Properties of ARIMA Forecasts, Causality, Exogeneity, VAR, Impulse Response Functions, Volatility Measurement, Modeling and Forecasting: The ARCH Process, The GARCH Process

Unit IV

Qualitative Forecasting Techniques, Survey and Opinion Polling Techniques, Exponential Smoothing and Other Advanced Techniques, Barometric Techniques, Leading, Lagging and Coincident Economic Indicators, Diffusion and Composite Indexes, Accuracy of Forecast, Short Run Forecast, Long Term Forecast, Use of Software Packages for Forecasting.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Francis X. Diebold, Elements of Forecasting, 4th Edition, South-western Cengage Learning, 2007 <http://www.ssc.upenn.edu/~fdiebold/Teaching221/BookPhotocopy.pdf>
2. J. Holton Wilson and Barry Keating, Business Forecasting with Forecast X™, 6th Edition, McGraw Irwin, John Galt Solutions, Inc.
3. Evans, Michael K. (2003). Practical Business Forecasting. UK: Blackwell.
4. Box, George E.P., Gwilym M. Jenkins and Gregory C. Reinsel (2009) Time Series Analysis: Forecasting and Control 3rd Edn. Pearson Education
5. Hanke, John E. and Dean W. Wichern (2005). Business Forecasting. 8thEdn. New Delhi: Pearson-Prentice Hall
6. Makridakis, Spyros, Steven C. Wheelwright and Rob J. Hyndman (1998). Forecasting: Methods and Applications. 3rdEdn. USA: John Wiley and Sons

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MBA Batch 2021 onwards
MBA 402-18
Viva-Voce for Project/Dissertation

Guidelines for Project / Dissertation:

Kindly refer to Annexure B for the suggested guidelines and evaluation criteria of Project Report

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MBA Batch 2021 onwards

MBA 403-18 Workshop on Indian Ethos

Course Objective: The course is an attempt for the students to learn about how to apply the concepts and theories of ancient Indian management in business.

Courses Outcomes:

CO1: Comprehend and practice Indian Ethos and values system.

CO2: Applying value based management and ethical practices in business.

CO3: To gain the knowledge of management principles from Vedas and other holy books and explain the application of Indian heritage in business.

CO4: To comprehend various stress management techniques and their applications in organizations.

CO5: To describe salient features and advantages of ancient Indian system of learning.

CO6: To describe various laws of Karma and explain the concept of corporate karma.

Unit 1

Indian Ethos: History & Relevance, Principles Practiced by Indian Companies, Role of Indian Ethos in Managerial Practices.

Management Lessons from Vedas, Mahabharata, Bible, Quran, Kautilya's Arthashastra, Indian Heritage in Business, Management-Production and Consumption. Ethics v/s Ethos, Indian v/s Western Management.

Unit 2

Work Ethos: Meaning, levels, dimensions and steps.

Values: Values for Indian Managers, Relevance of Value Based Management in Global Change, Impact of Values on Stakeholders. Trans-Cultural Human Values, Secular v/s Spiritual Values, Value System in Work Culture.

Unit 3

Stress Management: Meaning, types of stress at work, causes of stress, consequences of stress.

Techniques for Managing Stress: Meditation: Meaning, advantages for mental health and its importance in management. Brain storming, brain stilling, Yoga: Meaning, Significance.

Contemporary Approaches to Leadership- Joint Hindu Family Business—Leadership Qualities of Karta.

Unit 4

Indian Systems of Learning- Gurukul System of Learning, Advantages- Disadvantages of Karma, importance of Karma to Managers, Nishkama Karma. Laws of Karma: Law of Creation, Law of Humility, Law of Growth, Law of Responsibility, Law of Connection.

Corporate Karma: Meaning, methodologies, guidelines for good corporate karma.

Suggested Readings: -

1. N M Khandelwal- Indian Ethos & Values for Management- Himalya Publishing.
2. Tushar Agrawal and Nidhi Chandorkar- Indian Ethos in Management- Himalya Publishing.

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3. Chakraborty, S.K., Ethics in Management-Vedantic Approach, New Delhi, Oxford India Ltd. 1995.
4. DwijendraTripathi, History of Indian Business by Publisher, Oxford University Press India, 2004.
5. Fernando A.C., Business Ethics: An Indian Perspective, Pearson, 2009.
6. Habib Irfan, The Cambridge Economic History of India, Volume 1 Cambridge University Press, 1982.
7. Jitatmananda Swami, Indian Ethos for Management, Rajkot, Ramakrishna Ashrama, 1996.
8. Kautilya's Arthasastra, King, Governance, and Law in Ancient India, Oxford University Press, 2016.

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Annexure A

Guidelines for Summer training Report

Summer Training Project Report

on

“PROJECT TITLE”

Submitted to



I.K. GUJRAL PUNJAB TECHNICAL UNIVERSITY

KAPURTHALA

In partial fulfillment of the requirement for the

award of degree of

Master of Business Administration (MBA)

Submitted by

Name of the Student

University Roll no.

Supervisor

Name (Company Guide)

Designation

Logo of the Institute **DEPARTMENT OF**

MANAGEMENT NAME OF THE

INSTITUTE

NAME OF THE CITY

(Batch)

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CERTIFICATE (On a Separate Page)

*Certificate of Summer Training from Company shall be attached herewith.

STUDENT DECLARATION (On a Separate Page)

I, “_____ (Student Name)”, hereby declare that I have undergone my summer training at “_____ (Company Name)” from ____ (start date) to ____ (end date). I have completed a research project titled “_____ (Project Title)” under the guidance of Mr. /Ms. _____ (Name of Supervisor at Company).

Further I hereby confirm that the work presented herein is genuine and original and has not been published elsewhere.

(Student name and Signature)

FACULTY DECLARATION (On a Separate Page)

I hereby declare that the student Mr. / Ms. _____ of MBA (II) has undergone his/her summer training under my periodic guidance on the Project titled “_____ (Project Title)”.

Further I hereby declare that the student was periodically in touch with me during his/her training period and the work done by student is genuine & original.

(Signature of Supervisor)

ACKNOWLEDGEMENT (On a Separate Page)

*Acknowledge the support and guidance provided to you by various persons during your Summer Training

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TABLE OF CONTENTS (On a Separate Page)

Certificate by Guide		ii
Student Declaration		iii
Faculty Declaration		iv
Acknowledgment		v
CHAPTER NO.	CHAPTER TITLE	PAGE NO.
1	Introduction to the Company	
2	Introduction to the Research Problem	
3	Need, Scope and Objectives of the Study	
4	Research Methodology	
5	Data Analysis and Interpretation	
6	Findings of the Study	
7	Conclusion, Suggestions & Recommendations of the Study	
References and Bibliography		
Appendix (Questionnaire, Glossary of Terms, Abbreviations, Documents, Performa, Financial statements, etc.)		

LIST OF TABLES

TABLE NO.	TABLE TITLE	PAGE NO.

LIST OF FIGURES

FIGURE NO.	FIGURE TITLE	PAGE NO.

General Guidelines for Layout and format

1. Paper Size must be A4 and margins should be maintained on all pages as follows: **Left margin = 1.5” (wider for binding) Top, right & bottom margins = 1”**
2. Use **Times New Roman** font, **12 pointsize**, for text. and **14 point** size for headings
3. Use **1.5 line spacing** for all text in the main body of the thesis.
4. Report should contain page numbers (1, 2, 3...) starting from Introduction Chapter. Preliminary pages should be numbered: i., ii., iii, iv, v, vi, etc. A page number should not be shown on the inside title page even though it is counted as i.
5. Page number should be placed at the **bottom- center of page**.

Imp Note:

1. Students are required to prepare two Hard Bound copies of their Summer Training report to be submitted within 10 days of commencement of 3rd Semester
2. Questionnaires in original to be retained by the students for the final presentation.

Guidelines on Faculty Guide-Student Interaction

1. The Student is required to be in constant touch with their Faculty Guide through email, telephone, personal interactions etc.
2. It is mandatory for the student to provide a weekly progress report to their Faculty Guides for each week of their summer training.
3. The Topic for the Summer Training should be chosen in consultation with their Faculty guide and after their due approval.
4. Same topics having any sort of duplicacy shall not be acceptable.
5. Institute will be conducting surprise visits of the organization where the Student is undergoing summer training from time to time and any students found to be irregular / not attending their summer training then the summer training Project report of the said student shall stand cancelled .

Preparing References/Bibliography

- While preparing the Bibliography, in case of website as a source, ensure that the date and the timing of accessing the website is mentioned along with.
- While preparing bibliography student must adopt the following method:

Article in a Magazine

Henry, W. A., III. (1990, April 9). Making the grade in today's schools. *Time*, 135, 28-31.

Article in a Newspaper

Unlike other periodicals, p. or pp. precedes page numbers for a newspaper reference in APA style. Single pages take p., e.g., p. B2; multiple pages take pp., e.g., pp. B2, B4 or pp. C1, C3-C4.

Schultz, S. (2005, December 28). Calls made to strengthen state energy policies. *The Country Today*, pp. 1A, 2A.

Basic Format for Books

Author, A. A. (Year of publication). *Title of work: Capital letter also for subtitle*. Location: Publisher.

Note: For "Location," you should always list the city, but you should also include the state if the city is unfamiliar or if the city could be confused with one in another state.

Calfee, R. C., & Valencia, R. R. (1991). *APA guide to preparing manuscripts for journal publication*. Washington, DC: American Psychological Association.

Government Document

National Institute of Mental Health.(1990). *Clinical training in serious mental illness* (DHHS Publication No. ADM 90-1679). Washington, DC: U.S. Government Printing Office.

Report From a Private Organization

American Psychiatric Association. (2000). *Practice guidelines for the treatment of patients with eating disorders* (2nd ed.). Washington, D.C.: Author.

Conference Proceedings

Schnase, J.L., & Cunnius, E.L. (Eds.). (1995). *Proceedings from CSCL '95: The First International Conference on Computer Support for Collaborative Learning*. Mahwah, NJ: Erlbaum.

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Article From an Online Periodical

Author, A. A., & Author, B. B. (Date of publication). Title of article. *Title of Online Periodical*, volume number (issue number if available). Retrieved month day, year, (if necessary) from
<http://www.someaddress.com/full/url/>

Bernstein, M. (2002). 10 tips on writing the living Web. *A List Apart: For People Who Make Websites*, 149. Retrieved May 2, 2006, from <http://www.alistapart.com/articles/writeliving>

Online Newspaper Article

Author, A. A. (Year, Month Day). Title of article. *Title of Newspaper*. Retrieved
<http://www.someaddress.com/full/url/>

Parker-Pope, T. (2008, May 6). Psychiatry handbook linked to drug industry. *The New York Times*. Retrieved from <http://www.nytimes.com>

Electronic Books

De Huff, E.W. *Taytay's tales: Traditional Pueblo Indian tales*. Retrieved from
<http://digital.library.upenn.edu/women/dehuff/taytay/taytay.html>

Davis, J. *Familiar birdsongs of the Northwest*. Available from <http://www.powells.com/cgi-bin/biblio?inkey=1-9780931686108-0>

Online Encyclopedias and Dictionaries

Feminism. (n.d.) In *Encyclopædia Britannica online*. Retrieved March 16, 2008, from <http://www.britannica.com>

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EVALUATION CRITERIA FOR SEMINAR ON SUMMER TRAINING REPORT (MBA 303-18)

S.N.	Name	Roll No. & Date of Presentation	Introduction to Topic	Problem Definition / Need & Scope of the Study	Methodology & Objectives	Data Analysis & Findings	Suggestions & Conclusion	Overall Report Writing & Layout	Total Earned Marks out of (45)	Signature of the Evaluator with Date	Attendance Marks (in accordance to the criteria given below)	Total Earned Marks out of (50)
			5	5	5	15	5	10	45		5	50
1												
2												
3												

Note:

- 1) Total marks of “Seminar on Summer Training Report (MBA 303-18)” = 50
- 2) Attendance Marks (from a total of 5 marks) to be given on the basis of percentage of lectures attended of MBA 303-18 during the academic term as per the following criteria:
 - i. Above 75% = NIL
 - ii. 76% - 80% = 1
 - iii. 81% - 85% = 2
 - iv. 86% - 90% = 3
 - v. 91% - 95% = 4
 - vi. 96% and above = 5

Annexure B

Guidelines for Project / Dissertation:

OBJECTIVE

The objective of the project course is to help the student develop ability to apply multi-disciplinary concepts, tools and techniques to analyze and logically approach the organizational problems.

TYPE OF PROJECT

The project may be from any one of the following types, however, it should preferably be from your area of specialization in MBA:

- i) Comprehensive case study (covering single organization/multifunctional area problem formulation, analysis and recommendations).
- ii) Inter-organizational study aimed at inter-organizational comparison/validation of theory/survey of management practices.
- iii) Field study (empirical study).

PROJECT PROPOSAL

Proposal should be prepared in consultation with the supervisor and submitted before the routine first MST in department.

The Proposal may have the following components:

- a) Introduction, brief background, and Rationale of the topic chosen for the project.
- b) Brief Introduction and vital details of the organization/s under study.
- c) Statement of the problem.
- d) Objectives of the Project (clearly stated in behavioral terms).
- e) Research Methodology:
 - Research Design
 - Nature and source of data/information to be collected.
 - Sample and sampling technique. Rationale of chosen organization and the sample.
 - Tools and Techniques to be used for data collection – details of the tools/questionnaire to be used and its relevance with the objectives of the project.
 - Method/s to be used for data collection
 - Data handling and analysis
 - Statistical tools to be used for analysis
 - Relevance of statistical tools with the objectives of the project.
- f) Limitation of the proposed project, if any.
- g) Any other relevant detail which will help better appreciation and understanding of the project proposal.

PROJECT PROPOSAL EVALUATION:

The project proposal will be evaluated by the panel of three teachers immediately after first MST in presence of student, who will give the presentation to the panel.

In case of non-approval of the proposal the comments/suggestions for reformulating the project proposal will be communicated to the student. In such case, the revised project proposal should be submitted within 7 days, which shall be evaluated on similar guidelines.

PROJECT PRE-SUBMISSION:

After approval of the project proposal, the students shall complete their projects and submit the completed Project Report (Spiral bound) for final internal evaluation before 2nd MST.

The guidelines for project report are as follows:

- ✓ The length of the report may be about 50 to 60 double spaced typed pages not exceeding approximately 18,000 words (excluding appendices and exhibits). However, rational variation on either side is permissible.
- ✓ The Project Report may have the following:
 - Cover Page – must have the Title of the Project, Name & logo of college / university, Name and University Roll No of the Student and the Name of the Guide, along with the designation and department.
 - Detailed table of contents with page nos.
 - All pages of the Project Report must be numbered as reflected in the table of contents.
 - Project Proposal, properly bound in the project and not just stapled. Please note that project with stapled Proposal will not be accepted.
 - Certificate of originality- duly signed by the student and the guide with dates.
 - Introduction to the Project and Review of Literature along with brief details of the organization/s under study.
 - Rationale
 - Statement of problem
 - Objectives of the Project
 - Scope of the study
 - Research Methodology
 - Research Design
 - Nature and Source of data/information collected
 - Sample and Sampling method with rationale
 - Details of the tools:
 - The Questionnaire and other methods used and their purpose
 - Reliability and Validity of the tools used
 - Administration of tools and techniques
 - Data collection
 - Data Handling, Statistical tools used for Data Analysis

- Data Interpretation and Findings
 - Recommendations
 - Summary and Conclusion
 - Limitations of the Project
 - Direction for further research (optional)
 - Reference/Bibliography
 - Annexures/Appendices (Questionnaire used etc.)
- ✓ Note: Research Methodology of the Project Report must have elaborate detail of all the components of the methodology.

The spiral bound project report will be evaluated by the panel of three teachers before second MST in presence of student, who will give the presentation to the panel before second MST.

In case of non-approval of the final project report, the comments/suggestions for revising the project report will be communicated to the student. In such case, the revised project report should be submitted within 7 days, which shall be evaluated on similar guidelines.

SUBMISSION OF FINAL PROJECT REPORT:

After incorporating changes, if any, pointed out during internal evaluation, the final Project Report in Hard Bound form (3 copies) shall be submitted by the student atleast 3 working days before final viva voce. After signing of certificate by student and supervisor, one copy will be retained by the supervisor, second copy by the student and third copy shall be produced at the time of viva-voce, which shall be maintained by the department as record.

Note:

1. **Wherever it is felt that there is not sufficient time to complete the project after approval of project proposal, the phases of Project till "Project Proposal Evaluation" may be completed in third semester at department level.**
2. **For further details on references, bibliography and formatting of the report, you may refer the Guidelines for Summer Training Report.**

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EVALUATION CRITERIA FOR FINAL PROJECT

S.N.	Name	Roll No. & Date of Presentation	Introduction & Review of Literature	Rationale, Problem Definition, Scope & Objectives	Research Methodology	Data Analysis & Findings	Suggestions & Conclusion & Scope for Future research	Overall Report Layout and Viva Performance	Total Earned Marks (out of 100)	Signature of the Evaluator with Date
			15	15	15	20	15	20	100	
1										
2										
3										

Scheme & Syllabus of Master of Computer Applications (MCA)

Batch 2021 onwards



**For
University Main Campus, Constituent Campuses and
Affiliated Colleges**

**Department of Academics
IK Gujral Punjab Technical
University**

MCA Eligibility

THE GENERAL ELIGIBILITY CRITERIA FOR MCA 2 YEARS (FOUR SEMESTERS):

MCA ELIGIBILITY:

Passed BCA/B.Sc(CS/IT)/B.Voc with Computer as a major subject/Bachelor's Degree in CSE/IT or equivalent degree of minimum three years duration.

Or

Passed B.Sc./ B.Com./ B.A. with Mathematics at 10+2 Level or at Graduation Level (With additional bridge course as per norms of IKG PTU Jalandhar)/ Bridge course will be exempted if the candidate apart from above qualification has passed PGDCA or minimum One Year Diploma in Computer Application/Science/IT or equivalent from any recognized University/Institution.

Note: The candidate must have obtained at least 50% marks (45% marks in case of candidates belonging to reserved category) in the qualifying Examination.

PROGRAM OUTCOMES (POs)

Computational Knowledge: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

Problem Analysis: Identify, formulate, research literature, and solve complex computing problem searching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

Design /Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

Conduct investigations of complex Computing problems: User search-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.

Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team to manage projects and in multidisciplinary environments.

Communication Efficacy: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.

Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

Innovation and Entrepreneurship: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

First Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
PGCA-B1	Bridge Course*	Computer Programming using C	2	0	0	50	-	50	S/US
PGCA-B2	Bridge Course*	Computer Science Essentials	2	0	0	50	-	50	S/US
PGCA1917	Core Theory	Discrete Structures & Optimization	4	0	0	30	70	100	4
PGCA1951	Core Theory	Programming in Python	4	0	0	30	70	100	4
PGCA1952	Core Theory	Advanced Data Structures	4	0	0	30	70	100	4
PGCA1953	Core Theory	Advanced Database Management System	4	0	0	30	70	100	4
PGCA1905	Ability Enhancement Compulsory Course (AECC)	Technical Communication	3	0	0	30	70	100	3
PGCA1954	Core Practical/Laboratory	Data Structures using Python Laboratory	0	0	4	70	30	100	2
PGCA1955	Core Practical/Laboratory	Advanced Database Management System Laboratory	0	0	4	70	30	100	2
PGCA1908	Ability Enhancement Compulsory Course (AECC)	Technical Communication Laboratory	0	0	2	30	20	50	1
	TOTAL		19	0	10	320	430	750	24

***Bridge courses are not applicable to all the students, please refer MCA eligibility given above in order to offer bridge courses to students.**

Second Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
PGCA1909	Core Theory	Web Technologies	4	0	0	30	70	100	4
PGCA1920	Core Theory	Design & Analysis of Algorithms	4	0	0	30	70	100	4
PGCA1918	Core Theory	Advanced Java	4	0	0	30	70	100	4
PGCA1956	Core Theory	Linux Administration	4	0	0	30	70	100	4
PGCA1932	Core Theory	Information Security & Cyber Law	4	0	0	30	70	100	4
PGCA1914	Core Practical/Laboratory	Web Technologies Laboratory	0	0	4	70	30	100	2
PGCA1922	Core Practical/Laboratory	Advanced Java Laboratory	0	0	4	70	30	100	2
PGCA1957	Core Practical/Laboratory	Linux Administration Laboratory	0	0	4	70	30	100	2
	TOTAL		20	0	12	360	440	800	26
Students will undergo 4 weeks Summer Training after 2nd semester. Examination will be conducted along with 3rd semester practical.									

Third Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
PGCA1925	Core Theory	Advanced Computer Networking	4	0	0	30	70	100	4
PGCA1926	Core Theory	Artificial Intelligence & Soft Computing	4	0	0	30	70	100	4
PGCA1927	Core Theory	Theory of Computation	4	0	0	30	70	100	4
	Elective – I		4	0	0	30	70	100	4
	Elective – II		4	0	0	30	70	100	4
PGCA1928	Core Practical/ Laboratory	Advanced Computer Networking Laboratory	0	0	4	70	30	100	2
PGCA1929	Core Practical/ Laboratory	Artificial Intelligence & Soft Computing Laboratory	0	0	4	70	30	100	2
	Elective – II Laboratory		0	0	4	70	30	100	2
PGCA1969		**Summer/Institutional Training	0	0	4	70	30	100	2
	TOTAL		20	0	16	430	470	900	28

Elective – I	
Course Code	Course Title
PGCA1930	Software Project Management
PGCA1971	Optimization Techniques
PGCA1972	Data Mining and Business Intelligence
PGCA1973	Enterprise Resource Planning

Elective – II	
Course Code	Course Title
PGCA1933	Mobile Applications Development
PGCA1935	Simulation & Modelling
PGCA1921	e-Commerce and Digital Marketing
PGCA1931	Software Testing & Quality Assurance

Elective – II Laboratory	
Course Code	Course Title
PGCA1934	Mobile Applications Development Laboratory
PGCA1936	Simulation & Modelling Laboratory
PGCA1974	e-Commerce and Digital Marketing Laboratory
PGCA1975	Software Testing & Quality Assurance Laboratory

Fourth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
PGCA1976	Core Theory	Machine Learning & Data Analytics using Python	4	0	0	30	70	100	4
PGCA1958	Core Theory	Advanced Web Technologies	4	0	0	30	70	100	4
PGCA1977	Core Practical/ Laboratory	Machine Learning & Data Analytics using Python Laboratory	0	0	4	70	30	100	2
PGCA1960	Core Practical/ Laboratory	Advanced Web Technologies Laboratory	0	0	4	70	30	100	2
	Elective – III		4	0	0	30	70	100	4
	Elective – III Laboratory		0	0	4	70	30	100	2
PGCA1961		Research/Technical Seminar	0	0	2	0	100	100	1
PGCA1962		Project	0	0	8	180	120	300	4
	TOTAL		12	0	22	480	520	1000	23

Elective – III	
Course Code	Course Title
PGCA1937	Cloud Computing
PGCA1963	Digital Image Processing
PGCA1965	NLP and Speech Recognition
PGCA1967	IOT &Blockchain Technology

Elective – III Laboratory	
Course Code	Course Title
PGCA1938	Cloud Computing Laboratory
PGCA1964	Digital Image Processing Laboratory
PGCA1966	NLP and Speech Recognition Laboratory
PGCA1968	IOT &Blockchain Technology Laboratory

Course Code: PGCA-B1

Course Name: Computer Programming using C

Program: MCA (Bridge Course)	L: 2 T: 0 P: 0
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 22 hours
Internal max. marks: 50	Theory/Practical: Theory
External max. marks: -	Duration of end semester exam (ESE): -
Total marks: 50	Elective status: No

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Student should be able to understand the logic building used in Programming.
CO2	Students should be able to write algorithms for solving various real life problems.
CO3	To convert algorithms into programs using C.

Detailed Contents	Contact hours
Unit-I Logic Development: Data Representation, Flowcharts, Problem Analysis, Decision Trees/Tables, Pseudo code and algorithms. Fundamentals: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants. Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, Library functions.	6
Unit-II Data Input and Output: formatted & unformatted input output. Control Statements: While, Do-while and For statements, Nested loops, If-else, Switch, Break – Continue statements.	8
Unit-III Arrays: Defining, processing arrays, passing arrays to a function, multi-dimensional arrays. Strings: String declaration, string functions and string manipulation	8

Program Structure Storage Class: Automatic, external and static variables. Functions: Brief overview, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion. Objects and Classes: Introduction to Object Oriented Concepts, Features of OOP, Basic of classes and Objects.	

Text Books:

1. Programming in ANSI C, E. Balagurusami, Fourth Edition, Tata McGraw Hill.
2. Programming in C, Third Edition, Stephen G Kochan, Pearson.
3. The C Programming Language, Kernighan & Richie, Second Edition, PHI Publication.

Reference Books:

1. Object Oriented Programming, Lafore R, Third Edition, Galgotia Publications
 2. Let us C, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.
 3. Programming in C, Byron S. Gottfried, Second Edition, McGraw Hills.
 4. Problem Solving and Programming in C, R.S. Salaria, Second Edition
 5. Programming in C, Atul Kahate.
-

Course Code: PGCA-B2

Course Name: Computer Science Essentials

Program: MCA (Bridge Course)	L: 2 T: 0 P: 0
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 22 hours
Internal max. marks: 50	Theory/Practical: Theory
External max. marks: -	Duration of end semester exam (ESE): -
Total marks: 50	Elective status: No

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Understanding the concept of input and output devices of Computers
CO2	Learn the basic concepts of Operating Systems and Database Systems
CO4	Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.

Detailed Contents	Contact hours
Unit-I Human Computer Interface Concepts of Hardware and Software; Data and Information. Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter. (Brief introduction of all) Memory: Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks. Data Representation: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal Systems, Conversions and Binary Arithmetic (Addition/ Subtraction/ Multiplication) Applications of IT.	7
Unit-II Word processing: Editing features, formatting features, saving, printing, table handling, page settings, spell-checking, macros, mail-merge, equation editors. Spreadsheet: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using	7

formulas, cell references, replication, sorting, filtering, functions, Charts & Graphs. Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.	
Unit-III DBMS: Introduction of DBMS, Data Modeling for a Database, Three level Architecture of DBMS, Components of a DBMS. Fundamentals of Operating system: Introduction to Operating system, Functions of an operating system. Operating system as a resource manager. Structure of operating system (Role of kernel and Shell). Views of operating system. Evolution and types of operating systems. Data communications concepts: Digital and analog transmissions-Modem, parallel and serial transmission, synchronous and asynchronous communication. Modes of communication: Simplex, half duplex, full duplex. Types of Networks: LAN, MAN, WAN, Topologies.	8

Text Books:

1. Fundamentals of Computers, V Rajaraman, NADabala, PHI.
2. Computer Fundamentals and Programming in C, Reema Thareja, Oxford University Press, 2016.
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education
4. Computer Fundamentals, A. Goel, 2010, Pearson Education.
5. Computer Course Windows 10 with MS Office 2016, Satish Jain (Author), BPB Publications.

Reference Books:

1. "Introduction to Computers", Peter Norton
-

Course Code: PGCA1917

Course Name: Discrete Structures & Optimization

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: Basic Mathematical Knowledge

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Apply the operations of sets and use Venn diagrams to solve applied problems; solve problems using the principle of inclusion-exclusion
CO2	Apply rules of inference, proof by contradiction, proof by cases, and write proofs using symbolic logic and Boolean Algebra
CO3	Solve counting problems by applying elementary counting techniques using the product and sum rules, permutations, combinations, the pigeon-hole principle.
CO4	Determine if a given graph is simple or a multigraph, directed or undirected, cyclic or acyclic, and determine the connectivity of a graph.

Detailed contents	Contact hours
<u>Part A</u> Sets, relations, and functions: Introduction, Combination of Sets, ordered pairs, proofs of general identities of sets, relations, operations on relations, properties of relations and functions, Hashing Functions, equivalence relations, compatibility relations, partial order relations. Rings and Boolean algebra: Rings, Subrings, Morphism of rings ideals and quotient rings. Euclidean domains, Integral domains and fields, Boolean Algebra, Direct product morphisms, Boolean sub-algebra, Boolean Rings, Application of Boolean algebra (Logic Implications, Logic Gates, Karnaughmap) Combinatorial Mathematics: Basic counting principles, Permutations and combinations, Inclusion and Exclusion, Principle Recurrence relations, Generating Function, Pigeon Hole Principle, Application	24 Hours
<u>Part B</u> Monoids and Groups: Groups, Semigroups and monoids, Cyclic semigroups and submonoids, Subgroups and Cosets. Congruence relations	20 Hours

on semigroups. Morphisms. Normal subgroups. Dihedral groups.	
Graph Theory: Graph- Directed and undirected, Eulerian chains and cycles, Hamiltonian chains and cycles Trees, Chromatic number Connectivity, Graph coloring, Plane and connected graphs, Isomorphism and Homomorphism. Applications.	

Text Books:

1. Discrete Mathematics (Schaum series), Lipschutz (McGraw Hill).
2. Applied Discrete Structures for Computer Science, Alan Doerr and Kenneth Levarseur (Creative Commons) 2012.

Reference Books:

1. Discrete Mathematics and its Applications, Kenneth H Rosen.(McGraw Hill)
2. Discrete Mathematics and Graph Theory, Sartha, (Cengage Learning)
3. Elements of discrete mathematics. C L Liu (McGraw Hill)

Course Code: PGCA1951

Course Name: Programming in Python

Program: MCA	L:4 T:0 P:0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: -
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE:-NA-

Course Outcomes: Students will be able to:

CO#	Course Outcomes
CO1	Familiar with Python environment, data types, operators used in Python.
CO2	Compare and contrast Python with other programming languages.
CO3	Learn the use of control structures and numerous native data types with their methods.
CO4	Design user defined functions, modules, and packages and exception handling methods.
CO5	Create and handle files in Python and learn Object Oriented Programming Concepts.

Detailed Contents	Contact hours
Part- A Introduction to Python Programming Language: Programming Language, History and Origin of Python Language, Features of Python, Limitations, Major Applications of Python, Getting, Installing Python, Setting up Path and Environment Variables, Running Python, First Python Program, Python Interactive Help Feature, Python differences from other languages. Python Data Types & Input/Output: Keywords, Identifiers, Python Statement, Indentation, Documentation, Variables, Multiple Assignment, Understanding Data Type, Data Type Conversion, Python Input and Output Functions, Import command. Operators and Expressions: Operators in Python, Expressions, Precedence, Associativity of Operators, Non Associative Operators. Control Structures: Decision making statements, Python loops, Python control statements. Python Native Data Types: Numbers, Lists, Tuples, Sets, Dictionary, Functions & Methods of Dictionary, Strings (in detail with their methods and operations).	22 hours
Part- B Python Functions: Functions, Advantages of Functions, Built-in Functions, User defined functions, Anonymous functions, Pass by value Vs. Pass by Reference, Recursion, Scope and Lifetime of Variables. Python Modules: Module definition, Need of modules, Creating a module, Importing module, Path Searching of a Module, Module Reloading, Standard Modules, Python Packages. Exception Handling: Exceptions, Built-in exceptions, Exception handling, User defined exceptions in Python. File Management in Python: Operations on files (opening, modes, attributes, encoding, closing), read() & write() methods, tell() & seek() methods, renaming & deleting files in Python, directories in Python. Classes and Objects: The concept of OOPS in Python, Designing classes, Creating objects, Accessing attributes, Editing class attributes, Built-in class attributes, Garbage collection, Destroying objects.	22 hours

Text Books:

1. Programming in Python, Pooja Sharma, BPB Publications, 2017.
2. Core Python Programming, R. Nageswara Rao, 2nd Edition, Dreamtech.

Reference Books:

1. Python, The complete Reference, Martin C. Brown, Mc Graw Hill Education.
2. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.

Course Code: PGCA1952

Course Name: Advanced Data Structures

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Choose appropriate data structures and algorithms and use it to design solution for a specific problem.
CO2	Execute the operations of hashing to retrieve data from data structure.
CO3	Design and analyze programming problem statements
CO4	Come up with analysis of efficiency and proofs of correctness
CO5	Comprehend and select algorithm design approaches in a problem specific manner.

Detailed contents	Contact hours
<u>Part A</u> Introduction to Data Structures: Data Structures and its Types, Algorithms, Time Complexity, Recurrence, Probabilistic Analysis, Amortized Analysis, Competitive Analysis. Sorting Algorithms: Quick Sort, Heap Sort, Counting Sort, Bucket Sort, Multi-way Merge Sort.	22 Hours

Hashing Techniques: Direct Address Tables, Hash Tables, Hash Functions, Open Addressing, Perfect Hashing. Advanced Data Structures: AVL Trees, Red-Black Trees, Splay Trees, B-trees, Binomial Heaps, Fibonacci heaps, Data Structures for Disjoint Sets.	
<u>Part B</u> Graphs & Algorithms: Graphs Representation, Minimum Spanning Tree (MST), Single Source Shortest Paths, All Pairs Shortest Paths, Maximum Flow. String Matching: String, String Length, String Concatenation, String Copy, String-Matching, Brute Force algorithm, Rabin Karp algorithm, Knuth-Morris-Pratt (KMP) algorithm, Boyer-Moore algorithm.	22 Hours

Text Books:

1. Thomas Cormen, "Introduction to Algorithms", Third edition, Prentice Hall of India, 2009.

Reference Books:

1. Kleinberg J., Tardos E., "Algorithm Design", 1st Edition, Pearson, 2012.
 2. Aho Alfred V., Hopcroft John E., Ullman Jeffrey D., "Data Structures and Algorithms", Addison Wesley, 2001.
 3. Seymour Lipschutz, "Data structure", Indian Adapted Edition, Tata McGraw Hill, 200
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Course Code: PGCA 1953

Course Name: Advanced Database Management System

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -Understanding of Core Java concepts.

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Express the basic concepts of DBMS and RDBMS.
CO2	Apply normalization theory to the normalization of a database
CO3	Apply the concept of Transaction Management & Recovery techniques in RDBMS.
CO4	Analyze various advanced databases prevailing in market, Big Data, Temporal Databases, Parallel and Distributed Databases, XML Database and multidimensional Databases
CO5	Demonstrate No SQL databases (Open Source)

Detailed contents	Contact hours
<u>Part A</u> Need of DBMS over traditional Data storage mechanisms, Basic DBMS terminologies; Architecture of a DBMS: Data Independence, DBMS Component Structure, DBMS USERS, various DBMS Data Models, Conceptual Model: Entity Relationship Model, Importance of ERD, Symbols (Entity: Types of Entities, weak Entity, Composite Entity, Strong Entity, Attribute: Types of Attribute, Relationship: Type of relationship, Connectivity, Cardinality). Normalization and its various forms, Functional Dependencies, Multi-valued Dependencies, Join Dependencies Database Integrity: Domain, Entity, Referential Integrity Constraints Relational Languages: Relational Algebra, Relational Calculus, Query Execution, optimization and evaluation Plans. Transaction Management and Concurrency Control techniques, Database Recovery Management Concepts and methods. Introduction and Need of Database Administration and activities of	22 Hours

Database administration.	
<u>Part B</u> Parallel Databases : Database System Architectures: Centralized and Client-Server Architectures – Server System Architectures – Parallel Systems-Parallel Databases: I/O Parallelism – Inter and Intra Query Parallelism – Inter and Intra operation Parallelism Distributed Database Concepts : Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency Control – Distributed Query Processing Multidimensional Databases and their uses in data analytics. Temporal Databases : Introduction to Temporality, Temporal relationships, temporal hierarchies. Spatial Databases: Spatial data types, spatial relationships, Topological Relationships, Spatial Data Structures and methods of storage. Big Data : introduction: introduction to NOSQL Databases (Open Source only). Need and usage of XML Databases: XML Data Model – DTD – XML Schema	22 Hours

Text Books:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan, “Database System Concept”, Sixth Edition, 2013, McGraw-Hill
2. Bipin C. Desai, “An Introduction to Database System” , Revised Edition, 2012, Galgotia Publications Pvt Ltd-New Delhi

Reference Books:

1. Ivan Bayross, “SQL, PL/SQL The Programming Language of Oracle”, 4th Revised Edition, 2009, BPB Publications
2. Peter Rob Carlos Coronel, “Database Systems”, Cengage Learning, 8th ed.
3. C.J.Date, A.Kannan, S.Swamynathan, “An Introduction to Database Systems”, 8th Edition, 2006, Pearson Education.

Course Code: PGCA1905

Course Name: Technical Communication

Program: MCA	L:3 T:0 P:0
Branch: Computer Applications	Credits: 3
Semester: 1 st	Contact hours: 33 hours
Internal max. marks: 30	Theory/Practical: Theory
External max. marks: 70	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Ability Enhancement

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	The objective of the course is to help the students become the independent users of English language.
CO2	Students will acquire basic proficiency in reading & listening, comprehension, writing and speaking skills.
CO3	Students will be able to understand spoken and written English language, particularly the language of their chosen technical field.
CO4	They will be able to converse fluently.
CO5	They will be able to produce on their own clear and coherent texts.

Detailed contents	Contact hours
<u>Part A</u> Basics of Technical Communication: Functions of Communication- Internal & External Functions, Models-Shannon & Weaver's model of communication, Flow, Networks and importance, Barriers to Communication, Essential of effective communication (7C's and other principles), Non-verbal Communication. Basic Technical Writing: Paragraph writing (descriptive, Imaginative etc.), Precise writing, reading and comprehension, Letters— Format & various types.	16 Hours
<u>Part B</u> Advanced Technical Writing: Memos, Reports, E-Mails & Net etiquettes, Circulars, Press Release, Newsletters, Notices. Resume Writing, Technical Proposals, Research Papers, Dissertation and Thesis, Technical Reports, Instruction Manuals and Technical Descriptions, Creating Indexes, List of References and Bibliography. Verbal Communication: Presentation Techniques, Interviews, Group	17 Hours

Discussions, Extempore, Meetings and Conferences.

Technical Communication:MS-Word, Adobe Frame maker and ROBO Help

* Lab Exercises based on Listening and Speaking skills

Text Books:

1. Vandana R Singh, The Written Word, Oxford University Press, New Delhi.
 2. K K Ramchandran, et al Business Communication, Macmillan, New Delhi.
 3. Swati Samantaray, Business Communication and Communicative English, Sultan Chand, New Delhi.
 4. S.P. Dhanavel English and Communication Skills for Students of Science and Engineering (with audio CD).
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Course Code: PGCA1954

Course Name: Data Structures using Python Laboratory

Program: MCA	L: 0T:0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): -
External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite: -Understanding of concepts of Data Structures

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand the concept of data structures, python and apply algorithm for solving problems like Sorting, searching, insertion and deletion of data.
CO2	Implement linear and non-linear data structures for processing of ordered or unordered data.
CO3	Analyze various algorithms based on their time and space complexity.

<u>LIST OF EXPERIMENTS</u>	
1	Write a Python program to create an array of 5 elements and display the array items. Access each individual element through indexes.
2	Write a Python program to reverse the order of the items in the array.
3	Write a Python program to append a new item to the end of the array.
4	Write a Python program to remove a specified item using the index from an array.
5	Write a Python program to get the length of an array.
6	Write a Python program for binary search.
7	Write a Python program for sequential or linear search.
8	Write a Python program to sort a list of elements using the bubble sort algorithm.
9	Write a Python program to sort a list of elements using the selection sort algorithm.
10	Write a Python program to sort a list of elements using the insertion sort algorithm.
11	Write a Python program to sort a list of elements using the quick sort algorithm.
12	Write a Python program to create a singly linked list, append some items and iterate through the list.
13	Write a Python program to find the size of a singly linked list.
14	Write a Python program to search a specific item in a singly linked list and return true if the item is found otherwise return false.
15	Write a Python program to delete the first item from a singly linked list.
16	Write a Python program to create circular single linked lists.
17	Write Python programs to implement stack and its operations using list.
18	Write Python programs to implement queue and its operations using list.
19	Write a Python program to create a Balanced Binary Search Tree (BST) using an

	array (given) elements where array elements are sorted in ascending order.
20	Write a Python program to find the kth smallest element in a given a binary search tree.
21	Write a Python program to traverse the binary tree using pre-order, post-order and in-order traversals.
22	Write a Python program to count the number of nodes in binary search tree.
23	Write a Python program to traverse the graph using Depth First Search and Breadth First Search
24	Write a Python program to create Red Black Tree and perform operations of Insertion and Deletion in it.
25	Write a Python program to implement AVL Trees as well as various operations of searching, insertion and deletion on AVL Trees.

Text Books:

1. Benjamin Baka, David Julian, “Python Data Structures and Algorithms”, Packt Publishers, 2017.
2. Y Daniel Liang, “Introduction to Programming using Python”, Pearson.
3. Rance D. Necaie, “Data Structures and Algorithms using Python”, Wiley Student Edition.

Reference Books:

1. Hemant Jain, “Problem Solving in Data Structures and Algorithms using Python: programming interview guide”, 2016.
2. Zed A. Shaw, “Learn Python the Hard Way: a very simple introduction to the terrifyingly beautiful world of computers and code”, 3e, Addison-Wesley, 2014.

Course Code: PGCA1955

Course Name: Advanced Database Management System Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): -
External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Implement query a database using SQL DML/DDDL commands.
CO2	Analyze integrity constraints on a database
CO3	Develop PL/SQL programs including stored procedures, stored functions, cursors

CO4	Design new database and modify existing ones for new applications and reason about the efficiency of the result.
CO5	Implement various DBA roles/techniques

S.No.	Practical Assignments
1.	Database design using E-R model and Normalization (Any 3 systems).
2.	Implementation of DDL Commands to perform creation of table, alter, modify and drop column operations.
3.	Implementation of Constraint ▪ Check Constraint ▪ Entity Integrity Constraint ▪ Referential Integrity Constraint ▪ Unique Constraint ▪ Null Value Constraint
4.	Implementation of DML and DCL Commands.
5.	Implementation of Data and Built in Functions in SQL.
6.	Implementation of Nested Queries and Join Queries.
7.	Implementation of Cursors.
8.	Implementation of Procedures and Functions.
9.	Implementation of Triggers.
10.	Implementation of Embedded SQL.
11.	Consider a Database applications, Design and Develop Conceptual Data Model (E-R Diagram) with all the necessary entities, attributes, constraints and relationships. Design and build Relational Data Model for application specifying all possible constraints.
12.	Implementation of various DBA roles/techniques ▪ Creation of user ▪ Granting of privileges to the users ▪ Creation of roles ▪ Loading of privileges into user defined roles. ▪ Import/Export data between various databases and flat files

Text Books:

1. Ivan Bayross, “SQL, PL/SQL The Programming Language of Oracle”, 4th Revised Edition, 2009, BPB Publications.
2. Steven Feuerstein and Bill Pribyl, “Oracle PL/SQL Programming”, 5th Edition, 2009, O'Reilly Media.

Course Code: PGCA1908

Course Name: Technical Communication Laboratory

Program: MCA	L:0 T:0 P:2
Branch: Computer Applications	Credits: 1
Semester: 1 st	Contact hours: 2 hours per week
Internal max. marks: 30	Theory/Practical: Practical
External max. marks: 20	Duration of end semester exam (ESE): -
Total marks: 50	Elective status: Ability Enhancement

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	The objective of the course is to help the students become the independent users of English language.
CO2	Students will acquire basic proficiency in listening and speaking skills.
CO3	Students will be able to understand spoken English language, particularly the language of their chosen technical field.
CO4	They will be able to converse fluently
CO5	They will be able to produce on their own clear and coherent texts.

Assignments:

Interactive practice sessions in Language Lab on Oral Communication	
1.	Listening Comprehension
2.	Self-Introduction, Group Discussion and Role Play
3.	Common Everyday Situations: Conversations and Dialogues
4.	Communication at Workplace
5.	Interviews
6.	Formal Presentations

Text Books:

1. Practical English Usage. Michael Swan. OUP. 1995.
2. Communication Skills. Sanjay Kumar and Pushp Lata. Oxford University Press. 2011.
3. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press.

Course Code: PGCA1909

Course Name: Web Technologies

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: Student must have the basic knowledge of any text editor like Notepad, Notepad++ and Edit plus etc.

Co requisite: Student must know the background of Markup Language.

Additional material required in ESE:

- Demonstration of the website of college/ specific department/specific cells etc. will be presented by the students during the final practical.
- Developed Website/s must be made online by the student/s.
- Printouts of the Main Page of the website must be arranged on Practical file during daily lab work and must be submitted in the final examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Understand the basics of Internet and Web Services.
CO2	Describe and differentiate Programming Language and Markup Language.
CO3	Connect various web pages and web sites together.
CO4	Capture user input from the remote users.
CO5	Learn connectivity concepts of Front End and Back End.

Detailed Contents	Contact hours
<u>Part-A</u> Internet Basics: Basic concepts, communicating on the internet, internet domains, internet server identities, establishing connectivity on the internet client IP address, How IP addressing came into existence? A brief overview TCP/IP and its services, transmission control protocol. Introduction To HTML: Information Files Creation, Web Server, Web Client/Browser, Hyper Text Markup Language (HTML Tags, Paired Tags, Singular Tags), Commonly Used HTML Commands (Document Head, Document Body), Title and Footer, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines). Basic Formatting Tags: HTML Basic Tags, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines), Text Styles (Bold, Italics, Underline), Other Text Effects	24 hours

(Centering (Text, Images etc.), Spacing (Indenting Text), HTML Color Coding. Basic Formatting Tags: HTML Basic Tags, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines), Text Styles (Bold, Italics, Underline), Other Text Effects (Centering (Text, Images etc.), Spacing (Indenting Text), HTML Color Coding. Lists Type of Lists (Unordered List (Bullets), Ordered Lists (Numbering), Definition Lists. Adding Graphics To HTML Documents: Using The Border Attribute, Using The Width And Height Attribute, Using The Align Attribute, Using The Alt Attribute. Tables: Introduction (Header, Data rows, The Caption Tag), Using the Width and Border Attribute, Using the Cell padding Attribute, Using the Cell spacing Attribute, Using the BGCOLOR Attribute, Using the COLSPAN and ROWSPAN Attributes Tag.	
<u>Part-B</u> Linking Documents: Links (External Document References, Internal Document References), Image As Hyperlinks. Frames: Introduction to Frames: The<FRAMESET> tag, The <FRAME> tag, Targeting Named Frames. DHTML: Cascading Style Sheets, Style Introduction to JavaScript: Introduction to JavaScript: JavaScript in Web Pages (Netscape and JavaScript, Database Connectivity, Client side JavaScript, Capturing User Input); The Advantages of JavaScript (an Interpreted Language, Embedded within HTML, Minimal Syntax -Easy to Learn, Quick Development, Designed for Simple, Small Programs, Performance, Procedural Capabilities, Designed for Programming User Events, Easy Debugging and Testing, Platform Independence/Architecture Neutral); Writing JavaScript into HTML. Forms Used by a Web Site: The Form Object, The Form Object's Methods (The Text Element, The Password Element, The Button Element, The Submit (Button) Element, The Reset (Button) Element, The Checkbox Element, The Radio Element, The Text Area Element, The Select and Option Element, The Multi Choice Select Lists Element) Other Built-In Objects in JavaScript (The String Object, The Math Object, The Date Object), User Defined Objects (Creating a User Defined Object, Instances, Objects within Objects).	20 hours

Text Books:

1. Internet for Every One: Alexis Leon, 1st Edition, Leon Techworld, Publication, 2009.
2. Greenlaw R; Heppel, "Fundamentals of Internet and WWW", 2nd Edition, Tata McGraw-Hill, 2007.
3. RajKamal, "Internet & Web Technologies", edition Tata McGraw-Hill Education 2009.
4. Chris Payne, "ASP in 21 Days", 2nd Edition, Sams Publishing, 2003 PDCA.
5. A Beginner's Guide to HTML <http://www.Ncsa.Nine.Edit/General/Internet/WWW/HTML.Prmter>

E-Books/ Online learning material:

1. https://www.tutorialspoint.com/html/html_tutorial.pdf
2. <https://www.w3schools.com/js/>
3. <https://www.w3schools.com/html/>
4. https://www.cs.uct.ac.za/mit_notes/web_programming.html
5. http://www.pagetutor.com/table_tutor/index.html

Course Code: PGCA1920

Course Name: Design & Analysis of Algorithms

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -Student must have knowledge about Data Structures.

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Categorize problems based on their characteristics and practical importance
CO2	Develop Algorithms using iterative/recursive approach
CO3	Design algorithm using an appropriate design paradigm for solving a given problem
CO4	Classify problems as P, NP or NP Complete

Detailed contents	Contact hours
<u>Part A</u> Algorithms: Analyzing algorithms, order arithmetic, Time and space complexity of an algorithm, comparing the performance of different algorithms for the same problem. Different orders of growth. Asymptotic notation. Polynomial vs. Exponential running time. Principles of Algorithm	24 Hours

Design. Mathematical analysis of Recursive and Non-recursive algorithms. Basic Algorithm Design Techniques: Divide-and-conquer, Greedy approach, Randomization and dynamic programming. Example problems on Backtracking: n-Queens problem, Hamiltonian Circuit Problem, Subset – Sum Problem. Branch-and- Bound: Assignment Problem, Knapsack Problem, Traveling Salesperson Problem.	
<u>Part B</u> Sorting and searching: Insertion and selection sort, Binary search in an ordered array. Sorting algorithms such as Merge sort, Quick sort, Heap sort, Radix Sort, and Bubble sort with analysis of their running times. Lower bound on sorting. Exhaustive search and String Matching. Graphs and NP-completeness: Graph traversal: Breadth-First Search(BFS) and Depth-First Search (DFS). Applications of BFS and DFS. Shortest paths in graphs: Dijkstra algorithm. Definition of class NP, P, NP-hard and NP-complete problems.	20 Hours

Text Books:

1. Horowitz E., Sahani S., Rajasekharan S.: Computer Algorithms, Galgotia Publication
2. A.V.Aho, J.E.Hopcroft, and J.D.Ullman, The Design and Analysis of Computer Algorithms, Pearson Education India
3. J.Kleinberg and E.Tardos, Algorithm Design by, Pearson Education India
4. Cormen T.H., Leiserson C.E., and Rivest R.L.: Introduction to Algorithms, PHI

Reference Books:

1. Anany Levitin: Introduction to the Design and Analysis of Algorithms, Pearson Education, 2nd Edition.
2. Michael T Goodrich and Roberto Tamassia : Algorithm Design, Wiley India
3. R C T Lee, S S Tseng, R C Chang, Y T Tsai : Introduction to Design and Analysis of Algorithms: A Strategic Approach, Tata McGraw Hill

Course Code: PGCA1918

Course Name: Advanced Java

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -Understanding of Core Java concepts.

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Learn the advanced features of Java and write the programs.
CO2	Work with API and implement Serialization concept of Java.
CO3	Learn Java Generics and develop Projects.

Detailed contents	Contact hours
<u>Part A</u> Servlets: The life cycle of Servlet, Java Servlet Development kit, Servlet API, Reading the servletparameters, Reading initialization parameters, Handling HTTP requests and responses, Using cookies, Session tracking and security issues. Java Server Pages (JSP): JSP Architecture, Life cycle of JSP, JSP syntax basics–Directives,Declarations, Scripting, Standard actions, Custom tag libraries, Implicit objects, Object scope. Synchronization issues, Session management. Struts : Introduction to struts framework, understanding basic architecture of Model, view, controller. Deploying the application in struts with database connectivity.	22 Hours
<u>Part B</u> Hibernate : Introduction to hibernate framework, understanding basic architecture of Model, view, controller. Basic concepts of creating pojo files, reverse mapping, object creation in hibernate ,database connectivity . Enterprise Java Bean: The bean developer kit (BDK), Use of JAR files, The java beans API,Creating a JavaBean, Types of beans, Stateful session bean, Stateless session bean, Entity bean. Remote Method Invocation: Defining the remote interface, Implementing the remote interface, Compiling and executing the server and the client. Common Object Request Broker Architecture (CORBA): Overview of technical architecture, CORBA basics, CORBA services.	22 Hours

Text Books:

1. Herbert Schildt , “The Complete Reference Java 2” , Tata McGraw -Hill.
2. H.M. Deital, P.J. Dietal and S.E. Santry, “Advanced Java 2 Platform HOW TO PROGRAM”, Prentice Hall.

Reference Books:

1. Grey Cornell and Hortsman Cay S., “Core Java”, Sun Microsystems Press.
2. Philip Hanna, “JSP: The Complete Reference”, Tata McGraw –Hill.

Course Code: PGCA1956

Course Name: Linux Administration

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite:

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand the technical details of Linux operating system
CO2	Work with various Linux command and understand file hierarchical structuring
CO3	Administrate user, manage and configure packages in Linux
CO4	Know and configure the various internet services.

Detailed contents	Contact hours
<u>Part A</u> Introduction: Linux: The Operating System: Linux Distributions, Difference Between Linux and Windows, Separation of the GUI and the Kernel, Understanding Linux Kernel, Installing Linux in a Server Configuration, Booting and Shutting Down Process, Concept of Root, Basic commands, working with vi Editor, Understanding files and File System: Understanding Files and Directories	22 Hours

in Linux, File Structure and hierarchy, File Permissions, File Management and Manipulation, Managing File System Managing Packages & Users: Installing and removing Software in Linux, Getting and Unpacking the Package, Configuring the Package, Compiling the Package, Installing the Package, Managing Users and Groups	
<u>Part B</u> DNS: Installing a DNS Server, Configuring a DNS Server, DNS Records Types, Setting Up BIND Database Files, The DNS Toolbox, Configuring DNS Clients. Web Server: Understanding the HTTP Protocol, Installing the Apache HTTP Server, Starting Up and Shutting Down Apache, Configuring Apache E-Mail Server: Understanding SMTP, Installing the Postfix Server, Configuring the Postfix Server, Running the Server, POP and IMAP Basics, Installing the UW-IMAP and POP3 Server Samba Server: The Mechanics of SMB, Samba Administration, Using SWAT, Creating a Share, Mounting Remote Samba Shares, Creating Samba Users, Using Samba to Authenticate Against a Windows Server	22 Hours

Text Books:

1. Linux Administration: A Beginner's Guide, Wale Soyinka, McGrawHill
2. UNIX and Linux system administration Handbook Evi Nemeth, Garth Snyder, Trent R. Hein, Ben Whaley, Dan Mackin, Pearson Education

Reference Books:

1. Linux: The Complete Reference, Sixth Edition, Richard Petersen McGrawHill
 2. Linux All-In-One for Dummies, Emmett Dulaney, Wiley India
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Course Code: PGCA1932

Course Name: Information Security and Cyber Law

Program: MCA	L:4 T:0 P:0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Acquire knowledge about various Information Systems.
CO2	Understand the key security requirements of Confidentiality, Integrity & Availability.
CO3	Demonstrate the concept of Intrusion Detection & Intrusion Prevention.
CO4	Apply Symmetric Encryption techniques.
CO5	Describe the concept of Security policies and Cyber Laws.

Detailed contents	Contact hours
<u>Part A</u> Introduction to Information System, classification and components of information system, Computer Security Concepts, CIA (Confidentiality, integrity and availability), Security Functional Requirements. User Authentication: Means of Authentication, Password-Based Authentication, Token-Based Authentication, Biometric Authentication, Remote User Authentication, Security Issues for User Authentication. Access Control: Access Control Principles, Subjects, Objects, and Access Rights, Discretionary Access Control, File Access Control, Role-Based Access Control. Database Security: The Need for Database Security, Database Access Control, Database Encryption. Malicious Software: Types of Malicious Software (Malware)-Viruses, Worms, SPAM E-mail, Trojans, Zombie, Bots, Keyloggers, Phishing, Spyware, Backdoors, Rootkits, Preventive Measures. Denial-of-Service Attacks: Types of DoS attacks, Defenses Against Denial-of-Service	22 Hours

Attacks.	
<u>Part B</u> Intrusion Detection: Intruders, Intrusion Detection, Host-Based Intrusion Detection, Distributed Host-Based Intrusion Detection, Network-Based Intrusion Detection, Honeypots. Firewalls & Intrusion Prevention Systems: The Need for Firewalls, Firewall Characteristics, Types of Firewalls, Firewall Basing, Intrusion Prevention Systems. Cryptographic Algorithms: Symmetric Encryption Principles, Data Encryption Standards (DES) Introduction to Internet Security Protocols & Standards: SSL, TLS, HTTPS, IPv4 and IPv6 Security protocols. Security Policies and Cyber Laws: Concept of Information Security Policy, ISO Standards, various Indian Cyber Laws, Information Technology Act 2000, Electronic Record and E-Governance, Classification and Provisions of Cyber Crimes, Regulation of Certifying Authorities, Patent, Copyright, Digital signature, Introduction to Cyberspace.	22 Hours

Text Books:

1. William Stallings, Lawrie Brown, “Computer Security: Principles & Practice”, 3rd Edition, Pearson, 2015.
2. Surya Prakash Tripathi, RitendraGoel, Praveen Kumar Shukla, “Introduction to Information Security and Cyber Laws”, Wiley India, 2014.

Reference Books:

1. Christof Paar , Jan Pelzl, “Understanding Cryptography: A Textbook for Students and Practitioners”, 1st Edition, Springer, 2010
2. William Stallings, “Cryptography and Network Security Principles and Practices”, 4th Edition, Prentice Hall, 2006.
3. Darren Death, “Information Security Handbook”, Packt Publishing, 2017

Course Code: PGCA1914

Course Name: Web Technologies Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of End Semester Exam (ESE): 3hrs
External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite: Students must have the knowledge of editors like Notepad etc. and basic understanding of Scripting Language/s.

Co requisite: Knowledge of Networking, Internet, Client Server concepts, Static & Dynamic environment of the websites etc.

Additional material required in ESE:

- Demonstration of the website of college/ specific department/specific cells etc. will be presented by the students during the final practical.
- Developed Website/s must be made online by the student/s.
- Printouts of the Main Page of the website must be arranged on Practical file during daily lab work and must be submitted in the final examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Understand Static and Dynamic concepts of web designing.
CO2	Develop ability to retrieve data from a database and present it online.
CO3	Design web pages that apply various dynamic effects on the web site.
CO4	Solve complex and large problems using Scripting Language & Markup Language.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments:

1.	Design index page of a book Titled Web Designing.
2.	Create a simple HTML page to demonstrate the use of different tags.
3.	Display Letter Head of your college on a web page & it must be scrolling Right to Left.
4.	Create a link to move within a single page rather than to load another page.
5.	Display “Name of University” using different Text formatting Tags.
6.	Design Time Table of your department and highlight most important periods.
7.	Use Tables to provide layout to your web page.
8.	Embed Audio and Video into your web page.
9.	Divide a web page vertically and display logo of your college in left pane and logo of university in right pane.
10.	Create Bio- Data of an employee.
11.	Design front page of a hospital with different styles.
12.	Design a web page and display horizontally two different web pages at a time.

13.	Write a program to create a login form. On clicking the submit button, the user should get navigated to a profile page.
14.	Write a HTML code to create a Registration Form. On submitting the form, the user should be asked to login with the new credentials.
15.	Write a HTML code to create website in your college or department and create link for Tutorial of specific subject.
16.	Write a program to perform following operations on two numbers input by the user: Addition 2) Subtraction 3) Multiplication 4) Division.
17.	Design a program to solve quadratic equations.
18.	Write a program to determine greatest number of three numbers.
19.	Write a script to compute, the Average and Grade of students marks.
20.	Design a scientific calculator and make event for each button using scripting language.
21.	Write a script to check whether a number is even or odd?
22.	Write a program to show whether a number is prime or not?
23.	Write a program to show multiplication table of any number.
24.	Write a program to find the factorial of any number.
25.	Write a program to show Fibonacci Series between 0 to 74.

Reference Books:

1. Greenlaw R; Hepp E, “Fundamentals of Internet and www”, 2nd Edition, Tata. McGraw-Hill, 2007.
2. A Beginner’s Guide to HTML [Http://www.Ncsa.Nine.Edit/General/Internet/www/html.prmter](http://www.Ncsa.Nine.Edit/General/Internet/www/html.prmter).

Online Experiment material:

1. https://www.w3schools.com/html/html_examples.asp
 2. https://www.cs.uct.ac.za/mit_notes/web_programming.html
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Course Code: PGCA1922

Course Name: Advanced Java Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): -
External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Learn the advanced features of Java and write the programs.
CO2	Work with API and implement Serialization concept of Java.
CO3	Learn Java Generics and develop Projects.
CO4	Understand to use digital marketing for developing effective digital and social media strategies

S.No.	Practical Assignments (Java)
1.	Create a Servlet to handle HTTP Requests and Responses.
2.	Implementation of the concept of Cookies and Session Tracking.
3.	Illustrate the concept of JavaServer Pages (JSP).
4.	Create a JavaBean by using Bean Developer Kit (BDK).
5.	Implementation of various types of beans like Session Bean and Entity Bean.
6.	Introduction to Struts platform with basic connectivity.
7.	Deploying first sample program using MVC architecture in struts.
8.	Implementing database connectivity in struts.
9.	Creating one sample application in struts.
10.	Introduction to Hibernate framework.
11.	Creating simple Hibernate application.
	Practical Assignments (SEO)
12.	Take a web site and prepare the SEO report of the website including status of following factors: Title tag, meta-description tag, header tags, keyword consistency, number of back links, robots.txt and xml sitemaps then after going through the steps of SEO prepare the report.
13.	Discuss any five tools to prepare the list of ten organic key words for SEO purpose.
14.	Optimize the images in the website using suitable methods and compare the reports before and after the SEO steps.
15.	Write the robot and sitemap file of a website under consideration.

Text Books:

1. Herbert Schildt , “The Complete Reference Java 2” , Tata McGraw -Hill.
2. H.M. Deital, P.J. Dietal and S.E. Santry, “Advanced Java 2 Platform How To Program”, Prentice Hall.
3. Laudon and Traver, “E-Commerce: Business, Technology & Society”, Pearson Education

4. Shivani Karwal, “Digital Marketing Handbook: A Guide to search Engine Optimization, Pay Per Click Marketing, Email Marketing and Content Marketing”, CreateSpace Independent Publishing Platform, 1st edition.

Reference Books:

1. Grey Cornell and Hortsman Cay S., “Core Java”, Sun Microsystems Press.
2. Philip Hanna, “JSP: The Complete Reference”, Tata McGraw –Hill..

Course Code: PGCA1957

Course Name: Linux System Administration Laboratory

Program: MCA	L: 0T:0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 hours per week
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): -
External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite:

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:Students will be able to:

CO#	Course outcomes
CO1	Install Linux desktop and Linux server operating system.
CO2	Use various commands for performing different operations
CO3	Work with various Linux administration commands
CO4	Install and configure various servers in Linux environment

Lab Practicals

S.No	Practical Assignments
1	Installation of Linux operating system. a. Partitioning drives b. Configuring boot loader (GRUB/LILO) c. Network configuration d. Setting time zones e. Creating password and user accounts f. Installing and removing packages g. Shutting down
2.	Working with basic commands
3.	Linux system administration a. Becoming super user b. Temporarily changing user identity with su command c. Using graphical administrative tools

	d. Administrative commands e. Administrative configuration files
4.	Configuring NICs with Network Device Configuration Utilities (ip and ifconfig)
5.	Install and configuring a DNS Server with a domain name of your choice.
6.	Install and configuring DHCP server and client
7.	Install and configuring Mail Server
8.	Install and configuring Apache Web Server for hosting websites
9.	Securing a simple network with Linux firewall (Netfilter/iptables)
10.	Setting up Samba Server to share files and printers with Windows-based and other operating systems

Text Books:

1. Linux Administration: A Beginner's Guide, Wale Soyinka, McGrawHill
2. UNIX and Linux system administration Handbook Evi Nemeth, Garth Snyder, Trent R. Hein, Ben Whaley, Dan Mackin, Pearson Education
3. Linux Command Line and Shell Scripting Bible, 3rd Edition Richard Blum, Christine Bresnahan, Wiley

Reference Books:

1. Linux: The Complete Reference, Sixth Edition, Richard Petersen McGrawHill
2. Linux All-In-One for Dummies, Emmett Dulaney, Wiley India.

Course Code: PGCA1925

Course Name: Advanced Computer Networking

Program: MCA	L:4 T:0 P:0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Familiar with the different Network Models.
CO2	Understand different protocols working at Medium Access Sub layer.
CO3	Learn the concept of network routing through algorithms.
CO4	Learn and understand Internet protocols and network security.

Detailed contents	Contact hours
<u>Part A</u> Computer Networks: Uses of computer Networks, Goals and applications of networks, Computer Network Structure and Architecture, Reference models: OSI model Physical Layer: Concept of Analog & Digital Signal, Bandwidth, Transmission Impairments: Attenuation, Distortion, Noise, Multiplexing : Frequency Division, Time Division, Wavelength Division, Introduction to Transmission Media : Twisted pair, Coaxial cable, Fiber optics, Wireless transmission (radio, microwave, infrared) Data Link Layer: Design issues, Framing, Error detection and correction codes: parity, checksum, CRC, hamming code, Data link protocols for noisy and noiseless channels, Sliding Window Protocols: Stop & Wait ARQ, Go-back-N ARQ, Selective repeat ARQ, Data link protocols: HDLC and PPP. Network Layer: Design issues, IPv4 classful and classless addressing, subnetting, Routing algorithms: distance vector, Congestion control: Principles of Congestion Control, Congestion prevention policies, Leaky bucket and token bucket algorithms Medium Access Sub-Layer: Static and dynamic channel allocation, Random Access: ALOHA, CSMA-CA/CD protocols, Controlled Access: Polling, Token Passing Transport Layer: Elements of transport protocols: addressing, connection establishment and release, flow control and buffering, multiplexing and demultiplexing, crash recovery, introduction to TCP/UDP protocols and their comparison. Application Layer: World Wide Web (WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP) TCP/IP model, Comparison of TCP/IP and OSI models.	22 Hours
<u>Part B</u> An Overview of Select Wireless and Mobile Networking Technologies: Principles, WLANs: IEEE 802.11, Cellular Networks, Issues in Seamless Mobility Adhoc networks: Features, advantages and applications, Adhoc versus Cellular networks, Network architecture, Protocols: MAC protocols, Routing protocols, Technologies. Wireless Communication Systems: Evolution, examples of wireless communication systems, 2G Cellular networks, Evolution for 2.5G TDMA Standards, IS-95B for 2.5G CDMA. Wireless System Design: Introduction, Frequency reuse, channel assignment strategies, handoff strategies, interference and system capacity,	22 Hours

improving coverage and capacity in cellular systems.	

Text Books:

1. A.S. Tannenbaum, "Computer Networks", 3rd Edition, Prentice Hall, 1999.
2. Data Communications & Networking by Forouzan, Tata McGraw Hills.
3. Larry L. Peterson & Bruce S. Davie: Computer Networks: A Systems Approach, 5th Edition, Morgan Kaufmann / Elsevier, New Delhi, 2012, reprint 2016.
4. James F. Kurose & Keith W. Ross: Computer Networking: A Top-Down Approach, 7th Edition, Pearson Education Inc. Boston, 2016.

Reference Books:

1. D.E. Comer, "Computer Networks and Internet", 2nd Edition, Addison Wesley Publication, 2000.
2. D. Bertsekas and R. Gallager, "Data Networks", 2nd Edition, Prentice-Hall, 1992.
3. Stevens W.R., "UNIX Network Programming," Prentice Hall, 1990.

Course Code: PGCA1926

Course Name: Artificial Intelligence & Soft Computing

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand the significance and domains of Artificial Intelligence and knowledge representation.
CO2	Examine the useful search techniques; learn their advantages, disadvantages and comparison.
CO3	Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory.
CO4	Apply artificial neural networks and fuzzy logic theory for various problems.
CO5	Determine the use of Genetic algorithm to obtain optimized solutions to problems.

Detailed contents	Contact hours
<u>Part A</u> Introduction-What is intelligence? Foundations of artificial intelligence (AI).History of AI. AI problems: Toy Problems, Real World problems-Tic-Tac-Toe, Water Jug, Question-Answering, 8-puzzle, 8-Queens problem. Formulating problems, Searching for Solutions. Knowledge Representation: Propositional Logic, Propositional Theorem proving-Inference and Proofs, Proof by Resolution, Horn Clauses and definite Clauses, Forward and Backward chaining; First order Logic, Inference in First order Logic. Informed (Heuristic) Search Strategies-Hill Climbing, Simulated Annealing, Greedy best-first search, A* and optimal search, Memory-bounded heuristic search. Natural language processing: Grammars, Parsing, Semantic Analysis and Pragmatics.	22 Hours
<u>Part B</u> Introduction: What is Soft Computing? Difference between Hard and Soft computing, Requirement of Soft computing, Major Areas of Soft Computing, Applications of Soft Computing. Neural Networks: Introduction, What is Neural Network, Learning rules and various activation functions, Supervised Learning Networks, Single layer Perceptrons, Back Propagation networks, Architecture of Backpropagation(BP)Networks, Backpropagation Learning, Variation of Standard Back propagation Neural Network, Introduction to Associative Memory, Adaptive Resonance theory and Self Organizing Map, Recent Applications. Unsupervised Learning Networks. Fuzzy Systems: Fuzzy Set theory, Fuzzy vs. Crisp set, Fuzzy Relation, Fuzzification, Minmax Composition, Defuzzification Method, Fuzzy Logic, Fuzzy Rule based systems, Predicate logic, Fuzzy Decision Making, Fuzzy Control Systems, Fuzzy Classification. Genetic Algorithm: History of Genetic Algorithms (GA), Working Principle, Various Encoding methods, Fitness function, GA Operators-Reproduction, Crossover, Mutation, Convergence of GA, Bit wise operation in GA, Multi-level Optimization. Introduction to Hybrid Systems.	22 Hours

Text Books:

1. Artificial Intelligence-A Modern Approach, Russel and Norvig, Prentice Hall.
2. Artificial Intelligence, Elaine Rich, Kevin Knight and SB Nair, 3 Ed.,Tata McGraw-Hill.

3. Principles of Soft Computing, S.N. Sivanandam, S.N. Deepa, Wiley India
4. Neural Networks, Fuzzy Logic and Genetic Algorithms: Synthesis & Applications, S.Rajasekaran, G. A. Vijayalakshami, PHI.

Reference Books:

1. Artificial Intelligence-A new Synthesis, Nils J. Nilsson, Morgan Kaufmann Publishers.
2. Soft Computing: With Matlab Programming, N. P. Padhy, S. P. Simon, Oxford Higher Education
3. Neuro - Fuzzy & Soft Computing - C. T. Sun, E. Mizutani, J. S. R. Jang, Pearson

Course Code: PGCA1927

Course Name: Theory of Computation

Program: MCA	L:4 T:0 P:0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems:
Internal max. marks: 30	Duration of end semester exam (ESE):
External max. marks: 70	Elective status: core/elective Core
Total marks: 100	

Prerequisite: NA

Co requisite: NA

Additional material required in ESE: NA

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Use basic concepts of formal languages of finite automata techniques.
CO2	Design Finite Automata's for different Regular Expressions and Languages.
CO3	Construct context free grammar for various languages.
CO4	Solve various problems of applying normal form techniques, push down automata and Turing Machines.
CO5	Solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation.

Detailed contents	Contact hours
Part A Formal Language, Non-Computational Problems, Diagonal Argument, Russels's Paradox.	22 hours

Theory of Automata: Deterministic Finite Automaton (DFA), Non-Deterministic Finite Automaton (NFA), Equivalence of DFA and NFA, Mealy and Moore Models, Minimization of Finite Automata. Regular Sets and Regular Grammars: Regular Languages, Regular Grammars, Regular Expressions, Properties of Regular Language, Pumping Lemma, Non-Regular Languages, Lexical Analysis. Context Free Language: Properties of Context Free Language, Chomsky Classification of Languages, Context Free Grammar, Simplification of Context Free Grammar, Chomsky Normal Form, Greibach Normal Form.	
Part B Push Down Automata: Ambiguity, Parse Tree Representation of Derivation Trees, Equivalence of PDA's and Pushdown Automaton (PDA), Non-Deterministic Pushdown Automaton (NPDA). Turing Machines (TM): Standard Turing Machine and its Variations; Universal Turing Machines, Models of Computation and Church-Turing Thesis. Recursive and Recursively-Enumerable Languages; Context-Sensitive Languages, Unrestricted Grammars, Chomsky Hierarchy of Languages, Construction of TM for Simple Problems. Unsolvable Problems and Computational Complexity: Unsolvable Problem, Halting Problem, Post Correspondence Problem, Unsolvable Problems for Context-Free Languages, Measuring and Classifying Complexity, Tractable and Intractable Problems.	22 hours

Text Books:

1. Jeffrey Ullman and John Hopcroft, Introduction to Automata Theory, Languages, and Computation, 3e, Pearson Education India (2008).
2. K.L.P. Mishra, Theory of Computer Science: Automata, Languages and Computation, Prentice Hall India Learning Private Limited (2006).
3. John Martin, Introduction to Languages and the Theory of Computation, McGraw-Hill Higher Education (2007).

Reference Books:

1. Introduction to Computer Theory, Daniel. I.A. Cohen , John Wiley & Sons.

Course Code: PGCA1928

Course Name: Advanced Computer Networking Laboratory

Program: MCA	L:0T:0 P:4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE):

External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite: Computer Networks

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Familiarize themselves with the different Network Models.
CO2	Understand working of different devices used to set up LAN.
CO3	Learn the concept of network routing.
CO4	Learn and understand Internet protocols and network security.

S.No.	Name of Experiment
1.	Familiarization with Networking Components and devices: LAN Adapters, Switches, Routers etc.
2.	Familiarization with Transmission media and Tools: Co-axial cable, UTP Cable, Crimping Tool, Connectors etc.
3.	Preparing Straight and Cross Cables.
4.	Study of various LAN Topologies and their creation using Network devices, Cables and Computers.
5.	Configuration of TCP/IP Protocols in Windows and Linux.
6.	Implementation of File and Printer sharing.
7.	Designing and Implementing Class A, B, C Network.
8.	Subnet Planning and its Implementation.
9.	Installation of ftp server and client.
10.	To develop programs for simulating routing algorithms for Adhoc networks.
11.	To install any one open source packet capture software like packet tracer etc.
12.	To configure Wireless Local Loop.
13.	To configure WLAN.
14.	To configure Adhoc Networks.
15.	To install and configure wireless access points.

Text Books:

1. A.S. Tannenbaum, "Computer Networks", 3rd Edition, Prentice Hall, 1999.
2. "Data Communications & Networking", Behrouz A. Forouzan, Fifth Edition, Tata McGraw Hill.

Reference Books:

1. D.E. Comer, "Computer Networks and Internet", 2nd Edition, Addison Wesley Publication, 2000.
2. D. Bertsekas and R. Gallager, "Data Networks", 2nd Edition, Prentice-Hall, 1992.

3. Stevens W.R., "UNIX Network Programming," Prentice Hall, 1990.

Course Code: PGCA1929

Course Name: Artificial Intelligence & Soft Computing Laboratory

Program: MCA	L: 0T: 0 P: 4
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): 3hrs
External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory.
CO2	Apply artificial neural networks and fuzzy logic theory for various problems.
CO3	Determine the use of Genetic algorithm to obtain optimized solutions to problems.

Instructions: Develop the assignments in MATLAB/Python.

Assignments:

1.	Use logic programming in Python to check for prime numbers.
2.	Use logic programming in Python parse a family tree and infer the relationships between the family members.
3.	Python script for building a puzzle solver.
4.	Implementation of uninformed search techniques in Python.
5.	Implementation of heuristic search techniques in Python.
6.	Python script for tokenizing text data.
7.	Extracting the frequency of terms using a Bag of Words model.
8.	Predict the category to which a given piece of text belongs.
9.	Python code for visualizing audio speech signal
10.	Python code for Generating audio signals
11.	Create a perceptron with appropriate no. of inputs and outputs. Train it using fixed increment learning algorithm until no change in weights is required. Output the final weights.
12.	Implement AND function using ADALINE with bipolar inputs and outputs.
13.	Implement AND function using MADALINE with bipolar inputs and outputs.
14.	Construct and test auto associative network for input vector using HEBB rule.

15.	Construct and test auto associative network for input vector using outer product rule.
16.	Construct and test heteroassociative network for binary inputs and targets.
17.	Create a back propagation network for a given input pattern. Perform 3 epochs of operation.
18.	Implement Union, Intersection, Complement and Difference operations on fuzzy sets. Also create fuzzy relation by Cartesian product of any two fuzzy sets and perform maxmin composition on any two fuzzy relations.
19.	Maximize the function $f(x)=x^2$ using GA, where x ranges from 0-25. Perform 6 iterations.

Text Books:

1. Principles of Soft Computing, S.N. Sivanandam, S.N. Deepa, Wiley India
2. Artificial Intelligence with Python, Prateek Joshi, Packt Publishing.
3. Neural Networks, Fuzzy Logic and Genetic Algorithms: Synthesis & Applications, S. Rajasekaran, G. A. Vijayalakshami, PHI.

Reference Books:

1. Soft Computing: With Matlab Programming, N. P. Padhy, S. P. Simon, Oxford Higher Education
2. Neuro - Fuzzy & Soft Computing - C. T. Sun, E. Mizutani, J. S. R. Jang, Pearson

Course Code: PGCA1930

Course Name: Software Project Management

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3 hrs
External max. marks: 70	Elective status: Elective-I
Total marks: 100	

Prerequisite: Software Engineering (PGCA1912)

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand and practice the process of project management
CO2	Develop the scope of work, provide accurate cost estimates and to plan the various activities.
CO3	Understand and use risk management analysis techniques that identify the factors that put a project at risk and to quantify the likely effect of risk on project timescales
CO4	Identify the resources and people required for a project and to produce a work plan and resource schedule.

Detailed contents	Contact hours

<u>Part A</u>	
Project Management Fundamentals- Basic Definitions, Project Stakeholders and Organizational, Influences on Project Management, Project Management Processes, Project Initiating Processes. Planning and Resourcing a Project - Identifying Requirements, Creating the Work Breakdown structure, Developing the Project Schedule, Developing a Project Cost Estimate, Planning Quality, Organizing the Project Team, Planning for Potential Risks Project Evaluation and Planning - Activities in Software Project Management, Overview of Project Planning, Stepwise planning, contract management, Software processes and process models. Cost Benefit Analysis, Cash Flow Forecasting, Cost-Benefit Evaluation Techniques, Risk Evaluation. Project costing, COCOMO 2, Staffing pattern, Effect of schedule compression, Putnam's equation, Capers Jones estimating rules of thumb, Project Sequencing and Scheduling Activities, Scheduling resources, Critical path analysis, Network Planning, Risk Management, Nature and Types of Risks, Managing Risks, Hazard Identification, Hazard Analysis, Risk Planning and Control, PERT and Monte Carlo Simulation techniques.	22 Hours
<u>Part B</u>	
Executing and Managing a Project -Project Executing Processes-Acquiring and Developing the Project Team, Managing the Project Team, Managing Stakeholder Expectations, Directing and Managing the Project while assuring Quality. Project Monitoring and Controlling Processes - Verifying and Controlling Scope, Managing Schedule and Cost, Controlling Quality, Monitoring and Controlling Risks. Integrated Change Control, Project Closing Process, Collecting Data, Visualizing Progress, Cost Monitoring review techniques, Project termination review, Earned Value analysis, Change Control, Software Configuration Management (SCM), Managing Contracts, Types of Contracts, Stages in Contract Placement, Typical Terms of a Contract, Contract Management and Acceptance. Quality Management and People Management- Introduction, Understanding Behaviour, Organizational Behaviour, Selecting The Right Person for The Job, Motivation, The Oldman – Hackman Job Characteristics Model, working in Groups, Organization and team structures, Decision Making, Leadership, Organizational Structures, Stress, Health and Safety. Overview of project management tools for software.	22 Hours

Text Books:

1. Bob Hughes, Mike Cotterell, "Software Project Management", Tata McGraw Hill.
2. Royce, "Software Project Management: A Unified Framework, Pearson Education.

Reference Books:

1. Robert K. Wysocki, "Effective Software Project Management", Wiley
2. Ian Sommerville, Software Engineering, Seventh Edition, Pearson Education.
3. R.S. Pressman, Software Engineering: A Practitioner's Approach, Sixth Edition, Tata McGraw-Hill.

Course Code: PGCA1971

Course Name: Optimization Techniques

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-I
Total marks: 100	

Prerequisite: - NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:Students will be able to:

CO#	Course outcomes
CO1	Formulate and solve linear programming problems
CO2	Frame and resolve the transportation and assignment problems
CO3	Understand the Project Management problems using CPM
CO4	Find solution to two person zero-sum games

Detailed contents	Contact hours
<u>Part A</u> Scope of Operations Research: Introduction to linear and non-linear programming formulation of different models. Linear Programming: Geometry of linear programming, Graphical method, Linear programming (LP) in standard form, Solution of LP by simplex method, Exceptional cases in LP, Duality theory, Dual simplex method, Sensitivity analysis. Integer Programming: Branch and bound technique.	24 Hours
<u>Part B</u> Transportation and Assignment Problem: Initial basic feasible solutions of balanced and unbalanced transportation/assignment problems, Optimal	20 Hours

solutions. Project Management: Construction of networks, Network computations, Floats (free floats and total floats), Critical path method (CPM), Crashing. Game Theory: Two person zero-sum game, Game with mixed strategies, Graphical method and solution by linear programming.	

Text Books:

- 1.Chandra, S., Jayadeva, Mehra, A., Numerical Optimization and Applications, Narosa Publishing House, (2013).
- 2.Taha H.A., Operations Research-An Introduction, PHI (2007).

Reference Books:

- 1.Pant J. C., Introduction to optimization: Operations Research, Jain Brothers (2004)
- 2.Bazaarra Mokhtar S., Jarvis John J. and Shirali Hanif D., Linear Programming and Network flows, John Wiley and Sons (1990)
- 3.Swarup, K., Gupta, P. K., Mammohan, Operations Research, Sultan Chand & Sons, (2010).

Course Code: PGCA1972

Course Name: Data Mining and Business Intelligence

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-I
Total marks: 100	

Prerequisite: - NA

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand basic concepts of data warehouse and business intelligence
CO2	Perform various data warehouse-related problems
CO3	Analyze data and relate to real-world scenario
CO4	Deriving intrinsic facts from data

Detailed contents	Contact hours
<u>Part A</u> Introduction: Reporting and Analysing data, Raw data to valuable information-Lifecycle of Data, The building Blocks: Defining Features – Data Warehouses (DW) and Data Marts - Overview of the components – Metadata, Need, Basic elements, trends. Business Intelligence (BI) Definitions and Concepts, BI Process and Technology, BI Roles and Responsibilities The Architecture of BI and DW: BI and DW architectures and its types, Relation between BI and DW - OLAP and OLTP definition and its differences, Dimensional analysis: Drill-down and roll-up – slice and dice or rotation, schemas: Stars, snowflakes and fact constellations Introduction to data mining (DM) and Data Preprocessing: Motivation for Data Mining, Data Mining Definition, and Functionalities, Classification of DM Systems - DM task and its applications, Integration of a Data, KDD Process, Steps of pre-processing data - Data cleaning: Missing Values, Noisy Data - Data, Integration, and transformation - Data Reduction: Data cube aggregation, Dimensionality reduction - Data Compression	24 Hours
<u>Part B</u> Concept Description and Association Rule Mining: Introduction, Data Generalization and summarization-based characterization, Association Rule Mining; Market basket analysis - basic concepts - Finding frequent item sets: Apriori algorithm - generating rules – Improved Apriori algorithm Classification and Prediction: Introduction, Issues regarding Classification and prediction: Classification methods: Decision tree, Bayesian Classification, Rule based, CART, Neural Network Prediction methods: Linear and nonlinear regression, Logistic Regression Data Mining for Business Intelligence Applications: Data mining for business Applications like Balanced Scorecard, Fraud Detection, Clickstream Mining, Market Segmentation, retail industry, telecommunications industry, banking & finance and CRM etc., Introduction to Advance Topics Clustering, Spatial mining, web mining, text mining, Data Analytics Life Cycle: Big data Business Analytics, State of the practice in analytics role of data scientists, Hadoop architecture .	20 Hours

Text Books:

1. J. Han, M. Kamber, “Data Mining Concepts and Techniques”
2. Arun K. Pujari, “Data Mining Techniques”.
3. M. Kantardzic, “Data mining: Concepts, models, methods and algorithms, John Wiley & Sons Inc.

Reference Books:

1. Paulraj Ponnian, "Data Warehousing Fundamentals", John Willey.
2. G. Shmueli, N.R. Patel, P.C. Bruce, "Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner", Wiley India.

Course Code: PGCA1973

Course Name: Enterprise Resource Planning

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-I
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Analyse a business processes of different functional areas
CO2	Understand ERP & Related Technologies
CO3	ERP Implementation Strategies
CO4	Use and apply this knowledge in E Commerce & E Governance related applications.

Detailed contents	Contact hours
<u>Part A</u> Basic ERP Concepts: Enterprise-An overview, Benefits & Risk, Evolution and Structure, Conceptual Model of ERP. ERP & Related Technologies: Business Process Reengineering (BPR), Data Warehousing and Data Mining, OLAP, Product Life Cycle Management, Supply Chain management, CRM. ERP Functional Module: Introduction, Finance, Manufacturing, Human Resource, Plant maintenance, Material Management, Integration of ERP, Supply Chain and Customer Relationship Application.	22 Hours
<u>Part B</u>	22 Hours

ERP Implementation: Implementation Challenges / Strategies / Methodologies, ERP Project Teams, Vendors and Consultants, Dealing with employee resistance, Training and Education, data migration, Project Management and monitoring. Strategic Grid: Useful guidelines for ERP Implementations. Post Implementation : Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of ERP Implementation. Calculation of ROI of ERP implementation, Hidden costs, ERP success inhibitors and accelerators. Emerging Trends on ERP: Technologies in ERP Systems and Extended ERP, ERP Market Place and Dynamics, Future Directives in ERP; ERP E Commerce & E – Governance: Concept, frame work, area of application like public sector, service industry. Case Studies: Development and Analysis of ERP Implementations	

Text Books:

1. Alexis Leon, “Enterprise Resource Planning”, TMH, 2nd Ed.
2. Vinod Kumar Garg and Venkitakrishnan N K, “Enterprise Resource Planning Concepts and Practice”. PHI
3. V.K. Garg & N.K. Venkita Krishnan. “ERP Ware: ERP Implementation Framework”, PHI.

Reference Books:

1. S Sadagopan, “ERP A Managerial Prospective” TMH
2. Rahul V. Altekhar “Enterprise wide Resource Planning” , TMH
3. Joseph A Brady, Ellen F Monk, Bret Wagner, “Concepts in Enterprise Resource Planning”, Thompson Course Technology
4. Sandoe, Corbitt, and Boykin, “Enterprise Integration”, John Wiley, ©2001, ISBN 0-471-35993-9
5. Motiwalla and Thompson, “Enterprise Systems For Management”, Pearson/Prentice Hall 2011

Course Code: PGCA1933

Course Name: Mobile Application Development

Program: MCA	L:4 T:0 P:0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective II
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Know the components and structure of mobile application development frameworks for Android and iOS based mobiles.
CO2	Understand how to work with various mobile application development frameworks.
CO3	Design and implement the user interfaces of mobile applications.
CO4	Develop useful mobile applications using Google Android and Eclipse simulator.

Detailed contents	Contact hours
<u>Part A</u> Introduction: Mobile Applications –Characteristics and Benefits – Frameworks and Tools, Types, Application Model. Profiles of Mobile devices. Building Blocks of Mobile Applications: User Interface Designing, Layout, User Interface elements, Functionality based user interface, Naïve Data Handling, Sprucing up Mobile applications Testing Mobile Applications: Debugging Applications, Testing Strategies, Test Automation of Applications.	22 Hours
<u>Part B</u> Mobile Operating System --Introduction to Mobile Operating Systems and why they are needed, Open Platforms, Mobile OS Features, Symbian, BlackBerry, Android, iOS, Windows, Tizen, Ubuntu, etc. Android programming: Android toolkit, Components of an Android application, Android Software Development using Eclipse – Concepts, Terminology, Views and Perspectives, memory management, communication protocols, application development methods, deployment. IOS: Development environment, iOS Layers, Architecture, User Interface tool kit interfaces, Event handling, Graphics services, Layer Animation, Basic iPhone Styling, Advanced iPhone Styling.	22 Hours

Text Books:

1. Anubhav Pradhan, Anil V Deshpande, “ Mobile Apps Development” Edition: I
2. Jeff McWherter, Scott Gowell “Professional Mobile Application Development”, John Wiley & Sons, 2012.

Reference Books:

1. ZigurdMednieks, L. Dornin, G. Blake Meike, M. Nakamura," Programming Andriod, 1st Edition, O'Relly Publication, 2011.
 2. A. Allan" Learning iPhone Programming", 1st Edition, O'Relly Publication, 2010.
 3. Neal Goldstein, Tony Bove, "iPhone Application Development All-In-One For Dummies", John Wiley & Sons.
 4. Teach Yourself Android Application Development In 24 Hours, Edition: I, Publication: SAMS.
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Course Code: PGCA1934

Course Name: Mobile Application Development Laboratory

Program: MCA	L: 0T:0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): 3hrs
External max. marks: 30	Elective status: Elective-II
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand how to work with various mobile application development frameworks.
CO2	Develop mobile applications using GUI and Layouts
CO3	Learn the basic and important design concepts and issues of development of mobile applications.
CO4	Analyze and discover own mobile app for simple needs.

List of Assignments	
Sr. No.	Assignments
1	Using emulator to deploy and run mobile apps
2	Create an Android application that shows Hello + name of the user and run it on an emulator.
3	Create an application that takes the name from a text box and shows hello message along with the name entered in text box, when the user clicks the OK button.
4	Develop an ANDRIOD application that uses GUI components, Font and Colors.

5	Write an application that draws basic graphical primitives on the screen.
	Develop an application that uses Layout Managers and event listeners.
7	Create and Login application as above. On successful login, open browser with any URL.
8	Testing mobile app - unit testing, black box testing and test automation.
9	Create an iOS application that can play audio and video files.
10	Write an iOS application that creates alarm clock.
11	Devise an iOS application that draws basic graphical primitives (rectangle, circle) on the screen.
12	Build an iOS mobile application that create, save, update and delete data in a database.

Text Books:

1. Anubhav Pradhan, Anil V Deshpande, “ Mobile Apps Development” Edition: I
2. Jeff McWherter, Scott Gowell “Professional Mobile Application Development”, John Wiley & Sons, 2012.

Reference Books:

1. ZigurdMednieks, L. Dornin, G. Blake Meike, M. Nakamura," Programming Andriod, 1st Edition, O'Relly Publication, 2011.
2. A. Allan” Learning iPhone Programming”, 1st Edition, O'Relly Publication, 2010.
3. Neal Goldstein, Tony Bove, “iPhone Application Development All-In-One For Dummies”, John Wiley & Sons.
4. Teach Yourself Android Application Development In 24 Hours, Edition: I, Publication: SAMS.

Course Code: PGCA1935

Course Name: Simulation & Modelling

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-II
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Identify the paradigms and approaches used to design the simulation.
CO2	Understand the various types of simulation, techniques and methods.
CO3	Apply concepts of computer simulation for types of inputs, system models, output behavior and performance estimation
CO4	Test the goodness of a simulation by analyzing the simulated data.

Detailed contents	Contact hours
<u>Part A</u> Inventory Concept: The technique of Simulation, Major application areas, concept of a System, Environment, Continuous and discrete systems, systems modeling types of models progress of a Simulation Study, Monte Carlo Method, Comparison of Simulation and Analytical Methods. Numerical Computation Technique for discrete and continuous models, Continuous System Simulation. Input Modeling- Data collection, Identifying the Distribution with Data: Histograms, Selection of the Appropriate Family of Distributions, Quantile-Quantile Plots. 100 Parameter Estimation: Sample Mean and Sample Variance and various biased and unbiased Estimators. Goodness of Fit Tests applied to Simulation inputs: Chi-Square and Chi-Square with Equal Probabilities, Kolmogorov-Smirnov Tests, pValues and Best Fits. Verification and Validation of Simulation Models- Verification and Validation of Simulation Models. Calibration and Validation: Face Validity, Validation of Assumptions, Input-Out Transformation Validation. Output Analysis of a Single Model- Output analysis and types of simulation. Stochastic Nature of the Output Data. Measures of Performance and Estimation: Point Estimation and Confidence-Interval Estimation. Output Analysis for Terminating Simulations and Estimation of Probabilities. Output Analysis of Steady State Simulations: Initialization Bias, Error Estimation, Replications, Sample Size and Batch Means for Interval Estimation.	26 Hours
<u>Part B</u> Simulation of Queuing Systems: Rudiments of queuing theory, Simulation of single-server queue, Simulation of two-server queue. Simulation Software- Integrated environments. Examples and review of some existing software popular and useful in the industry, e.g., Arena, AutoMod, Extend, Flexsim, Micro Saint, ProModel, Quest, SIMUL8, WITNESS etc. Simulation using languages and environments like C++/Java/GPSS/SSF etc. Experimentation and Statistical-Analysis Tools: common features and relevant current products.	18 Hours

Simulation Languages: Basic Introduction to Special Simulation Languages:-GPSS/ MATLAB/ Network Simulators.	

Text Books:

1. Jerry Banks, John S. Carson II, Barry L. Nelson and David M. Nicol, Discrete-Event System and Simulation, Prentice Hall of India, New Delhi, 2005
2. Gordon, G: System Simulation, Prentice-Hall; 2 edition (1979).

Reference Books:

1. Gabriel A. Wainer, Discrete-event modeling and simulation: a practitioner's approach, CRC Press, 2009
2. Bernard P. Zeigler, Herbert Praehofer, Tag Gon Kim, Theory of modeling and simulation: integrating discrete event and continuous complex dynamic systems, Academic Press, 2000.
3. Neal Goldstein, Tony Bove, “iPhone Application Development All-In-One For Dummies”, John Wiley & Sons. Bhat, U. Narayan, An Introduction to Queueing Theory: Modeling and Analysis in Applications, Springer 2008 (Birkhäuser Boston).
4. James J. Nutaro, Building software for simulation: theory and algorithms, with applications in C++. Wiley, 2010.

Course Code: PGCA1936

Course Name: Simulation & Modelling Laboratory

Program: MCA	L: 0T:0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): 3hrs
External max. marks: 30	Elective status: Elective-II
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand the use of software tools for modelling and analysis of mathematical concepts for engineering application.
CO2	Know how to simulate any discrete system using queuing systems.
CO3	Model and analyze simple engineering concepts and its importance in engineering applications.
CO4	Develop skills to apply simulation software to construct and execute goal-driven system models.

Sr. No.	Assignments
1	Installation of MATLAB.
2	Write a program in MATLAB using different types of branching statements.
3	Write a program to perform basic matrix operations.
4	WAP to plot different types of graphs in MATLAB.
5	Write a MATLAB code to plot with the elements of its vector representation
6	Programs on simulation of real time systems for automation purpose.
7	Simulation of continuous and discrete systems.
8	Programs on testing the random number set for uniformity and independence – Kolmogorov-Smirnov test, Chisquare test, Runs test and Autocorrelation test.
9	Programs on simulation of single and two-server queuing systems..
10	Programs on simulation of an inventory system.

Text Books:

1. Jerry Banks, John S. Carson II, Barry L. Nelson and David M. Nicol, Discrete-Event System and Simulation, Prentice Hall of India, New Delhi, 2005
2. Gordon, G: System Simulation, Prentice-Hall; 2 edition (1979).

Reference Books:

1. Gabriel A. Wainer, Discrete-event modeling and simulation: a practitioner's approach, CRC Press, 2009
2. Bernard P. Zeigler, Herbert Praehofer, Tag Gon Kim, Theory of modeling and simulation: integrating discrete event and continuous complex dynamic systems, Academic Press, 2000.

Course Code: PGCA1921

Course Name: E-Commerce & Digital Marketing

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-II
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand various applications and scope of ecommerce.

CO2	Acquire knowledge of various payment modes used in ecommerce today.
CO3	Learn to develop, evaluate, and execute a comprehensive digital marketing strategy and plan
CO4	Describe how and why to use digital marketing for multiple goals within a larger marketing and/or media strategy, Developing effective digital and social media strategies
CO5	Understand the major digital marketing channels - online advertising: Digital display, video, mobile, search engine, and social media

Detailed contents	Contact hours
<u>Part A</u> Introduction to Electronic Commerce: Technical Components of E-commerce, E-Commerce Framework, E-Commerce Applications and Electronic Business. Internet Service provider and World wide web. Architectural Framework for Electronic Commerce, WWW as the Architecture and Hypertext publishing. Electronic payment System : Types and Traditional payment, Value exchange system, Electronic funds transfer, Digital Token Based Electronic Payment System, Smart Cards – Credit Cards, Risk in Electronic Payment Systems, Designing Electronic Payment Systems. Electronic Data Interchange : Concepts and applications of EDI and Limitation. EDI and Electronic Commerce standardization and EDI – EDI Software Implementation. EDI Applications in Business – EDI: Legal, Security and Privacy issues.E- Governance for India : Indian customer EDI system and Service centres.	22 Hours
<u>Part B</u> Introduction to Digital Marketing : Components of Online Marketing (Email, Forum, Social network, Banner, Blog) , Impact of Online Marketing, Basics of Affiliate Marketing, Viral Marketing, Influencer Marketing, Referral Marketing, Online Advertising, Mobile Marketing, Web analytics and Email Marketing. Search Engine Optimization (SEO) and Social Engine Marketing (SEM).: Importance of Internet and Search Engine and Role of Keywords in SEO, On-Page Optimization (Onsite) and Off Page Optimization. Introduction to Social Media Marketing (SMM). Website Planning & Creation : Content Marketing Strategy, Keywords Research and Analysis, Web Presence and Creating content. Successful content marketing strategies and case studies.	22 Hours

Text Books:

4. Whitley, David, “E-Commerce Strategy, Technologies and Applications”, Tata McGraw Hill.
5. Laudon and Traver, “E-Commerce: Business, Technology & Society”, Pearson Education
6. Damian Ryan, Calvin Jone. Kogan Page; “Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation”.

Reference Books:

1. Seema Gupta, Digital Marketing, McGraw Hill
2. Puneet Singh Bhatia, Fundamentals of Digital Marketing First Edition, Publication Pearson.
3. Shivani Karwal, “Digital Marketing Handbook: A Guide to search Engine Optimization, Pay Per Click Marketing, Email Marketing and Content Marketing”, CreateSpace Independent Publishing Platform, 1st edition.
4. Ian Dodson, The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted and Measurable Online Campaigns, Publication Wiley India Pvt Ltd.
5. Venakataramana Rolla, “Digital Marketing Practice guide for SMB: SEO, SEM and SMM”, CreateSpace Independent Publishing Platform, First edition.

Course Code: PGCA 1974

Course Name: e-Commerce and Digital Marketing Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Internal max. marks: 70	Theory/Practical: Practical
External max. marks: 30	Duration of End Semester Exam (ESE): 3hrs
Total marks: 100	Elective status: Elective-II

Prerequisite: --

Co requisite: --

Additional material required in ESE:--

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Understand of implementation of ecommerce applications.
CO2	Learn to develop and implement digital marketing strategy and plan
CO3	Implement and developing effective digital and social media strategies
CO4	Implementation and working on the social, and security issues concerning the digital marketing and e-commerce.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments:

Develop Strategy/ Case Study for a Company/ Website enhancing its Online visibility using following tools/channels:

1.	Social media marketing and optimization
2.	YouTube Marketing

3.	Facebook marketing
4.	Email marketing
5.	LinkedIn
6.	Twitter
7.	Google Analytics
8.	Mobile Advertising
9.	Content Marketing: Optimize customer and user experience
10.	Creating & publishing Blogs

Text Books:

7. Whitley, David, “E-Commerce Strategy, Technologies and Applications”, Tata McGraw Hill.
8. Laudon and Traver, “E-Commerce: Business, Technology & Society”, Pearson Education
9. Seema Gupta, “Digital Marketing”, McGraw Hill
10. Puneet Singh Bhatia, “Fundamentals of Digital Marketing”, Pearson.
11. Shivani Karwal, “Digital Marketing Handbook: A Guide to search Engine Optimization, Pay Per Click Marketing, Email Marketing and Content Marketing”, CreateSpace Independent Publishing Platform, 1st edition.

Course Code: PGCA1931

Course Name: Software Testing & Quality Assurance

Program: MCA	L:4 T:0 P:0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3 hrs
External max. marks: 70	Elective status: Elective-II
Total marks: 100	

Prerequisite: Software Engineering (PGCA1912)

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand various approaches of software testing and quality assurance for software development.
CO2	Create test strategies, design test cases, prioritize and execute them.
CO3	Identify various risks involved with software projects and build risk management
CO4	Plan and execute software management and configuration activities.

Detailed contents	Contact hours
<u>Part A</u> Software Testing: Testing, Verification and Validation, Test Strategies for Conventional and Object Oriented Software, Unit Testing, Integration Testing, Validation Testing, Alpha and Beta Testing, System Testing, Recovery Testing, Security Testing, Stress Testing, Performance Testing,	26 Hours

Metrics for Source Code, Metrics for Testing, Debugging Process, Debugging Strategies. Testing Techniques: Software Testing Fundamentals, Black Box and White Box Testing, Basis Path Testing, Flow Graph Notation, Independent Program Paths, Graph Matrices, Control Structure Testing, Condition Testing, Data Flow Testing, Loop Testing, Graph Based Testing Methods, Equivalence Partitioning, Object Oriented Testing Methods: Applicability of Conventional Test Case Design Methods, Issues in Object Oriented Testing, Fault-Based Testing, Scenario-Based Testing, Random Testing and Partition Testing for Classes, InterClass Test Case Design. Testing Process and Specialized Systems Testing: Test Plan Development, Requirement Phase, Design Phase and Program Phase Testing, Testing Client/Server Systems, Testing Web based Systems, Testing Off-the-Shelf Software, Testing in Multiplatform Environment, Testing for Real Time Systems, Testing Security.	
<u>Part B</u> Software Quality Assurance Concepts and Standards: Quality Concepts, Quality Control, Software Quality Attributes, Quality Assurance, SQA Activities, Software Reviews, Formal Technical Reviews, Review Guidelines, Software Reliability, Software Safety, Quality Assurance Standards, ISO 9000, ISO 9001:2000, ISO 9126 Quality Factors, CMM, CMMI, PCMM, TQM, Six Sigma, SPICE, Software Quality Assurance Metrics. Risk Management and Change Management: Software Risks, Risk Identification, Risk Projection, Risk Refinement, The RMMM Plan, Software Configuration Management, Baselines, Software Configuration Items, SCM Process: Version Control, Change Control, Configuration Audit, Configuration Management for Web Engineering.	18 Hours

Text Books:

1. Software Quality Assurance – From Theory to Implementation, Daniel Galin, Pearson Education
2. Software Testing Techniques, Boris Beizer, Dream Tech Press.

Reference Books:

1. Roger S. Pressman, Software Engineering, 8/e, McGraw Hill, 2014.
2. Effective Methods for Software Testing, Third edition, William E. Perry, Wiley India.
3. Software Testing – Principles and Practices, Naresh Chauhan, Oxford University Press
Walker Royce, Software Project Management: A Unified Frame Work, Pearson Education.

Course Code: PGCA1975

Course Name: Software Testing & Quality Assurance Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): 3 hrs
External max. marks: 30	Elective status: Elective-II
Total marks: 100	

Prerequisite: Software Engineering (PGCA1912)

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand various approaches of software testing and quality assurance for software development.
CO2	Create test strategies, design test cases, prioritize and execute them.
CO3	Identify various risks involved with software projects and build risk management
CO4	Plan and execute software management and configuration activities.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments:

1.	Introduction to Test Cases, How to create a simple test case and record it in the excel file.
2.	Developing Login functionality and testing them manually and storing the data in the sheet.
3.	Testing the registration functionality
4.	Testing flight reservation system and recording test cases
5.	Testing the date field scenario programmatically and recording test cases.
6.	Taking scenario of product description functionality in ecommerce website.
7.	Taking a scenario of payment functionality and order history in ecommerce website.
8.	Practicing the data flow testing taking some another logic and implying path testing
9.	Taking up path testing
10.	Developing a logical code to test boundary value exemptions
11.	Create an image upload functionality and make their test cases
12.	Teams will make HTML CSS design templates in hours and perform load and

	performance testing
13.	Developing applications to automate basis path testing.
14.	Exposure to automated testing tools such as Rational test manager, Selenium, Loadrunner or any other similar tools

Text Books:

3. Software Quality Assurance – From Theory to Implementation, Daniel Galin, Pearson Education
4. Software Testing Techniques, Boris Beizer, Dream Tech Press.

Reference Books:

4. Roger S. Pressman, Software Engineering, 8/e, McGraw Hill, 2014.
5. Effective Methods for Software Testing, Third edition, William E. Perry, Wiley India.
6. Software Testing – Principles and Practices, Naresh Chauhan, Oxford University Press
- Walker Royce, Software Project Management: A Unified Frame Work, Pearson Education.

Course Code: PGCA1976

Course Name: Machine Learning and Data Analytics using Python

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Learn Machine Learning concepts
CO2	Understand the difference between supervised and unsupervised learning
CO3	Learn clustering and classification algorithms
CO4	Analyse data using Python Numpy, Panda Libraries
CO5	Visualize data using matplotlib library of Python

Detailed contents	Contact hours
<u>Part A</u>	22 Hours
Machine Learning: Introduction, supervised, unsupervised, reinforcement learning.	

Regression: Linear Regression, linear classification, logistic regression. Clustering: K nearest neighbour, decision trees, Random forest. Classification: Naïve Bayes, principal component analysis, Introduction to neural networks.	
<u>Part B</u> Introduction to Python Programming: Data types, operators, control structures, functions, modules. Numpy: Introduction to numpy, arrays, array indexing, operations Pandas: Introduction to pandas, series, group by, DataFrames, missing data, merging, joining, concatenating, operations, data input and output. Matplotlib: Plotting, markers, line, labels, grid, subplot, scatter, bars, histograms, pie charts.	22 Hours

Text Books:

1. Machine Learning using Python, M Pradhan, U Dinesh Kumar, Wiley, 2015.
2. Introduction to Machine Learning with Python: A Guide for Data Scientists, Andreas Muller, O'Reilly, 2016.
3. Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, William McKinney, O'Reilly, 2017.

Reference Books:

1. Machine Learning Applications Using Python: Cases Studies from Healthcare, Retail, and Finance, Puneet Mathur, Apress, 2019.
2. Python for Data Science For Dummies, John Paul, Luca, Massron, Wiley, 2019.

Course Code: PGCA 1958

Course Name: Advanced Web Technologies

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand client-side and server-side programming.
CO2	Learn to represent web data and XML document handling.
CO3	Understand AJAX and relevance.
CO4	Develop a dynamic webpage by the use of java PHP and MySQL.
CO5	Able to learn how to perform basic CRUD database operations in a Dynamic Website.
CO6	Learn about web services and their development.

Detailed contents	Contact hours
<u>Part A</u> PHP: Server-side web scripting, Installing PHP, Adding PHP to HTML, Syntax and Variables, Passing information between pages, Strings, Arrays and Array Functions, Numbers, Basic PHP errors/ problems. Advanced PHP and MySQL: PHP/MySQL Functions, Displaying queries in tables, Introduction to PHP OOPs concepts, Building Forms from queries, String and Regular Expressions, Sessions, Cookies and HTTP, Type and Type Conversions, E-Mail Introduction to Web Services: Use of Web Services, Types of Web Services, Introduction to Content Management System CMS (Types, Usages, Benefits).	22 Hours
<u>Part B</u> XML: Introduction to XML, XML Basics, XML Syntax and Editors, documents, Elements, Attributes. Creating XML documents. Ajax : Introduction and Use of Ajax in Website. jQuery : Introduction, jQuery UI: Date picker, auto complete, tooltip, accordion, retrieving page content, manipulating page content, working with events. Introduction to Bootstrap : Components of Bootstrap Introduction to Node.js: Node Package Manager (NPM), Node.js Webserver – Server and Clients. React: Introduction to ReactJS, Environment Setup, JSX, Components, State, Props, Validating Props, Component API, Component Life Cycle, Forms, Events	22 Hours

Text Books:

4. Steven Holzner, “PHP: The Complete Reference”, TATA McGraw Hill, 2015.
5. Roger S Pressman, David Lowe, “Web Engineering: A Practitioner's Approach”, TMH.
6. W. Jason Gilmore, “Beginning PHP and MySQL: From Novice to Professional”, Apress.

7. “Learning PHP, MySQL, JavaScript, CSS and HTML 5”, Robin Nixon, O’Reilly publication
8. Web Technologies, Black Book, dreamtech Press
9. Alex Young, “Node.js in Action”, 2ed, Bradley Meck

Reference Books:

1. Jesus Caspagnetto, “Professional PHP Programming”, Wrox Publication.
 2. P.J. Deitel & H.M. Deitel, “Internet and World Wide Web How to program”, Pearson
 3. Harwani, “Developing Web Applications in PHP and AJAX”, McGrawHill
 4. Ralph Moseley and M. T. Savaliya, “Developing Web Applications”, Wiley-India
 5. HTML 5, Black Book, Dreamtech Press
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Course Code: PGCA1977

Course Name: Machine Learning and Data Analytics using Python Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): 3hrs
External max. marks: 30	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Develop knowledge of various learning models of data.
CO2	Implement a wide variety of learning algorithms.
CO3	Understand how to evaluate models generated from data.
CO4	Apply the algorithms to a real-world problems.
CO5	Optimize the models learned and report on the expected accuracy that can be achieved by applying the models.

Instructions:

1. Students may develop the assignments in Python.
2. Standard data sets or assumed data sets may be used for developing ML programs.

Assignments:

1.	Design and evaluate a data model using Linear Regression.
2.	Design and evaluate a data model using Logistic Regression.
3.	Design and evaluate a data model using KNN.
4.	Design and evaluate a data model using K Means Clustering.

5.	Design and evaluate a data model using SVM.
6.	Design and evaluate a data model using PCA.
7.	Design and evaluate a data model using Decision Trees.
8.	Design and evaluate a data model using Random Forest.
9.	Compare the performance of all the above ML techniques on a similar data set using matplotlib.

Reference Books:

1. Introduction to Machine Learning with Python: A Guide for Data Scientists, Andreas C. Müller, Sarah Guido, O'Reilly Media.
 2. Understanding Machine Learning: From Theory to Algorithms, Shai Shalev-Shwartz, Shai Ben-David, Cambridge University, Press.
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Course Code: PGCA 1960

Course Name: Advanced Web Technologies Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Internal max. marks: 70	Theory/Practical: Practical
External max. marks: 30	Duration of End Semester Exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: --

Co requisite: --

Additional material required in ESE:

- Install the following on local machine
 - Apache web server OR Tomcat application server locally
 - Install MySQL
 - PHP and configure it to work with Apache web server and MySQL

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Understand the advance concepts of website development.
CO2	Provide skills to design and develop dynamic web sites.
CO3	Work independently for database programming for web applications
CO4	Understand concepts of jQuery methods, AJAX, Bootstrap and REACT
CO5	Connect Website with an Database Server and perform basic CRUD operations.
CO6	Develop market ready website, to be used by clients.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments: All the Practical Assignments need to be carried on specific applications. (Example: Inventory Management System, Bus/Airline/Railway Reservation System, Student Management System etc.)

Practice Programs with PHP	
26.	PHP Code to display today's date in dd-mm-yyyy format.
27.	PHP Code to check if number is prime or not.
28.	PHP Code to print first 10 Fibonacci Numbers.
29.	PHP Code to read data from txt file and display it in html table (the file contains info in format Name: Password: Email)
30.	PHP Script for login authentication. Design an HTML form which takes username and password from user and validate against stored username and password in file.
31.	PHP Script for storing and retrieving user information from MySql table. - Design A HTML page which takes Name, Address, Email and Mobile No. From user (register.php) - Store this data in MySql database / text file. - Next page display all user in html table using PHP (display.php)
32.	PHP Script for user authentication using PHP-MYSQL. Use session for storing username.
Implement the following with specific web applications	
33.	Create HTML page for chosen application that contain textbox, submit / reset button. Write php program to display this information and also store into text file.
34.	Create XML documents for chosen application and validate using DTD and schema. Also render the content of XML document using XSL. Scenarios include - XML document must have attributes and elements so that they can be validated against DTD/Schema. - Check the data types of variables declared in XML document using Schema. - Display the details of data contained in XML document in a table using XSL.
35.	Embed the JQuery features for the application chosen. Perform the Scenarios using JQUERY ready function - In login form, define username and password constraints and ensure that the credentials follow them. - In registration form, username must be of atleast 6 characters. Password must be of atleast 8 characters and follow password constraints. Password and confirm password fields must match with each other. E-mail id must be of the form "yourname@domain.com". Mobile number must be of 10 digits only and starting digit must be any number from 6-9 etc... - Use the get and post methods for server side communication.
36.	Modify the specific web applications to use AJAX to show the result on the same page.
37.	Enhance functionality of the specific web applications using BOOTSTRAP
38.	Create a responsive Photo Gallery in BOOTSTRAP
39.	Suppose you have a list of Students having Student's Name, Roll Number, Marks in five subjects, Show this list in a responsive table in BOOTSTRAP
40.	Modify your answer for above question with PHP and MYSQL database and Perform CRUD operations with AJAX
41.	Build a Password Strength Check App with JQuery. You can use AJAX for form validation and add an alert when the user enters a weak password.
42.	Build a Registration Form and Validate it with JQuery. Registration Form must have at least 10 elements.
43.	Design a Sign In, Sign Up and Forgot Password Page with BOOTSTRAP. Use PHP

	and MYSQL to store Sign Up data in Database.
44.	Create a Star Rating System in JQuery.
45.	Create a simple To-do list Application with REACT
46.	Create a Calculator with REACT
47.	Create a Photo Gallery with REACT. Also implement search operation
48.	How can you create a Portfolio App with Node.js?
49.	Create a simple Shopping Cart with REACT and Node.js
50.	Modify your Shipping Cart with JQuery, JSON and AJAX functionality.

Reference Books:

10. Roger S Pressman, David Lowe, “Web Engineering: A Practitioner's Approach”, TMH.
11. Steven Holzner, “PHP: The Complete Reference”, TATA McGraw Hill, 2015.
12. W. Jason Gilmore, “Beginning PHP and MySQL: From Novice to Professional”, Apress.
13. Learning PHP, MySQL, JavaScript, CSS and HTML 5, Robin Nixon, O'Reilly publication

Course Code: PGCA1937

Course Name: Cloud Computing

Program: MCA	L:4 T:0 P:0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems:
Internal max. marks: 30	Duration of end semester exam (ESE):
External max. marks: 70	Elective status: core/elective Elective-III
Total marks: 100	

Prerequisite:

Co requisite:

Additional material required in ESE:

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Understand the basic concept and importance of cloud computing.
CO2	Access the suitability of migrating to a cloud solution for different applications.
CO3	Compare and evaluate the virtualization technologies.
CO4	Monitor and manage the cloud resources, applications and data while addressing the security concerns.
CO5	Use cloud solutions offered by industry leaders for various applications.

Detailed contents	Contact hours
Part A Overview of Computing Paradigm: Recent trends in Computing - Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing. Introduction to Cloud Computing: Vision of Cloud Computing, Defining a Cloud, Cloud Reference Model, Deployment Model, Characteristics, Benefits of Cloud Computing, Challenges ahead. Cloud computing vs. Cluster computing vs. Grid computing. Migrating into a Cloud: Introduction, Broad approaches to Migrating into the Cloud, The Seven-Step Model of Migration Into a Cloud. Virtualization: Introduction, Characteristics of Virtualized environment, Taxonomy of Virtualization techniques, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Technology Examples- Xen, VMware, Microsoft Hyper-V. Capacity Planning: Introduction, Defining Baseline and Metrics-Baseline Measurements, System Metrics, Load Testing, Resource Ceilings, Server and Instance types; Network Capacity, Scaling.	22 hours
Part B SLA Management in Cloud Computing: Inspiration, Traditional Approaches to SLO Management, Types of SLA, Life Cycle of SLA, SLA management in Cloud. Automated Policy-based management. Securing Cloud services: Cloud Security, Securing Data- Brokered Cloud Storage Access, Storage location and tenancy, Encryption, Auditing and compliance. Cloud Storage: Provisioning Cloud Storage, Virtual storage containers, Cloud Storage Interoperability (CDMI, OCCI), Database Storage, Resource Management, Advance Topics in Cloud:Energy Efficiency in cloud, Market Oriented Cloud Computing, Federated Cloud Computing, Mobile Cloud Computing, Fog computing, BigData Analytics, Basics of IoT. Cloud Platforms in Industry: Amazon Web Services-Compute Services, Storage Services, Communication Services, Additional Services. Google AppEngine-Architecture and Core Concepts, Application Life Cycle. Cost Model. Microsoft Azure-Azure Core Concepts, SQL Azure, Windows Azure Platform Appliance.	22 hours

Text Books:

1. Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, and ThamaraiSelvi, Tata McGraw Hill, ISBN-13: 978-1-25-902995-0, New Delhi, India, Feb 2013.
2. Cloud Computing Bible, Barrie Sosinsky, Wiley India Pvt. Ltd, ISBN-13: 978-81-265-2980-3, New Delhi, India, 2011.
3. Cloud Computing: Principles and paradigms, Raj Kumar Buyya, James Broberg, AndrezeiM.Goscinski, Wiley India Pvt. Ltd, ISBN-13: 978-81-265-4125-6, New Delhi, India, 2011

Reference Books:

1. Cloud Computing For Dummies, Fern Halper, Hurwitz, Robin Bloor, Marcia Kaufman, Wiley India Pvt. Ltd, ISBN-13: 978-0-47-0597422, New Delhi, India, 2011.

2. Dr. Saurabh Kumar, Cloud Computing: Insights Into New-Era Infrastructure, Wiley India Pvt. Ltd, ISBN-13: 978-8-12-6528837, New Delhi, India, 2011.

E Books/ Online learning material:

1. P.D. Kaur, I. Chana, Unfolding the distributed computing paradigm, in: Proceedings of the IEEE International Conference on Advances in Computer Engineering, ACE, Bangalore, Karnataka, India, 2010, pp. 339–342.
2. P.Mell and T. Grance, “The NIST definition of cloud computing (draft), NIST Spec. Publ. 800 (2011) 7.

Course Code: PGCA 1938

Course Name: Cloud Computing Laboratory

Program: MCA	L:0 T:0 P:4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: -
Internal max. marks: 70	Duration of end semester exam (ESE): -
External max. marks: 30	Elective status: core/elective Elective-III
Total marks: 100	

Prerequisite: Working Knowledge of Linux Operating system

Co requisite:

Additional material required in ESE:

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Learn the use of cloud computing tools offered by industry leaders.
CO2	Develop and deploy cloud applications using popular cloud platforms.
CO3	Configuration of the virtual machines on the cloud and building of a private cloud.

Sr. No.	Experiment Name
1.	Enlist various companies in cloud business and the corresponding services provided by them and tag them under SaaS, PaaS & IaaS.
2.	Create a warehouse application using tools supplied by any SaaS provider.
3.	Implementation of Para-Virtualization using VM Ware's Workstation/ Oracle's Virtual Box and Guest O.S. Learn creation, migration, cloning and managing of virtual machines.
4.	Using public cloud service providers tools for exploring the usage of IaaS, PaaS and SaaS cloud services.
5.	Interact with Cloud Storage and conduct typical management tasks such as bucket creation, file transfers, Access Control Lists (ACL) permissions and Identity and Access Management (IAM) configuration.
6.	Setting up a private cloud using open source tools (Eucalyptus/Open Stack etc.).

Reference Books:

1. Cloud Computing For Dummies, Fern Halper, Hurwitz, Robin Bloor, Marcia Kaufman, Wiley India Pvt. Ltd, ISBN-13: 978-0-47-0597422, New Delhi, India, 2011.
2. Dr. Saurabh Kumar, Cloud Computing: Insights Into New-Era Infrastructure, Wiley India Pvt. Ltd, ISBN-13: 978-8-12-6528837, New Delhi, India, 2011.

Course Code: PGCA1963

Course Name: Digital Image Processing

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-III
Total marks: 100	

Prerequisite: -Student must have knowledge about Computer Graphics.

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand the need for various image transforms along with properties
CO2	Learn different techniques employed for the enhancement of images
CO3	Understand the rapid advances in Machine vision
CO4	Analyze images in multiresolution environment
CO5	Learn image compression techniques

Detailed contents	Contact hours
<u>Part A</u> Introduction: Fundamental steps in Digital Image Processing, Components of an image processing system, Image sampling and quantization, Color models Digital Image Processing Operations: Pixel relationships and distance metrics - Image coordinate system, Image topology, Connectivity, Relations, Distance measures. Classification of image processing Operations - Arithmetic, Logical, Geometrical (Translation, Scaling, Zooming, Linear Interpolation, Mirror or Reflection, Shearing, Rotation, Affine and Inverse transformation) Operations, Image interpolation Techniques (Downsampling and upsampling), Set operations, Statistical operations, Convolution and Correlation operations. Image Enhancement in Spatial Domain: Image enhancement point operations-	24 Hours

Linear and non-linear functions, Piecewise linear functions, Histogram processing. Spatial filtering - basics of filtering in the spatial domain, Vector representation, Smoothing linear and non-linear filters, sharpening filters. Image Enhancement in Frequency Domain: Basics of filtering in the frequency domain, Image smoothing and sharpening using frequency domain filters.	
<u>Part B</u> Image Restoration: A model of the image degradation/restoration process, Noise models, Noise filters, Degradation function. Multiresolution Analysis: Wavelet analysis, Continuous wavelet transform, Discrete wavelet transform, Wavelet decomposition and reconstruction in two dimensions, Wavelet packet analysis, Wavelet based image denoising. Image Compression: Image compression model, Compression measures, Compression algorithm and its types (Entropy, Predictive, Transform and layered coding), Types of redundancy (Coding, Inter-pixel, Psycho-visual and Chromatic), Lossless compression algorithms – Run-length, Huffman, Bit-plane, Arithmetic, Predictive coding. Lossy compression algorithms – Lossy predictive, Block transform coding. Image Segmentation: Classification of image segmentation algorithms, Point, Line and Edge detection, Hough transforms, Corner detection, Global thresholding, Otsu’s method, Multivariable thresholding, Region-based segmentation, Watershed segmentation,	20 Hours

Text Books:

1. R. C. Gonzalez and R. E. Woods, “Digital Image Processing”, Pearson Education, 2013.
2. S. Sridhar, “Digital Image Processing”, Oxford University Press, 2011.

Reference Books:

1. M. Sonka, V. Hlavac and Roger Boyle, “ Image Processing, Analysis and Machine Vision”, Thomas Learning, 2007
2. K. R. Castleman, “Digital Signal Processing”, Pearson Education, 2007.

Course Code: **PGCA1964**

Course Name: **Digital Image Processing Laboratory**

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Internal max. marks: 70	Theory/Practical: Practical
External max. marks: 30	Duration of End Semester Exam (ESE): 3hrs
Total marks: 100	Elective status: Elective-III

Prerequisite: Students must have the knowledge of computer graphics.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Implement the various operations which can be performed on images.
CO2	Apply filters on images as per the requirement
CO3	Implement different techniques employed for the enhancement of images
CO4	Develop an Image Processing Application

Instructions: For implementation, software such as Python/SciLab/MATLAB or any other image processing software can be used and instructor may increase/decrease the experiments as per the requirement.

Sr no.	Assignments
51.	Installation of image processing software and use of basic image processing commands.
52.	Generation of lines, array, matrix and image
53.	Reading and displaying images in different formats using different color models
54.	Converting color images into monochrome images
55.	Displaying of image Histogram
56.	Image color enhancements using pseudo coloring techniques
57.	Image restoration techniques.
58.	Application of image processing operations
59.	Point, Line, and Edge Detections in images
60.	Boundary Detections in images
61.	Color image processing
62.	Wavelet transforms.
63.	Image compression techniques
64.	A minor project based on above taught image processing techniques.

Reference Books:

1. R. C. Gonzalez and R. E. Woods, "Digital Image Processing", Pearson Education, 2013.

Course Code: PGCA1965

Course Name: NLP and Speech Recognition

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-III
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Learn basics of natural language processing
CO2	Understand the text normalization, use of edit distance, and regular expressions
CO3	Learn Naive bayes and sentiment classification algorithms
CO4	Familiarize with chatbots and phonetics
CO5	Learn the concept of speech recognition and text to speech conversion.

Detailed contents	Contact hours
<u>Part A</u> Introduction to Natural Language Processing Regular Expressions, Text Normalization, Edit Distance: Regular Expressions, Words, Corpora, Text Normalization, Minimum Edit Distance N-gram Language Models: N-Grams, Evaluating Language Models, Generalization and Zeros, Smoothing, Kneser-Ney Smoothing, Huge Language Models and Stupid Backoff, Advanced: Perplexity's Relation to Entropy Naive Bayes and Sentiment Classification: Naive Bayes Classifiers, Training the Naive Bayes Classifier, Optimizing for Sentiment Analysis, Naive Bayes for other text classification tasks, Naive Bayes as a Language Model, Evaluation: Precision, Recall, F-measure, Test sets and Cross-validation, Statistical Significance Testing, Avoiding Harms in Classification Logistic Regression: Classification: the sigmoid, Learning in Logistic Regression, The cross-entropy loss function, Gradient Descent, Regularization, Multinomial logistic regression, Interpreting models, Advanced: Deriving the Gradient Equation	22 Hours
<u>Part B</u> Chatbots & Dialogue Systems: Properties of Human Conversation,	22 Hours

Chatbots, GUS: Simple Frame-based Dialogue Systems, The Dialogue-State Architecture, Evaluating Dialogue Systems, Dialogue System Design Phonetics: Speech Sounds and Phonetic Transcription, Contents, Articulatory Phonetics, Prosody, Acoustic Phonetics and Signals, Phonetic Resources Automatic Speech Recognition and Text-to-Speech: The Automatic Speech Recognition Task, Feature Extraction for ASR: Log Mel Spectrum, Speech Recognition Architecture, CTC, ASR Evaluation: Word Error Rate, TTS, Other Speech Tasks	

Text Books:

14. Speech and Language Processing, An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition, Daniel Jurafsky, James H. Martin, Pearson, 2020
15. The Oxford Handbook of Computational Linguistic, Ruslan Mitkov, Oxford
16. Taming Text, Grant Ingersoll, Thomas Morton and Drew Farris, Manning

Reference Books:

3. Natural Language Processing with Python by Steven Bird, Ewan Klein and Edward Loper, O'Reilly, 2009

Course Code: PGCA1966

Course Name: NLP and Speech Recognition Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 70	Duration of end semester exam (ESE): 3hrs
External max. marks: 30	Elective status: Elective-III
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Develop knowledge of various learning models of data.
CO2	Understand a wide variety of learning algorithms.
CO3	Understand how to evaluate models generated from data.
CO4	Apply the algorithms to a real-world problems.

CO5	Optimize the models learned and report on the expected accuracy that can be achieved by applying the models.

Instructions:

3. Students may develop the assignments in Python.
4. Standard data sets or assumed data sets may be used for developing ML programs.

Assignments:

10.	Write a Program for Word Analysis.
11.	Write a Program for Word Generation.
12.	Write a program to implement Morphology.
13.	Write a Program to implement N-Grams.
14.	Write a Program to implement N-Grams Smoothing.
15.	Write a Program to implement POS Tagging: Hidden Markov Model.
16.	Write a Program to implement POS Tagging: Viterbi Decoding
17.	Design and evaluate a data model using Linear Regression.
18.	Design and evaluate a data model using Logistic Regression.
19.	Design a vocabulary of about 20 words. Choose words with a variety of segmental structure and length: place names or animal names for example. Add in a few minimal pairs.

Reference Books:

3. Introduction to Machine Learning with Python: A Guide for Data Scientists, Andreas C. Müller, Sarah Guido, O'Reilly Media.
4. Understanding Machine Learning: From Theory to Algorithms, Shai Shalev-Shwartz, Shai Ben-David, Cambridge University, Press.

Course Code: PGCA1967

Course Name: IOT & Blockchain Technology

Program: MCA	L: 4 T: 0 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 70	Elective status: Elective-III

Total marks: 100	

Prerequisite: - NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Understand the terminology and enabling technologies of IoT and Blockchain
CO2	Enumerate the steps involved in IoT system design methodology
CO3	Gain Knowledge about the working of bit coin crypto currency
CO4	Describe domain specific applications of IoT and Blockchain

Detailed contents	Contact hours
<u>Part A</u> Introduction to Internet of Things (IoT): Definitions & Characteristics of IoT, Physical Design of IoT-Things in IoT, Protocols, Logical Design of Functional Blocks, Communication Models, Communication APIs. Enabling Technologies: Wireless Sensor Networks, Cloud Computing, Big Data Analytics, Communication Protocols, Embedded Systems, IoT Levels & Deployment Templates. Elements of IoT : Hardware Components- Computing (Arduino, Raspberry Pi), Communication, Sensing, Actuation, I/O interfaces. Software Components- familiarity with API's for Communication, Protocols-MQTT, ZigBee, Bluetooth, CoAP, UDP, TCP. Solution Framework for IoT applications. Domain Specific IoTs: IoT applications for Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle	24 Hours
<u>Part B</u> Concept of Blockchain: Overview of Blockchain, Public Ledgers, Bitcoin, Smart Contracts, Block in a Blockchain, Transactions, Distributed Consensus, Public vs Private Blockchain, Understanding Crypto currency to Blockchain, Permissioned Model of Blockchain, Overview of Security aspects of Blockchain Bitcoin and Blockchain: Creation of coins, Payments and double spending, Bitcoin Scripts, Bitcoin P2P Network, Transaction in Bitcoin Network, Block Mining, Block propagation and block relay. Enterprise Application of Blockchain: Cross border payments, Know Your Customer (KYC), Food Security, Mortgage over Blockchain, Blockchain enabled Trade, We Trade — Trade Finance Network, Supply Chain Financing, Identity on Blockchain	20 Hours

Text Books:

5. Arshdeep Bahga, Vijay Madisetti, "Internet of Things-A Hands-on Approach", Universities Press, 2015.
6. Melanie Swan, "Blockchain: Blueprint for a New Economy", O'Reilly, 2015.
7. Andreas Antonopoulos, "Mastering Bitcoin: Unlocking Digital Cryptocurrencies", O'Reilly, 2014.

Reference Books:

1. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", (CRC Press).
2. Raj Kamal, "Internet of Things: Architecture and Design", McGraw Hill
3. Cuno Pfister, "Getting Started with the Internet of Things", O'Reilly Media.
4. Iran Bashir "Mastering Blockchain", Second Edition Paperback, 2018.
5. Daniel Drescher, "Blockchain Basics", First Edition, Apress, 2017.

Course Code: PGCA1968

Course Name: IOT & Blockchain Technology Laboratory

Program: MCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Internal max. marks: 70	Theory/Practical: Practical
External max. marks: 30	Duration of End Semester Exam (ESE): 3hrs
Total marks: 100	Elective status: Elective-III

Prerequisite: - NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Learn and Use IoT sensors and remotely monitor data and control devices.
CO2	Develop real life IoT based projects.
CO3	Understand blockchain technology and develop blockchain based solutions.
CO4	Build and deploy IoT based blockchain applications for on-premise and cloud based architecture.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments:

65.	Familiarization with Arduino/Raspberry Pi and perform necessary software installation.
66.	To interface LED/Buzzer with Arduino/Raspberry Pi and write a program to turn ON LED for 1 sec after every 2 seconds.
67.	Interfacing Rain Sensing Automatic Wiper System
68.	To interface DHT11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.
69.	To interface motor using relay with Arduino/Raspberry Pi and write a program to turn ON motor when push button is pressed.
70.	To interface Bluetooth with Arduino/Raspberry Pi and write a program to send

	sensor data to smartphone using Bluetooth.
71.	Write a program on Arduino/Raspberry Pi to upload and retrieve temperature and humidity data to and from thingspeak cloud.
72.	Interfacing smoke sensor to give alert message to fire department.
73.	Install and understand Docker container, Node.js, Java and Hyperledger Fabric/Ethereum and perform necessary software installation on local machine/create instance on cloud to run.
74.	Create and deploy a blockchain network using Hyperledger Fabric SDK/Ethereum for Java Set up and initialize the channel, install and instantiate chain code, and perform invoke and query on your blockchain network.
75.	Interact with a blockchain network. Execute transactions and requests against a blockchain network by creating an app to test the network and its rules.
76.	Develop an IOT asset tracking app using Blockchain. Use an IOT asset tracking device to improve a supply chain by using Blockchain, IOT devices and Node-RED

e-Resources:

1. GitHub repository.
 2. IBM library for IoT.
-

Course Code: PGCA1961

Course Name: Research/Technical seminar

Program: MCA	L: 0 T: 0 P: 2
Branch: Computer Applications	Credits: 1
Semester: 4 th	Contact hours: 2 hours per week
Internal max. marks: 0	Theory/Practical: Practical
External max. marks: 100	Duration of End Semester Exam (ESE): 3hrs
Total marks: 100	Elective status:

Prerequisite: - NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Project:

Students may be encouraged to take up internship projects in industry or research/academic institutions.

Students may be offered software/hardware development or research oriented projects if taken in house.

Faculty members may offer project proposals from their side and students may choose from them.

Students may also submit project proposals not covered in the faculty provided list, which may be guided by the interested faculty members.

Co-guidance with external institutes/industry may also be allowed.

Same project ideas may be submitted by more than one student group, but may be unique at the implementation level, as per the judgment of the department.

Students may be encouraged to take up more innovative projects involving contemporary technologies, leading to research paper and/or patent publications.

Minor Projects from the previous semester may also be carrying forwarded with significant up gradations.

Technical seminar:

Industry seminars are suggested to enable the students of MCA to appreciate the software developments which are going on in industries in India. These seminars will help the students to face interviews with some confidence. The students should attend these and submit a report. The following points are listed to enable the college to organize these seminars.

1. Three to four organizations (Industry, Public sector organizations, Govt. organizations) are requested to present a detailed case study of one or many applications in their organization.
 2. Presentation covers in detail all aspects of a project from conception to implementation and maintenance. Design is discussed to cover all factor that influenced the design. Planned and achieved benefits of the application are also stressed.
 3. In order that the students take the presentations seriously, groups of students are assigned to prepare a detailed synopsis of each presentation, copies of which are distributed to others.
 4. One session could be a survey of new applications in the Indian environment during the past year, as ascertained from a survey of news paper articles. This is to be done by a group of students.
 5. College can invite potential employers to participate in the inauguration- and valediction of the seminar so that the efforts of the college get noticed by employers.
 6. It is neither necessary nor possible to have an examination on the seminar. Idea is that the motivated students get an opportunity to seek answers to questions on worthwhile computerization on our economy.
-

Course Code: PGCA1962

Course Name: Project

Program: MCA	L: 0 T: 0 P: 8
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 8 hours per week
Internal max. marks: 180	Theory/Practical: Practical
External max. marks: 120	Duration of End Semester Exam (ESE): 3hrs
Total marks: 300	Elective status:

Prerequisite: - NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Annexure A

OBJECTIVE

The objective of the project course is to help the student develop ability to apply multi-disciplinary concepts, tools and techniques to analyze and logically approach the organizational problems.

PROJECT PROPOSAL EVALUATION:

The project proposal/Synopsis will be submitted within 2 weeks from start of semester and evaluated by the panel of three teachers in the presence of student, who will give the presentation to the panel.

In case of non-approval of the Synopsis the comments/suggestions for reformulating the Synopsis will be communicated to the student. In such case, the revised Synopsis should be submitted within 7 days, which shall be evaluated on similar guidelines.

Then after period of 1 Month Progress report 1 has been evaluated by Guide on the basis of following:

1. Problem Definition
2. Need & Scope of the Study
3. Methodology & Objectives
4. Data Analysis & Findings

Then after period of 2 Month Progress report 2 has been evaluated by Guide on the basis of following:

1. Testing & Implementations
2. Suggestions and Conclusions
3. Overall Report Writing & Layout

PROJECT PRE-SUBMISSION:

After approval of the Synopsis, student shall complete their projects and submit the completed Project Report (Spiral bound) for final internal evaluation before 2nd MST.

The guidelines for project report are as follows:

- ▮ The length of the report may be about 60 to 80 double spaced typed pages not exceeding approximately 18,000 words (excluding appendices and exhibits). However, rational variation on either side is permissible.
- ▮ The Project Report may have the following:
 - Cover Page – must have the Title of the Project, Name & logo of college / university, Name and University Roll No of the Student and the Name of the Guide, along with the designation and department.
 - Detailed table of contents with page nos.
 - All pages of the Project Report must be numbered as reflected in the table of contents.
 - Project Proposal, properly bound in the project and not just stapled. Please note that project with stapled Proposal will not be accepted.
 - Certificate of originality- duly signed by the student and the guide with dates.
 - Introduction to the Project and Review of Literature along with brief details of the organization/s understudy.
 - Rationale
 - Statement of problem
 - Objectives of the Project
 - Scope of the study
 - Research Methodology
 - Research Design
 - Nature and Source of data/information collected
 - Sample and Sampling method with rationale
 - Details of the tools:
 - The Questionnaire and other methods used and their purpose
 - Reliability and Validity of the tools used
 - Administration of tools and techniques
 - Data collection
 - Data Handling, Statistical tools used for Data Analysis
 - Data Interpretation and Findings
 - Recommendations
 - Summary and Conclusion
 - Limitations of the Project
 - Direction for further research (optional)
 - Reference/Bibliography
 - Annexures/Appendices (Questionnaire used etc.)
- ▮ Note: Research Methodology of the Project Report must have elaborate detail of all the components of the methodology.

The spiral bound project report will be evaluated by the panel of three teachers before second MST in presence of student, who will give the presentation to the panel before second MST.

In case of non-approval of the final project report, the comments/suggestions for revising the project report will be communicated to the student. In such case, the revised project report should be submitted within 7 days, which shall be evaluated on similar guidelines.

SUBMISSION OF FINAL PROJECT REPORT:

After incorporating changes, if any, pointed out during internal evaluation, the final Project Report in Hard Bound form (3 copies) shall be submitted by the student at least 3 working days before final viva voce. After signing of certificate by student and supervisor, one copy will be retained by the supervisor, second copy by the student and third copy shall be produced at the time of viva-voce, which shall be maintained by the department as record.

Note:

- 1. Wherever it is felt that there is not sufficient time to complete the project after approval of Synopsis, the phases of Project till "Project Proposal Evaluation" may be completed in third semester at department level.**
- 2. Minor Projects from the previous semester may also be carrying forwarded with significant up gradations with the consent of HOD.**
- 3. For further details on references, bibliography and formatting of the report, you may refer the Guidelines for Project Report.**

EVALUATION CRITERIA FOR PROJECT REPORT (MCA-PGCA1962)

S.No.	Name	Roll No. & Date of Presentation	Synopsis	Problem Definition / Need & Scope of the Study	Methodology & Objectives	Data Analysis & Findings	Testing and Implementation	Suggestions & Conclusion	Overall Report Writing & Layout	Total Earned Marks out of (170)	Signature of the Evaluator with Date	Attendance Marks (in accordance to the criteria)	Total Earned Marks out of (180)
				Progress Report 1			Progress Report 2						
			60	20	15	15	20	20	20	160		10	180
1													
2													
3													

Note:

- 1) Total marks of “Project Report (MCA PGCA1962)” = 180
- 2) Attendance Marks (from a total of 5 marks) to be given on the basis of percentage of lectures attended of MCA during the academic term as per the following criteria:
 - i. Above 75% = NIL
 - ii. 76% - 80% = 1
 - iii. 81% - 85% = 2
 - iv. 86% - 90% = 3
 - v. 91% - 95% = 4
 - vi. 96% and above = 5

Guidelines for Project Report

Project Report on
“PROJECT TITLE”

Submitted to



I.K. GUJRAL PUNJAB TECHNICAL UNIVERSITY
KAPURTHALA

In partial fulfillment of the requirement for the
award of degree of
Master of Computer Applications (MCA)

Submitted by

Name of the Student

University Roll no.

Supervisor

Name (Guide)

Designation

Logo of the Institute

DEPARTMENT OF COMPUTER

APPLICATIONS

NAME OF THE INSTITUTE

NAME OF THE CITY

(Batch)

CERTIFICATE (On a Separate Page)

*Certificate of Project from Institute/Company/Industry shall be attached herewith.

STUDENT DECLARATION (On a Separate Page)

I, “_____ (Student Name)”, hereby declare that I have undergone my Project at “_____ (Institute/Industry Name)” from ____ (start date) to ____ (end date). I have completed a research project titled “_____ (Project Title)” under the guidance of Mr. /Ms. _____ (Name of Supervisor).

Further I hereby confirm that the work presented herein is genuine and original and has not been published elsewhere.

(Student name and Signature)

FACULTY DECLARATION (On a Separate Page)

I hereby declare that the student Mr. / Ms. _____ of MCA has undergone his/her Project under my periodic guidance on the Project titled “(Project Title)”.

Further I hereby declare that the student was periodically in touch with me during his/her training period and the work done by student is genuine & original.

(Signature of Supervisor)

ACKNOWLEDGEMENT (On a Separate Page)

*Acknowledge the support and guidance provided to you by various persons during your Project Training

TABLE OF CONTENTS (On a Separate Page)

Certificate by Guide		ii
Student Declaration		iii
Faculty Declaration		iv
Abstract		v
Acknowledgment		v
CHAPTER NO.	CHAPTER TITLE	PAGE NO.
1	Synopsis	
2	Introduction to the Research Problem	
3	Need, Scope and Objectives of the Study	
4	Research Methodology	
5	Data Analysis and Interpretation	
6	Findings of the Study	
7	Testing and Implementation	
8	Conclusion, Suggestions & Recommendations of the Study	
References and Bibliography		
Appendix (Questionnaire, Glossary of Terms, Abbreviations, Documents, Performa, Financial statements, etc.)		

LIST OF TABLES

TABLE NO.	TABLE TITLE	PAGE NO.

LIST OF FIGURES

FIGURE NO.	FIGURE TITLE	PAGE NO.

General Guidelines for Layout and format

1. Paper Size must be A4 and margins should be maintained on all pages as follows: **Left margin = 1.5” (wider for binding) Top, right & bottom margins = 1”**
2. Use **Times New Roman** font, **12 pointsize**, for text. and **14 point** size for headings
3. Use **1.5 line spacing** for all text in the main body of the thesis.
4. Report should contain page numbers (1, 2, 3....) starting from Introduction Chapter. Preliminary pages should be numbered: i., ii., iii, iv, v, vi, etc. A page number should not be shown on the inside title page even though it is counted as i.
5. Page number should be placed at the **bottom- center of page**.

Imp Note:

1. Students are required to prepare two Hard Bound copies of their Project report to be submitted within 10 days of commencement of 3rd Semester
2. Questionnaires in original to be retained by the students for the final presentation if required.

Guidelines on Faculty Guide-Student Interaction

1. The Student is required to be in constant touch with their Faculty Guide through email, telephone, personal interactions etc.
2. It is mandatory for the student to provide a weekly progress report to their Faculty Guides for each week of their Project.
3. The Topic for the Project should be chosen in consultation with their Faculty guide and after their due approval.
4. Same topics having any sort of duplicacy shall not be acceptable.
5. Institute will be conducting surprise visits of the organization where the Student is undergoing Project from time to time and any students found to be irregular / not attending their Project then the Project report of the said student shall stand cancelled .

Preparing References/Bibliography

- While preparing the Bibliography, in case of website as a source, ensure that the date and the timing of accessing the website is mentioned along with.
- While preparing bibliography student must adopt the following method:

Article in a Magazine

Henry, W. A., III. (1990, April 9). Making the grade in today's schools. *Time*, 135, 28-31.

Article in a Newspaper

Unlike other periodicals, p. or pp. precedes page numbers for a newspaper reference in APA style. Single pages take p., e.g., p. B2; multiple pages take pp., e.g., pp. B2, B4 or pp. C1, C3-C4.

Schultz, S. (2005, December 28). Calls made to strengthen state energy policies. *The Country Today*, pp. 1A, 2A.

Basic Format for Books

Author, A. A. (Year of publication). *Title of work: Capital letter also for subtitle*. Location: Publisher.

Note: For "Location," you should always list the city, but you should also include the state if the city is unfamiliar or if the city could be confused with one in another state.

Calfee, R. C., & Valencia, R. R. (1991). *APA guide to preparing manuscripts for journal publication*. Washington, DC: American Psychological Association.

Government Document

National Institute of Mental Health.(1990). *Clinical training in serious mental illness* (DHHS Publication No. ADM 90-1679). Washington, DC: U.S. Government Printing Office.

Report From a Private Organization

American Psychiatric Association. (2000). *Practice guidelines for the treatment of patients with eating disorders* (2nd ed.). Washington, D.C.: Author.

Conference Proceedings

Schnase, J.L., & Cunnius, E.L. (Eds.). (1995). Proceedings from CSCL '95: *The First International Conference on Computer Support for Collaborative Learning*. Mahwah, NJ: Erlbaum.

Article From an Online Periodical

Author, A. A., & Author, B. B. (Date of publication). Title of article. *Title of Online Periodical*, volume number (issue number if available). Retrieved month day, year, (if necessary) from <http://www.someaddress.com/full/url/>

Bernstein, M. (2002). 10 tips on writing the living Web. *A List Apart: For People Who Make Websites*, 149. Retrieved May 2, 2006, from <http://www.alistapart.com/articles/writeliving>

Online Newspaper Article

Author, A. A. (Year, Month Day). Title of article. *Title of Newspaper*. Retrieved <http://www.someaddress.com/full/url/>

Parker-Pope, T. (2008, May 6). Psychiatry handbook linked to drug industry. *The New York Times*. Retrieved from <http://www.nytimes.com>

Electronic Books

De Huff, E.W. *Taytay's tales: Traditional Pueblo Indian tales*. Retrieved from <http://digital.library.upenn.edu/women/dehuff/taytay/taytay.html>

Davis, J. *Familiar birdsongs of the Northwest*. Available from <http://www.powells.com/cgi-bin/biblio?inkey=1-9780931686108-0>

Online Encyclopedias and Dictionaries

Feminism. (n.d.) In *Encyclopædia Britannica online*. Retrieved March 16, 2008, from <http://www.britannica.com>

Annexure B

Guidelines for Research/ Technical Seminar:

OBJECTIVE

The objective of the Research /Technical Seminar is to help the student develop ability to apply multi- disciplinary concepts, tools and techniques to analyze and logically approach the organizational problems.

The Research topic may be from any one of the following types, however, it should preferably be from your area of specialization in MCA:

- i) Survey of Literature/Comprehensive case study (covering single organization/multifunctional area problem formulation, analysis and recommendations).
- ii) Inter-organizational study aimed at inter-organizational comparison/validation of theory/survey of management practices.
- iii) Field study / Conclusion (empirical study).

REPORT PROPOSAL

Proposal should be prepared in consultation with the supervisor and submitted before the routine first MST in department. The length of the report may be about 25 to 30 double spaced typed pages not exceeding approximately 5000 words (excluding appendices and exhibits). However, rational variation on either side is permissible.

The Proposal may have the following components:

- a) Introduction, brief background, and Rationale of the topic chosen for the Research.
- b) Brief Introduction and vital details of the organization/s understudy.
- c) Statement of the Research problem.
- d) Objectives of the Research (clearly stated in behavioral terms).
- e) Research Methodology:
 - Research Design
 - Survey of Literature
 - Nature and source of data / information to be collected.
 - Sample and sampling technique. Rationale of chosen organization and the sample.
 - Tools and Techniques to be used for data collection – details of the tools/questionnaire to be used and its relevance with the objectives of the project.
 - Method/s to be used for data collection
 - Data handling and analysis
 - Statistical tools to be used for analysis
 - Conclusion.
- f) Limitation of the proposed research work, if any.
- g) Any other relevant detail which will help better appreciation and understanding of the research study.

I.K.G. Punjab Technical University
MCA Batch 2020 onwards

EVALUATION CRITERIA FOR Research/Technical Seminar

S.N.	Name	Roll No. & Date of Presentation	Introduction & Review of Literature	Rationale, Problem Definition, Scope & Objectives	Research Methodology	Data Analysis & Findings	Suggestions & Conclusion & Scope for Future research	Overall Report Layout and Viva Performance	Total Earned Marks (out of 100)	Signature of the Evaluator with Date
			15	15	15	20	15	20	100	
1										
2										
3										

Name of Student: Roll No: _

.....

Research/ Technical Seminar

(Title).....

Estimated

duration.....

Name of Organization &

Address.....

.....

.....

Nature of

Research.....

(Application/Network/Web based) Research Description (Additional Pages is to be attached to give description of the work under the following

heads).....

.....

Features of the

Research.....

Existing

Papers.....

Proposed

Papers.....

Tools.....

Requirements: Hardware & Software

Requirements.....

.....

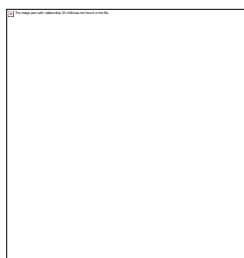
Signature of student

(Signature of Guide In-charge)

Study Scheme & Syllabus of Bachelor of Business Administration (BBA)

Batch 2021 onwards

University Main Campus



**Department of Academics
I.K. Gujral Punjab Technical University**

Courses & Examination Scheme:

First Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BBA 101-18	Core Theory 1	Principles and Practices of Management	5	1	0	40	60	100	6
BBA 102-18	Core Theory 2	Basic Accounting	5	1	0	40	60	100	6
BBAGE101-18	General Elective 1	Managerial Economics I	5	1	0	40	60	100	6
BTHU103/18	Ability Enhancement Compulsory Course (AECC)	English	1	0	0	40	60	100	1
BTHU104/18	Ability Enhancement Compulsory Course (AECC)	English Practical/Laboratory	0	0	2	30	20	50	1
HVPE101-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules	3	0	0	40	60	100	3
HVPE102-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules (Lab/ Seminar)	0	0	2	25	--**	25	1
BMPD102-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		19	3	6	280	320	600	25

**The Human Values, De-addiction and Traffic Rules (Lab/ Seminar) and Mentoring and Professional Development course will have internal evaluation only.

Note: One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the seminar at least once during the semester. It will be binding for all students to attend the seminar.

Second Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BBA201-18	Core Theory 3	Business Statistics	5	1	0	40	60	100	6
BBA 202-18	Core Theory 4	Business Environment	5	1	0	40	60	100	6
BBAGE201-18	General Elective 2	Managerial Economics II	5	1	0	40	60	100	6
EVS102-18	Ability Enhancement Compulsory Course (AECC) - III	Environmental Studies	2	0	0	40	60	100	2
BMPD202-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		17	3	2	195	240	425	21

Third Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BBA301-18	Core Theory 5	Organizational Behaviour	5	1	0	40	60	100	6
BBA 302-18	Core Theory 6	Marketing Management	5	1	0	40	60	100	6
BBA 303-18	Core Theory 7	Cost & Management Accounting	5	1	0	40	60	100	6
BBAGE 301-18	General Elective 3	Production and Operation Management	5	1	0	40	60	100	6
BBASEC 301-18	Skill Enhancement Course-1	IT tools for Business	2	0	0	40	60	100	2
BMPD302-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		22	4	2	225	300	525	27

Fourth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BBA401-18	Core Theory 8	Business Research Methods	5	1	0	40	60	100	6
BBA 402-18	Core Theory 9	Human Resource Management	5	1	0	40	60	100	6
BBA 403-18	Core Theory 10	Financial Management	5	1	0	40	60	100	6
BBAGE 401-18	General Elective 4	Entrepreneurship Development	5	1	0	40	60	100	6
BBASEC 401-18	Skill Enhancement Course-2	Business Ethics and Corporate Social Responsibility	2	0	0	40	60	100	2
BMPD402-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		22	4	2	425	300	525	27

Fifth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BBA501-18	Core Theory 11	Operation Research	5	1	0	40	60	100	6
BBA502-18	Core Theory 12	Mercantile Law	5	1	0	40	60	100	6
	Discipline Specific Elective 1	Elective – I	5	1	0	40	60	100	6
	Discipline Specific Elective 2	Elective – II	5	1	0	40	60	100	6
BMPD502-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		20	4	2	225	240	425	25

SPECIALISATIONS

Any of the following groups each having two papers in Semester V can be chosen as specialization by the students.

1. Marketing

BBA 511-18	Consumer Behaviour
BBA 512-18	Advertising and Sales Management

2. Finance

BBA 521-18	Corporate Accounting
BBA 522-18	Financial Markets & Services

3. Human Resource Management

BBA 531-18	Industrial Relations & Labour Law
BBA 532-18	Organisation Change & Development

Sixth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BBA601-18	Core Theory 13	Strategy Management	5	1	0	40	60	100	6
BBA602-18	Core Theory 14	Company Law	5	1	0	40	60	100	6
	Discipline Specific Elective 3	Elective – III	5	1	0	40	60	100	6
	Discipline Specific Elective 4	Elective – IV	5	1	0	40	60	100	6
BMPD602-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		20	4	2	185	240	425	25

SPECIALISATIONS:

Any of the following groups each having two papers in Semester VI can be chosen as specialization by the students.

1. Marketing

BBA 611-18	Services Marketing
BBA 612-18	Retailing and Logistics Management

2. Finance

BBA 621-18	Personal Financial Planning
BBA 622-18	Direct and Indirect Tax Laws

3. Human Resource Management

BBA-631	Training & Development
BBA-632	Cross Cultural Human Resource Management

Program Educational Objectives (PEOs)

PEO1: Graduates will develop expertise in the area of accounts, marketing, interpersonal skills, human resource management and entrepreneurship.

PEO2: Graduates will develop competencies in qualitative and quantitative techniques to analyse the business data.

PEO3: Graduates will develop an understanding of economic, legal and social environment of Indian business.

PEO4: Graduates will develop responsiveness to social issues and will be able to identify business solutions to address the same. They will also be able to understand the issues of business ethics.

Program Outcomes (POs)

At the end of the program the student will be able to:

PO1: Evaluate and describe contextual forces (macro and micro both) in business environment and identify their impact on business operations.

PO2: Recognise and apply various qualitative, technical and analytical methods in solving business problems.

PO3: Communicate effectively in various business settings both in written and oral formats.

PO4: Explain the responsibility of business towards development of society. Students will also be able to distinguish between ethical and unethical behaviours.

PO5: Develop strategies for effective functioning of functional areas such as marketing, strategy, finance and operations.

PO6: Apply the entrepreneurial and managerial skills for effective business management.

BBA 101 Principles and Practices of Management

Course objective: the course aims at providing fundamental knowledge and exposure to the concepts, theories and practices in the field of management. And to facilitate the students in appreciating need/significance and applications of various managerial functions.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Describe fundamental concepts, nature and principles of Management.

CO2: Explain the role and responsibilities of managers and adapt to the various styles of management across organizations.

CO3: Develop analytical abilities to face the business situations.

CO4: Apply various tools that would facilitate the decision making process in the business.

CO5: Develop peer based learning and working in groups and teams.

Unit – I

Management: Meaning, definitions, nature and scope, functions of management. Managerial roles and skills. Forms of different organizations: sole proprietorship, partnership and Joint Stock Company.

Evolution of management thoughts: classical and new classical systems, contingency approaches, Scientific management.

Unit – II

Planning: nature, purpose and functions, types of plan, Management by Objective (MBO), steps in planning.

Decision Making: Meaning, Steps in Decision Making, Techniques of Decision Making.

Strategic planning – concepts, process, importance and limitations; Growth strategies- Internal and external.

Unit – III

Organizing: Concept, formal and informal organizations, task force, bases of departmentation, different forms of organizational structures, avoiding organizational inflexibility. Teamwork – meaning, types and stages of team building.

Concept of staffing- Recruitment and Selection.

Motivation – concept, importance and theories.

Unit –IV

Authority: definition, types, responsibility and accountability, delegation, decentralization v/s centralization, determinants of effective decentralization. Line and staff authority.

Control: function, process and types of control, nature, process, significance and span of control. Direct control v/s preventive control.

Trends and challenges of management in global scenario, emerging issues in management: Introduction to Total Quality Management (TQM), Just in Time (JIT).

Suggested Textbooks:

- Principles and practices of management: L. M. PRASAD (S. Chand publishers)
- Essentials of Management: Koontz H. & Weihrich H. (Tata Mc Graw Hill Publishers)

Suggested Reference books

- Management: Stephen Robbins (Pearson publishers)
- VSP Rao & V H Krishna, Management, Excel books

BBA 102 BASIC ACCOUNTING

Course Objective: This course aims to acquaint students with foundation of financial accountancy and its application in business. It also aims to familiarize students with regulatory framework of accounting in India.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: To understand the basic underlying concepts, principles and conventions of accounting.

CO2: To identify the rules of debit and credit in accounting.

CO3: To get an overview of the regulatory framework of accounting in India.

CO4: To prepare trading, profit & loss and balance sheet of a firm.

CO5: To comprehend the concept of depreciation and different methods to treat depreciation in accounting.

Unit I

Introduction to Accounting- Meaning, objectives and Scope of **Financial Accounting**, Concept of Book Keeping, Basic Accounting terms, users of accounting information, limitations of Financial Accounting. **Accounting Concepts and Conventions.**

Accounting Standards- Concept, objectives, benefits, brief review of Accounting Standards in India.

Unit II

The Accounting Equation; Types and Nature of Accounts, Rules of Debit and Credit; **Accounting process** :Recording Transactions in Journal; Preparation of Ledger Accounts, Subsidiary Books; Preparation of Trial Balance.

Unit III

Bank Reconciliation Statement, Depreciation: Meaning, need & importance of depreciation, methods of charging depreciation (WDV & SLM). **Preparation of Final Accounts:** Preparation of Trading and Profit & Loss Account and Balance Sheet of sole proprietary business

Unit IV

Introduction to Company Final Accounts: Important provisions of Companies Act, 1956 in respect of preparation of final accounts of a company. Understanding the Annual Report of a Company.

Computerised Accounting: Computers and its application in accounting. Accounting software packages

Suggested Readings:

1. Maheshwari, S.N. and Maheshwari, S.K., “Financial Accounting”, 2009, Vikas Publishing House, New Delhi.
2. Mukherjee, A. and Hanif, M., “Financial Accounting”, 1st Edition, 2003, Tata McGraw Hill.
3. Ramchandran, N. and Kakani, R.K., “Financial Accounting for Management”, 2nd Edition, 2007, Tata McGraw Hill.
4. Tulsian, P.C., Financial Accounting,
5. Horngren, Charles T., Sundem, Gart 1, Elliot, John A. Philbrick, Donna R.,
6. “Introduction to Financial Accounting”, Prentice Hall, New Delhi.
7. Gupta, Ambrish, “Financial Accounting for Management: An Analytical Perspective”, Pearson Education, New Delhi.
8. Khatri, Dhanesh, “Financial Accounting” Tata McGraw-Hill, New Delhi.

BBA-GE 101 Managerial Economics- I

Course Objective: The primary objective of this course is to equip students with the necessary economic concepts, principles, theory and techniques and enhance their managerial decision making to address business problems in a globalized economic environment

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand the basic concepts of managerial economics and apply the economic way of thinking to individual decisions and business decisions.

CO2: Measure price elasticity of demand, understand the determinants of elasticity and apply the concepts of price, cross and income elasticity of demand.

CO3: Understand and estimate production function and Law of Diminishing Marginal Utility.

CO4: Understand and explain four basic market models of perfect competition, monopoly, monopolistic competition, and oligopoly, and how price and quantity are determined in each model.

CO5: Understand the different costs of production and how they affect short and long run decisions.

Unit-I

Introduction to Managerial Economics: Managerial Economics: Meaning, Nature, Scope & Relationship with other disciplines, Role of managerial economics in decision Making, Opportunity Cost Principle, Production Possibility Curve, Incremental Concept, Scarcity Concept.

Demand and the Firm: Demand and its Determination: Demand function; Determinants of demand; Demand elasticity – Price, Income and cross elasticity. Use of elasticity for analyzing demand, Demand estimation, Demand forecasting, Demand forecasting of new product. **Indifference Curve Analysis:** Meaning, Assumptions, Properties, Consumer Equilibrium, Importance of Indifference Analysis, Limitations of Indifference Theory

Unit-II

Production Function : Production function Meaning, Concept of productivity and technology, Short Run and long run production function Isoquants; Least cost combination of inputs, Producer's equilibrium; Return to scale; Estimation of production function.

Theory of Cost: Cost Concepts and Determinants of cost, short run and long run cost theory, **Modern** Theory of Cost, Relationship between cost and production function

Unit-III

Revenue Curve: Concept of Revenue, Different Types of Revenues, concept and shapes of Total Revenue, Average revenue and marginal revenue, Relationship between Total Revenue, Average revenue and marginal revenue, Elasticity of Demand and Revenue relation

Market Structure: Market Structure: Meaning, Assumptions and Equilibrium of Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly: Price and output determination under collusive oligopoly, Price and output determination under non-collusive oligopoly, Price leadership model.

Unit-IV

Pricing: Pricing practices; Commodity Pricing: Economics of advertisement costs; Types of pricing practices

Factor Pricing: Demand and supply of factor of production; Collective bargaining, Concept of rent, profit, interest- Rate of return and interest rates; Real vs. Nominal interest rates. Basic capital theory–Interest rate and return on capital. Measurement of profit.

Note: Relevant Case Studies will be discussed in class.

Suggested Readings/ Books:

- K.K .Dewett, *Modern Economic Theory*, S. Chand Publication
- D.M.Mithani, *Managerial Economics Theory and Applications*, Himalaya Publication
- Peterson and Lewis, *Managerial Economic*, Prentice Hall of India
- Gupta, *Managerial Economics*, TataMcGraw Hills
- Geetika, *Managerial Economics*, Tata McGraw Hills
- D.N.Dwivedi, *Managerial Economic*, Vikas Publications
- Froeb, *Managerial Economics*, Cengage Learning

- Koutsoyiannis, A, Modern Micro Economics, Palgrave Macmillan Publishers, New Delhi.
- Thomas Christopher R., and Maurice S. Charles, Managerial Economics – Concepts and Applications, 8th Edition,
- Mehta, P. L, Managerial Economics – Analysis, Problems and Cases, Sultan Chand & Sons, Delhi.
- Peterson and Lewis, Managerial Economics, 4th Edition, Prentice Hall of India Pvt. Ltd., New Delhi.
- Shapiro, Macro Economics, Galgotia Publications.
- H. L Ahuja Advanced Economic Analysis, S. Chand & Co. Ltd, New Delhi. 7.
- G.S Gupta, Managerial Economics, Tata McGraw Hill.

AECC
BTHU103/18 English

Course Outcomes:

- The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
- To help the students become the independent users of English language.
- To develop in them vital communication skills which are integral to their personal, social and professional interactions.
- The syllabus shall address the issues relating to the Language of communication.
- Students will become proficient in professional communication such as interviews, group discussions, office environments, important reading skills as well as writing skills such as report writing, note taking etc.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Detailed Contents:

Unit1- 1 (Introduction)

- Theory of Communication
- Types and modes of Communication

Unit- 2 (Language of Communication)

- Verbal and Non-verbal
- (Spoken and Written)
- Personal, Social and Business
- Barriers and Strategies
- Intra-personal, Inter-personal and Group communication

Unit-3 (Reading and Understanding)

- Close Reading
- Comprehension
- Summary Paraphrasing
- Analysis and Interpretation
- Translation(from Hindi/Punjabi to English and vice-versa)

OR

- Precis writing /Paraphrasing **(for International Students)**
- Literary/Knowledge Texts

Unit-4 (Writing Skills)

- Documenting
- Report Writing
- Making notes
- Letter writing

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.

2. *Business English*, Pearson, 2008.
3. *Language, Literature and Creativity*, Orient Blackswan, 2013.
4. *Language through Literature* (forthcoming) ed. Dr. Gauri Mishra, DrRanjanaKaul,
DrBrati Biswas
5. *On Writing Well*. William Zinsser. Harper Resource Book. 2001
6. *Study Writing*. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press. 2006.

AECC
BTHU104/18 English Practical/Laboratory

Course Outcomes:

- The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
- To help the students become the independent users of English language.
- To develop in them vital communication skills which are integral to personal, social and professional interactions.
- The syllabus shall address the issues relating to the Language of communication.
- Students will become proficient in professional communication such as interviews, group discussions and business office environments, important reading skills as well as writing skills such as report writing, note taking etc.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Interactive practice sessions in Language Lab on Oral Communication

- Listening Comprehension
- Self Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations
- Monologue
- Effective Communication/ Mis- Communication
- Public Speaking

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.
2. *Business English*, Pearson, 2008.
3. *Practical English Usage*. Michael Swan. OUP. 1995.
4. *Communication Skills*. Sanjay Kumar and PushpLata. Oxford University Press. 2011.
5. *Exercises in Spoken English*. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

AECC
HVPE 101-18 Human Values, De-addiction and Traffic Rules

Course Objective

This introductory course input is intended

- a. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- b. To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Value based living in a natural way.
- c. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

Thus, this course is intended to provide a much needed orientational input in Value Education to the young enquiring minds.

Course Methodology

- The methodology of this course is universally adaptable, involving a systematic and rational study of the human being vis-à-vis the rest of existence.
- It is free from any dogma or value prescriptions.
- It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as proposal and the students are facilitated to verify it in their own right based on their Natural Acceptance and Experiential Validation.
- This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and within the student himself/herself finally.
- This self-exploration also enables them to evaluate their pre-conditionings and present beliefs.

Content for Lectures:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education [6]

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration-what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!

[6]

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - *Sukh* and *Suvidha*
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure *Sanyam* and *Swasthya*
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

[6]

13. Understanding harmony in the Family- the basic unit of human interaction
14. Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*;
Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
15. Understanding the meaning of *Vishwas*; Difference between intention and competence
16. Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
17. Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
18. Visualizing a universal harmonious order in society- Undivided Society (*Akhand Samaj*), Universal Order (*Sarvabhaum Vyawastha*)- from family to world family!
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

[4]

19. Understanding the harmony in the Nature
20. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
21. Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
22. Holistic perception of harmony at all levels of existence
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

[6]

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct
25. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

26. Competence in professional ethics:
 - a) Ability to utilize the professional competence for augmenting universal human order,
 - b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,
 - c) Ability to identify and develop appropriate technologies and management patterns for above production systems.
27. Case studies of typical holistic technologies, management models and production systems
28. Strategy for transition from the present state to Universal Human Order:
 - a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers
 - b) At the level of society: as mutually enriching institutions and organizations

Text Book

R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

Reference Books

1. Ivan Illich, 1974, *Energy & Equity*, The Trinity Press, Worcester, and HarperCollins, USA
2. E.F. Schumacher, 1973, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
3. A Nagraj, 1998, *Jeevan Vidya ek Parichay*, Divya Path Sansthan, Amarkantak.
4. Susan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991
5. PL Dhar, RR Gaur, 1990, *Science and Humanism*, Commonwealth Publishers.
6. A.N. Tripathy, 2003, *Human Values*, New Age International Publishers.
7. Subhas Palekar, 2000, *How to practice Natural Farming*, Pracheen(Vaidik) Krishi Tantra Shodh, Amravati.
8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth – Club of Rome's report*, Universe Books.
9. E G Seebauer & Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists & Engineers*, Oxford University Press
10. M Govindrajran, S Natrajan & V.S. Senthil Kumar, *Engineering Ethics (including Human Values)*, Eastern Economy Edition, Prentice Hall of India Ltd.
11. B P Banerjee, 2005, *Foundations of Ethics and Management*, Excel Books.
12. B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow. Reprinted 2008.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, <http://uhv.ac.in>

2. Story of Stuff, *<http://www.storyofstuff.com>*
3. Al Gore, *An Inconvenient Truth*, Paramount Classics, USA
4. Charlie Chaplin, *Modern Times*, United Artists, USA
5. IIT Delhi, *Modern Technology – the Untold Story*

AECC

HVPE 102-18 Human Values, De-addiction and Traffic Rules (Lab/Seminar)

One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholars and experts of the subject will be called for the Seminar at least once during the semester. It will be binding for all the students to attend the seminar.

BMPD102-18 Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Field project.
3. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

BBA 201-18 Business Statistics

Course Objective: Course Objective: The objective of the course on Business Statistics is to familiarize students with the basic statistical tools used to summarize and analyze quantitative information for decision making. Analysis of numbers is required for taking decisions related to every aspect of business.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: To learn the basic concepts like statistics and calculation of arithmetic mean, median and mode and partition values.

CO2: To understand the calculation of moments, skewness and kurtosis and determining whether the given distribution is normal or not.

CO3: To be acquainted with prerequisite knowledge required to understand the Probability and applications of probability theory.

CO4: To understand the concept of correlation regression analysis and their applications.

CO5: To apply the learnt techniques in statistical testing and their applications.

Unit I

Introduction to Statistics: Meaning, Definitions, Features of statistics, Importance, Functions, Scope and Limitations of Statistics.

Data Collection: Sources of Primary and Secondary data. Presentation of Data. Frequency distribution.

Sampling Concepts: Meaning of Population and Sample, Parameters and Statistics, Descriptive and Inferential Statistics, Probability and Non Probability Sampling Methods including Simple Random Sample, Stratified Sampling, Systemetic Sampling, Judgement Sampling and Convenience Sampling.

Unit II

Measures of Central Tendency: Mathematical averages including arithmetic mean, geometric mean and harmonic mean, properties and applications. Positional Averages: Mode and median (and other partition values including quartiles, deciles and percentile. Graphic presentation of measures of central tendency.

Measures of Variation: Absolute and relative measures. Range, quartile deviation, mean deviation, standard deviation and their coefficients. Properties of Standard Deviation and Variance.

Sampling Distribution: Concept of Sampling Distribution, Formulation of Sampling Distribution of Mean and Sampling distribution of standard deviation/Variance.

Unit III

Simple Correlation Analysis: Meaning of Correlation, Simple, multiple and partial, linear and non linear correlation, correlation and causation, scatter diagram, pearson's correlation coefficient and Rank Correlation.

Simple Regression Analysis: Meaning of Regression, Principle of least square and regression analysis, Calculation of regression coefficient, properties of regression coefficient, Relationship between correlation and regression coefficient.

Unit IV

Theory of Probability: Meaning of Probability, Approaches to the calculation of probability, calculation of event probabilities, Addition and Multiplication, Laws of Probability (Proof not required), Conditional Probability and Bayes' Theorem (Proof not required).

Probability Distribution: Binomial Distribution: Probability Distribution function, Constants, Shape, Fitting of Binomial Distribution, Poisson Distribution: Probability Function (including Poisson approximation to binomial distribution) Constants, Fitting of Poisson Distribution, Normal Distribution: Probability Distribution Function, Properties of Normal Curve, Calculation of Probabilities.

Suggested Readings:

1. Levin, Richard and David S. Rubin. "*Statistics for Management*". Prentice Hall of India, New Delhi.
2. Chandan, J.S., "*Statistics for Business and Economics*", Vikas Publishing House Pvt. Ltd.
3. Render, B. and Stair, R. M. Jr., "*Quantitative Analysis for Management*", Prentice-Hall of India, New Delhi.
4. Gupta C B, Gupta V, "*An Introduction to Statistical Methods*", Vikas Publications.
5. Siegel, Andrew F, *Practical Business Statistics*. International Edition, McGraw Hill
6. Berenson, L.M., Krehbiel, T.C., Vishwanathan, P.K. and Levine, D.M., *Business Statistics: A First Course*, Pearson Education.

BBA202-18 Business Environment

Course Objective: The objective of this paper is to acquaint students with the issues of business environment in which corporate sector has to operate. It will also familiarize them with the techniques available for scanning and monitoring the environment. It also aims at providing some basic knowledge about international environment pertaining to business.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: To Identify and evaluate the complexities of business environment and their impact on the business.

CO2: To analyze about the relationships between Government and business and understand the political, economic, legal and social policies of the country .

CO3: To understand the current economic conditions in developing emerging markets, and evaluate present and future opportunities.

CO4: To be acquainted with prerequisite knowledge required to understand the Probability and applications of probability theory.

CO5: To understand the concept of the Industrial functioning and strategies to overcome challenges in competitive markets.

Unit I

Introduction to Business Environment: Nature and Significance Business Environment. Components of Business Environment, Techniques of Environment Scanning. **Economic Environment of Business:** Economic Systems. Economic Planning in India, Brief idea of Industrial Policy, Fiscal policy, Monetary policy and EXIM policy.

Unit II

Political and Legal Environment of Business: Three political institutions: Legislature, Executive and Judiciary. Foreign Exchange Management Act (FEMA), Consumer Protection Act. Introduction to Liberalization, Privatization and Globalization: Factors facilitating and impeding globalization in India.

Unit III

Socio- Cultural Environment: Critical elements of socio-cultural Environment. Social responsibility of business. Business Ethics and Corporate Social Responsibility. **Public Sector**-Changing Role of Public Sector - Relevance of public sector – Public Sector reforms. Regulatory framework with reference to Banking and Security Market. Technological Environment.

Unit IV

International Business Environment: Multinational Corporations-Benefits and Problems. Mergers and acquisitions - reasons - trends - Advantages and Disadvantages.WTO ,Consequences of WTO for India. IMF. Regional Groupings.

SUGGESTED READINGS:

- Aswathappa, K : Essentials of Business Environment-Text, Cases and Exercises - Himalya Publishing House(13th Revised Edition-2016)
- Cherunilam, Fransis– Business Environment- Text and Cases ,Himalya Publishing House Pvt. Ltd.(20th Edition-2011)
- Paul, Justin-Business Environment- Text and Cases-McGraw Hill Education (India) Private Limited.(4th Revised Edition-2018)
- Ramachandara, Archana and Ravi-Business Environment. Himalya Publishing House Pvt. Ltd.(New Edition-2017)
- Sheikh, Saleem and Sahu Jayadev, Business Environment, Pearson.

BBAGE 201-18 Managerial Economics-II

Course Objective: This course aims to acquaint students with economy as a whole including measurement of national income, inflation and unemployment, which an objective to inculcate understanding of macroeconomic environment of an economy for better decision making.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Explain the concept of national income and its measurement using different approaches.

CO2: Describe the underlying theories of demand and supply of money in an economy.

CO3: Make use of employment and national income statistics students will be able to describe and analyze the economy in quantitative terms.

CO4: Interpret macroeconomic issues like money, inflation and unemployment.

CO5: Identify the phases of the business cycle and the problems caused by cyclical fluctuations in the market economy.

Unit I

National Income: Measuring National Income. Problems in the measurement of National Income. **Theories of Money:** Nature and functions of money – Types of money: Near money, inside money and outside money. Theories of demand for money – defining demand for money – Classical theories of demand for money – Friedman's re-statement of Quantity Theory of Money; Liquidity preference theory and Keynesian Liquidity Trap. Theories of Supply of money; Defining supply of money; Measuring supply of money.

Unit II

Theories of Inflation and Unemployment: Meaning, Types and Theories of Inflation. - Cost of inflation and sacrifice ratio. - Measurement of Inflation in India - Policies to control inflation Meaning and types of unemployment. - Cost of unemployment and Oakun's Law Measurement of unemployment in India. - Concept of Stagflation - Concept of Philips Curve.

Unit III

Business cycle: Meaning, types and phases. **Monetary, Fiscal and Income policy** – Meaning and instruments. **Multiplier:** Concept, Features and Leakages. Foreign trade multiplier.

Unit IV

Macro-economic Framework in Indian Economy–Public Finance–Tax system in India–Financial Administration: Finance Commission.

SUGGESTED READINGS:

1. Ahuja, H.L. (2015) *Macroeconomics-Theory and Policy*. New Delhi: Sultan Chand.
2. Jhingan, M.L. (2016) *Macro Economic Theory*. Delhi: Vrinda Publications Pvt. Ltd
3. Dwivedi, D.N. (2017) *Macroeconomics: Theory and Practice: Theory & Practice*. New Delhi: McGraw Hill.
4. Jain, T.R., Khanna, O.P. (2014) *Managerial Economics*: V.K. Publications
5. Dewett, K.K., Navalur, M.H., (2006) *Modern Economic Theory*: New Delhi: Sultan Chand.

AECC
EVS102-18 Environment Studies

Course Outcomes:

1. Students will enable to understand environmental problems at local and national level through literature and general awareness.
2. The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
3. The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world

UNIT-1: Introduction to Environmental Studies

Multidisciplinary nature of Environmental Studies: Scope & Importance
Need for Public Awareness

UNIT-2: Ecosystems

Concept of an Ecosystem: Structure & functions of an ecosystem (Producers, Consumers & Decomposers)

Energy Flow in an ecosystem: Food Chain, Food web and Ecological Pyramids

Characteristic features, structure & functions of following Ecosystems:

- Forest Ecosystem
- Aquatic Ecosystem (Ponds, Lakes, River & Ocean)

UNIT-3: Natural Resources

Renewable & Non-renewable resources

Forest Resources: Their uses, functions & values (Biodiversity conservation, role in climate change, medicines) & threats (Overexploitation, Deforestation, Timber extraction, Agriculture Pressure), Forest Conservation Act

Water Resources: Their uses (Agriculture, Domestic & Industrial), functions & values, Overexploitation and Pollution of Ground & Surface water resources (Case study of Punjab), Water Conservation, Rainwater Harvesting,

Land Resources: Land as a resource; Land degradation, soil erosion and desertification

Energy Resources: Renewable & non-renewable energy resources, use of alternate energy resources (Solar, Wind, Biomass, Thermal), Urban problems related to Energy

UNIT-4: Biodiversity & its conservation

Types of Biodiversity: Species, Genetic & Ecosystem

India as a mega biodiversity nation, Biodiversity hot spots and biogeographic regions of India

Examples of Endangered & Endemic species of India, Red data book

UNIT-5: Environmental Pollution & Social Issues

Types, Causes, Effects & Control of Air, Water, Soil & Noise Pollution

Nuclear hazards and accidents & Health risks

Global Climate Change: Global warming, Ozone depletion, Acid rain, Melting of Glaciers & Ice caps, Rising sea levels

Environmental disasters: Earthquakes, Floods, Cyclones, Landslides

UNIT-6: Field Work

Visit to a National Park, Biosphere Reserve, Wildlife Sanctuary

Documentation & preparation of a Biodiversity (flora & fauna) register of campus/river/forest

Visit to a local polluted site : Urban/Rural/Industrial/Agricultural

Identification & Photography of resident or migratory birds, insects (butterflies)

Public hearing on environmental issues in a village

Suggested Readings:

1. Bharucha, E. Text Book for Environmental Studies. University Grants Commission, New Delhi.
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down to Earth, Centre for Science and Environment (R)
9. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
10. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
11. Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
12. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
13. Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
14. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
15. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
16. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
17. Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.

18. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
19. Survey of the Environment, The Hindu (M)
20. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
21. Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
22. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

BMPD202-18 Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

4. Sports/NSS/NCC
5. Field Project
6. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

BBA 301- Organizational Behaviour

Course Objective: This course emphasizes the importance of human capital in the organizations of today. It gives an insight to the students regarding individual and group behaviour in any organization.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1- To explain the basics of Organizational behaviour and various challenges for OB.

CO2- To illustrate the foundations of Individual Behaviour and various factors influencing individual behaviour viz. learning, personality, perception, attitude and motivation.

CO3: To examine the dynamics of group development and group properties.

CO4: To understand various dimensions of organisational culture.

CO5: To analyse the process of conflict management and approaches to stress management.

Unit I

Introduction: Meaning of organizational behaviour and its relevance in today's business environment, contributing disciplines to Organization Behaviour, challenges and opportunities for OB.

Individual behaviour in organization: Foundations of individual behaviour, Factors influencing Individual Behaviour.

Learning: Meaning, characteristics and theories: Classical conditioning theory, operant conditioning theory, social learning theory, behaviour modification.

Unit II

Perception: Nature, importance, perceptual process, factors influencing perception, perceptual errors.

Attitude: Meaning, importance, components and types of work related attitude.

Personality: Meaning, determinants of personality, personality traits.

Motivation: Meaning, types of motivation, theories of work motivation given by Maslow, Herzberg, McGregor, Vroom and Porter – Lawler.

Unit III

Group behaviour in organization: Group dynamics, Types of groups, Group development, theories of group development, Group norms and roles, Group cohesiveness,

Work Teams: Meaning, characteristics, types of team, Creating effective team.

Leadership: nature, leadership styles, Leadership theories: trait theory and behavioural theories.

Unit IV

Conflict Management: Meaning, types and sources of conflict, Process of conflict management, approaches to conflict management.

Stress management: sources of stress, approaches for stress management.

Organizational culture: meaning, concept, types of culture, dimensions of organizational culture.

Suggested Readings/ Books:

- Robbins, *Organization Behaviour*, Pearson Education Asia
- Luthans, *Organization Behaviour*, Tata McGraw Hill
- Newstrom, *Organizational Behaviour: Human Behaviour at Work*, Tata McGraw Hill
- L.M. Prasad, *Organisation Behaviour*, Sultan Chand
- Parikh, Gupta, *Organisational Behaviour*, Tata McGraw Hill
- Aswathappa, *Organization Behaviour*, Himalaya

BBA 302- Marketing Management

Course Objective: Marketing is one of the foremost functions of Management in present day corporate world, its understanding results in developing best products in terms of goods and services that brings consumer satisfaction. This course will imbibe the basic understanding among the students to become successful marketers.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Explain the basics of marketing, selling, marketing mix and its core concepts.

CO2: Describe the intricacies of the marketing environment and marketing information systems for effective marketing planning and strategies.

CO3: Develop necessary skills for effective market segmentation, targeting and positioning.

CO4 – Illustrate various components of product mix, product life cycle and comprehend the new product development process.

CO5– Develop an understanding of promotion mix and strategies for successful promotion

Unit I

Marketing: Nature and Scope of Marketing, customer needs, wants and demand. Various Marketing Concepts: production, product, selling, marketing and societal marketing, Analyzing marketing environment: micro, macro environment

Unit II

Market segmentation: Need, concept, nature, basis and strategies, mass marketing vs. Segmentation.

Marketing mix: 4Ps of products and 7Ps of services, components and factors affecting mix.

Unit III

Product decisions: Product definition, new product development process, and product life cycle, positioning, branding, packaging and labeling decisions.

Pricing decisions: importance, objectives, designing strategies, Pricing Techniques

Unit IV

Distribution: Types of channel, factors affecting decision, Designing and Managing Marketing Channel, Managing Retailing, physical distribution system and its components.

Product Promotion: promotion mix-introduction, importance, advantages and disadvantages of various components and factors affecting. Designing and managing Integrated Marketing Communications.

Suggested Readings:

1. Kotler, P., Keller, K.L. Koshy, A. and Jha, M., Marketing Management: A South Asian Perspective, Pearson Education.
2. Etzel, M., Walker, B., Stanton, W. and Pandit, A Marketing Management, Tata McGraw Hill.
3. Ramaswamy, V.S and Namakumari, S. Marketing Management: Global Perspective Indian Context, Macmillan Publishers India Ltd.
4. Saxena, Rajan, Marketing Management, Fourth Edition, Tata McGraw Hill Education Pvt. Ltd.

BBA 303-18 COST AND MANAGEMENT ACCOUNTING

Course Objective: To impart the students, knowledge about the use of financial, cost and other data for the purpose of managerial planning, control and decision making.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand and differentiate between Cost accounting and management accounting.

CO2: Make managerial decisions regarding make or buy, acceptance or rejection of export offers and continuation or shut down of plant.

CO3: Estimate the breakeven point of the firm.

CO4: Understand and apply the concepts of budgetary control for better decision-making.

CO5: Understand and estimate material, labour, overheads and sales variances for comparing planned with actual results.

Unit – I

Introduction: Meaning, Objectives, Nature and Scope of management accounting, Difference between cost accounting and management accounting, Cost control and Cost reduction, Cost management.

Ratio Analysis: Meaning–Nature, different types of ratios, their uses and limitations, computation of various types of ratios – liquidity ratios, solvency ratios, profitability ratios, turnover ratios

Unit – II

Analysis and Interpretation of financial Statements: Meaning- Types and Methods of Financial Analysis – Comparative statements – Trend Analysis – Common size statements.

Standard Costing: Standard Costing and Variance Analysis: Meaning of standard cost and standard costing, advantages, limitations and applications. Variance Analysis – material, labour, overheads and sales variances.

Unit – III

Budgetary Control: Budgeting and Budgetary Control: Concept of budget, budgeting and budgetary control, objectives, merits, and limitations. Budget administration. Functional budgets. Fixed and flexible budgets. Zero base budgeting.

Unit – IV

Marginal Costing: Absorption versus Variable Costing: Distinctive features and income determination. Cost-Volume-Profit Analysis, Profit / Volume ratio. Break-even analysis- algebraic and graphic methods, Margin of safety, Key factor, determination of cost indifference point.

Suggested Readings:

- Horngren, C. T., Sundem, G. L., Stratton, W. O., Burgstahler, D., & Schatzberg, J. (2011). *Introduction to management accounting*. Pearson Education International.
- Anthony A. Atkinson, Robert S. Kaplan, Ella Mae Matsumura, S. Mark Young. (2006). *Management Accounting*. Dorling Kindersley(India) Pvt. Ltd.
- Singh, Surender. (2016). *Management Accounting*. Scholar Tech Press, New Delhi.
- Garrison H., Ray and Eric W. Noreen. (2016). *Managerial Accounting*. McGraw Hill.
- Goel, Rajiv. (2013). *Management Accounting*. International Book House,
- Arora, M.N. (2012). *A Textbook of Cost and Management Accounting*. Vikas Publishing House, New Delhi.
- Maheshwari, S.N. and S.N. Mittal. (2017). *Management Accounting*. Shree Mahavir Book Depot, New Delhi.

BBA- 304 Production and Operations Management

Course objective: The course aims at developing knowledge about various steps of product, design, development, plant location, storage, production planning and control.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand ever growing importance of Production and Operations management in uncertain business environment.

CO2: Gain an in-depth understanding of resource utilization of an organization.

CO3: Appreciate the unique challenges faced by firms in services and manufacturing.

CO4: Understand the subject as a crucial part of functional management.

CO5: Develop skills to operate competitively in the current business scenario.

UNIT I

Operations management: Concept, Functions. Product Design and development – Product design and its characteristics: Product development process (Technical): Product development techniques .Process selection- Project, job, Batch, Mass and Process types of Production Systems.

UNIT - II

Facility Location – importance, Factors in Location Analysis: Location Analysis Techniques.

Facility Layout – Objectives: Advantages: Basic types of layouts. Capacity Planning – Concepts: Factors Affecting Capacity Planning, Capacity Planning Decisions. Production Planning & Control (PPC) –Concepts, Objectives, Functions.

UNIT – III

Introduction to modern productivity techniques – just in time, Kanban system. Total Quality Management & six sigma.

Functions of Purchasing Management – Objectives, Functions: Methods: Procedure. Value analysis – Concepts. Stock control systems. Virtual factory concept.

UNIT – IV

Inventory Management – Concepts, Classification: Objectives: Factors Affecting Inventory Control Policy: Inventory costs: Basic EOQ Model: Re-order Level: ABC Analysis. Quality Management - Quality Concepts, Difference between Inspections, Quality Control, Quality Assurances, Total Quality Management: Control Charts: acceptance sampling.

Suggested Readings:

1. Nair, Production & Operations management, 1st Edition, Tata McGraw Hill
2. Adam and Eben, Production & Operations management, 5th Edition, Prentice Hall, India.
3. Krajewski &Ritzman, Operations Management, 5th Edition, Pearson Education.
4. Buffa & Sarin, Modern Production/Operations Management, 8th Edition, John Wiley
5. Chary, Production & Operations Management, 2nd Edition, Tata McGraw

BBA- SEC 301 IT Tools for Business

Course Objective: The purpose of this course is to provide a through exposure to the operating and office management tools available in different packages. A student can be exposed to the working knowledge of Windows based operating systems and software packages such as Windows-95, 98, 2000-Professional, windows -XP and MS -Office.

Course Outcomes (COs): After completion of the course, the students shall be able to:

- CO1:** Develop understanding of computer fundamentals, functions and their classifications
- CO2:** Develop a clear understanding and knowledge about the functioning of a Computer software and window operating system
- CO3:** Demonstrate proficiency in Microsoft word & Excel.
- CO4:** Apply formatting and editing features to enhance worksheets.
- CO5:** Use styles, themes, and conditional formats to customize worksheets.

Unit –I

Computer Fundamentals: Data, Instruction and Information, Characteristics of Computers, Various fields of application of Computers, Input-output Devices (Hardware, Software, Human ware and Firmware) Advantages and Limitations of Computer, Block Diagram of Computer, Function of Different Units of Computer, Classification of Computers. Data Representation: Different Number System (Decimal, Binary, Octal and hexadecimal) and their Inter Conversion.

Unit –II

Computer Software: Types of Software, Application software and system software, Compiler and Interpreter, Generations of languages, Low- and High-Level Languages. Computer Memory: Primary Memory & Secondary memory. Storage Media. **Introduction to Windows Operating System:** All Directory Manipulation: Creating Directory, Sub Directory, Renaming, Coping and Deleting the Directory File Manipulation: Creating a File, Deleting, Coping, renaming a File Using accessories such as calculator, paint brush, CD player, etc

Unit –III

MS-Word: History, Creating, Saving, Opening, Importing, Exporting and Inserting document, Formatting pages, Alignment, Paragraphs and Sections. Indents and Outdents, creating lists and numberings Formatting Commands: Headings, Styles, Fonts and Size editing, Viewing Text, Finding and Replacing text, Headers and Footers, Inserting page

breaks, Page numbers, Special Symbols and Dates Mail merge, Preview and Printings command.

MS-PowerPoint: History, Creating, Saving, Opening, existing presentation, Creating and Saving a Presentation using Auto Content Wizard, Design Template, Blank Presentation the Slide Sorter View, Slide Show, Inserting pictures and graphics and Printing Slides.

Unit –IV

MS-Excel: Introduction, Components of Excel History, Creating, Saving, Opening, Spreadsheet, Formatting numbers and Text, Graph and Chart Formatting Commands, Menu Bar, Toolbars, Producing Charges, Protecting Cell Macro and Printing Operation, Spell Checking, Cell Editing, Calculation of various Financial and Statistical Functions using Formulas.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- Ram, B.(2018).*Computer Fundamentals Architecture and Organization*. New Delhi: Age Publications
- Sinha, P.K. and Sinha, P. (2017).*Foundation of computing*. New Delhi: BPB Publications.
- Arora, A.(2015) *Computer fundamentals and applications*. Vikas Publishing.
- Rajaraman, V.(2014).*Fundamentals of Computers*. Delhi: Prentice-Hall.
- Roger,J. (2010).*MicrosoftAccess2010*.Delhi:PearsonEducation.
- Forouzan,(2009).*Basics of Computer Science*. India: Cengage Learning
- Levi, D.S., Kaminsky, P. (2007) *Designing and Managing the Supply Chain*. McGraw Hill
- Turban, E., Aronson JE., Liang, TP. (2005). *Decision Support Systems and Intelligent Systems* (7th Edition). Pearson Publishers.

BMPD302-18 Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

7. Sports/NSS/NCC
8. Field project.
9. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

BBA 401 Business Research Methods

Course Objective: The course aims at equipping students with an understanding of the research process, tools and techniques in order to facilitate managerial decision making.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Explain the objectives and process of conducting research and its application in business.

CO2: Analyse the different types of research design and experimental errors.

CO3: Understand various techniques of sampling and methods of data collection.

CO4: Examine different types of scales and appraise about data preparation and analysis.

CO5: Identify and prepare various types of reports.

UNIT I

Research Methodology: definition, objectives, scope in management research, process of Research and limitations.

Research Design: Formulating the Research Problem, Choice of Research Design, Types of Research Design, Sources of Experimental Errors

UNIT II

Sampling: Advantages and Limitation of Sampling, Sampling process, Types of Sampling: Non-

probability sampling techniques, Probability sampling techniques, Sampling and non sampling

errors. **Data collection:** primary, secondary data collection, observation methods and survey method:

UNIT III

Measurement Concept, Levels of measurement—Nominal, Ordinal, Interval and Ratio

Attitude Measurement: Comparative scaling techniques, Non-comparative scaling techniques,

Questionnaire Designing: Types, Guidelines for developing a good questionnaire

UNIT IV

Data Preparation And Analysis: Editing, Coding, Cross Tabulation and Practices through Excel (Basic Concepts)

Report Writing: Types of Research Reports, Guidelines for Writing a Report, Report Format,

Guidelines for evaluating a report.

Suggested Readings:

1. K.V. Rao : Research Methodology, Sterling Publishers,
2. Srivastava and Rego : Business Research Methodology Tata McGraw Hill
3. Rajinder Nargundhkar : Marketing Research, Tata McGraw Hill
4. Cooper and Schindler, Business Research Methods, Tata McGraw Hill
5. C.R. Kothari : Research Methodology, New Age International Publishers

BBA 402 Human Resource Management

Course Objective: To provide an in-depth overview of the field of HRM, what are the roles and responsibilities of HR professionals how the primary functions affect the broader business strategy.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1- To explain the basics of Human Resource Management and analyse the evolution of HRM.

CO2: To appraise various functions of HRM that facilitate employee hiring viz. human resource planning, job analysis recruitment and selection.

CO3: To understand the role of training, development, career planning and performance appraisal functions in human resource development.

CO4: To analyse the functions of compensation management namely, wages and salary administration, incentives and fringe benefits.

CO5: To comprehend the meaning and concept of Industrial relations.

Unit I

Nature, scope, role and importance of HRM. New trends in HRM due to globalization deregulation and technological advancements, HRM practices in India, issues and challenges. Human Resource Planning: Meaning, factors affecting HRP, Human Resource Planning process.

Unit II

Job analysis: steps in analysing job and introduction to methods of collecting job analysis information, Job description, job specification. Job design: job simplification, job rotation, job enrichment and job enlargement.

Recruitment: sources of recruitment, policies and procedure of recruitment. Selection process, testing and interviews, Placement and induction.

Unit III

Training and Development: Identification of training needs, process of training and methods of training and development.

Career planning and development: career life cycle, process of career planning and development.

Unit IV

Performance appraisal: Meaning, process of performance appraisal, methods and problems of performance appraisal.

Compensation Management- Wage & Salary Administration: Meaning & Concept of Wage & Salary Administration, Elements & Methods of Wage & Salary, Incentive Plans & Fringe Benefits.

Industrial Relations: Meaning & Concept of Industrial Relations.

Suggested Readings:

1. Monnappa and Saiyadan, *Personnel Management*, Tata Mcgraw Hill.
2. Dessler, Garg, *Human Resource Management*, Pearson education.
3. C.B. Memoria *Personal Management* Himalaya
4. K. Aswathappa *Human Resource Management* Tata McGrawHill
5. Rao V.S.P. *Human Resource Management*, Excel books

BBA 403 Financial Management

Course Objective: To develop a conceptual clarity and basic understanding of the fundamentals of corporate finance among the students. Further help them comprehend its practical applicability in the corporate world.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Apply financial data for use in decision making by applying financial theory to problems faced by business enterprises.

CO2: Apply foundational finance theories and to analyse a forecast using relevant data and to conduct preliminary measurement of leverage analysis.

CO3: Apply time value of money techniques to various pricing and budgeting problems.

CO4: Apply modern techniques in capital budgeting analysis.

CO5: Assess dividend policy's impacts on share prices and to understand the implications of Dividend decisions in financial decision making.

Unit I

Financial management -Introduction: Meaning, nature and Scope, Goals of Financial Management-Profit Maximization vs. Wealth Maximization; Finance functions-investment, Financing, Liquidity and dividend decisions. **Sources of finance**-Long term and short term. **Concept of Time Value of Money**-present value, future value, annuity, Present Value of a series of payments.

Unit II

Cost of Capital: Meaning and significance of cost of capital; cost of equity shares; cost of preference shares; cost of debt, weighted average cost of capital. **Form of Capital:** Introduction to Capital Structure; theories- NI approach; NOI approach; MM approach; Traditional approach, determinants of capital structure. **Operating and Financial Leverage:** Measurement of leverages; Financial and operating leverage, combined leverage

Unit II

Investment Decision Making: Meaning, importance, nature of investment decisions. Investment evaluation criteria, **Capital budgeting Techniques-Non-discounted cash flow-** Pay back methods; Post Payback period; Accounting rate of return method, **Discounted cash flow techniques-**Net Present value method; Internal rate of return method; Profitability index method.

Unit IV

Working Capital: Meaning, significance, types, approaches, Factors affecting working capital management capital. **Dividend Policies:** Issues in dividend decisions. Forms of dividend- Theories of relevance and irrelevance of dividends.

Suggested Readings:

- I. Khan, M. Y. and Jain P. K.(2011),”Financial Management, Text, Problems & Cases”, Tata McGraw Hill Company, New Delhi.
- II. Pandey, I.M.(2015), “Essentials of Financial Management”, 4th Edition, Vikas Publishing House Pvt. Ltd., New Delhi.
- III. Maheshwari, S.N.(2019), “Financial Management – Principles & Practice”, 15th Edition, Sultan Chand & Sons, New Delhi.
- IV. Rustagi,Dr.R.P.(2017), “Basic Financial Management”, 8th Edition, Sultan Chand & Sons, New Delhi.
- V. Patel, Bhavesh(2014),” Fundamentals of Financial Management”, Vikas Publishing House Pvt. Ltd., New Delhi.

BBA GE- 401 Entrepreneurship Development

Course Objective: The objective of the course is to make the student understand the concept and importance of entrepreneurship and facilitate generation of young entrepreneurs.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Describe the concept and theories of entrepreneurship and its role in economic development of nation.

CO2: Develop business plan and identify the reasons of failure of business plans.

CO3: Illustrate the steps in starting MSME.

CO4: Comprehend government policies and regulatory framework available in India to facilitate the process of entrepreneurial development.

CO5: Identify different sources of finance for new enterprises and assess the role of financial institutions and various government schemes in entrepreneurial development.

Unit I

Definition and Concept of Entrepreneurship, Theories of Entrepreneurship, Myths about Entrepreneurship, Entrepreneurial Traits and Motivation, Role of Entrepreneurship in economic development. Types of Entrepreneurs. Barriers in the way of Entrepreneurship. Entrepreneurship Development (ED) Cycle.

Unit II

Creativity and Business Ideas, Blocks to creativity. Business Plans and reasons of failure of business plans. Micro-Small-Medium (MSME) Enterprise – Definition – Characteristics- Objectives- Advantages- Disadvantages-Role in developing countries-Problems- steps for starting- – Government Policies.

Unit III

EDP in India – Phases of Entrepreneurial programs – Government Policies- Administrative Frame work – Policy instruments – Statutory Boards – Industrial Estates –Industrial clusters – Incentives and subsidies – Advantages - Needs & Problems – Promotional agencies. Business Incubators& Start-ups.

Unit IV

Financing Options - Bridge capital, Seed capital assistance, Margin money scheme, Industrial Sickness, Causes-Remedies- An overview on the roles of institutions/schemes in entrepreneurial development- SIDBI, Commercial Banks. Other financing options- venture capital, lease funding, Angel Investors. Revival, Exit and End to a venture.

Suggested Readings:

- Kumar,Arya(2018), “Entrepreneurship”, Pearson, New Delhi.
- Gopal,V.P.Nanda (2015), “Entrepreneurial Development”, Vikas Publishing, New Delhi.
- Desai, Vasant, “Dynamics of Entrepreneurial Development & Management”, Himalaya Publishing House.
- Khanka,S S, Entrepreneurial Development, S.Chand & Co.,New Delhi.

BBA SEC- 401 Business Ethics & Corporate Social Responsibility

Course Objective: This paper aims at providing the students the understanding of ethical issues related to business and good governance necessary for long term survival of business.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Explore the relationship between ethics and business across different cultural traditions

CO2: Understand the relationship between ethics, morals and values in the workplace

CO3: Discuss the moral and social responsibility dimensions of corporate governance.

CO4: Describe models of CSR in India.

CO5: Assess international framework for CSR.

Unit I

Business Ethics: Nature, scope and purpose of ethics, Importance of Ethics & Moral standards; Ethics & Moral Decision Making, Ethical Principles in Business, Markets, Environment, Trade, Consumer Production and Marketing, Finance, HR, Personal Growth and Lessons from Ancient Indian Educational System; Science and Human Values.

Unit-II

Indian Ethos: Need, purpose & relevance of Indian Ethos; Salient feature (Brain Stilling, Total Quality Mind, Intuition, Intellectual rational brain V/s Holistic-Spiritual Brain. Holistic Approach for Managers in Decision Making, Professional ethos and code of professional ethics Human Values, Different meaning of human values: foundational human values – freedom, creativity, love and wisdom, Nature of Human freedom.

UNIT III

Meaning & Definition of CSR, History & evolution of CSR. Concept of Charity, Corporate philanthropy, Corporate Citizenship, CSR-an overlapping concept. Concept of sustainability & Stakeholder Management. CSR through triple bottom line and Sustainable Business; relation between CSR and Corporate governance; environmental aspect of CSR; Chronological evolution of CSR in India; models of CSR in India, Carroll's model; drivers of CSR; major codes on CSR; Initiatives in India.

UNIT IV

International framework for corporate social Responsibility, Millennium Development goals, Sustainable development goals, Relationship between CSR and MDGs. United Nations (UN) Global Compact 2011. UN guiding principles on business and human rights. OECD CSR policy tool, ILO tri-partite declaration of principles on multinational enterprises and social policy.

Suggested Readings:

1. S.S. Iyer - Managing for Value (New Age International Publishers, 2002)
2. S.K. Bhatia - Business Ethics and Managerial Values (Deep & Deep Publications Pvt.Ltd, 2000).
3. Velasquez – Business Ethics – Concepts and Cases (Prentice Hall, 6th Ed.)
4. Reed Darryl – Corporate Governance, Economic Reforms & Development (Oxford).
5. Mathur UC – Corporate Governance & Business Ethics (Mc Millan).
6. Human Values By : Prof. A.N. Tripathi New Age International
7. Corporate Social Responsibility in India - Sanjay K Agarwal
8. Handbook on Corporate Social Responsibility in India, CII.

BMPD402-18 Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

10. Sports/NSS/NCC
11. Field project.
12. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

BBA 501-18
Operation Research

Course Objective: The objective of the course is to acquaint the students with the applications of the operations research to business and industry and help them to grasp the significance of analytical approach to decision making.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand the concept, approaches and applications of operations research.

CO2: Apply the methods of linear programming for decision making.

CO3: Analyse transportation and assignment problems of business.

CO4: Apply the methods of game theory to solve business problems

CO5: Apply the techniques of network analysis to schedule business / project activities.

Unit 1

Introduction to Operation Research:- Meaning, Evolution, approaches, techniques and scopes of operations research, managerial application of Operation Research. Linear programming:- Introduction, meaning characteristics, graphical approaches and its utility simplex method, dual linear programming

Unit 2

Transportation & Assignment Problem: - The general structure of the problem, methods of initial allocation degeneracy, optimal solution, assignment problem, structure variation in assignment problem.

Unit 3

Game Theory: Games with pure and mixed strategies, saddle point, odds method, principle of dominance, sub games method. Sequencing problems: Processing jobs through two machines and three machines.

Unit 4

Network Analysis:- PERT/CPM background and development, stages in application PERT networking analysis, CPM, Determination of CPM, Determination of earliest expected & latest allowable times. Inventory control: - Classification of Inventory control, EOQ model, inventory control system, ABC Analysis, Advantages of EOQ model in management.

References:

- Gupta P.K., Hira D.S. (2011). Operations Research S. Chand & Co. Ltd., New Delhi.
- Taha H.A.(2010).Operations Research An Introduction. Pearson Education.
- Mustafi, C.K. (2000). Operations Research: New Age International Pvt. Ltd., New Delhi.
- Gupta,M.P., Sharma J. K. (2000). Operations Research for Management: Mayoor Paperbacks, Delhi.
- N.D.Vohra.(2007) Quantitative Techniques in Management. Tata McGraw-Hill.

- Frederick S. Hillier and Gerald J. Lieberman.(2001). Introduction to Operations Research: concept and cases.Tata McGraw-Hill.
- Sharma J.K.(2006). Operations Research: Theory and Application. Macmillan Publishers India.

BBA 502-18

Mercantile Law

Course Objective: To provide the brief idea about the frame work of Indian Business Laws. The course aims to familiarize the students with case law studies related to Business Laws.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand the concept, approaches and application of Contract Act in business decision making.

CO2: Understand and apply the provisions of Partnership Act in business decision making.

CO3: Understand and apply the provisions of sales Act in business decision making.

CO4: Understand and apply the provisions of Consumer Protection Act and Environment Protection Act in business decision making

CO5: Understand and apply the provisions of Negotiable Instrument Act in business decision making

Unit I

Introduction to Contract Act: Agreement, kinds of Agreements, Contract- kinds of contracts: Valid, Void, Voidable, Contingent and Quasi Contract and E contract, distinguish between agreement and contract. **Offer and Acceptance** - Definition, Essentials and types Communication of offer, Acceptance and Revocation. **Capacity to contract, Free Consent, Consideration**, Legality of Object and Consideration. Performance and discharge of contract, Remedies for breach of contract.

Law of Indemnity and Guarantee, Law of Bailment and pledge, Law of Agency.

Unit II

Partnership Act: Introduction to Partnership Act, Admission of Partner, Retirement and Death of Partner, Dissolution of Partnership Firm.

The Sale of Goods Act : Introduction, definitions, Formalities of the contract of sale, Distinction between 'sale' and 'agreement' of sell, Distinction between 'sale and hire-purchase agreement', Conditions and Warranties, Transfer of property as between the seller and buyer Rights of an unpaid seller.

Unit III

Consumer Protection Act : Objectives, features, structure and significance

Environment Protection Act : Objectives, features, structure and significance

Unit IV

Negotiable Instrument Act: Meaning and Characteristics of Negotiable Instrument, classification of Negotiable Instruments, Promissory Notes and Bills of Exchange, Essential elements of promissory Note and bill of exchange. Acceptance for honour, Absolute and qualified or conditional acceptance, Drawer, Drawee in case of Need, Payee, Cheques, types of cheques and Penalties in case of dishonour of certain cheques, distinguish between cheque and Bill of exchange, Holder, Holder in Due Course, Rights and privileges of H.D.C. Payment in due course, Maturity of an Instrument.

References:

- Majumdar, A.K. (2017), “ Company Law” Taxman Publishers
- C. L. (2016) , “ Business Laws” Taxmann Publishers.
- Kuchhal M. C. and Parkash D (2016) , “ Business Legislations for Managements’ Vikas Publications.
- Singhanian V. K. and Singhanian K (2016), “ Direct Tax Laws and Practice’ Taxmann Publishers.
- Chawla, Garg and Sarin (2017), “ Mercantile Law’ Kalyani Publishers.

BMPD 502-18
Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A
(Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B
(Outdoor Activities)

13. Sports/NSS/NCC
14. Field project.
15. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.
Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

Consumer Behaviour

Course objective:

The course aims at providing fundamental knowledge and exposure to the concepts, theories and practices in Consumer behavior and to facilitate the students in appreciating need/significance and applications of various domains of consumer behavior especially in the changing business environment.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand fundamental concepts, nature and importance of consumer behaviour.

CO2: Analyze the various factors that influence consumer decisions.

CO3: Understand the individual, group or organizations make buying decisions.

CO4: Understand how and why groups affect consumer behavior.

CO5: Understand the emerging trends in field of consumer behavior.

Unit I

Consumer Behaviour: Nature, scope & Importance of Consumer behavior. Consumer decision making process (five step model), factors affecting buying behaviour , Models of consumer decision making,

Unit II

Consumer as an individual: Consumer motivation: needs & goals, **Personality:** Theories (Psychoanalytical and Trait Product Personality, **Consumer Perception:** Concept and Elements of Perception, **Theories of consumer learning:** Behavioural and Cognitive Learning Theories. **Consumer Attitude:** Meaning of Consumer attitude and Functions of Attitude.

Unit III

Consumer in social & cultural setting: Reference groups: concepts, factors affecting reference groups, Family: Functions of family, Family Life Cycle. **Social class:** Meaning and different social classes, **Culture & sub culture:** definition & influence.

Unit IV

Consumer Decision Making: Introduction to opinion leadership, Diffusion of innovations: Diffusion Process, Adoption Process Influence, Profile of Consumer Innovators.

Recommended Text Books:

1. Schiffman, L.G. and Kanuk, L.L.(2018) *Consumer Behavior*, Prentice Hall of India
2. Loudon, D. and Bitta, D.,(2010) *Consumer Behaviour*, Tata Mc Graw Hill
3. Majumdar,R, (2017) *Consumer Behaviour: Insights from the Indian Market*, PHI Learning Pvt. Ltd.
4. Schiffman, L.G. Wisenblit and Kumar (2016). *Consumer Behavior*, Pearson.

Advertising and Sales Management

Objective of Course: The course aims at providing fundamental knowledge and exposure to the concepts, theories and practices in the field of advertising and sales management. The course will help students learn rules and techniques of effective advertising and to understand the sales management process and its management

Course Outcomes: After studying this course, the students should be able to:

CO1: Understand advertising and its role in Marketing

CO2: Apply knowledge of advertising components in designing effective Advertising campaign for products and services

CO3: Design effective Media strategy for its product /Service awareness

CO4: Apply its knowledge in recruiting and selecting right set of Sales force for selling products and services in market

CO5: Design sound sales strategy for its products and services.

CO6: Measure performance of sales force and sales territories.

Unit I

Advertising: Definition of Advertising, History of Advertising, Roles of Advertising, Types of Advertising, Setting advertising objectives, different kinds of advertising, Advertising Layout, advertising copy, Creative copy strategies, Message Strategies, Cognitive strategies, Exceptional Strategies, Advertising Effectiveness.

Unit II

Media planning & scheduling: Media Plan, Types of media, Market Analysis, Media Objectives, Developing and Implementing Media Strategies, Evaluating the effectiveness of Media, Measuring advertising effectiveness: pre and post testing, Social, Ethical and Legal Aspect of Advertising,

Unit III

Sales Management: Definition, Nature, Scope and Importance of Sales Management, Emerging Trends in Sales Management. Role and Skills of Sales Managers, Function and qualities of a Sales Executive, Sales Objectives, Sales Strategies.

Personal Selling: Defining Personal Selling, Scope and Significance, Aims and Objectives of Personal Selling, AIDAS Principles, Personal Selling Process, Customer Delight

Unit IV

Sales Force Management: Meaning and Role of Sales Force, Sales Force Objectives and Strategy, Sales Force Size, , Financial rewards, Non-financial rewards, Compensation,

Sales Territories and Quotas: Defining Sales Territory, Designing Sales Territory, Steps involved, Methods used, Guidelines for designing territories, Types of territory designs.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. 1. Belch, G. E. & Belch, Advertising and Promotion, Tata McGraw Hill.
2. Wells W., Burnet J. and Moriarty S, Advertising: Principles & Practice, Pearson Education.
3. O' Guinn, T. and Allen, C. 'Advertising Management with Integrated Brand Promotion' Cengage Learning
4. Aaker, D A, Myers and Batra, Advertising Management, Pearson Education
5. S. A. Chunawalla, Foundation of Advertisement Theory and Practices, Himalaya Publications

Latest editions of the books should be followed.

Corporate Accounting

Course Objective: To make the student familiar with corporate accounting procedures and in-depth knowledge of preparation of various accounts related to corporate field.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: To understand the accounting of issue of shares and debentures.

CO2: To understand the final accounts of company form of organization.

CO3: To get an overview of financial reporting of financial institutions

CO4: To understand the accounting treatment for amalgamation.

CO5: To understand the accounting for liquidation of the company.

Unit I Accounting for Shares and Debentures: Issue of Shares at Par, at Premium and at Discount; Forfeiture and Re-Issue of Shares; Buy-Back of Shares; Redemption of Preference Shares; Rights Issue. Issue of Debentures; Redemption of Debentures; Conversion of Debentures into Shares. Underwriting of Issues; Profits Prior To Incorporation; Treatment of Preliminary Expenses.

Unit II Final Accounts of company: Provisions and Reserves; Determination of Managerial Remuneration; Appropriation out of Profits; Payment of Dividend, Transfer of Unpaid Dividend to Investor Education and Protection Fund; Bonus Shares and Payment of Interest out of capital.

Unit III Accounting Treatment for Amalgamation and Reconstruction of Companies: Amalgamation- Accounting Treatment and Disclosures; Calculation of purchase consideration, Accounting treatment in the books of transferor and transferee (as per Accounting Standard 14, excluding inter- company holdings). Internal Reconstruction Holding and Subsidiary Companies, Preparation of consolidated balance sheet — minority interest – cost of acquiring control or goodwill – capital reserve – preference share capital in subsidiary companies.

Unit IV: Liquidation of companies: Scope, contributory preferential payments, preference dividend. Statement of affairs and deficiency/surplus account, Liquidators final statement of account, liquidator remuneration, receiver for debenture holders, list 'B' contributories.

Note: Relevant Case Studies will be discussed in class

Suggested Readings / Books:

- Shukla M.C., Grewal T. S. & Gupta S. C.(2017) *Advanced Accounts*. (19 Ed).Sultan Chand & Company Ltd.
- Gupta R. L. & Radhaswamy M. (2013).*Corporate Accounting*. Sultan Chand & Sons.
- Maheshwari S.N. *Corporate Accounting* Vikas Publishing House.

- Ghosh T.P. (2007) *Accounting Standards and Corporate Accounting Practices Vol. 1*. Taxman's, New Delhi,
- Sharma P. *Corporate Accounting*. Sharma Publication.
- Arulanandam M.A., Raman K.S. *Advanced Accounting*, Himalaya Publication.
- Middlekauff, R.H. (2007). *The glorious cause: The American revolution*. Oxford University Press.

Financial Markets and Services

Course Objective: The objective of the course is to understand role of Financial Services and markets in Business organizations and to give an insight into the strategic, regulatory, operating and managerial issues concerning select financial services. In addition, the course will examine the present status and developments that are taking place in the financial markets and developing an integrated knowledge of the functional areas of financial services industry in the real services industry in the real world situation.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: To understand the concept of financial system and their importance.

CO2: To know the structure of Financial Markets.

CO3: To develop basic understanding of derivatives and currency markets.

CO4: To understand the importance and role of Primary and Secondary markets.

CO5: To understand the role and types of Financial Services

CO6: To understand structure and system of leasing, mutual funds, credit rating, credit cards, Dematerialization, merchant banking, venture capital, factoring, and securitization.

Unit I Introduction to Financial System: Introduction, components, key elements, Financial Markets; money market in India; nature, instruments, functioning and participants. Indian Capital Market: structure, functions, role, participants. Financial Services: Meaning, types and their importance, Role of Financial Services in a financial system.

Unit II Financial Regulations: Regulatory Frame work; Securities Exchange Board of India and Reserve Bank of India. Primary Market: SEBI guidelines on primary market, Book building, online IPOs, Green- shoe option. Secondary Market: Introduction, stock exchanges, listing of securities, trading and settlement. Introduction to Derivative Markets.

UNIT III Financial Services: Leasing: Meaning and features, Types of Leases, Lease vis-à-vis buy. Lease vis-à-vis Hire purchase. Mutual Funds: Concept, Composition, Schemes, Merchant Banking: Meaning, scope, Latest guidelines of SEBI w.r.t. Merchant bankers. Credit Rating: Types of credit Rating, credit Rating Agencies & their Methodology. Venture Capital: Meaning, Features, SEBI guidelines for venture capital,

UNIT IV Factoring: concept, factoring vis-à-vis Bills Discounting - Factoring vis-à-vis credit Insurance Factoring vis-à-vis Forfeiting. Depository: Meaning, Process of De-materialization and Re-materialization. Brief description of NSDL and CDSL Depository, depository participants, SEBI guidelines relating to depository system.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Khan, M.Y. (2011). *Financial Services*. (6th Ed). Tata McGraw-Hill.

2. Bhole, L.M, Mahakud, Jitendra (2009). *Financial Institutions & Markets*. (5th Ed). Tata McGraw-Hill

3. Gurusamy S, (2009) *Financial Services & System*. (2nd Ed). Thomson Publications
4. Avdhani V. A. (2017) *Financial Services in India*. (3rd Ed). Himalaya Publications
5. Gordon & Natarajan. (2016) *Financial Markets & Services*. (11th Ed).Himalaya Publications
6. Pathak, Bharti V. (2009) *The Indian Financial System-Markets, Institutions and Services*. New Delhi: Pearson Education.
7. Harrington S. E. (2004). *Risk management and insurance: Instructor manual*. (2nd Ed.). New York: McGraw- Hill Publishing Company.
- 8 Madura, J. (2009). *Financial markets and institutions*. USA: South Western College.
9. Mishkin, F.S., & Eakins, F.S. (2009). *Financial markets and institutions*. (6th Ed.). New Delhi: Pearson Education.

BBA 531-18
Industrial Relations and Labour Laws

Course Objective: The objective of this course is to acquaint the students with the two important aspects of Industrial Relations namely Social Security and Labour Welfare.

Course Outcomes:

- CO1: Understand establishing & maintaining a sound relationship between the worker & the employer.
- CO2: Identify and rectify the simmering issues which might take the form of a dispute in the workplace.
- CO3: Clarify the use & importance of various Acts & their uses in Industrial Relations.
- CO4: Keep away from strikes & lockouts so as to enhance the economic status of the employee.
- CO5: Understand the significance & functioning of Trade Unions

Unit –I

Concept of Industrial Relations: Concepts, Objectives, Scope, Importance, Participants, Essentials of effective Industrial Relations, Factors affecting Industrial Relations, Constraints of IR and approaches of IR. **Trade Unions:** Concept, Objectives, Types, Structure and Functions. **Trade Unions Act, 1926:** Objectives and definition, registration of trade unions, Rights and liabilities.

Unit –II

Industrial Conflict and Disputes: Introduction, Scope, Objectives, Manifestation of Conflict, provisions regarding strikes, lock-outs, layoff and retrenchment. **Settlement of Industrial Disputes:** Concept, Types, Conciliation Procedure and Practices in India; Adjudication – Concept and types; Arbitration: Approaches and types.

Unit –III

Factories Act: Object and definition, Health, Safety and welfare provisions, Provision of working hours for women and young persons. Basic Features of payment of wages Act, Minimum Wages Act and Basic features of Employees Provident Fund Act, and Payment of bonus act.

Unit –IV

I.L.O and Social Security: The concept of Labour welfare: Introduction, Evolution, Scope and Objectives, Theories and Types. Social Security, Role of Indian Labour Laws and International bodies such as ILO-Social Audit.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:-

1. Piyali Ghosh, Shefali Nandan (2015), “Industrial Relations and Labour Laws”, Tata McGraw Hill Edition, New Delhi.
2. Monappa Arun, Nambudiri Ranjeet & Selvaraj Patturaja (2012), “Industrial Relations and Labour Laws”, Tata McGraw Hill Edition, New Delhi.
3. Mamoria, Mamoria and Gankar (2020) “Dynamics of Industrial Relations”, Himalaya Publishing House, New Delhi.
4. T.N. Chabbra and R.K. Suri, Industrial Relations – Concepts & Issues, Dhanpat Rai & Company
5. Venkata Ratnam, C.S (2006). “Industrial Relations”, Oxford University Press, New Delhi.
6. Srivastava, S. C (2008). “Industrial Relations and Labour Laws”, Vikas Publishing House Pvt Ltd, New Delhi.
7. Sinha, P.R.N., Sinha, Indu Bala and Shekhar, Seema Priyadarshini (2004), “Industrial Relations, Trade Unions, and Labour Legislation”, Pearson Education, New Delhi.
8. Sen Ratna (2003), “Industrial Relations in India”, MacMillan, New Delhi.
9. Davar, R S (1999), Personnel Management and Industrial Relation, Vikas Publishing House Pvt. Ltd, New Delhi.
10. Sivarethnamohan, R (2010), Industrial Relations and Labour Welfare- Text and Cases, PHI Learning Pvt. Ltd, New Delhi.

Organizational Change and Development

Course Objective: This course aims to introduce students to theories and concepts of organizational change and development and also it enhances the knowledge and understanding of organizational interventions terminology and provides students with the opportunity to apply the key concepts to practical organizational situations.

Course Outcomes: Upon completion of this course, students will be able to:

CO1: Develop understanding of organization change and illustrate theories of planned change.

CO2: Analyze the issues and problems arising out of organizational change initiatives.

CO3: Explain the meaning, objectives and process of organizational development.

CO4: Understand the role of various intervention strategies in organizational development.

CO5: Explain the issues in the consultant client relationship.

Unit I

Organisation Change: - Introduction, importance, forces of change and types of change. Models of change: - systems model of change, Lewin's Force Field Analysis Model, The model of change management, the process of change.

Unit II

Change & its impact: - effects of change on people, operational effects, psychological effects, social effects, people's reaction to change:- Acceptance of change, indifference, organized resistance, frustration & aggression, Reasons for resistance and Methods of minimizing resistance. Strategies of change.

Unit III

Organisation Development: - Meaning, features, objectives, History of OD, process of organizational development. OD interventions: - concept, characteristics, classification of intervention, OD interventions as tool to improve effectiveness of organization.

Unit IV

Training Experience: T-Groups, behaviour Modelling, Team building interventions, Issues in consultant client relationship.

Suggested Readings:

1. Wendeel L. French, Cecil H. Bell (1999), "Organization Development" Prentice Hall
2. Burke W.W and Noumair, D. A. (2015), "Organization Development – A Process of Learning and Change", Pearson Education
3. Cummings, T. G. and Worley, C. G. (2008), "Organization Development & Change", Cengage Learning.
4. Bhatia, S.K (2003), "Management of Change & Organisation Development- Innovative Approaches", Deep & Deep Publications, New Delhi.
5. Bhattacharya, Dipak Kumar (2009), "Organization Change & Development", Oxford University Press.
6. Singh, Kavita (2009), "Organisation Change & Development, Excel Books.
7. S. Ramnarayan, and T.V. Rao (2011) : OD – Accelerating Learning & Transformation, Sage, New Delhi

BBA 601-18
Strategy Management

Course Objectives: The course aims at providing fundamental knowledge and exposure to the strategies at corporate level. It will help student understand the relationship amongst goals, objectives, strategies, tactics, plans, programs, procedures, rules etc.

UNIT I

Strategic Management: Introduction, Nature & Scope, Need, Process of Strategic Management. **Strategic Intent:** Vision, Mission, Business Definition, Business Model Goals & Objectives.

Unit II

Strategy Formulation & process:

Environment Appraisal and Scanning: External & Internal Environment including PEST, Techniques for Environmental Scanning (SWOT, ETOP, Quest). Porter's Five forces Model, Methods and technique Used for Organizational Appraisal.

Unit III

Corporate Level Strategy: Concept, Stability, Expansion, Retrenchment, Combination, Strategy. **Business Level Strategy:** Concept, Porter's Generic Business Strategy. **Strategic Choice:** Concept, Process of Strategic Choice, BCG Matrix, GE Nine Cell Matrix.

UNIT IV

Strategic Implementation: Concept, Interrelationship between Formulation and Implementation, Aspects of Strategy Implementation (Behavioral Implementation, Resource Allocation). **Strategic Evolution and Control:** An Overview, Technique of Strategic Evolution and Control

Suggested Readings:

1. Azhar Kazmi(2007), "Business Policy and Strategic Manageent", Tata Mcgraw Hill
2. Jouch & Gluick, "Strategic Management & Business Policy", Tata Mcgraw Hill
3. Wheelen & Hunger (2008), "Strategic management & Business Policy", Pearson Education
4. Hill, Charles, W. L., Schilling, Melissa A., Jones, Gareth R. (2019), "Strategic Management: Theory & Cases: An Integrated Approach", Cengage Learning.

BBA 602-18

Company Law

Course Objective: The objective of the course is to impart basic knowledge of the provisions of the Companies Act 2013. This course will provide better understanding of the different clauses of company law which a business manager must know for better decision making.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand the basic concept and provisions of company law in business decision making.

CO2: Understand the concept of different types of companies and differentiate among them.

CO3: Understand the process of formation of company and different documents required for that.

CO4: Understand the process of appointment and qualification of different types of directors of company

CO5: Understand the need of different meetings and process of winding up of company.

UNIT-I

Nature of a company: Definition of a company, Characteristics of a company, Lifting the corporate veil, Company distinguished from partnership. **Types of companies** including one person company, small company, associate company, dormant company, producer company; association not for profit; illegal association; **Formation of a company:** Steps involved in the formation and incorporation of a company, on-line filing of documents, promoters, their legal position, pre-incorporation contract; on-line registration of a company.

UNIT-II

Memorandum of Association: Meaning and Importance, Form and Contents, Alteration of Memorandum.

Articles of Association: Meaning, Relationship of and distinction between MOA and AOA. Prospectus: Meaning, Definition and contents, statutory requirements in relation to prospectus.

UNIT-III

Share capital: Kinds of share capital, Alteration of share capital, Ways for raising share capital, Allotment of shares

Company Management: Classification of directors, women directors, independent director, small shareholder's director; Disqualifications, director identity number (DIN); Appointment; Legal positions, powers and duties; removal of directors; Key managerial personnel, managing director, manager;

UNIT-IV

Meetings of shareholders and board; Types of meeting, convening and conduct of meetings, postal ballot, and meeting through video conferencing, e-voting.

Winding Up - Concept and modes of Winding Up. Administration of Company Law [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts.

Suggested Readings/Books:

- Singh, Avtar (2018), “ Company Law” Eastern Book Co., Lucknow
- Kuchal M.C (2017), “ Modern India Company Law” Shri Mahavir Books, Noida.
- Kapoor N.D.(2017), “Company Law -Incorporating the Provisions of the Companies, Amendment Act” Sultan Chand & Sons, New Delhi
- Bagrial A.K. (2018), “ Company Law” Vikas Publishing House, New Delhi.
- Ramaiya (2016), “ A Guide to Companies Act” Wadhwa and Buttersworth.
- Manual of Companies Act, Corporate Laws and SEBI Guideline, Bharat Law House, New Delhi (2018)
- A Compendium of Companies Act 2013, along with Rules, by Taxmann Publications.
- Gower and Davies (2018), “ Principles of Modern Company Law” Sweet & Maxwell Publishers
- Sharma J.P.(2018) , “ An Easy Approach to Corporate Laws” Ane Books Pvt. Ltd., New Delhi

BMPD 602-18
Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A
(Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B
(Outdoor Activities)

16. Sports/NSS/NCC
17. Field project.
18. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.
Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

BBA 611-18

Services Marketing

Course objective:

This course aims at providing understanding among the graduate students to apply service marketing concepts and strategies to the create customer value in today's highly competitive environment.

Course Outcomes (COs): After completion of the course, the students shall be able to:

CO1: Understand fundamental concepts, nature and importance of Services Marketing.

CO2: Analyze the various factors that influence service marketing.

CO3: Understand the role of customers and employees in service delivery.

CO4: Understand how and why new service development takes place.

CO5: Understand the emerging trends in field of service marketing.

Unit I

Introduction to Services: Reasons for growth of service sector, Contribution of service sector towards Indian economy. Service characteristics, classification of services, Extended Service marketing mix. Service Quality: SERVQUAL and integrated gaps model of service quality

Unit II

Service development and design: Challenges of service design, types of new services, core and supplementary elements, new service development process, Service blueprint, Physical evidence and the Servicescape.

Unit III

Role of employees and customers: service culture, employee's role in service delivery, strategies to deliver quality services, **Customer Participation:** introduction to role of customer in delivering services Role of intermediaries and electronic channels.

Unit IV

Services marketing communications: services marketing triangle, Pricing approaches for services. Emerging trends in services marketing.

Recommended Books

1. Zeithmal A Valarie and Bitner Mary,(2016) '*Services Marketing*', Tata McGraw Hill,
2. Lovelock, Christopher H,(2014) '*Services Marketing*', Pearson Education .
3. Singh. P and Kaur R, (2017) '*Services Marketing*', Kalyani Publishers.
4. Shajahan , (2010) "Service Marketing" Himalya Publishing.

BBA 612-18
Retailing and Logistics Management

Course Objectives: The objective of this course is to make students understand the role of retailing and logistics management in overall management function and how to use that knowledge in designing effective retail strategy.

Course Outcomes: After studying this course, the students should be able to:

CO1: Understand Retail Environment, challenges and Retail formats in retailing in India.

CO2: Design Merchandise System for effective execution of retailing function.

CO3: Understand and recognize the importance of store design and apply the concepts of store design to determine store layout and merchandising.

CO5: Understand various activities in logistics system and its importance

CO6: To apply knowledge of Inventory management, Transportation, warehousing, Packaging in designing overall strategy of Logistic Function

Unit - I

Introduction to Retailing: Meaning and Economic Significance, Opportunities in Retailing, Types of Retailers **Retailing in India:** Evolution of Retail in India, Drivers of Retail Change and Challenges to Retail Development in India.

Unit-II :

Retail formats: Food Retailers, General Merchandise Retailers, Non-Store Retail Formats, Services Retailing, and Types of Ownership

Planning and Merchandise Management for Retail Outlets: Meaning, Sales Forecasting for Merchandise Plan, Assortment Planning process, Finance and location Strategists for Retailing, Store Management Responsibilities.

Unit-III:

Recruiting & Selecting Store Employees, Socializing & Training New Store Employees
Motivating, Managing & Evaluating Store Employees.

Store Layout, Design & Visual Merchandising: Objectives of Good Store Design, Store Layout. Space Planning and Merchandise Presentation Techniques.

UNIT-IV

Logistics Management:

Introduction, Objectives of logistics, Types of logistics, Role of Logistics in an Economy,

Inventory Management: Introduction, Objectives, Types of Inventory, Importance of inventory management, Different Types of Inventory Costs, Inventory Performance Measures in Logistic Management.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

1. Levy, Michael and Barton A. Weitz (2003), Retail Management, Tata McGraw Hill, 5th Edition.

2. Sinha, P. K. and Uniyal, D. P. (2007), Managing Retailing, Oxford, 1st Edition.

3. Newman, Andrew J. and Peter Cullen (2007), Retailing: Environment and Operations, Thomson, 1st Edition.

4. Pradhan, Swapna (2007), Retail Management – Text and Cases, Tata McGraw Hill, 2nd Edition.
5. Sople (2009), Logistic Management, Pearson Education India, 3rd Edition.
6. Alan Rushton, Phil Croucher, Peter Baker, The Handbook of Logistics and Distribution Management: Understanding the Supply Chain (5th Edition):.
8. Satish C Ailawadi, Rakesh Singh (2005). Logistic Management Prentice-Hall Of *India* Pvt. Limited,

BBA 621-18
Personal Financial Planning

Course Objective - This course aims to acquaint students with the knowledge regarding personal financial planning its importance, methods and various instruments that may be considered for it.

Course Outcomes:

CO1 – To familiarise students with the concept, objectives and importance of personal financial planning.

CO2 - To enable the students to understand the implications of environmental factors

CO3 – To familiarize students with the concepts of time value of money on the personal financial statements and their use in personal financial planning.

CO4 – To enable students to identify various types of risks any individual is exposed to and how they can hedge diversifiable risk.

CO5 – To familiarise students with various instruments available for investment by an individual for achieving their personal financial goals.

Unit I

Personal Financial Planning: Introduction, features, objectives and scope of personal financial planning.

Environmental Analysis: Screening and analysis of environmental factors affecting personal financial planning.

Unit II

Time Value of Money Personal Financial Statements: Meaning and calculation of present value and future value of money. Factors affecting the time value of money and its impact on the personal financial statements.

Personal Risk Management: Meaning of risk, measurement of risk and its identification. introduction to life insurance and general insurance. Insurance planning for the individual as well as family.

Unit III

Investment Planning: Meaning, process, importance and objectives of investment planning.

Investment Instruments for Personal Financial Management: Introduction to various tax saving financial instruments, Mutual fund schemes, Fixed income securities (Government bonds, corporate debt securities, bank deposits, fixed income plans by mutual funds, post office saving schemes etc.), Capital market instruments, Money market instruments and Real Assets.

Unit IV

Retirement Planning: Meaning, nature, importance, scope and process of retirement planning

Estate Planning: Meaning, nature, importance, scope and documentation in estate planning

Suggested Readings:

1. Walker, R. B and Walker, K. P. (2017) 'Personal Finance: Building Your Future', McGraw Hill Education.
2. Kapoor, J. R., Dlabay, L. R., Hughes, R. J. and Hart, M. M. (2020) 'Personal Finance', McGraw Hill Education.
3. Madura, J. (2020) 'Personal Finance', Pearson Education.
4. Benjamin, G. (2006) 'Intelligent Investor: The Definitive Book on Value Investing' HarperCollins Publisher, Reprinted.
5. Murali, S. and Subakrishna, K. R. (2018) 'Personal Financial Planning (Wealth Management)', Himalaya Publishing House.

BBA 622-18
Direct and Indirect Tax Laws

Course Objective - To enable the students to understand the importance, implication and computation of direct and indirect taxes in India

Course Outcomes:

CO1 – The students will be familiarised with the concepts, framework and incidence of taxes in India.

CO2 – To acquaint students with the provision of the current finance act with regard to various heads of income.

CO3 – To enable students to compute the tax liability of individuals after considering their residential status, various exempted incomes, permissible deduction, clubbing of income and setting off of losses.

CO4 – To familiarize students with the concepts of Value Added Tax, excise duty and custom duty.

CO5 – To enable students to understand the concept and importance of One-Nation-One-Tax system brought in India through Goods and Services Tax.

CO6 – To enable students to understand the framework and structure of GST.

CO7 – To acquaint students with the process of tax credit and refund of GST.

UNIT I

Introduction: Meaning and constitutional framework of taxation in India. Difference between direct and indirect taxes

Introduction to Direct Tax: Basic concepts, Agricultural income and its assessment, Basis of charge, Residential status of an assessee, Exempted incomes

Income from Salaries: Meaning, Allowance and Perquisites, Standard deduction, computation of taxable salary income.

Unit II

Income from House Property: Meaning of rental income, treatment of interest on housing loan, computation of taxable income from house property

Profits and Gains from Business or Profession: Meaning, various admissible and non-admissible expenses, treatment of depreciation, copyright, patents and expenditure on research and development.

Unit III

Capital Gains: Meaning of short-term and long-term capital gains, various exempted capital gains u/s 54

Income from Other Sources; Clubbing of Income, Setting off and Carry forward of losses, Deductions u/s 80

Unit IV

Introduction and basic features of Central excise, Customs duty and Value added Tax.

Good and Service Tax: Meaning, features, advantages and history of GST in India. Goods and Services Tax Act

GST Council and GST Network

Rates structure of GST, Scope of supply, Composition Scheme under GST, Assessment (only basic concepts), Process of tax credit and refunds

Suggesting Readings:

1. Mehrotra, H. C. and Goyal, S. P. (2020) 'Income Tax Law and Practice' Sahitya Bhawan Publications.
2. Ahuja, G. and Gupta, R. (2020) 'Practical Approach to Direct and Indirect Taxes: Containing Income Tax and GST', Wolters Kulwer.
3. Singhanian V. K. and Singhanian, M. (2020) 'Students' Guide to Income Tax Including GST - Problems & Solutions', Taxmann Publications.
4. Gaur, V. P. and Narang, D. B. (2020) 'Income Tax Law and Practice' Kalyani Publishers.
5. Datey, V. S. (2020) 'Indirect Taxes: Law and Practice' Taxmann Publications.

Training and Development

Unit I

Training and Development:- Conceptual aspects, objectives and importance of Training and Development. Process of Training and Development: Identification of training needs, methods of need assessment.

Unit II

Designing Effective Training Program: factors affecting training design, budget for training, selecting and preparing training site, choosing the trainers, program design.

Unit III

Methods of Training: Traditional and Modern methods, Use of technology in training.

Training Evaluation: Testing effectiveness of training, Introduction, Reasons for evaluation, evaluation process, outcomes used for evaluation of training, evaluation practices.

Unit IV

Employee Development: approaches to employee development, Designing development programmes. Development Methods: Case studies, Role play and Sensitivity Training, Business Games, Behavior Modelling.

Suggested Readings:

1. Noe, Raymond, A (2017). "Employee Training and Development" McGraw Hill.
2. Raymond, A. N. and Kodwani, A. D. (2018) "Employee Training and Deevlopment" McGraw Hill.
3. Craig, Robert (2005) "Training and Development Handbook" McGraw Hill, New York
4. Rajshree Shinde, Abhilasha, A. and Ramakumar, A. (2015) "Human Resource Development" Himalaya Publishing House.
5. N. Sambasiva Rao and Yvvsss Vara Prasad (2018), "Training and Development", Himalaya Publishing House.

BBA 632-18

Cross Cultural Human Resource Management

Course Objective: The course has been designed to make the students aware of the changing role of HR in international organizations having large number of subsidiaries which are operating in different countries and cultures as compared to the domestic companies.

Course Outcomes:

- CO1:** Understand issues, opportunities and challenges pertaining to international Human Resource Management.
- CO2:** Develop competency in dealing with cross cultural situations.
- CO3:** Understand the strategic and functional roles of HRM in various international contexts, especially in areas such as recruitment and selection, performance management, training, learning and development, career management, compensation, motivation and repatriation;
- CO4:** Identify the role of cross-cultural leadership in managing multicultural teams.
- CO5:** Understand external forces (e.g. globalisation, sociocultural changes, political and economic changes) that have the potential to shape international HRM.

Unit –I

Introduction to Cross Cultural Management:

Introduction to cross cultural management: Understanding Culture, Culture dimensions, Significance and impact of cross culture on organization, Role of culture in Strategic Decision Making. Influence of National Culture on Organizational Culture. Difference between Domestic and International Human Resource Management.

Unit –II

Shift in Culture: significance of shift in Culture, Influence of economic factors and foreign intervention on shifts in local cultures.

Comparing Culture: Cultural and behavioral differences in different countries, various models for comparing cultural- Hofstede, GLOBE Model.

Unit –III

Staffing and Training for Global Operations Global Staffing Choices: Approaches to Staffing, Transferring Staff for International Business Activities, Role of Expatriates and Non-

Expatriates. Cultural Adaptation through Sensitivity Training. Dynamics of Cross-Cultural leadership.

Unit –IV

Managing and motivating multi culture teams. Cross –cultural Negotiation & Decision making, Culture and Dispute, Resolution of Conflicts and Disputes in cross culture context, Cross-culture ethics: Ethics values across cultures and Ethics dilemma

Note: Relevant Case Studies should be discussed in class.

Suggested Readings: -

- Luthans, F. and Jonathan D. P. (2012) “International Management: Culture, Strategy and Behavior” Tata McGraw-Hill Education, New Delhi.
- Peter, J. Dowling and Denise, E. Welch (2007), “International Human Resource Management”, Thomson Publishers, New Delhi.
- David .C. T. and Mark F. P. (2008) Cross-Cultural Management: Essential Concepts, Sage Publishers
- Thakur, M., Burton & Gene, E (2002). International Management. Tata McGraw Hill
- Tayeb, Monir (2005), “International Human Resource Management: A Multinational Company Perspective”, Oxford University Press.
- K .Aswathappa (2012) , “International Human Resource Management”, McGraw Hill, New Delhi.
- Deresky, Helen (2000), “International management: Managing across borders and cultures”, Pearson Education India.
- S. C. Gupta (2006), “International Human Resource Management”, Macmillan India Ltd.
- Hodgetts, R. and Luthans, F. (2003). International Management. McGraw Hill Inc.

Scheme & Syllabus of

Bachelor of Computer Applications

(BCA)

Batch 2021 onwards



For
**University Main Campus, Constituent Campuses
and Affiliated colleges**

Department of Academics
IK Gujral Punjab Technical University

I. K. Gujral Punjab Technical University
Bachelor of Computer Applications (BCA)

Bachelors of Computer Applications (BCA):

It is a Under Graduate (UG) Programme of 3 years duration (6 semesters)

Eligibility: All those candidates who have passed the 10+2 or its equivalent examination in any stream conducted by a recognized Board / University / Council.

Or

Those candidates who have passed their Matriculation examination **AND** have also passed three year Diploma in any Trade from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such Examination from any other recognized State Board of Technical Education, or Sant Longowal Institute of Engineering & Technology, Longowal.

BCA (Lateral Entry): It is a Under Graduate (UG) Programme of 2 years duration (4 semesters)

Eligibility: All those candidates who have passed Matriculation examination **AND** have also passed 3 Year Diploma in any Trade from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such Examination from any other recognized State Board of Technical Education, or Sant Longowal Institute of Engineering & Technology, Longowal.

Or

10+2 with 1 year Diploma in Computer Application / IT (or equivalent) from a recognized University with Mathematics as course at 10+2 or DIT / DCA level.

**I. K. Gujral Punjab Technical University
Bachelor of Computer Applications (BCA)**

PROGRAM OUTCOMES (POs)

Program: BCA

1. **Basic knowledge:** An ability to apply knowledge of basic mathematics, science and domain knowledge to solve the computational problems.
2. **Discipline knowledge:** An ability to apply discipline –specific knowledge to solve core and/or applied computational problems.
3. **Experiments and practice:** An ability to plan and perform experiments and practices and to use the results to solve computational problems.
4. **Tools Usage:** Apply appropriate technologies and tools with an understanding of limitations.
5. **Profession and society:** Demonstrate knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional practice.
6. **Environment and sustainability:** Understand the impact of the computational solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.
7. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the professional practice.
8. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse/multidisciplinary teams.
9. **Communication:** An ability to communicate effectively.
10. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the context of technological changes.

**I. K. Gujral Punjab Technical University
Bachelor of Computer Applications (BCA)**

First Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1901	Core Theory	Mathematics	3	1	0	40	60	100	4
UGCA1902	Core Theory	Fundamentals of Computer and IT	3	1	0	40	60	100	4
UGCA1903	Core Theory	Problem Solving using C	3	1	0	40	60	100	4
UGCA1904	Practical/Laboratory	Workshop on Desktop Publishing	0	0	4	60	40	100	2
UGCA1905	Core Practical/Laboratory	Problem Solving using C Laboratory	0	0	4	60	40	100	2
UGCA1906	Core Practical/Laboratory	Fundamentals of Computer and IT Laboratory	0	0	4	60	40	100	2
BTHU103/18	Ability Enhancement Compulsory Course (AECC)-I	English	1	0	0	40	60	100	1
BTHU104/18	Ability Enhancement Compulsory Course (AECC)	English Practical/Laboratory	0	0	2	30	20	50	1
HVPE101-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules	3	0	0	40	60	100	3
HVPE102-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules (Lab/ Seminar)	0	0	1	25	--**	25	1
BMPD102-18		Mentoring and Professional Development	0	0	1	25	--**	25	1
	TOTAL		13	3	16	460	440	900	25

****The Human Values, De-addiction and Traffic Rules (Lab/ Seminar) and Mentoring and Professional Development course will have internal evaluation only. (See guidelines at the last page of this file)**

I. K. Gujral Punjab Technical University
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Second Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1907	Core Theory	Fundamentals of Statistics	3	1	0	40	60	100	4
UGCA1908	Core Theory	Computer System Architecture	3	1	0	40	60	100	4
UGCA1909	Core Theory	Object Oriented Programming using C++	3	1	0	40	60	100	4
UGCA1910	Core Practical/Laboratory	Object Oriented Programming using C++ Laboratory	0	0	4	60	40	100	2
UGCA1911	Core Practical/Laboratory	Fundamentals of Statistics Laboratory	0	0	4	60	40	100	2
UGCA1912	Core Practical/Laboratory	Computer System Architecture Laboratory	0	0	4	60	40	100	2
EVS102-18	Ability Enhancement Compulsory Course (AECC) -III	Environmental Studies	2	0	0	40	60	100	2
BMPD202-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		11	3	13	365	360	725	21

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Third Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1913	Core Theory	Computer Networks	3	1	0	40	60	100	4
UGCA1914	Core Theory	Programming in Python	3	1	0	40	60	100	4
UGCA1915	Core Theory	Data Structures	3	1	0	40	60	100	4
UGCA1916	Core Practical/Laboratory	Computer Networks Laboratory	0	0	4	60	40	100	2
UGCA1917	Core Practical/Laboratory	Programming in Python Laboratory	0	0	4	60	40	100	2
UGCA1918	Core Practical/Laboratory	Data Structures Laboratory	0	0	4	60	40	100	2
UGCA1919	Skill Enhancement Course-I	PC Assembly & Troubleshooting	3	0	0	40	60	100	3
UGCA1920	Skill Enhancement Course- Laboratory	PC Assembly & Troubleshooting Laboratory	0	0	2	30	20	50	1
BMPD302-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		12	3	15	395	380	775	23

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Fourth Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1921	Core Theory	Software Engineering	3	1	0	40	60	100	4
UGCA1922	Core Theory	Database Management Systems	3	1	0	40	60	100	4
UGCA1923	Core Theory	Operating Systems	3	1	0	40	60	100	4
UGCA1924	Core Practical/Laboratory	Software Engineering Laboratory	0	0	4	60	40	100	2
UGCA1925	Core Practical/Laboratory	Database Management Systems Laboratory	0	0	4	60	40	100	2
UGCA1926	Core Practical/Laboratory	Operating Systems Laboratory	0	0	4	60	40	100	2
UGCA1927	Skill Enhancement Course-II	Web Designing	3	0	0	40	60	100	3
UGCA1928	Skill Enhancement Course- Laboratory	Web Designing Laboratory	0	0	2	30	20	50	1
BMPD402-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		12	03	15	395	380	775	23
Students will undergo 4 weeks Institutional Summer Training* after 4th semester. Examination will be conducted along with 5th semester practical.									

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Fifth Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1929	Skill Enhancement Course-III	Programming in PHP	3	0	0	40	60	100	3
UGCA1930	Skill Enhancement Course-Laboratory	Programming in PHP Laboratory	0	0	2	30	20	50	1
	Open Elective-I		3	1	0	40	60	100	4
	Elective-I		3	1	0	40	60	100	4
	Elective-II		3	1	0	40	60	100	4
	Elective-I Laboratory		0	0	4	60	40	100	2
	Elective-II Laboratory		0	0	4	60	40	100	2
	Project	Minor Project	0	0	2	60	40	100	1
	Institutional Summer Training*		0	0	2	60	40	100	1
BMPD502-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		12	03	15	455	420	875	23

Elective -I	
Course Code	Course Title
UGCA1931	Data Warehouse and Mining
UGCA1932	Programming in Java
UGCA1933	Internet of Things

Elective -II	
Course Code	Course Title
UGCA1934	Computer Graphics
UGCA1935	Linux Operating System
UGCA1936	Cloud Computing

Elective-I Laboratory	
Course Code	Course Title
UGCA1937	Data Warehouse and Mining Laboratory
UGCA1938	Programming in Java Laboratory
UGCA1939	Internet of Things Laboratory

Elective-II Laboratory	
Course Code	Course Title
UGCA1940	Computer Graphics Laboratory
UGCA1941	Linux Operating System Laboratory
UGCA1942	Cloud Computing Laboratory

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Sixth Semester

Course Code	Course Type	Course Title	Load Allocation			Marks Distribution		Total Marks	Credits
			L	T	P	Internal	External		
UGCA1943	Skill Enhancement Course-IV	Android Programming	3	0	0	40	60	100	3
UGCA1944	Skill Enhancement Course-Laboratory	Android Programming Laboratory	0	0	2	30	20	50	1
	Open Elective-II		3	1	0	40	60	100	4
	Elective-III		3	1	0	40	60	100	4
	Elective-IV		3	1	0	40	60	100	4
	Elective-III Laboratory		0	0	4	60	40	100	2
	Elective-IV Laboratory		0	0	4	60	40	100	2
	Project	Major Project	0	0	4	120	80	200	4
BMPD602-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		10	03	15	455	485	875	25

Elective -III	
Course Code	Course Title
UGCA1945	Artificial Intelligence
UGCA1946	R Programming
UGCA1947	Digital Marketing

Elective -IV	
Course Code	Course Title
UGCA1948	Information Security
UGCA1949	Cyber Laws & IPR
UGCA1950	Machine Learning

Elective -III	
Course Code	Course Title
UGCA1951	Artificial Intelligence Laboratory
UGCA1952	R Programming Laboratory
UGCA1953	Digital Marketing Laboratory

Elective -IV	
Course Code	Course Title
UGCA1954	Information Security Laboratory
UGCA1955	Cyber Laws & IPR Laboratory
UGCA1956	Machine Learning Laboratory

Open Electives	
Course Code	Course Title
UGCA1902	Fundamentals of Computer and IT
UGCA1903	Problem Solving using C
UGCA1909	Object Oriented Programming using C++
UGCA1913	Computer Networks
UGCA1922	Database Management Systems
UGCA1957	Software Project Management

***The above list of Open Elective Courses is particularly designed to offer to other disciplines such as Physics, Chemistry, Mathematics, Management or any other area of expertise in their Under-Graduate Programs.**

***In case Open Elective-I and Open Elective-II are not offered by any other discipline/branch in the Institute/College, then student may opt Open Elective courses from given lists of Elective courses (Theory only).**

**I. K. Gujral Punjab Technical University
Bachelor of Computer Applications (BCA)**

Course Code: UGCA1901

Course Name: Mathematics

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: core/elective: Core

Prerequisite: Student must have the knowledge of Basic Mathematics.

Co requisite: NA.

Additional material required in ESE: Minimum two exercises of each concept will be recorded in the file and the file will be submitted in End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Define various mathematical notions.
CO2	Explain different terms used in basic mathematics.
CO3	Illustrate various operations and formulas used to solve mathematical problems.
CO4	Organize data in various models.
CO5	Prepare solutions for various real life problems.

Detailed contents	Contact hours
<u>Unit-I</u> Set Introduction, Objectives, Representation of Sets (Roster Method, Set Builder Method), Types of Sets (Null Set, Singleton Set, Finite Set, Infinite Set, Equal Set, Equivalent Set, Disjoint Set, Subset, Proper Subset, Power Set, Universal Set) and Operation with Sets (Union of Set, Intersection of Set, Difference of Set, Symmetric Difference of Set) Universal Sets, Complement of a Set. [CO1][CO2]	12 hours
<u>Unit-II</u> Logic Statement, Connectives, Basic Logic Operations (Conjunction, Disjunction, Negation) Logical Equivalence/Equivalent Statements, Tautologies and Contradictions.[CO3]	10 hours
<u>Unit -III</u> Matrices Introduction, Types of Matrix (Row Matrix, Column Matrix, Rectangular Matrix, Square Matrix, Diagonal Matrix, Scalar Matrix, Unit Matrix, Null Matrix, Comparable Matrix, Equal Matrix), Scalar Multiplication,	12 hours

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Negative of Matrix, Addition of Matrix, Difference of two Matrix, Multiplication of Matrices, Transpose of a Matrix. [CO4]	
<u>Unit-IV</u> Progressions Introduction, Arithmetic Progression, Sum of Finite number of quantities in A.P, Arithmetic Means, Geometric Progression, Geometric Mean. [C05]	10 hours

Text Books:

1. Discrete Mathematics and Its Applications by Kenneth H. Rosen, Mc Graw Hill, 6th Edition.
2. College Mathematics, Schaum's Series, TMH.

Reference Books:

1. Elementary Mathematics, Dr. RD Sharma
2. Comprehensive Mathematics, Parmanand Gupta
3. Elements of Mathematics, ML Bhargava

E Books/ Online learning material

1. www.see.leeds.ac.uk/geo-maths/basic_maths.pdf
2. www.britannica.com/science/matrix-mathematics
3. www.pdfdrive.com/schaums-outline-of-discrete-mathematics-third-edition-schaums-e6841453.html

Course Code: UGCA1902

Course Name: Fundamentals of Computer and IT

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify of input and output devices of Computers

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CO2	Utilize the functioning of various components of computer system
CO3	Define the role of Operating system
CO4	Prepare documents using word processing, Spreadsheet and Presentation Graphics Software's.
CO5	Highlight the Internet safety, legally, and other issues.

Detailed Contents	Contact hours
Unit-I Human Computer Interface Concepts of Hardware and Software; Data and Information. [CO1] Functional Units of Computer System: CPU, registers, system bus, main memory unit, cache memory, Inside a computer, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors. Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter. [CO2] Memory: Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks. [CO2] Data Representation: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal Systems, Conversions and Binary Arithmetic (Addition/ Subtraction/ Multiplication) Applications of IT.	12
Unit-II Concept of Computing, Types of Languages: Machine, assembly and High level Language; Operating system as user interface, utility programs. [CO3] Word processing: Editing features, formatting features, saving, printing, table handling, page settings, spell-checking, macros, mail-merge, equation editors. [CO4]	10
Unit-III Spreadsheet: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cell references, replication, sorting, filtering, functions, Charts & Graphs. [CO4] Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.	10

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Unit-IV Electronic Payment System: Secure Electronic Transaction, Types of Payment System: Digital Cash, Electronic Cheque, Smart Card, Credit/Debit Card E-Money, Bit Coins and Crypto currency, Electronic Fund Transfer (EFT), Unified Payment Interface (UPI), Immediate Payment System (IMPS), Digital Signature and Certification Authority. [CO5] Introduction to Bluetooth, Cloud Computing, Big Data, Data Mining, Mobile Computing and Embedded Systems and Internet of Things (IoT)	12

Text Books:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education
2. Computer Fundamentals, A. Goel, 2010, Pearson Education.
3. Fundamentals of Computers, P. K.Sinha & P. Sinha, 2007, BPB Publishers.
4. IT Tools, R.K. Jain, Khanna Publishing House
5. “Introduction to Information Technology”, Satish Jain, Ambrish Rai & Shashi Singh, Paperback Edition, BPB Publications, 2014.

Reference Books:

1. “Introduction to Computers”, Peter Norton
2. Computers Today, D. H. Sanders, McGraw Hill.
3. “Computers”, Larry long & Nancy long, Twelfth edition, Prentice Hall.
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning

E Books/ Online learning material

1. www.sakshat.ac.in
 2. <https://swayam.gov.in/course/4067-computer-fundamentals>
-

Course Code: UGCA1903

Course Name: Problem Solving using C

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 1 st	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs

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Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Express the logical flow used in Programming.
CO2	Design algorithms for solving various real life problems
CO3	Implement programs using C.
CO4	Choose the right data type and statements for programs.
CO5	Explain various concepts of C programming language.

Detailed Contents	Contact hours
Unit-I Logic Development: Data Representation, Flowcharts, Problem Analysis, Decision Trees/Tables, Pseudo code and algorithms. Fundamentals: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants. [CO1] Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, Library functions. [CO2]	11
Unit-II Data Input and Output: formatted & unformatted input output. Control Statements: While, Do-while and For statements, Nested loops, If-else, Switch, Break – Continue statements. [CO3]	10
Unit-III Functions: Brief overview, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion. [CO4] Arrays: Defining, processing arrays, passing arrays to a function, multi-dimensional arrays.	11

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Strings: String declaration, string functions and string manipulation Program Structure Storage Class: Automatic, external and static variables. [CO3]	
Unit-IV Structures & Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, unions. Pointers: Understanding Pointers, Accessing the Address of a Variable, Declaration and Initialization of Pointer Variables, Accessing a Variable through its Pointer, Pointers and Arrays File Handling: File Operations, Processing a Data File [CO5]	12

Text Books:

1. Programming in ANSI C, E. Balagurusami, Fourth Edition, Tata McGraw Hill.
2. Programming in C, Third Edition, Stephen G Kochan, Pearson.
3. The C Programming Language, Kernighan & Richie, Second Edition, PHI Publication.

Reference Books:

1. Object Oriented Programming, Lafore R, Third Edition, Galgotia Publications
 2. Let us C, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.
 3. Programming in C, Byron S. Gottfried, Second Edition, McGraw Hills.
 4. Problem Solving and Programming in C, R.S. Salaria, Second Edition
 5. Programming in C, Atul Kahate.
-

Course Code: UGCA1904

Course Name: Workshop on Desktop Publishing

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester examinations (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have basic understanding of designing/ Painting tools.

Co requisite: Printing & Publishing tools.

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Additional material required in ESE: Softcopy & Hardcopy of the exercises are to be maintained during the practical labs and to be submitted during the End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Outline the characteristics of desktop publishing tools.
CO2	Identify the right components for designing documents.
CO3	Apply knowledge in designing various documents.
CO4	Prepare different types of graphic related documents.
CO5	Express the messages through graphical content

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments:

1.	Design and print a <i>Title Page</i> of a Magazine/Book.
2.	Prepare multiple designs for a <i>Flex</i> by using different Tools.
3.	Prepare <i>NSS Certificates</i> for appreciation using logos of University, College & NSS unit.
4.	Prepare 5 different Designing of <i>Business Cards</i> .
5.	Prepare <i>Envelops</i> displaying full address of the company by inserting graphical symbol/ logos of company.
6.	Design and Print <i>Invoices</i> for three companies.
7.	Prepare and print <i>News Letter Layouts</i> for any five activities of your college/ university.
8.	Prepare <i>Invitation Cards</i> for cultural meet held in your college.
9.	Design and print <i>Brochures</i> to advertise a “Blood Donation Camp” in your college.
10.	Design <i>Logos</i> of your college, University & Govt. of Punjab also display these logos on black background as water mark.
11.	Design, Print and Publish 5 motivations Playcards.
12.	Design & Print assignment book of minimum 20 Pages on any Topic.
13.	Design & Print any five most important activities of your college in a collage.
14.	Design & Print Question Paper of any Subject.
15.	Assemble all the latest news cutting of your activities on a 10 X 8 size flex.

Reference Books:

1. DTP Course, by Shirish Chavan published by Rapidex.
2. DTP Course Kit by Vikas Gupta published by Comdex.
3. CorelDraw 9 by David Karlins published by Techmedia.
4. Adobe Illustrator CC by Brian Wood published by Adobe Press.
5. Page Maker in Easy Steps - Scott Basham.

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Software Tools:

1. Adobe Illustrator 14.
 2. CorelDraw Graphics Suit.
 3. GNU image manipulation program.
 4. Ink Scape.
 5. PhotoScape Setup.
 6. PM701.
-

Course Code: UGCA1905

Course Name: Problem Solving using C Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course Outcomes
CO1	Select the right statement for the program.
CO2	Experiment with different input values.
CO3	Test the output with boundary conditions.
CO4	Distinguish between various control statements and data types.
CO5	Implement programs for various problems.

Instructions: Develop all programs in C programming language.

Assignments:

1.	WRITE A PROGRAM to display your name. Write another program to print message with inputted name.
2.	WRITE A PROGRAM to add two numbers.
3.	WRITE A PROGRAM to find the square of a given number.
4.	WRITE A PROGRAM to calculate the average of three real numbers.
5.	Write a program to Find ASCII Value of a Character
6.	WRITE A PROGRAM to Find the Size of int, float, double and char

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7.	WRITE A PROGRAM to Compute Quotient and Remainder
8.	WRITE A PROGRAM to accept the values of two variables.
9.	WRITE A PROGRAM to find the simple interest, inputs are amount, period in years and rate of interest.
10.	Basic salary of an employee is input through the keyboard. The DA is 25% of the basic salary while the HRA is 15% of the basic salary. Provident Fund is deducted at the rate of 10% of the gross salary(BS+DA+HRA). WRITE A PROGRAM to calculate the net salary
11.	WRITE A PROGRAM to find area of a circle using PI as constant
12.	WRITE A PROGRAM to find volume of a cube using side as input from user
13.	WRITE A PROGRAM using various unformatted Input Functions
14.	WRITE A PROGRAM to find area of rectangle and print the result using unformatted output Functions
15.	WRITE A PROGRAM to find the larger of two numbers.
16.	WRITE A PROGRAM to find greater of three numbers using Nested If.
17.	WRITE A PROGRAM to find whether the given number is even or odd.
18.	WRITE A PROGRAM to Generate Multiplication Table Using for loop
19.	WRITE A PROGRAM to Generate Multiplication Table Using while loop
20.	WRITE A PROGRAM to Make a Simple Calculator Using switch...case
21.	WRITE A PROGRAM to find whether the given number is a prime number.
22.	WRITE A PROGRAM using function to find the largest of three numbers
23.	WRITE A PROGRAM using function to print first 20 numbers and its squares.
24.	WRITE A PROGRAM to find the factorial of a given number.
25.	WRITE A PROGRAM to print the sum of two matrices
26.	WRITE A PROGRAM to Find the Length of a String
27.	WRITE A PROGRAM to Copy String using strcpy()
28.	WRITE A PROGRAM to compare a string
29.	WRITE A PROGRAM to reverse a string
30.	WRITE A PROGRAM to reverse a string
31.	WRITE A PROGRAM to multiply two numbers using pointers.
32.	WRITE A PROGRAM to display address of variable using pointers
33.	WRITE A PROGRAM to show the memory occupied by Structure and Union
34.	WRITE A PROGRAM to create Student I-Card using a Structure
35.	WRITE A PROGRAM to read data from a file from a file
36.	WRITE A PROGRAM to save Employee details in a file using File Handling

Course Code: UGCA1906

Course Name: Fundamentals of Computer and IT Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 1 st	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical

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External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: - NA-

Course Outcomes:

CO#	Course outcomes
CO1	Highlight the features of word processing, spreadsheet and presentation tools
CO2	Identify the right componets for its documents on editor, spread sheet and presentation software.
CO3	Prepare documents and apply formatting.
CO4	select the right tool for different requirements.
CO5	Apply various operations.

Instructions:

Word Orientation:	
The instructor needs to give an overview of word processor. Details of the four tasks and features that would be covered Using word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter.	
1.	Using word to create Resume Features to be covered: - Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in Word.
2.	Creating an Assignment Features to be covered: - Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.
3.	Creating a Newsletter Features to be covered :- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs
4.	Creating a Feedback form Features to be covered :- Forms, Text Fields, Inserting objects, Mail Merge in Word.
Excel Orientation:	
The instructor needs to tell the importance of Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered Excel – Accessing, overview of toolbars, saving excel files,	
1.	Creating a Scheduler Features to be covered :- Gridlines, Format Cells, Summation, auto fill, Formatting Text
2.	Calculations

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	Features to be covered :- Cell Referencing, Formulae in excel – average, std.deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP
3.	Performance Analysis Features to be covered :- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting
4.	Game (like Cricket, badminton) Score Card Features to be covered :- Pivot Tables, Interactive Buttons, Importing Data, Data Protection, Data Validation
Presentation Orientation:	
1.	Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows
2.	This session helps students in making their presentations interactive. Topics covered includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts
3.	Concentrating on the in and out of Microsoft power point. Helps them learn best practices in designing and preparing power point presentation. Topics covered includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides. Auto content wizard, Slide Transition, Custom Animation, Auto Rehearsing
4.	Power point test would be conducted. Students will be given model power point presentation which needs to be replicated
Internet and its Applications The instructor needs to tell the how to configure Web Browser and to use search engines by defining search criteria using Search Engines	
1.	To learn to setup an e-mail account and send and receive e-mails
2.	To learn to subscribe/post on a blog and to use torrents for accelerated downloads
3.	Hands on experience in online banking and Making an online payment for any domestic bill

Reference Books:

1. IT Tools, R.K. Jain, Khanna Publishing House.
2. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
3. Introduction to information technology, Turban, Rainer and Potter, John Wiley and Sons.
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning.

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**AECC (For UGC courses)
BTHU103-18 English:**

Course Outcomes:

- The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
- To help the students become the independent users of English language.
- To develop in them vital communication skills which are integral to their personal, social and professional interactions.
- The syllabus shall address the issues relating to the Language of communication.
- Students will become proficient in professional communication such as interviews, group discussions, office environments, important reading skills as well as writing skills such as report writing, note taking etc.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Detailed Contents:

Unit1- 1 (Introduction)

- Theory of Communication
- Types and modes of Communication

Unit- 2 (Language of Communication)

- Verbal and Non-verbal
- (Spoken and Written)
- Personal, Social and Business
- Barriers and Strategies
- Intra-personal, Inter-personal and Group communication

Unit-3 (Reading and Understanding)

- Close Reading
- Comprehension
- Summary Paraphrasing
- Analysis and Interpretation
- Translation(from Hindi/Punjabi to English and vice-versa)

OR

Precis writing /Paraphrasing (for International Students)

- Literary/Knowledge Texts

Unit-4 (Writing Skills)

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- Documenting
- Report Writing
- Making notes
- Letter writing

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.
 2. *Business English*, Pearson, 2008.
 3. *Language, Literature and Creativity*, Orient Blackswan, 2013.
 4. *Language through Literature* (forthcoming) ed. Dr. Gauri Mishra, Dr Ranjana Kaul, Dr Brati Biswas
 5. *On Writing Well*. William Zinsser. Harper Resource Book. 2001
 6. *Study Writing*. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press. 2006.
-

**AECC
BTHU104/18 English Practical/Laboratory
: 0L 0T 2P 1 Credit**

Course Outcomes:

- The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
- To help the students become the independent users of English language.
- To develop in them vital communication skills which are integral to personal, social and professional interactions.
- The syllabus shall address the issues relating to the Language of communication.
- Students will become proficient in professional communication such as interviews, group discussions and business office environments, important reading skills as well as writing skills such as report writing, note taking etc.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Interactive practice sessions in Language Lab on Oral Communication

- Listening Comprehension
- Self-Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations
- Monologue

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- Effective Communication/ Mis- Communication
- Public Speaking

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.
 2. *Business English*, Pearson, 2008.
 3. *Practical English Usage*. Michael Swan. OUP. 1995.
 4. *Communication Skills*. Sanjay Kumar and Pushp Lata. Oxford University Press. 2011.
 5. *Exercises in Spoken English*. Parts. I-III. CIEFL, Hyderabad. Oxford University Press
-

Course Code: HVPE101-18

Course Name: Human Values, De-addiction and Traffic Rules

Program: BCA	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 1 st	Contact hours: 33 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Ability Enhancement

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
CO2	To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Value based living in a natural way.
CO3	To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

Note: This course is intended to provide a much needed orientational input in Value Education to the young enquiring minds.

Detailed Contents	Contact hours

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Unit-I Course Introduction - Need, Basic Guidelines, Content and Process for Value Education 1. Understanding the need, basic guidelines, content and process for Value Education 2. Self-Exploration—what is it? - its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self-exploration 3. Continuous Happiness and Prosperity- A look at basic Human Aspirations 4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority 5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario 6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels [CO1]	8
Unit-II Understanding Harmony in the Human Being - Harmony in Myself! [CO2] 1. Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’ 2. Understanding the needs of Self (‘I’) and ‘Body’ - <i>Sukh</i> and <i>Suvidha</i> 3. Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer) 4. Understanding the characteristics and activities of ‘I’ and harmony in ‘I’ 5. Understanding the harmony of I with the Body: <i>Sanyam</i> and <i>Swasthya</i>; correct appraisal of Physical needs, meaning of Prosperity in detail 6. Programs to ensure <i>Sanyam</i> and <i>Swasthya</i> - Practice Exercises and Case Studies will be taken up in Practice Sessions.	8
Unit-III Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship [CO2] 1. Understanding harmony in the Family- the basic unit of human interaction 2. Understanding values in human-human relationship; meaning of <i>Nyaya</i> and program for its fulfillment to ensure <i>Ubhay-tripti</i>;	6

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Trust (<i>Vishwas</i>) and Respect (<i>Samman</i>) as the foundational values of relationship 3. Understanding the meaning of <i>Vishwas</i>; Difference between intention and competence 4. Understanding the meaning of <i>Samman</i>, Difference between respect and differentiation; the other salient values in relationship 5. Understanding the harmony in the society (society being an extension of family): <i>Samadhan</i>, <i>Samridhi</i>, <i>Abhay</i>, <i>Sah-astitva</i> as comprehensive Human Goals 6. Visualizing a universal harmonious order in society- Undivided Society (<i>Akhand Samaj</i>), Universal Order (<i>Sarvabhaum Vyawastha</i>)- from family to world family! - Practice Exercises and Case Studies will be taken up in Practice Sessions.	
Unit-IV Understanding Harmony in the Nature and Existence - Whole existence as Co-existence [CO3] 1. Understanding the harmony in the Nature 2. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature 3. Understanding Existence as Co-existence (<i>Sah-astitva</i>) of mutually interacting units in all-pervasive space 4. Holistic perception of harmony at all levels of existence - Practice Exercises and Case Studies will be taken up in Practice Sessions.	5
Unit-V Implications of the above Holistic Understanding of Harmony on Professional Ethics [CO3] 1. Natural acceptance of human values 2. Definitiveness of Ethical Human Conduct 3. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order 4. Competence in professional ethics: a) Ability to utilize the professional competence for augmenting universal human order, b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, c) Ability to identify and develop appropriate technologies and management patterns for above production systems. 5. Case studies of typical holistic technologies, management models and production systems	6

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6. Strategy for transition from the present state to Universal Human Order: a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers b) At the level of society: as mutually enriching institutions and organizations.	

Text Book

1. R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

Reference Books

1. Ivan Illich, 1974, *Energy & Equity*, The Trinity Press, Worcester, and Harper Collins, USA.
2. E.F. Schumacher, 1973, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
3. A Nagraj, 1998, *Jeevan Vidya ek Parichay*, Divya Path Sansthan, Amarkantak.
4. Sussan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991.
5. PL Dhar, RR Gaur, 1990, *Science and Humanism*, Common wealth Publishers.
6. A.N. Tripathy, 2003, *Human Values*, New Age International Publishers.
7. Subhas Palekar, 2000, *How to practice Natural Farming*, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati.
8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth – Club of Rome’s report*, Universe Books.
9. E G Seebauer & Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists & Engineers*, Oxford University Press
10. M Govindrajan, S Natrajan & V.S. Senthil Kumar, *Engineering Ethics (including Human Values)*, Eastern Economy Edition, Prentice Hall of India Ltd.
11. B P Banerjee, 2005, *Foundations of Ethics and Management*, Excel Books.
12. B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow. Reprinted 2008.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, <http://uhv.ac.in>
2. Story of Stuff, <http://www.storyofstuff.com>
3. Al Gore, An Inconvenient Truth, Paramount Classics, USA
4. Charlie Chaplin, Modern Times, United Artists, USA
5. IIT Delhi, Modern Technology – the Untold Story

Course Code: HVPE102-18

Course Name: Human Values, De-addiction and Traffic Rules (Lab/ Seminar)

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Program: BCA	L: 0 T: 0 P: 1
Branch: Computer Applications	Credits: 1
Semester: 1 st	Contact hours: 1 hour per week
Internal max. marks: 25	Theory/Practical: Practical
External max. marks: 0	Duration of end semester exam (ESE): 3hrs
Total marks: 25	Elective status: Ability Enhancement

One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the Seminar at least once during the semester. It will be binding for all the students to attend the seminar.

Course Code: UGCA1907

Course Name: Fundamentals of Statistics

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have the basic knowledge of mathematic terms.

Co requisite: NA

Additional material required in ESE: Minimum two exercises of each concept will be recorded in the file and the file will be submitted in End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Highlight the need of studying & analyzing numbers.
CO2	Identify visualization tools for representing data.
CO3	Describe various statistical formulas.
CO4	Compute various statistical measures.
CO5	Compare result of different statistical measures.

Detailed Contents	Contact hours
Unit I Statistics and Probability: Introduction to Statistics – Origin of Statistics, Features of Statistics, Scope of Statistics, Functions of Statics, Uses and importance of Statistics, Limitation of Statistics, Distrust of Statistics	8 hours

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Collection of Data: Introduction to Collection of Data, Primary and Secondary Data, Methods of Collecting Primary Data, Methods of Secondary Data, Statistical Errors, Rounding off Data (Approximation). [CO1]	
Unit II Classification of Data Frequency Distribution: Introduction Classification of Data, Objectives of Classification, Methods of Classification, Ways to Classify Numerical Data or Raw Data. Tabular, Diagrammatic and Graphic Presentation of Data: Introduction to Tabular Presentation of Data, Objectives of Tabulation, Components of a Statistical Table, General Rules for the Construction of a Table, Types of Tables, Introduction to Diagrammatic Presentation of Data, Advantage and Disadvantage of Diagrammatic Presentation, Types of Diagrams, Introduction to Graphic Presentation of Data, Advantage and Disadvantage of Graphic Presentation, Types of Graphs. [CO2]	12 hours
Unit III Measures of Central tendency: Introduction to Central Tendency, Purpose and Functions of Average, Characteristics of a Good Average, Types of Averages, Meaning of Arithmetic Mean, Calculation of Arithmetic Mean, Merit and Demerits of Arithmetic Mean, Meaning of Median, Calculation of Median, Merit and Demerits of Median, Meaning of Mode, Calculation of Mode, Merit and Demerits of Mode, Harmonic Mean- Properties- Merit and Demerits. [CO3]	12 hours
Unit IV Measures of Dispersion: Meaning of Dispersion, Objectives of Dispersion, Properties of a good Measure of Dispersion, Methods of Measuring Dispersion, Range Introduction, Calculation of Range , Merit and Demerits of Range, Mean Deviation, Calculation of Mean Deviation , Merit and Demerits of Mean Deviation, Standard Deviation Meaning, Calculation of Standard Deviation , Merit and Demerits of Standard Deviation,	12 hours

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Coefficient of Variation, Calculation of Coefficient Variance, Merit and Demerits of Coefficient of Variation. [CO4] [CO5]	

Text Books:

1. Statistics and Data Analysis, A.Abebe, J. Daniels, J.W.Mckean, December 2000.
2. Statistics, Tmt. S. EzhilarasiThiru, 2005, Government of Tamilnadu.
3. Introduction to Statistics, David M. Lane.
4. Weiss, N.A., Introductory Statistics. Addison Wesley, 1999.
5. Clarke, G.M. & Cooke, D., A Basic course in Statistics. Arnold, 1998.

Reference Books:

1. Banfield J.(1999), Rweb: Web-based Statistical Analysis, Journal of Statistical Software.
2. Bhattacharya,G.K. and Johnson, R.A.(19977), Statistical Concepts and Methods, New York, John Wiley & Sons.

E-Books/ Online learning material

1. http://onlinestatbook.com/Online_Statistics_Education.pdf
2. <https://textbookcorp.tn.gov.in/Books/12/Std12-Stat-EM.pdf>
3. <https://3lihandam69.files.wordpress.com/2015/10/introductorystatistics.pdf>

Course Code: UGCA1908

Course Name: Computer System Architecture

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Basics of Information Technology

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify the various internal and peripheral components of computer system
CO2	Categorize different number system.
CO3	Outline the role of various components of computer system.
CO4	Identify micro-operations.
CO5	Comment on the design of Combinational & Sequential circuits

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Detailed Contents	Contact hours
Unit-I Logic Gates: AND, OR, NOT, NAND, NOR, XOR, XNOR, NAND & NOR as Universal Gates, Logic Gates Applications.[CO5] Boolean Algebra: Introduction, Theorems, Simplification of Boolean Expression using Boolean Algebra, SOP & POS Forms, Realization of Boolean Expression using Gates, K-Maps, Simplification of Boolean Expression using K-Maps. [CO2]	12
Unit-II Combinational Logic Circuits: Half Adder & Half Subtractor, Full Adder & Full Subtractor, Parallel Binary Adder, Binary Adder/Subtractor. [CO4] Combinational Logic Circuits: Multiplexers & Demultiplexers, Implementation of Boolean equations using Multiplexer and Demultiplexer, Encoders & Decoders.	12
Unit-III Sequential Logic Circuits: Latch, Flip Flops- R-S Flip-Flop, J-K Flip-Flop, Race Around Condition, Removing Race Around Condition, Master-Slave J-K Flip-Flop, D Flip-Flop, T Flip-Flop, Applications of Flip-Flops. [CO3]	8
Unit-IV Introduction to Computer Organization: Introduction to Computer and CPU (Computer Organization, Computer Design and Computer Architecture), Stored Program Concept- Von Neumann Architecture, Harvard Architecture, RISC and CISC Architecture. [CO1] Register Transfer and Micro operations- Introduction to Registers, Instruction Format, Types of Instructions- Memory Reference Instructions, Register Reference Instructions and Input-Output Instructions. Common Bus System: Introduction to Common Bus System, Types of Buses (Data Bus, Control Bus, Address Bus), 16-bit Common Bus System--Data Movement among registers using Bus.[CO4]	12

Text Books:

1. Computer System Architecture, M.M. Mano, Third Edition, PHI.
2. Digital Computer Electronics, Malvino, Second Edition, Mc-Graw Hill.

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3. Modern Digital Electronics, R. P. Jain, Fourth Edition, TMH.

Reference Books:

1. Computer Organization and Architecture, Stallings, Eighth Edition, PHI.
 2. Computer Organization and Architecture, J.P.Hayes, Third Edition, TMH.
 3. Digital and Electronic Circuits, T. C. Bartee, McGraw Hill.
 4. Digital Fundamentals, Floyd, Ninth Edition, PHI.
 5. Digital Integrated Electronics, Taub & Schilling, Eighth Edition, Mc-Graw Hill.
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Course Code: UGCA1909

Course Name: Object Oriented Programming using C++

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 2 nd	Contact hours: 44 hours
Internal max. marks: 40	Theory/Practical: Theory
External max. marks: 60	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Outline the role of programming for solving real world problems.
CO2	Explain Object oriented approach for finding Solutions to various problems with the help of C++ language.
CO3	Implement computer based solutions to various real-world problems using C++
CO4	Select the right Object Oriented Concept for optimal solution.
CO5	Review different solutions for a common problem.

Detailed Contents	Contact hours
Unit-I Principles of object oriented programming Introduction to OOP and its basic features, Basic components of a C++, Program and program structure, Compiling and Executing C++ Program. Difference between Procedure Oriented Language(C) and Object Oriented Language [CO1]	12
Unit-II	10

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Classes & Objects and Concept of Constructors Defining classes, Defining member functions, Declaration of objects to class, Access to member variables from objects, Different forms of member functions, Access specifiers (Private, public, protected), Array of objects. Introduction to constructors, Parameterized constructors, Copy Constructor, Multiple constructors in class, Dynamic initialization of objects, Destructors.[CO2]	
Unit-III Inheritance and Operator overloading Introduction to Inheritance, Types of inheritance: - Single inheritance, Multiple inheritance, Multilevel inheritance, Hierarchical inheritance, Hybrid inheritance, Defining operator overloading, Overloading of Unary and Binary operators, Rules for overloading operators [CO3]	12
Unit-IV Polymorphism and File Handling Early Binding, Late Binding, Virtual Functions, pure virtual functions, Abstract Classes. [CO5] Opening and Closing File, Reading and Writing a file.	10

Text Books:

1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.
3. The C++ Programming Language, Bjarna Stroustrup, Third Edition, Addison-Wesley Publishing Company.
4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.

Course Code: UGCA1910

Course Name: Object Oriented Programming using C++ Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 hours per week

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Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Design the classes.
CO2	Illustrate the concept of memory representation for objects
CO3	Implement programs using OOP concepts for various problems.
CO4	Implement file handling in C++
CO5	Select the right data types to represent class properties.

Instructions: Develop all program in C++

Assignments:

1.	Write a program to enter mark of 6 different subjects and find out the total mark (Using cin and cout statement)
2.	Write a function using reference variables as arguments to swap the values of pair of integers.
3.	Write a function to find largest of three numbers.
4.	Write a program to find the factorial of a number.
5.	Define a class to represent a bank account which includes the following members as Data members: a) Name of the depositor b) Account Number c) Withdrawal amount d) Balance amount in the account Member Functions: a) To assign initial values b) To deposit an amount c) To withdraw an amount after checking the balance d) To display name and balance.
6.	Write the above program for handling n number of account holders using array of objects.
7.	Write a C++ program to compute area of right angle triangle, equilateral triangle, isosceles triangle using function overloading concept.
8.	Consider a publishing company that markets both book and audio cassette version to its works. Create a class Publication that stores the title (a string) and price (type float) of a publication. Derive the following two classes from the above Publication class: Book which adds a page count (int) and Tape which adds a playing time in minutes(float). Each class should have get_data() function to get its data from the user at the keyboard. Write the main() function to test the Book and Tape classes by creating instances of them asking the user to fill in data with get_data() and then displaying it using put_data().

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9.	Consider an example of declaring the examination result. Design three classes student, exam and result. The student has data members such as rollno, name. Create the class exam by inheriting the student class. The exam class adds data members representing the marks scored in 5 subjects. Derive the result from exam-class and it has own data members like total, avg.
10.	Write a program for overloading of Unary ++ operator.
11.	Write a program for overloading of Binary + operator.
12.	Write a program of Virtual Functions.
13.	Write a program of Abstract Classes.
14.	Write a program to read and write from file.

Reference Books:

1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill.
 2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.
 3. The C++ Programming Language, Bjarna Stroustrup, Third Edition, Addison-Wesley Publishing Company.
 4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.
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Course Code: UGCA1911

Course Name: Fundamentals of Statistics Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have the knowledge of Spreadsheet.

Co requisite: The students will develop analytical behavior & will have better understanding of analyzing data and testing hypotheses.

Additional material required in ESE: Minimum two exercises of each concept will be recorded in the file and the file will be submitted in End Semester Examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Create Frequency table and Graphs for data representation.
CO2	Apply various statistical operations using statistical tool like excel.
CO3	Compute various statistical measures using statistical tool like excel.

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CO4	Analyze real life data using statistical tool
CO5	Prepare data in different formats and styles

Instructions: Sample exercises are given below and Instructor can increase or decrease the experiments as per the requirement.

1:	Display the Maximum and Minimum market data.														
2:	Display year wise strength of the students of a college in Tabular form & Graphical form.														
3:	Calculate the average marks of the students of your College.														
4:	Print measure of Central Tendency using grouped and ungrouped data.														
5:	Construct & print frequency distribution using data with the following Techniques: a) Histogram b) Frequency Polygon c) Frequency Curve c) Ogive curves.														
6:	Find out & display the Median and Mode from the following series by using suitable method: <table><tr><td>Class</td><td>156-158</td><td>158-160</td><td>160-162</td><td>162-164</td><td>164-166</td></tr><tr><td>Frequency</td><td>4</td><td>8</td><td>28</td><td>51</td><td>89</td></tr></table>	Class	156-158	158-160	160-162	162-164	164-166	Frequency	4	8	28	51	89		
Class	156-158	158-160	160-162	162-164	164-166										
Frequency	4	8	28	51	89										
7:	Calculate an appropriate measure of dispersion using grouped and ungrouped data.														
8:	Make an array and calculate range of the data.														
9:	Represent the placement record of the students of your college.														
10:	Calculate & display Letter Grade using spreadsheet.														
11:	Represent the following data by suitable graphs, determine therefrom the number of children having IQ (i) Below 105 (ii) Above 124. <table><tr><td>IQ</td><td>75-84</td><td>85-94</td><td>95-104</td><td>105-114</td><td>115-124</td><td>125-134</td></tr><tr><td>No. of Children</td><td>8</td><td>20</td><td>45</td><td>54</td><td>28</td><td>16</td></tr></table>	IQ	75-84	85-94	95-104	105-114	115-124	125-134	No. of Children	8	20	45	54	28	16
IQ	75-84	85-94	95-104	105-114	115-124	125-134									
No. of Children	8	20	45	54	28	16									

Reference Books:

1. Statistics for Economics, TR Jain, VK Ohri.
2. Statistics and Data Analysis, A.Abebe, J. Daniels, J.W.Mckean, December 2000.

E-Books/ Online learning material

1. https://www.meritnation.com/cbse-class-11-commerce/economics/class_13_tr_jain.
2. http://college.cengage.com/mathematics/brase/understandable_statistics/9780618949922_ch03.pdf
3. http://www.rockcreekschools.org/pages/uploaded_files/Excel%20Lab%20Exercises.pdf

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Course Code: UGCA1912

Course Name: Computer System Architecture Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 2 nd	Contact hours: 4 hours per week
Internal max. marks: 60	Theory/Practical: Practical
External max. marks: 40	Duration of end semester exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Basic knowledge of Fundamentals of Computer and IT

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify various types of Gates and Circuits
CO2	Highlight the functioning of various gates and circuits
CO3	Validate the outcome of various gates and circuits
CO4	Differentiate between the various types of gates and circuits
CO5	Outline the use of each type of gate and circuit

Assignments:

1.	To verify the Truth Table of Basic Logic Gates
2.	To verify the Truth Table of Combinational Logic Gates
3.	To verify the Truth Table of Universal Logic Gates
4.	To verify the Truth Table of Half Adder Combinational Circuit
5.	To verify the Truth Table of Full Adder Combinational Circuit
6.	To verify the Truth Table of Half Subtractor Combinational Circuit
7.	To verify the Truth Table of Full Subtractor Combinational Circuit
8.	To verify the Truth Table of Decoder Combinational Circuit
9.	To verify the Truth Table of Encoder Combinational Circuit
10.	To verify the Truth Table of Multiplexer Combinational Circuit
11.	To verify the Truth Table of De Multiplexer Combinational Circuit
12.	To verify the Truth Table of S-R Flip-Flop
13.	To verify the Truth Table of J-K Flip-Flop
14.	To verify the Truth Table of Master Slave J-K Flip-Flop
15.	To verify the Truth Table of D Flip-Flop
16.	To verify the Truth Table of T Flip-Flop
17.	To verify the working of Asynchronous Up Counter
18.	To verify the working of Asynchronous Down Counter
19.	To verify the working of Asynchronous MOD-N Counter
20.	To verify the working of Synchronous Up Counter
21.	To verify the working of Synchronous Down Counter
22.	To verify the working of Synchronous MOD-N Counter

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23.	To verify the working of Asynchronous Bidirectional Counter
24.	To verify the working of Synchronous Bidirectional Counter

Reference Books:

1. Computer Organization and Architecture, Stallings, Eighth Edition, PHI.
 2. Modern Digital Electronics, R. P. Jain, Fourth Edition, TMH.
 3. Digital Logic & Computer Design, D. Morris Mano, Second Edition, PHI.
 4. Digital and Electronic Circuits, T. C. Bartee, McGraw Hill.
 5. Digital Fundamentals, Floyd, Ninth Edition, PHI.
 6. Digital Integrated Electronics, Taub & Schilling, Eighth Edition, Mc-Graw Hill.
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**Ability Enhancement Compulsory Course
EVS102-18 Environmental Studies**

Course Outcomes:

1. Students will enable to understand environmental problems at local and national level through literature and general awareness.
2. The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
3. The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world

UNIT-1: Introduction to Environmental Studies

Multidisciplinary nature of Environmental Studies: Scope & Importance
Need for Public Awareness

UNIT-2: Ecosystems

Concept of an Ecosystem: Structure & functions of an ecosystem (Producers, Consumers & Decomposers)

Energy Flow in an ecosystem: Food Chain, Food web and Ecological Pyramids

Characteristic features, structure & functions of following Ecosystems:

- Forest Ecosystem
- Aquatic Ecosystem (Ponds, Lakes, River & Ocean)

UNIT-3: Natural Resources

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Renewable & Non-renewable resources

Forest Resources: Their uses, functions & values (Biodiversity conservation, role in climate change, medicines) & threats (Overexploitation, Deforestation, Timber extraction, Agriculture Pressure), Forest Conservation Act

Water Resources: Their uses (Agriculture, Domestic & Industrial), functions & values, Overexploitation and Pollution of Ground & Surface water resources (Case study of Punjab), Water Conservation, Rainwater Harvesting,

Land Resources: Land as a resource; Land degradation, soil erosion and desertification

Energy Resources: Renewable & non-renewable energy resources, use of alternate energy resources (Solar, Wind, Biomass, Thermal), Urban problems related to Energy

UNIT-4: Biodiversity & its conservation

Types of Biodiversity: Species, Genetic & Ecosystem

India as a mega biodiversity nation, Biodiversity hot spots and biogeographic regions of India

Examples of Endangered & Endemic species of India, Red data book

UNIT-5: Environmental Pollution & Social Issues

Types, Causes, Effects & Control of Air, Water, Soil & Noise Pollution

Nuclear hazards and accidents & Health risks

Global Climate Change: Global warming, Ozone depletion, Acid rain, Melting of Glaciers & Ice caps, Rising sea levels

Environmental disasters: Earthquakes, Floods, Cyclones, Landslides

UNIT-6: Field Work

Visit to a National Park, Biosphere Reserve, Wildlife Sanctuary

Documentation & preparation of a Biodiversity (flora & fauna) register of campus/river/forest

Visit to a local polluted site: Urban/Rural/Industrial/Agricultural

Identification & Photography of resident or migratory birds, insects (butterflies)

Public hearing on environmental issues in a village

Suggested Books:

1. Bharucha, E. Text Book for Environmental Studies. University Grants Commission, New Delhi.
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down to Earth, Centre for Science and Environment (R)
9. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p

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10. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
 11. Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
 12. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
 13. Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
 14. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
 15. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
 16. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
 17. Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
 18. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
 19. Survey of the Environment, The Hindu (M)
 20. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
 21. Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
 22. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p
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Course Code: UGCA1913

Course Name: Computer Networks

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Core
Total marks: 100	

Prerequisite: Information Technology

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Highlight the characteristics of various protocols.
CO2	Define different network technologies and their application.
CO3	Identify Hardware and software components for designing network.
CO4	Compare the performace of different network media
CO5	Implement various configutaion settings

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Detailed Contents	Contact hours
Unit-I Data communications concepts: Digital and analog transmissions-Modem, parallel and serial transmission, synchronous and asynchronous communication. Modes of communication: Simplex, half duplex, full duplex. [CO1] Types of Networks: LAN, MAN, WAN Network Topologies: Bus, Star, Ring, Mesh, Tree, Hybrid Communication Channels: Wired transmissions: Telephone lines, leased lines, switch line, coaxial cables-base band, broadband, optical fiber transmission. [CO3] Communication Switching Techniques: Circuit Switching, Message Switching, Packet Switching. [CO1]	12
Unit-II Network Reference Models: OSI Reference Model, TCP/IP Reference Model, Comparison of OSI and TCP/IP Reference Models. Transmission impairments – Attenuation, Distortion, Noise. Multiplexing – Frequency division, Time division, Wavelength division. [CO2] Data Link Layer Design Issues: Services provided to the Network Layer, Framing, Error Control (error detection and correction code), Flow Control, Data Link Layer in the Internet (SLIP, PPP) [CO2]	10
Unit-III MAC sub layer: CSMA/CD/CA, IEEE standards (IEEE802.3 Ethernet, Gigabit Ethernet, IEEE 802.4 Token Bus, IEEE 802.5 Token Ring) [CO1] Network Layer: Design Issues, Routing Algorithms: Optimality Principle, Shortest Path Routing, Congestion Control Policies, Leaky bucket and token bucket algorithm, Concept of Internetworking. [CO1]	12
Unit-IV Transport Layer: Design issues, Elements of transport protocols – Addressing, Connection establishment and release, Flow control and buffering, Introduction to TCP/UDP protocols. [CO4] Session, Presentation and Application Layers: Session Layer – Design issues, remote procedure call. Presentation Layer – Design issues, Data compression techniques, Cryptography. Application Layer – Distributed	10

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application (client/server, peer to peer, cloud etc.), World Wide Web (WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP), HTTP as an application layer protocol. [CO5]	

Text Books:

1. Computer Networks, Tanenbaum, Andrew, Fifth Edition, PHI.
2. Data Communication and Networking, Behrouz A. Forouzan, Fourth Edition.
3. Computer Today, S.K. Basandra, First Edition, Galgotia.

Reference Books:

1. Data Communication System, Black, Ulysse, Third Edition, PHI.
 2. Data and Computer Communications, Stalling, Ninth Edition, PHI.
 3. James F. Kurose and Keith W. Ross, "Computer Networking", Pearson Education.
 4. Douglas E. Comer, "Internetworking with TCP/IP", Volume-I, Prentice Hall, India.
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Course Code: UGCA1914

Course Name: Programming in Python

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 40%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course Outcomes
CO1	Explain environment, data types, operators used in Python.
CO2	Compare Python with other programming languages.
CO3	Outline the use of control structures and numerous native data types with their methods.
CO4	Design user defined functions, modules, files, and packages and exception handling methods.
CO5	Write solutions for Object Oriented Programming Concepts.

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Detailed Contents	Contact hours
Unit-I Introduction to Python Programming Language: Programming Language, History and Origin of Python Language, Features of Python, Limitations, Major Applications of Python, Getting, Installing Python, Setting up Path and Environment Variables, Running Python, First Python Program, Python Interactive Help Feature, Python differences from other languages. [CO1] [CO2] Python Data Types & Input/Output: Keywords, Identifiers, Python Statement, Indentation, Documentation, Variables, Multiple Assignment, Understanding Data Type, Data Type Conversion, Python Input and Output Functions, Import command. [CO1] Operators and Expressions: Operators in Python, Expressions, Precedence, Associativity of Operators, Non Associative Operators. [CO1]	12
Unit-II Control Structures: Decision making statements, Python loops, Python control statements. Python Native Data Types: Numbers, Lists, Tuples, Sets, Dictionary, Functions & Methods of Dictionary, Strings (in detail with their methods and operations).[CO3]	10
Unit-III Python Functions: Functions, Advantages of Functions, Built-in Functions, User defined functions, Anonymous functions, Pass by value Vs. Pass by Reference, Recursion, Scope and Lifetime of Variables. [CO3] Python Modules: Module definition, Need of modules, Creating a module, Importing module, Path Searching of a Module, Module Reloading, Standard Modules, Python Packages. [CO3]	12
Unit-IV Exception Handling: Exceptions, Built-in exceptions, Exception handling, User defined exceptions in Python.	10

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File Management in Python: Operations on files (opening, modes, attributes, encoding, closing), read() & write() methods, tell() & seek() methods, renaming & deleting files in Python, directories in Python. [CO4]	
Classes and Objects: The concept of OOPS in Python, Designing classes, Creating objects, Accessing attributes, Editing class attributes, Built-in class attributes, Garbage collection, Destroying objects. [CO5]	

Text Books:

1. Programming in Python, Pooja Sharma, BPB Publications, 2017.
2. Core Python Programming, R. Nageswara Rao, 2nd Edition, Dreamtech.

Reference Books:

1. Python, The complete Reference, Martin C. Brown, Mc Graw Hill Education.
 2. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.
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Course Code: UGCA1915

Course Name: Data Structures

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 3 rd	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Apply appropriate constructs of Programming language, coding standards for application development
CO2	Select appropriate data structures for problem solving and programming
CO3	Illustrate the outcome of various operations on data structures.
CO4	Identify appropriate searching and/or sorting techniques for wide range of problems and data types.
CO5	Differentiate between various types of data structures

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Detailed Contents	Contact hours
Unit-I Introduction to Data Structures: Algorithms and Flowcharts, Basics Analysis on Algorithm, Complexity of Algorithm, Introduction and Definition of Data Structure, Classification of Data, Arrays, Various types of Data Structure, Static and Dynamic Memory Allocation, Function, Recursion. [CO5] Arrays, Pointers and Strings: Introduction to Arrays, Definition, One Dimensional Array and Multi-Dimensional Arrays, Pointer, Pointer to Structure, various Programs for Array and Pointer. Strings. Introduction to Strings, Definition, Library Functions of Strings. [CO1]	10
Unit-II Stacks and Queue Introduction to Stack, Definition, Stack Implementation, Operations of Stack, Applications of Stack and Multiple Stacks. Implementation of Multiple Stack Queues, Introduction to Queue, Definition, Queue Implementation, Operations of Queue, Circular Queue, De-queue and Priority Queue. [CO2]	8
Unit-III Linked Lists and Trees Introduction, Representation and Operations of Linked Lists, Singly Linked List, Doubly Linked List, Circular Linked List, And Circular Doubly Linked List. [CO3] Trees Introduction to Tree, Tree Terminology Binary Tree, Binary Search Tree, Strictly Binary Tree, Complete Binary Tree, Tree Traversal, Threaded Binary Tree, AVL Tree B Tree, B+ Tree. [CO3]	14
Unit-IV Graphs, Searching, Sorting and Hashing Graphs: Introduction, Representation to Graphs, Graph Traversals Shortest Path Algorithms. [CO3] Searching and Sorting: Searching, Types of Searching, Sorting, Types of sorting like quick sort, bubble sort, merge sort, selection sort. [CO4]	12

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Hashing: Hash Function, Types of Hash Functions, Collision, Collision Resolution Technique (CRT), Perfect Hashing [CO4]	

Text Books

1. Brijesh Bakariya. Data Structures and Algorithms Implementation through C, BPB Publications.
2. Kruse R.L. Data Structures and Program Design in C; PHI
3. Aho Alfred V., Hopperoft John E., Ullman Jeffrey D., “Data Structures and Algorithms”, AddisonWesley

Reference books

1. Horowitz & Sawhaney: Fundamentals of Data Structures, Galgotia Publishers.
 2. Yashwant Kanetkar, Understanding Pointers in C, BPB Publications.
 3. Horowitz, S. Sahni, and S. Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd., 1998.
-

Course Code: UGCA1916

Course Name: Computer Networks Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Outline the key features of various protocols
CO2	Implement network configuration settings for an operating system
CO3	Prepare different types of cables for networking.
CO4	Design network model using network simulation tool
CO5	Implement various setting on FTP, Proxy and other servers.

List of assignments:

1.	Familiarization with networking components and devices: LAN Adapters, Hubs, Switches, Routers etc

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2.	Familiarization with transmission media and tools: Coaxial cable, UTP cable, Crimping tool, Connectors etc
3.	Preparing straight and cross cables
4.	Study of various LAN topologies and their creation using network devices, cables and computers
5.	Configuration of TCP/IP Protocols in Windows and Linux
6.	Implementation of resource sharing (file, printer etc.)
7.	Designing and implementing class A, B and C networks
8.	Subnet planning and its implementation
9.	To configure dynamic IP address for a computer connected to a LAN
10.	Use of commands like ping, ipconfig for trouble shooting network related problems
11.	Develop a program to compute the Hamming Distance between any two code words
12.	Installation of FTP server and client
13.	To configure proxy server
14.	Familiarization with network simulation tools.

Reference Books:

1. Data Communication and Networking, Behrouz A. Forouzan, Fourth Edition.
2. Douglas E. Comer, "Internetworking with TCP/IP", Volume-I, Prentice Hall, India.

Course Code: UGCA1917

Course Name: Programming in Python Laboratory

Program: BCA	L: 0 T: 0 P:4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 90%
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective Status : Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: - Maintain practical note book as per the instructions given by the instructor.

Course Outcomes: Students will be able to :

CO#	Course outcomes
CO1	Outline various programming constructs like data types and control structures of Python.
CO2	Implement different data structures.
CO3	Implement modules and functions.

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CO4	Illustrate concept of object oriented programming.
CO5	Implement file handling.

List of assignments:

1.	Compute sum, subtraction, multiplication, division and exponent of given variables input by the user.
2.	Compute area of following shapes: circle, rectangle, triangle, square, trapezoid and parallelogram.
3.	Compute volume of following 3D shapes: cube, cylinder, cone and sphere.
4.	Compute and print roots of quadratic equation $ax^2+bx+c=0$, where the values of a, b, and c are input by the user.
5.	Print numbers up to N which are not divisible by 3, 6, 9,, e.g., 1, 2, 4, 5, 7,....
6.	Write a program to determine whether a triangle is isosceles or not?
7.	Print multiplication table of a number input by the user.
8.	Compute sum of natural numbers from one to n number.
9.	Print Fibonacci series up to n numbers e.g. 0 1 1 2 3 5 8 13.....n
10.	Compute factorial of a given number.
11.	Count occurrence of a digit 5 in a given integer number input by the user.
12.	Print Geometric and Harmonic means of a series input by the user.
13.	Evaluate the following expressions: a. $x-x^2/2!+x^3/3!- x^4/4!+\dots x^n/n!$ b. $x-x^3/3!+x^5/5!- x^7/7!+\dots x^n/n!$
14.	Print all possible combinations of 4, 5, and 6.
15.	Determine prime numbers within a specific range.
16.	Count number of persons of age above 60 and below 90.
17.	Compute transpose of a matrix.
18.	Perform following operations on two matrices. 1) Addition 2) Subtraction 3) Multiplication
19.	Count occurrence of vowels.
20.	Count total number of vowels in a word.
21.	Determine whether a string is palindrome or not.
22.	Perform following operations on a list of numbers: 1) Insert an element 2) delete an element 3) sort the list 4) delete entire list
23.	Display word after Sorting in alphabetical order.
24.	Perform sequential search on a list of given numbers.
25.	Perform sequential search on ordered list of given numbers.
26.	Maintain practical note book as per their serial numbers in library using Python dictionary.
27.	Perform following operations on dictionary 1) Insert 2) delete 3) change
28.	Check whether a number is in a given range using functions.
29.	Write a Python function that accepts a string and calculates number of upper case letters and lower case letters available in that string.

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30.	To find the Max of three numbers using functions.
31.	Multiply all the numbers in a list using functions.
32.	Solve the Fibonacci sequence using recursion.
33.	Get the factorial of a non-negative integer using recursion.
34.	Write a program to create a module of factorial in Python.
35.	Design a Python class named <i>Rectangle</i> , constructed by a length & width, also design a method which will compute the area of a rectangle.
36.	Design a Python class named <i>Circle</i> constructed by a radius and two methods which will compute the area and the perimeter of a circle.
37.	Design a Python class to reverse a string 'word by word'.
38.	Write a Python program to read an entire <i>text file</i> .
39.	Design a Python program to read first n lines of a <i>text file</i> .
40.	Construct a Python program to write and append text to a file and display the text.

Text Books:

1. Programming in Python, Pooja Sharma, BPB Publications, 2017.
2. Core Python Programming, R. Nageswara Rao, 2nd Edition, Dreamtech.

Reference Books:

1. Python, The complete Reference, Martin C. Brown, Mc Graw Hill Education.
2. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.

Course Code: UGCA1918

Course Name: Data Structures Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 3 rd	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: - NA-

Course Outcomes: Student will be able to

CO#	Course outcomes
CO1	Implement Dynamic memory allocation.
CO2	Create different data structures in C/ C++
CO3	Implement various operations of all data structures

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CO4	Illustrate the outcome of various operations with the help of examples.
CO5	Write programs to implement various types of searching and sorting algorithms

Instructions: Programs may be developed in C/C++/Python/Java language.

List of assignments:

1	Program for using Dynamic Functions (malloc(), calloc(), realloc() and free()) functions.
2	Program to insert, delete and traverse an element from an array
3	Program to merge one dimensional arrays
4	Program for addition and subtraction of two matrices.
5	Program for implementing multiplication of two matrices
6	Implement linear search using one and two dimensional array.
7	Program for implementing selection sort.
8	Program for implementing insertion sort.
9	Program for implementing quick sort.
10	Program for implementing merge sort.
11	Program to calculate length of the string using user defined function.
12	Program to concatenate and compare two strings using user defined function.
13	Program for using the concept of pointer to string.
14	Program to reverse a sentence by recursion.
15	Program to delete all repeated words in string.
16	Program to find the number of vowels, consonants, digits and white space in a string.
17	Program to find the length of the longest repeating sequence in a string.
18	Program to find highest and lowest frequency character in a string.
19	Program for implementing Stack using array.
20	Program for implementing Stack using pointer.
21	Program for implementing multiple stack.
22	Program for converting infix to postfix form.
23	Program for implementing Queue using array.
24	Program for dynamic implementation of queue.
25	Program for implementing circular queue.
26	Program for implementing dequeue.
27	Program for implementing priority queue.
28	Program for implementing Singly Linked list.
29	Program for implementing Doubly Linked list.
30	Program for implementing Binary Search Tree.
31	Program for Breadth First Search (BFS) for graph traversal.
32	Program for Depth First Search (DFS) for graph traversal.

Reference Books:

1. Brijesh Bakariya. Data Structures and Algorithms Implementation through C, BPB Publications.

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2. Aho Alfred V., Hopperoft John E., Ullman Jeffrey D., “Data Structures and Algorithms”, AddisonWesley
 3. Horowitz & Sawhaney: Fundamentals of Data Structures, Galgotia Publishers.
-

Course Code: UGCA1919

Course Name: PC Assembly & Troubleshooting

Program: BCA	L:3T:0 P:0
Branch: Computer Applications	Credits: 3
Semester : 3 rd	Contact hours: 33 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 80%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Skill Enhancement
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Identify various components of computer systems.
CO2	Differentiate between types of processors required for different computer systems.
CO3	Explain the steps to install, connect and configure various peripheral devices
CO4	Execute the troubleshooting issues in Computer Systems
CO5	Explain how resources can be shared over network

Detailed contents	Contact hours
Unit I: Brief history of computer on the basis Hardware. Computer system modules/ components and its operations, need of hardware and software for computer to work, different hardware components within a computer and connected to a computer as peripheral devices, different processors used for personal computers and notebook computers. [CO1]	9
Unit II: Perform installation, configuration, and upgrading of microcomputer/ computer: Hardware and software requirement, Assemble/setup microcomputer/ computer systems, accessory boards, types of motherboards, selection of right motherboard, Installation replacement of motherboard, troubleshooting problems with memory. [CO2]	8

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Unit III: Install/connect associated peripherals: Working of printers and scanners, Installation of printers and scanners, sharing a printer over a local area network, troubleshooting printer and scanner problems, troubleshooting hard drive problems. Drivers: Meaning, role and types.[CO3]	8
Unit IV: Diagnose and troubleshooting of microcomputer/ computer systems hardware & software and other peripheral equipment: Approaches to solve a PC problem, troubleshooting a failed boot before the OS is loaded, different approaches to installing and supporting I/O device, managing faulty components. Booting and its types. [CO4][CO5]	8

Text Books:

1. PC Hardware: The Complete Reference, McGraw-Hills

Reference Books:

1. The Indispensable PC Hardware Book (4th Edition) Hans-Peter Messmer
 2. PC Hardware: A Beginner's Guide by Ron Gilster.
-

Course Code: UGCA1920

Course Name: PC Assembly & Troubleshooting Laboratory

Program: BCA	L: 0 T: 0 P: 2
Branch: Computer Application	Credits: 1
Semester: 3 rd	Contact hours: 2 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 95%
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 20	Elective status: Skill Enhancement
Total marks: 50	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

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CO#	Course outcomes
CO1	Identify key component of computer system while assembling a system.
CO2	Implement installation and configuration of computer system
CO3	Perform installation, configuration and sharing of peripheral devices.
CO4	Solve troubleshooting issues in Computer Systems
CO5	Execute dual booting.

List of assignments:

1.	Assembling and De Assembling of Computer System
2.	Loading and configuration procedure of Microsoft Client O/S Win XP /Win 7 and Windows 8
3.	Installation of utility tools (Software)
4.	Installation of utility tools (Drivers)
5.	Firewall configuration, Antivirus/Internet security loading and configuration procedure
6.	Installation and configuration of I/O devices – Printers, Webcams, Scanners.
7.	Installation and configuration of I/O devices – Digital Camera, USB Wi-fi, USB BT, USB Storages, Projectors
8.	Multiple OS loading and trouble shooting

Recommended Hardware:

All hardware component as mentioned above in the syllabus.

Text Books:

1. PC Hardware: The Complete Reference, McGraw-Hills

Reference Books:

1. The Indispensable PC Hardware Book (4th Edition) Hans-Peter Messmer
PC Hardware: A Beginner's Guide by Ron Gilster

Course Code: UGCA1921

Course Name: Software Engineering

Program: BCA	L: 3 T:1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems:-
Internal max. marks: 40	Duration of end semester exam (ESE): -
External max. marks: 60	Core/Elective status: core
Total marks: 100	

Prerequisite: -

Co requisite:-

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Additional material required in ESE:-

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Highlight the need of software engineering
CO2	Outline the phases and activities involved in the conventional software life cycle models
CO3	Design documents for various phases of software life cycle.
CO4	Compute the complexity of the software based on multiple metrics.
CO5	Identify the tools needed for different types of documents required in software engineering.

Detailed contents	Contact hours
Unit 1 The Nature of Software, Need of Software Engineering, Prescriptive Process Models, Specialized Process Models, The Unified Process. [CO1]	10
Unit 2 Role of a system analyst, SRS, Properties of a good SRS document, functional and non-functional requirements, Decision tree and Decision table, Formal Requirements Specification, Software Cost Estimation. [CO2]	10
Unit 3 Software design and its activities, Preliminary and detailed design activities, Characteristics of a good software design, Features of a design document, Cohesion and Coupling, Structured Analysis, Function Oriented Design, Object-Oriented Design. [CO3]	12
Unit 4 Testing Fundamentals, Unit Testing, Integration Testing, Validation Testing, System Testing, Maintenance and Reengineering, Measures, Metrics, and Indicators, Software Measurement, Metrics for Requirements Model, Metrics for Design Model, Metrics for Testing, Metrics for Maintenance. [CO4] [CO5]	12

Text Books:

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1. Software Engineering–A Practitioner’s Approach, Roger S.Pressman, Seventh Edition, McGrawHill, 2010.

Reference Books:

1. An Integrated Approach to Software Engineering, Pankaj Jalota, Third Edition, Narosa Publishing House, 2005
 2. Software Engineering, Ian Sommerville, Ninth Edition, Addison-Wesley, 2011
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Course Code: UGCA1922

Course Name: Database Management Systems

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to

CO#	Course outcomes
CO1	Define the basic concepts of DBMS.
CO2	Design SQL queries.
CO3	Illustrate the concept of data normalization with the help of real life examples.
CO4	Explain the concept of transaction management.
CO5	Outline features of advanced database management systems.

Detailed contents	Contact hours
Unit-I Introduction of DBMS, Data Modeling for a Database, Three level Architecture of DBMS, Components of a DBMS. Introduction to Data Models, Hierarchical, Network and Relational Model, Comparison of Network, Hierarchical and Relational Model, Entity Relationship Model. [CO1]	10

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Unit-II	
Relational Database, Relational Algebra and Calculus, SQL Fundamentals, DDL, DML, DCL, PL/SQL Concepts, Cursors, Stored Procedures, Stored Functions, Database Triggers. [CO2]	12
Unit-III	
Introduction to Normalization, First, Second, Third Normal Forms, Dependency Preservation, Boyce-Codd Normal Form, Multi-valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form, Domain-key normal form (DKNF). [CO3]	12
Unit-IV	
Database Recovery, Concurrency Management, Database Security, Integrity and Control. Structure of a Distributed Database, Design of Distributed Databases. [CO4] [CO5]	10

Text Books:

1. "An Introduction to Database System", Bipin C. Desai, Galgotia Publications Pvt Ltd-New Delhi, Revised Edition, (2012).
2. "Database System Concepts", Abraham Silberschatz, Henry F. Korth, S. Sudharshan, Tata McGraw Hill, 6th Edition, (2013).

Reference Books:

1. "SQL, PL/SQL The Programming Language of Oracle", Ivan Bayross, BPB Publications, 4th Revised Edition (2009)
2. "An Introduction to Database Systems", C. J. Date, A. Kannan, S. Swamynathan, 8th Edition, Pearson Education, (2006).
3. Database Management Systems, Raghu Ramakrishnan, McGraw-Hill, Third Edition, 2014.

Course Code: UGCA1923

Course Name: Operating Systems

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 4 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 15%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs

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External max. marks: 60	Elective status: Core
Total marks: 100	

Prerequisite: Basic understanding of computer system.

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to:

CO#	Course outcomes
CO1	Discuss the evaluation of operating systems.
CO2	Explain different resource managements performed by operating system.
CO3	Describe the architecture in terms of functions performed by different types of operating systems.
CO4	Analyze the performance of different algorithms used in design of operating system components.
CO5	Compare the key properties of different types of Operating Systems.

Detailed contents	Contact hours
Unit-I Fundamentals of Operating system: Introduction to Operating system, Functions of an operating system. Operating system as a resource manager. Structure of operating system (Role of kernel and Shell). Views of operating system. Evolution and types of operating systems.[CO1] Process & Thread Management: Program vs. Process; PCB, State transition diagram, Scheduling Queues, Types of schedulers, Concept of Thread, Benefits, Types of threads, Process synchronization. [CO2] CPU Scheduling: Need of CPU scheduling, CPU I/O Burst Cycle, Pre-emptive vs. Non-pre-emptive scheduling, Different scheduling criteria's, scheduling algorithms (FCFS, SJF, Round-Robin, Multilevel Queue). [CO2]	12
Unit-II Memory Management: Introduction, address binding, relocation, loading, linking, memory sharing and protection; Paging and segmentation; Virtual memory: basic concepts of demand paging, page replacement algorithms. [CO2]	12
Unit-III	08

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I/O Device Management: I/O devices and controllers, device drivers; disk storage.	
File Management: Basic concepts, file operations, access methods, directory structures and management, remote file systems; file protection.[CO3]	
Unit-IV Advanced Operating systems: Introduction to Distributed Operating system, Characteristics, architecture, Issues, Communication & Synchronization; Introduction Multiprocessor Operating system, Architecture, Structure, Synchronization & Scheduling; Introduction to Real-Time Operating System, Characteristics, Structure & Scheduling. Case study of Linux operating system [CO4] [CO5]	12

Text Books:

1. Operating System Principles by Abraham Silberschatz and Peter Baer Galvin, Seventh Edition, Published by Wiley-India.
2. Principals of Operating System by Naresh Chauhan, Published by OXFORD University Press, India.

Reference Books:

1. Operating Systems by Sibsankar Haldar and Alex A. Aravind, Published by Pearson Education.
2. Operating system by Stalling, W., Sixth Edition, Published by Prentice Hall (India)

Course Code: UGCA1924

Course Name: Software Engineering Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to

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CO#	Course outcomes
CO1	Identify the scope and objective of different domains that have impact on society
CO2	Create data flow diagrams
CO3	Compute software complexity using latest tools
CO4	Design a software engineering process life cycle.
CO5	Implement specification, design, implementation, and testing process using latest tools

Assignments:

1.	Identify project scope and objective of given problem: a. College automation system. b. Banking Management System.
2.	Develop software requirements specification for (1 a.) and (1 b.) problem.
3.	Develop UML Use case model for a problem.
4.	Develop Class diagrams
5.	Represent project Scheduling of above-mentioned projects
6.	Use any model for estimating the effort, schedule and cost of software project
7.	Develop DFD model (level-0, level-1 DFD and Data dictionary) of the project
8.	Develop sequence diagram
9.	Develop Structured design for the DFD model developed
10.	Develop the waterfall model, prototype model and spiral model of the product
11.	Explain with reason which model is best suited for the product
12.	Develop a working protocol of any of two problem
13.	Use LOC, FP and Cyclomatic Complexity Metric of above-mentioned problem
14.	Find Maintainability Index and Reusability Index of above-mentioned problem
15.	Using any Case Tool find number of statements, depth and complexity of the prototype

Reference Books:

1. Software Engineering–A Practitioner’s Approach, Roger S.Pressman, Seventh Edition, McGrawHill, 2010.
 2. The Unified Modeling Language Reference Manual, Grady Booch, Second Edition, Addison Wesley, 2005.
 3. An Integrated Approach to Software Engineering, Pankaj Jalota, Third Edition, Narosa Publishing House, 2005.
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Course Code: UGCA1925

Course Name: Database Management Systems Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2

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Semester: 4 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 100%
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Core
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Differentiate between DDL, DML and DCL commands
CO2	Implement DDL, DML and DCL commands
CO3	Write integrity constraints on a database
CO4	Design Databases and Tables in relational model for some project related to society welfare
CO5	Implement PL/SQL.

Instructions:

1.	Used of CREATE, ALTER, RENAME and DROP statement in the database tables (relations)
2.	Used of INSERT INTO, DELETE and UPDATE statement in the database tables (relations)
3.	Use of simple select statement.
4.	Use of select query on two relations
5.	Use of nesting of queries.
6.	Use of aggregate functions.
7.	Use of substring comparison.
8.	Use of order by statement.
9.	Consider the following schema for a Library Database: BOOK (<i>Book_id, Title, Publisher_Name, Pub_Year</i>) BOOK_AUTHORS (<i>Book_id, Author_Name</i>) PUBLISHER (<i>Name, Address, Phone</i>) BOOK_COPIES (<i>Book_id, Branch_id, No-of_Copies</i>) BOOK_LENDING (<i>Book_id, Branch_id, Card_No, Date_Out, Due_Date</i>) LIBRARY_BRANCH (<i>Branch_id, Branch_Name, Address</i>) Write SQL queries to 1. Retrieve details of all books in the library_id, title, name of publisher, authors, number of copies in each branch, etc. 2. Get the particulars of borrowers who have borrowed more than 3 books between Jan 2018 to Jun 2018

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	3. Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation. 4. Partition the BOOK table based on year of publication. Demonstrate its working with a simple query. 5. Create a view of all books and its number of copies that are currently available in the Library.
10.	Consider the following schema for Order Database: SALESMAN (<i>Salesman_id, Name, City, Commission</i>) CUSTOMER (<i>Customer_id, Cust_Name, City, Grade, Salesman_id</i>) ORDERS (<i>Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id</i>) Write SQL queries to 1. Count the customers with grades above Amritsar's average. 2. Find the name and numbers of all salesmen who had more than one customer. 3. List all salesmen and indicate those who have and don't have customers in their cities (Use UNION operation.) 4. Create a view that finds the salesman who has the customer with the highest order of a day. 5. Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.
11.	Write a PL/SQL code to add two numbers and display the result. Read the numbers during run time.
12.	Write a PL/SQL code to find sum of first 10 natural numbers using while and for loop.
13.	Write a program to create a trigger which will convert the name of a student to upper case before inserting or updating the name column of student table.
14.	Write a PL/SQL block to count the number of rows affected by an update statement using SQL%ROWCOUNT
15.	Write a PL/SQL block to increase the salary of all doctors by 1000.

Reference Books:

1. "SQL, PL/SQL The Programming Language of Oracle", 4th Revised Edition, Ivan Bayross (2009).
2. "Oracle PL/SQL Programming", 5th Edition, Steven Feuerstein and Bill Pribyl (2009).

Course Code: UGCA1926

Course Name: Operating Systems Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 4 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 100
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Core

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Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After going through the practical, student will be able to:

CO#	Course outcomes
CO1	Implement the installation and configuration of different operating systems.
CO2	Write programs for different scheduling algorithms.
CO3	Execute various commands in Vi editor
CO4	Implement the dual boot installation
CO5	Execute commands in shell programming

Instructions:

1	Installation of windows OS.
2	Installation of Linux OS.
3	Dual boot installation of Operating systems.
4	Implementation of FCFS Scheduling algorithm
5	Implementation of SJF Scheduling algorithm
6	Implementation of Round-Robin Scheduling algorithm
7	Vi Editor & its commands
8	Shell Commands
9	Shell Scripting- Using variables
10	Shell Scripting- Input & Output
11	Shell Scripting- Data types
12	Shell Scripting- Use of arithmetic operators
13	Shell Scripting- if control statement programs
14	Shell Scripting- while control statement
15	Shell Scripting- for control statement

Reference Books:

1. Linux: The complete reference by Richard Petersen, Published by Tata McGraw-Hill Publication.
2. Operating System Principles by Abraham Silberschatz and Peter Baer Galvin, Seventh Edition, Published by Wiley-India.

Course Code: UGCA1927

Course Name: Web Designing

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Program: BCA	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 4 th	Contact hours: 33 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 80%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Skill Enhancement
Total marks: 100	

Prerequisite: Student must have the basic knowledge of any text editor like notepad, notepad++ and Edit plus etc.

Co requisite: Student must know the background of Markup Language.

Additional material required in ESE:

- Demonstration of the website of college/ specific department/specific cells etc. will be presented by the students during the final practical.
- Developed Website/s must be made online by the student/s.
- Printouts of the Main Page of the website must be arranged on Practical file during daily lab work and must be submitted in the final examinations.

Course Outcomes: The students will be able to:

CO#	Course Outcomes
CO1	Create pages with simple tags in HTML
CO2	Design webpages with multiple sections or frames
CO3	Explain how to link webpages through hypertext or images a links
CO4	Outline the key web designing concepts using java script
CO5	Design forms with special controls using HTML

Detailed Contents	Contact hours
Unit-I Internet Basics Basic concepts, communicating on the internet, internet domains, internet server identities, establishing connectivity on the internet client IP address. Introduction To HTML Information Files Creation, Web Server, Web Client/Browser, Hyper Text Markup Language (HTML Tags, Paired Tags, Singular Tags), Commonly Used Html Commands (Document Head, Document Body), Title and Footer, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines). Basic Formatting Tags HTML Basic Tags, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines), Text Styles (Bold, Italics, Underline), Other Text Effects (Centering (Text, Images etc.), Spacing (Indenting Text), HTML Color Coding. [CO1]	8

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Unit-II Lists Type of Lists (Unordered List (Bullets), Ordered Lists (Numbering), Definition Lists. Adding Graphics To Html Documents Using The Border Attribute, Using The Width And Height Attribute, Using The Align Attribute, Using The Alt Attribute. [CO2] Tables Introduction (Header, Data rows, The Caption Tag), Using the Width and Border Attribute, Using the Cell padding Attribute, Using the Cell spacing Attribute, Using the BGCOLOR Attribute, Using the COLSPAN and ROWSPAN Attributes [CO2] Linking Documents Links (External Document References, Internal Document References), Image As Hyperlinks. [CO3] Frames Introduction to Frames: The<FRAMESET> tag, The <FRAME> tag, Targeting Named Frames. DHTML: Cascading Style Sheets, Style Tag. [CO2]	9
Unit-III Forms Used by a Web Site The Form Object, The Form Object's Methods (The Text Element, The Password Element, The Button Element, The Submit (Button) Element, The Reset (Button) Element, The Checkbox Element, The Radio Element, The Text Area Element, The Select and Option Element, The Multi Choice Select Lists Element). [CO4]	8
Unit 4 Introduction to JavaScript JS Introduction, Where To, Output, Statements, Syntax, Comments, Variables, Operators, Arithmetic, Assignment, Data Types, Functions, Objects, Events, Strings, String Methods, Numbers, Number Methods, Arrays, Array Methods, Array Sort, Array Iteration, Dates, Date Formats, Date Get Methods, Date Set Methods, Math, Random, Booleans, Comparisons, Conditions, Switch, Loop For, Loop While, Break, Type Conversion, Bitwise, RegExp, Errors, Scope, Hoisting, Strict Mode, JSON, Forms, Forms API [CO5] JS Functions, Function Definitions, Function Parameters, Function Invocation, Function Call, Function Apply, Function Closures [CO5]	8

Text Books/Reference Books:

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1. Internet for EveryOne: Alexis Leon, 1st Edition, Leon Techworld, Publication, 2009.
2. Greenlaw R; Heppe, “Fundamentals of Internet and WWW”, 2nd Edition, Tata McGraw-Hill, 2007.
3. Raj Kamal, “Internet & Web Technologies”, edition Tata McGraw-Hill Education.2009.

E-Books/ Online learning material:

1. BayrossIvan, “HTML, DHTML, JavaScript, PERL, CGI”, 3rd Edition, BPB Publication,2009.
 2. Chris Payne, “Asp in 21 Days”, 2nd Edition, Sams Publishing, 2003 PDCA.
 3. A Beginner's Guide To Html [Http://www.Ncsa.Nine.Edit/General/Internet/www/Html.Prmter](http://www.Ncsa.Nine.Edit/General/Internet/www/Html.Prmter)
 4. https://www.tutorialspoint.com/html/html_tutorial.pdf
 5. <https://www.w3schools.com/js/>
 6. <https://www.w3schools.com/html/>
 7. https://www.cs.uct.ac.za/mit_notes/web_programming.html
 8. http://www.pagetutor.com/table_tutor/index.html
-

Course Code: UGCA1928

Course Name: Web Designing Laboratory

Program: BCA	L: 0 T: 0 P: 2
Branch: Computer Applications	Credits: 1
Semester: 4 th	Contact hours: 2 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 80%
Internal max. marks: 30	Duration of End Semester Exam (ESE): 3hrs
External max. marks: 20	Elective status: Skill Enhancement
Total marks: 50	

Prerequisite: Students must have the knowledge of editors like Notepad etc.

Co requisite: Knowledge of Networking, Internet, Client Server concepts, Static & Dynamic environment of the websites etc.

Additional material required in ESE:

- Demonstration of the website of college/ specific department/specific cells etc. will be presented by the students during the final practical.
- Developed Website/s must be made online by the student/s.
- Printouts of the Main Page of the website must be arranged on Practical file during daily lab work and must be submitted in the final examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Design pages with simple tags in HTML

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CO2	Create web pages with Audio and Video content in it.
CO3	Illustrate the movement from one web page to another
CO4	Implement advanced web designing concepts using java script
CO5	Execute a small web based project for the benefit of society

Instructions: Instructor can increase/decrease the experiments as per the requirement.

1.	Create a simple HTML page to demonstrate the use of different tags.
2.	Design index page of a book on web designing.
3.	Display Letter Head of your college on a web page.
4.	Create a Hyperlink to move around within a single page rather than to load another page.
5.	Display letter using different Text formatting Tags.
6.	Design Time Table of your department and highlights of most important periods.
7.	Use Tables to provide layout to your web page.
8.	Embed Audio and Video into your web page.
9.	Divide a web page vertically and horizontally and display logo of your college in left pane and logo of university in right pane.
10.	Create a student Bio- Data.
11.	Design front page of hospital with different style sheets.
12.	Design a web page and display two different pages at a time.
13.	Write a program to create a login form. On submitting the form, the user should get navigated to a profile page using JavaScript.
14.	Write a code to create a Registration Form. On submitting the form, the user should be asked to login with the new credentials using JavaScript.
15.	Write an HTML code to create your Institute website/Department website/ Tutorial website for specific subject. Also use Java Script for validation.

Reference Books:

1. Greenlaw R; Hepp E, "Fundamentals of Internet and www", 2nd Edition, Tata. McGraw-Hill, 2007.
2. A Beginner's Guide to HTML
<http://www.Ncsa.Nine.Edit/General/Internet/www/>
a. html.prmter.

Online Experiment material:

1. https://www.w3schools.com/html/html_examples.asp
2. https://www.cs.uct.ac.za/mit_notes/web_programming.html

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Course Code: UGCA1929

Course Name: Programming in PHP

Program: BCA	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 5 th	Contact hours: 33 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 80%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Skill Enhancement
Total marks: 100	

Prerequisite: Students must have basic knowledge of any text editor like notepad++ and Edit plus etc.

Co requisite: Students must know the background of HTML, Front-End, Back-End & concept of Structure Query Language.

Additional material required in ESE:

- Demonstration of the website of college/ specific department/specific cells etc. will be presented by the students during the final practical.
- Developed Website/s must be made online by the student/s.
- Printouts of the Main Page of the website must be arranged on Practical file during daily lab work and must be submitted in the final examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Outline the importance and benefits of PHP
CO2	Compare Client Side Script & Server Side Script.
CO3	Explain the use of control structures, data types used in PHP.
CO4	Implement database connectivity.
CO5	Develop Dynamic Website that can interact with different kinds of Database Languages.

Detailed contents	Contact hours
Unit-I Introduction to PHP Evolution of PHP & its comparison Interfaces to External systems, Hardware and Software requirements, PHP Scripting. Basic PHP Development, Working of PHP scripts, Basic PHP syntax, PHP data types. [CO1] Displaying type information: Testing for a specific data type, Changing type with Set type, Operators, Variable manipulation, Dynamic variables and Variable scope. [CO1]	11

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Unit-II Control Statements if() and elseif() condition Statement, The switch statement, Using the? Operator, Using the while() Loop, The do while statement, Using the for() Loop. [CO3] Functions Function definition, Creation, Returning values, Library Functions, User-defined functions, Dynamic function, default arguments, Passing arguments to a function by value. [CO3] String Manipulation Formatting String for Presentation, Formatting String for Storage, Joining and Splitting String, Comparing String Array Anatomy of an Array, Creating index based and Associative array, Looping array using each() and foreach() loop. [CO2]	10
Unit-III Forms Working with Forms, Super global variables, Super global array, Importing user input, Accessing user input, Combine HTML and PHP code, Using hidden fields, Redirecting the user. Working with File and Directories Understanding file & directory, Opening and closing a file, Coping, renaming and deleting a file, Working with directories, File Uploading & Downloading. Generating Images with PHP: Basics computer Graphics, Creating Image.	10
Unit-IV Database Connectivity with MySql Introduction to RDBMS, Connection with MySql Database, Performing basic database operation (DML) (Insert, Delete, Update, Select).[CO4] [CO5]	2

Text Books:

1. [PHP: The Complete Reference, “Steven Holzner” , Tata McGraw Hill.](#)
2. [Programming PHP, “Kevin Tetrai” , O' Reilly.](#)

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3. [Robin Nixon, Learning PHP, MySQL, and JavaScript, Shroff/O'Reilly.](#)

E-Books/ Online learning material:

1. https://www.tutorialspoint.com/php/php_tutorial.pdf
 2. <https://www.w3schools.com/php/>
 3. <https://education.fsu.edu/wp-content/uploads/2015/04/Learning-PHP-MySQL-JavaScript-and-CSS-2nd-Edition-1.pdf>
-

Course Code: UGCA1930

Course Name: Programming in PHP Laboratory

Program: BCA	L: 0 T: 0 P: 2
Branch: Computer Applications	Credits: 1
Semester: 5 th	Contact hours: 2 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 80%
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 20	Elective status: Skill Enhancement
Total marks: 50	

Prerequisite: Students must have the knowledge of editors like Notepad++ and Edit plus etc.

Co requisite: Students must know the background of Markup Language, Front-End, Back-End & concept of Structure Query Language.

Additional material required in ESE:

- Demonstration of the website of college/ specific department/specific cells etc. will be presented by the students during the final practical.
- Developed Website/s must be made online by the student/s.
- Printouts of the Main Page of the website must be arranged on Practical file during daily lab work and must be submitted in the final examinations.

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Write scripts for basic web page designs
CO2	Design the work flow of web page with the help of various control statements
CO3	Differentiate between client side and server side scripting
CO4	Illustrate the concept of static and dynamic websites
CO5	Implement the database concepts in PHP

Instructions: Instructor can increase/decrease the experiments as per the requirement.

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1.	Take values from the user and compute sum, subtraction, multiplication, division and exponent of value of the variables.
2.	Write a program to find area of following shapes: circle, rectangle, triangle, square, trapezoid and parallelogram.
3.	Compute and print roots of quadratic equation.
4.	Write a program to determine whether a triangle is isosceles or not?
5.	Print multiplication table of a number input by the user.
6.	Calculate sum of natural numbers from one to n number.
7.	Print Fibonacci series up to n numbers e.g. 0 1 1 2 3 5 8 13 21.....n
8.	Write a program to find the factorial of any number.
9.	Determine prime numbers within a specific range.
10.	Write a program to compute, the Average and Grade of students marks.
11.	Compute addition, subtraction and multiplication of a matrix.
12.	Count total number of vowels in a word “Develop & Empower Individuals”.
13.	Determine whether a string is palindrome or not?
14.	Display word after Sorting in alphabetical order.
15.	Check whether a number is in a given range using functions.
16.	Write a program accepts a string and calculates number of upper case letters and lower case letters available in that string.
17.	Design a program to reverse a string word by word.
18.	Write a program to create a login form. On submitting the form, the user should navigate to profile page.
19.	Design front page of a college or department using graphics method.
20.	Write a program to upload and download files.

Reference Books:

1. [PHP: The Complete Reference, “Steven Holzner”, January 1, 2007. Tata McGraw-Hill Education.](#)
2. [Programming PHP, “Kevin Tetroi”, O' Reilly.](#)
3. [Published by Wiley Publishing, Inc. 10475 Crosspoint Boulevard Indianapolis, IN 46256](#)

E-Books/ Online learning material:

1. <http://cs.petsru.ru/~musen/php/2013/Books/Beginning%20PHP%205.3%20by%20Matt%20Doyle.pdf>
2. <https://www.w3schools.com/php/>

Course Code: UGCA1931

Course Name: Data Warehouse and Mining

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Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 5 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 20%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After completing this course, students will be able to:

CO#	Course outcomes
CO1	Highlight the need of Data Warehousing & Mining
CO2	Differentiate between the Transactional and Analytical data models.
CO3	Identify the real life applications where data mining can be applied.
CO4	Apply different data mining algorithms on wide range of data sets.
CO5	Explain the role of visualization in data representation and analysis.

Detailed Contents	Contact hours
Unit-I Need for strategic information, difference between operational and Informational data stores Data warehouse definition, characteristics, Data warehouse role and structure, OLAP Operations, Data mart, Different between data mart and data warehouse, Approaches to build a data warehouse, Building a data warehouse, Metadata & its types. [CO1]	11
Unit-II Data Pre-processing: Need, Data Summarization, Methods. Denormalization, Multidimensional data model, Schemas for multi-dimensional data (Star schema, Snowflake Schema, Fact Constellation Schema, Difference between different schemas. Data warehouse architecture, OLAP servers, Indexing OLAP Data, OLAP query processing, Data cube computation [CO2]	11
Unit-III Data Mining: Definition, Data Mining process, Data mining methodology, Data mining tasks, Mining various Data types & issues. Attribute-Oriented Induction, Association rule mining, Frequent itemset mining, The Apriori Algorithm, Mining multilevel association rules.[CO3]	12

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Unit-IV	
Overview of classification, Classification process, Decision tree, Decision Tree Induction, Attribute Selection Measures. Overview of classifier's accuracy, Evaluating classifier's accuracy, Techniques for accuracy estimation, Increasing the accuracy of classifier. [CO4]	10
Introduction to Clustering, Types of clusters, Clustering methods, Data visualization & various data visualization tools [CO5]	

Text Books:

1. Data Warehousing, Data Mining & Olap by Berson, Tata Mcgraw- Hill.
2. Han J., Kamber M. and Pei J., Data mining concepts and techniques, Morgan Kaufmann Publishers (2011) 3rd ed.
3. Pudi V., Krishana P.R., Data Mining, Oxford University press, (2009) 1st ed.
4. Adriaans P., Zantinge D., Data mining, Pearson education press (1996), 1st ed.
5. Pooniah P., Data Warehousing Fundamentals, Willey interscience Publication, (2001), 1st ed.

Course Code: UGCA1937

Course Name: Data Warehouse and Mining Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 90
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: Basic understanding of database concepts.

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After going through this laboratory, student will be able to:

CO#	Course outcomes
CO1	Identify different data mining tools used to analyze data.
CO2	Implement classification/ Clustering techniques in R/ Weka
CO3	Create visualization for representing data.
CO4	Execute various data preprocessing techniques
CO5	Analyze the data which has direct impact on the society

Instructions:

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1	Introduction to WEKA and R tools.
2	Installation of Weka/ R Tool.
3	Introduction to various components of WEKA/ R tool.
4	Fundamental programming using WEKA/ R tool.
5	Implementing data preprocessing.
6	Implementing apriori algorithm.
7	Implementing classification using decision tree.
8	Implementing classification using decision tree induction.
9	Implementation k-mean clustering
10	Implementing different Data visualization tools.

- Number of practical's can be more than 10 by implementing these algorithms on different data sets. Also, visualization tools can be used simultaneously to represent the outcomes in a better way

Reference Books:

1. Data Mining: Practical Machine Learning Tools and Techniques, 3rd edition by Ian H. Witten, Eibe Frank, Mark A. Hall Published by Morgan Kaufmann.
2. Data analytics using R, 1st edition by Seema Acharya Published by Tata Mcgraw Hill.

E Books/ Online learning material

Students can refer to youtube channel: Data Mining with Weka (WekaMOOC) by University of WAIKATO for reference using the following link:

<https://www.youtube.com/user/WekaMOOC>

Course Code: UGCA1932

Course Name: Programming in Java

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 5 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 40%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: Basic knowledge of programming like Programming in C.

Co requisite: - Knowledge of Object Oriented Concepts through any language like C++.

Additional material required in ESE: -NA-

Course Outcomes: Students will be able to

CO#	Course outcomes

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CO1	Define various Object Oriented concepts in Java Programming.
CO2	Compare different data types in java.
CO3	Differentiate between built-in and user defined functions/methods, interfaces and packages etc.
CO4	Outline the importance of exception handling in programs.
CO5	Explain advanced concepts like multithreading, applet used in java.

Detailed Contents	Contact hours
Unit-I Java Programming Fundamentals: Introduction to Java, Stage for Java, Origin, Challenges of Java, Java Features, Java Program Development, Object Oriented Programming. [CO2] Java Essentials: Elements of Java Program, Java API, Variables and Literals, Primitive Data Types, The String class, Variables, Constants, Operators, Scope of Variables & Blocks, Types of Comment in Java. [C2]	10
Unit-II Control Statements: Decision making statements (if, if-else, nested if, else if ladder, switch, conditional operator), Looping statements (while, do-while, for, nested loops), Jumping statements (Break and Continue). [CO1] Classes and Objects: Basic concepts of OOPS, Classes and Objects, Modifiers, Passing arguments, Constructors, Overloaded Constructors, Overloaded Operators, Static Class Members, Garbage Collection. [CO1] Inheritance: Basics of inheritance, Inheriting and Overriding Superclass methods, Calling Superclass Constructor, Polymorphism, Abstract Classes, Final Class. [CO1]	12
Unit-III Arrays and Strings: Introduction to array, Processing Array Contents, Passing array as argument, Returning array from methods, Array of objects, 2D arrays, Array with three or more dimensions. String class, string concatenation, Comparing strings, Substring, Difference between String and String Buffer class, String Tokenizer class. Interface and Packages: Basics of interface, Multiple Interfaces, Multiple Inheritance Using Interface, Multilevel Interface, Packages, Create and Access Packages, Static Import and Package Class, Access Specifiers.[CO2]	10

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Exception Handling: Introduction, Try and Catch Blocks, Multiple Catch, Nested Try, Finally, Throw Statement, Built-In Exceptions.[CO5]	
Unit-IV Multithreading: Introduction, Threads in Java, Thread Creation, Lifecycle of Thread, Joining a Thread, Thread Scheduler, Thread Priority, Thread Synchronization.[CO4] Applets: Introduction, Applet Class, Applet Life Cycle, Graphics in Applet, Event-Handling.[CO4] File and I/O Streams: File Class, Streams, Byte Streams, Filtered Byte Streams, Random Access File Class, Character Streams.[CO4]	12

Text Books:

1. Programming with Java A Primer, 5th Edition, E. Balagurusamy, TMH.
2. Java Programming for Core and Advanced Learners, Sagayaraja, Denis, Karthik, Gajalakshmi, Universities Press.
3. Java Fundamentals, A Comprehensive Introduction, H. Schildt, D. Skrien, TMH.

Reference Books:

1. Java, The complete Reference, H. Schildt, 7th Edition, TMH.

Course Code: UGCA1938

Course Name: Programming in Java Laboratory

Program: BCA	L: 0 T: 0 P:4
Branch: Computer Applications	Credits: 2
Semester: 5 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 90%
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Core
Total marks: 100	

Prerequisite: - Basic knowledge of Programming language like Programming in C.

Co requisite: - Knowledge of Object Oriented Concepts through any language like C++.

Additional material required in ESE: - Minor Project.

Course Outcomes: Students will be able to

CO#	Course Outcomes
CO1	Execute Core Java concepts.

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CO2	Illustrate the role of different data type, operators and control statement in java with the help of programs.
CO3	Write programs to handle exceptions
CO4	Implement multithreading in java
CO5	Execute interfaces and packages.

Instructions: All programs are to be developed in Java programming language.

List of assignments:

1.	Write a program to perform following operations on two numbers input by the user: 1) Addition 2) subtraction 3) multiplication 4) division
2.	Write a Java program to print result of the following operations. 1. $-15 + 58 * 45$ 2. $(35+8) \% 6$ 3. $24 + -5*3 / 7$ 4. $15 + 18 / 3 * 2 - 9 \% 3$
3.	Write a Java program to compute area of: 1) Circle 2) rectangle 3) triangle 4) square
4.	Write a program to convert temperature from Fahrenheit to Celsius degree using Java.
5.	Write a program through Java that reads a number in inches, converts it to meters.
6.	Write a program to convert minutes into a number of years and days.
7.	Write a Java program that prints current time in GMT.
8.	Design a program in Java to solve quadratic equations using if, if else
9.	Write a Java program to determine greatest number of three numbers.
10.	Write program that gets a number from the user and generates an integer between 1 and 7 subsequently should display the name of the weekday as per that number.
11.	Construct a Java program to find the number of days in a month.
12.	Write a program to sum values of an Single Dimensional array.
13.	Design & execute a program in Java to sort a numeric array and a string array.
14.	Calculate the average value of array elements through Java Program.
15.	Write a Java program to test if an array contains a specific value.
16.	Find the index of an array element by writing a program in Java.
17.	Write a Java program to remove a specific element from an array.
18.	Design a program to copy an array by iterating the array.
19.	Write a Java program to insert an element (on a specific position) into Multidimensional array.
20.	Write a program to perform following operations on strings: 1) Compare two strings. 2) Count string length. 3) Convert upper case to lower case & vice versa. 4) Concatenate two strings. 5) Print a substring.

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21.	Developed Program & design a method to find the smallest number among three numbers.
22.	Compute the average of three numbers through a Java Program.
23.	Write a Program & design a method to count all vowels in a string.
24.	Write a Java method to count all words in a string.
25.	Write a method in Java program to count all words in a string.
26.	Write a Java program to handle following exceptions: 1) Divide by Zero Exception. 2) Array Index Out Of B bound Exception.
27.	To represent the concept of <i>Multithreading</i> write a Java program.
28.	To represent the concept of all types of inheritance supported by Java, design a program.
29.	Write a program to implement <i>Multiple Inheritance</i> using interface.
30.	Construct a program to design a package in Java.
31.	To write and read a plain text file, write a Java program.
32.	Write a Java program to append text to an existing file.
33.	Design a program in Java to get a list of all file/directory names from the given.
34.	Develop a Java program to check if a file or directory specified by pathname exists or not.
35.	Write a Java program to check if a file or directory has read and write permission.

Text Books:

1. Programming with Java A Primer, 5th Edition, E. Balagurusamy, TMH.
2. Java Programming for Core and Advanced Learners, Sagayaraja, Denis, Karthik, Gajalakshmi, Universities Press.
3. Java Fundamentals, A Comprehensive Introduction, H. Schildt, D. Skrien, TMH.

Reference Books:

1. Java, The complete Reference, H. Schildt, 7th Edition, TMH.
2. Data Analytics using R, Seema Acharya, TMH.

Course Code: UGCA1933

Course Name: Internet of Things

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 5 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

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Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Define the concept of IoT
CO2	Outline various domains of IOT
CO3	Explain M2M (machine to machine) applications with necessary protocols
CO4	Express the need of IOT system management.
CO5	Implement the basic Raspberry PI platform for creating IOT applications.

Detailed Contents	Contact hours
Unit-I Definition and Need of IoT, Characteristics of IoT, Physical Design of IoT – IoT Protocols, Logical Design of IoT, IoT Enabled Technologies – Wireless Sensor Networks, Cloud Computing, Big Data Analytics, Communication Protocols, Embedded Systems, IoT Levels and Templates.[CO1]	11
Unit-II Domain Specific IoTs – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle.M2M Applications, Software Defined Networks, Network Function Virtualization. [CO2]	11
Unit-III Need for IoT System Management, Simple Network Management Protocol, Network Operator Requirements, NETCONF, YANG, IoT System Management with NETCOZF-YANG, IoT Design Methodology. [CO3]	11
Unit-IV Introduction to Raspberry PI-Interfaces (serial, SPI, I2C), Introduction to Cloud Storage Models and Communication APIs Webserver – Web Server for IoT, Cloud for IoT, Security Management in an IoT System. [CO4] [CO5]	11

Text Books:

1. Internet of Things – A Hands-on Approach, Arshdeep Bahga and Vijay Madiseti, First Edition, 2015, University Press.

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Reference Books:

1. The Internet of Things-Enabling Technologies, Platforms, and Use Cases, Pethuru Raj & Anupama C. Raman, CRC Press, 2017.
 2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014
 3. The Definitive Guide to the Internet of Things for Business, Syed Zaeem Hosain, Aeris Communications, 2016, 2nd edition.
 4. Internet of Things: Architecture and Design Principals, Raj Kamal, McGraw-Hill, 2017.
-

Course Code: UGCA1939

Course Name: Internet of Things Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5 th	Contact hours: 4 hours a week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify different types of IOT devices and sensors.
CO2	Analyze sensor generated data
CO3	Outline the use of Bluetooth for connectivity of mobile application with IOT device
CO4	Designing small IoT applications
CO5	Building interface of application with various devices

Instructions:

1	Interfacing Light Emitting Diode (LED) for Blinking LED
2	Interfacing Button and LED for LED blinking when button is pressed
3	Interfacing Light Dependent Resistor (LDR) and LED for displaying automatic night lamp
4	Interfacing Temperature Sensor (LM35) and/or humidity sensor (e.g. DHT11)

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5	Interfacing Liquid Crystal Display (LCD) to display data generated by sensor on LCD
6	Interfacing Air Quality Sensor-pollution (e.g. MQ135) to display data on LCD , switch on LED when data sensed is higher than specified value.
7	Interfacing Bluetooth module (e.g. HC05) for receiving data from mobile phone on Arduino and display on LCD
8	Interfacing Relay module to demonstrate Bluetooth based home automation application. (using Bluetooth and relay).

Reference Books:

1. Internet of Things – A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, First Edition, 2015, Universities Press.
2. Arduino Projects for Engineers, Neerparaj Rai, First Edition, 2016, BPB Publications.
3. 21 Internet of Things (IOT) Experiments, Yashavant Kanetkar, Shrirang Korde, First Edition, 2015, BPB Publications.

List of components:

1. One kit for 3-4 students: Arduino Uno, sensors (Bluetooth module (HC05), MQ135, DHT11, breadboard, LCD, 2-relay module etc.)
2. Consumables: LED, button, connecting wires, LDR, LM35, battery, etc

Course Code: UGCA1934

Course Name: Computer Graphics

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 5 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify different types of Input and Output devices.
CO2	Outline the key characteristics of virtual reality.
CO3	Explain different algorithms to draw shapes like line, circle, point, etc.
CO4	Differentiate between 2-D and 3-D coordinate system
CO5	Define projection.

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Detailed contents	Contact hours
Unit-I Introduction to Computer Graphics Applications of Computer Graphics. Graphs and Types of Graphs Input Devices: Light Pens, Graphic Tablets, Joysticks, Track Ball, Data Glove, Digitizers, Image Scanner. [CO1] Video Display Devices: Refresh Cathode Ray Tube, Raster Scan displays, Random Scan displays, Color CRT - monitors and Color generating techniques (Shadow Mask, Beam Penetration), Flat-Panel Displays; 3-D Viewing Devices, Graphics monitors and workstations, Color Models (RGB and CMY), Lookup Table. [CO1] Introduction Virtual Reality & Environments: Applications in Engineering, Architecture, Education, Medicine, Entertainment, Science, Training.[CO2]	11
Unit-II Scan-conversions Process and need of Scan Conversion, Scan conversion algorithms for Line, Circle and Ellipse using direct method, Bresenham's algorithms for line & circle and Midpoint Ellipse Algorithm along with their derivations, Area Filling Techniques, Flood Fill Techniques, Character Generation. [CO3]	11
Unit-III 2 – Dimensional Graphics Cartesian and need of Homogeneous co-ordinate system, Geometric transformations (Translation, Scaling, Rotation, Reflection, Shearing), Viewing transformation and clipping (line, polygon and text) using Cohen-Sutherland, Sutherland Hodgeman and Liang Barsky algorithm for clipping. [CO4]	10
Unit-IV 3 – Dimensional Graphics Introduction to 3-dimensional Graphics: Geometric Transformations (Translation, Scaling, Rotation), Mathematics of Projections (Parallel & Perspective). Color Shading. Introduction to Morphing techniques.[CO5]	12

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Text Books:

1. D. Hearn and M.P. Baker, *Computer Graphics*, PHI New Delhi.
2. J.D. Foley, A.V. Dam, S.K. Feiner, J.F. Hughes, R.L Phillips, *Computer Graphics Principles & Practices*, Second Edition, Pearson Education, 2007.
3. R.A. Plastock and G. Kalley, *Computer Graphic*, McGraw Hill, 1986.

E Books/ Online learning material

1. www.sakshat.ac.in
 2. <https://swayam.gov.in>
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Course Code: UGCA1940

Course Name: Computer Graphics Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Implement algorithms for drawing basic shapes like circle, line and point.
CO2	Write programs to implement 2-D and 3-D corrdibate transformations.
CO3	Design basic shapes for logo's
CO4	Develop programs for basic animations using C or C++
CO5	Design a small gaming project.

Instructions:

1.	Use of basic functions of graphic available like circle, putpixel, rectangle, arc, ellipse, floodfill, setcolor etc.
2.	Design a logo/poster using primitive functions.
3.	Draw a 3 D object using palettes.
4.	Line Drawing Algorithm : Direct method and DDA
5.	Bresenham's Line Drawing Algorithm
6.	Circle Generating Algorithm : Equation and trigonometric function.
7.	Bresenham's Circle Generating Algorithm

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8.	Draw an ellipse using Midpoint Algorithm.
9.	Translation transformation on a polygon.
10.	Scaling transformation on a polygon.
11.	Rotation transformation on a polygon.
12.	Reflection transformation on a polygon.
13.	Shearing transformation on a polygon.
14.	Mixed transformation on an object
15.	Minor project (eg Game/ Animation etc.)

Reference Books:

1. D. Hearn and M.P. Baker, *Computer Graphics*, PHI New Delhi.
2. J.D. Foley, A.V. Dam, S.K. Feiner, J.F. Hughes, R.L Phillips, *Computer Graphics Principles & Practices*, Second Edition, Pearson Education, 2007.
3. R.A. Plastock and G. Kalley, *Computer Graphic*, McGraw Hill, 1986.
4. Mark Lutz, *Learning Python*, O'REILY

Course Code: UGCA1935

Course Name: Linux Operating System

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 5 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 60%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: Operating System

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After completing this course, students will be able to:

CO#	Course outcomes
CO1	Discuss the evolution of Open Source operating systems.
CO2	Prepare environment for working on open source operating system like Linux.
CO3	Perform resource management in Linux
CO4	Write scripts in Linux.
CO5	Execute user level privileges

Detailed contents	Contact hours
Unit-I Introduction to Linux	12

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History of Linux & Unix, Overview of Linux Operating System, structure of Linux Operating system, Installation. [CO1] Desktops (The X window System, GNOME, KDE), desktop operations. Different types of editors, vi editor and its command.	
Unit-II Shells and Utilities Role of shells in the Linux environment, Different types of shells in Linux Operating system, Shell configuration: Shell initialization & configuration directories & file, Aliases, Filename expansion, Standard Input/ Output & Redirection, Pipes, Managing Jobs.[CO3] Shell Scripting: Different types of statements in shell script, variables in shell, assign values to shell variables, Default shell variables value, Rules for Naming variables, Display the value of shell variables Getting User writing simple shell scripts to accept input from the user and display a message on screen, Shell scripts to implement various control statements. [CO4]	12
Unit-III Files Systems & Linux Software Linux Files, File structure, commands for managing files & directories with other commonly used commands, Software Management, Office and Database Applications, Graphics Tools and Multimedia, Internet & Network services, Web, FTP & java Clients. [CO3]	10
Unit-IV Linux Administration Managing users, Superuser Control, System Run levels, Managing File Systems, [CO3] Kernel Administration: Linux kernel sources, rebuilding kernel, installing kernel, Virtualization, backup management. [CO5]	10

Text Books:

1. Linux: The complete reference by Richard Petersen, Published by Tata McGraw-Hill Publication.
2. Linux in a Nutshell: A Desktop Quick Reference, 6th Edition by Stephen Figgins, Arnold Robbins, Ellen Siever & Robert Love Published by O'Reilly Media.
3. Linux Administration: A Beginner's Guide by Steve Shah & Wale Soyinka, Published by McGraw-Hill Education

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4. Unix Shell Programming by Yashavant P. Kanetkar, Published by BPB Publishers.
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Course Code: UGCA1941

Course Name: Linux Operating System Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: 100
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: Operating system

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Prepare the environment for installation and use of Linux operating system
CO2	Write Shell Scripts
CO3	Implement C programs using gcc compiler
CO4	Implement virtualization
CO5	Execute commands related to granting and revoking user privileges.

Instructions:

1	Installation of Linux OS.
2	Writing advanced shell programs
3	Installation and management of printers
4	Using gcc compiler to write c programs
5	Configuring mail server
6	Configuring FTP server
7	Connecting to internet
8	Implementing different commands to manage file system
9	Implementation of virtualization
10	Becoming super user and implementing configuration commands
11	Implementing commands to manage users

- Instructor can select the commands, utilities and services to be managed on their own.

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Reference Books:

1. Linux: The complete reference by Richard Petersen, Published by Tata McGraw-Hill Publication.
 2. Linux in a Nutshell: A Desktop Quick Reference, 6th Edition by Stephen Figgins, Arnold Robbins, Ellen Siever & Robert Love Published by O'Reilly Media.
 3. Unix Shell Programming by Yashavant P. Kanetkar, Published by BPB Publishers.
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Course Code: UGCA1936

Course Name: Cloud Computing

Program: BCA	L: 3 T: 1 P: 2
Branch: Computer Applications	Credits: 4
Semester: 5 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Define the concept of cloud computing.
CO2	Outline the benefits if migrating to a cloud solution for different applications.
CO3	Compare different virtualization technologies.
CO4	Identify various resources needed to build cloud.
CO5	Explain various security threats to cloud.

Detailed contents	Contact hours
Unit-I Overview of Computing Paradigm: Recent trends in Computing -Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing. [CO1] Introduction to Cloud Computing: Vision of Cloud Computing, Defining a Cloud, Cloud delivery Model, Deployment Model, Characteristics, Benefits of Cloud Computing, Challenges ahead. Cloud computing vs. Cluster computing vs. Grid computing.[CO1]	12

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Migrating into a Cloud: Introduction, Broad approaches to Migrating into the Cloud, The Seven-Step Model of Migration Into a Cloud. [CO2]	
Unit-II Virtualization: Introduction, Characteristics of Virtualized environment, Taxonomy of Virtualization techniques, Virtualization and Cloud Computing, Pros and Cons of Virtualization, Hypervisor Technology Examples- Xen, VMware, Microsoft Hyper-V. [CO3] Capacity Planning: Elasticity vs Scalability, Introduction, Defining Baseline and Metrics-Baseline Measurements, System Metrics, Load Testing, Resource Ceilings, Server and Instance types; Network Capacity, Scaling. [C04]	12
Unit-III SLA Management in Cloud Computing: Inspiration, Traditional Approaches to SLO Management, Types of SLA, Life Cycle of SLA, SLA management in Cloud. Automated Policy-based management.[CO4] Securing Cloud services: Cloud Security, Securing Data- Brokered Cloud Storage Access, Storage location and tenancy, Encryption, Auditing and compliance. Steps to ensure security over cloud.[CO5]	10
Unit-IV Cloud Platforms in Industry: Amazon Web Services-Compute Services, Storage Services, Communication Services, Additional Services. Google AppEngine-Architecture and Core Concepts, Application Life Cycle. Cost Model. Microsoft Azure-Azure Core Concepts, SQL Azure, Windows Azure Platform Appliance. [CO4]	10

Text Books:

1. Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, and Thamarai Selvi, Tata McGraw Hill, ISBN-13: 978-1-25-902995-0, New Delhi, India, Feb 2013.
2. Cloud Computing Bible, Barrie Sosinsky, Wiley India Pvt. Ltd, ISBN-13: 978-81-265-2980-3, New Delhi, India, 2011.

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3. Cloud Computing: Principles and paradigms, Raj Kumar Buyya, James Broberg, Andrezei M. Goscinski, Wiley India Pvt. Ltd, ISBN-13: 978-81-265-4125-6, New Delhi, India, 2011

Reference Books:

1. 1.Cloud Computing for Dummies, Fern Halper, Hurwitz, Robin Bloor, Marcia Kaufman, Wiley India Pvt. Ltd, ISBN-13: 978-0-47-0597422, New Delhi, India, 2011.
2. Dr. Saurabh Kumar, Cloud Computing: Insights into New-Era Infrastructure, Wiley India Pvt. Ltd, ISBN-13: 978-8-12-6528837, New Delhi, India, 2011.

E Books/ Online learning material

1. P.D. Kaur, I. Chana, Unfolding the distributed computing paradigm, in: Proceedings of the IEEE International Conference on Advances in Computer Engineering, ACE, Bangalore, Karnataka, India, 2010, pp. 339–342.
2. P. Mell and T. Grance, “The NIST definition of cloud computing (draft), NIST Spec. Publ. 800 (2011) 7.

Course Code: UGCA1942

Course Name: Cloud Computing Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 5 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: Working Knowledge of Linux Operating system

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify major commercial projects in the field of cloud computing
CO2	Design basic cloud applications
CO3	Execute basic functionalities of open source tools like Open Stack.
CO4	Implement virtualization
CO5	Define major services provided by cloud service provider.

Instructions:

1.	Enlist various companies in cloud business and the corresponding services provided by them and tag them under SaaS , PaaS & IaaS.

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2.	Create a warehouse application using tools supplied by any SaaS provider.
3.	Implementation of Para-Virtualization using VM Ware's Workstation/ Oracle's Virtual Box and Guest O.S. Learn creation, migration, cloning and managing of virtual machines.
4.	Using public cloud service providers tools for exploring the usage of IaaS, PaaS and SaaS cloud services.
5.	Setting up a private cloud using open source tools (Eucalyptus/Open Stack etc.).

Course Code: UGCA1943

Course Name: Android Programming

Program: BCA	L: 3 T: 0 P: 0
Branch: Computer Applications	Credits: 3
Semester: 6 th	Contact hours: 33 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Skill Enhancement
Total marks: 100	

Prerequisite: The course will help students to develop applications for Android Mobile Phone. The students will use a software emulator for the phone to develop the application and a real phone to demonstrate the application. The main emphasis is on the aspects like develop, debug and test a variation of an existing application. Students must know all the basic concepts of Java.

Co requisite: -NA-

Additional material required in ESE: Students can carry their own data cable to execute the application built on Simulator for the sake of fast speed.

Course Outcomes:

CO#	Course outcomes
CO1	Prepare environment for working on Android OS.
CO2	Highlight various security issues in Android platform.
CO3	Design innovative User Interface and develop activity for android app.
CO4	Outline the steps for creating database applications.
CO5	Write programs for basic Android based applications.

Detailed contents	Contact hours

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Unit-I Characteristics of Mobile applications, Introduction to Android Development Environment, Advantages and Futures of Android, Architecture and working of Android, User-interface design for mobile applications and managing application data. [CO1] [CO3]	8
Unit-II Integrating cloud services, networking, OS and hardware into mobile-applications. Enterprise requirements in mobile applications: Performance, Scalability, Modifiability, Availability and Security. [CO2]	7
Unit-III Mobile Software Engineering (Design Principles, Development, Testing methodologies for mobile applications.[CO4]	7
Unit-IV Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android XML.[CO5]	8

Text Books:

1. Android Studio Application Development, Belen Cruz, Zapata, Packt Publishing
2. Deitel, P., Deitel, H., Deitle, A., and Morgano, M., Android for Programmers – An App-Driven Approach, Prentice Hall

Reference Books:

1. Professional Mobile Application Development, JEFFMCWHERTER, SCOTTGOWELL, Wiley.
2. Professional Android 4 Application Development, Reto Meier, Wrox Publication
3. Beginning iPhone Development with Swift, David Mark, A press Publication

E Books/ Online learning material

1. d.android.com
2. Safari Textbooks Online: <http://library.ohio-state.edu/search/y?SEARCH=Safari>
3. <https://www.androidauthority.com/best-ebook-ereader-apps-for-android-170696/>

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Course Code: UGCA1944

Course Name: Android Programming Laboratory

Program: BCA	L: 0 T: 0 P: 2
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 2 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems:--
Internal max. marks: 30	Duration of end semester exam (ESE): 3hrs
External max. marks: 20	Elective status: Skill Enhancement Laboratory
Total marks: 50	

Prerequisite: The course will help students to develop applications for Android Mobile Phone. The students will use a software emulator for the phone to develop the application and a real phone to demonstrate the application. The main emphasis is on the aspects like develop, debug and test a variation of an existing application. Students must know all the basic concepts of Java.

Co requisite: -NA-

Additional material required in ESE: Students can carry their own data cable to execute the application built on Simulator for the sake of fast speed.

Course Outcomes:

CO#	Course outcomes
CO1	Prapare environment for working on Android OS.
CO2	Program basic Android based applications.
CO3	Highlight various security issues in Android platform.
CO4	Implement database applications.
CO5	Design innovative User Interface and develop activity for android app.

Instructions:

1.	Installation of Java, android Framework
2.	Android SDK Manager and its all components
3.	Programs based on the overriding, constructor, classes in Java
4.	Programs based on the Final, this and static keyword in Java
5.	Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android XML.
6.	Applications based on Text Boxes and Button
7.	Applications based on Check Boxes and button
8.	Applications based on Radio Buttons
9.	Applications based on Intents and Intent Filters
10.	Applications based on Activities and services
11.	Applications based on Action Bar
12.	Applications based on Option Menu
13.	Applications based on Rating Bar
14.	Applications based on Media Player
15.	Applications based on Content Providers
16.	Applications based on accessing camera
17.	Applications based on accessing location

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18.	Applications based on the activation of sensors
19.	Applications based on Animations

Reference Books:

1. Deitel, P., Deitel, H., Deitle, A., and Morgano, M., Android for Programmers – An App-Driven Approach, Prentice Hall, Upper Saddle River, NY, 2012, ISBN: 212136-0.
2. Professional Mobile Application Development, JEFFMCWHERTER, SCOTTGOWELL, Wiley.

Course Code: UGCA1945

Course Name: Artificial Intelligence

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: NA--

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Highlight the significance and domains of Artificial Intelligence and knowledge representation.
CO2	Outline the advantages and disadvantages of various search techniques.
CO3	Identify various Expert Systems and AI applications.
CO4	Define the role of AI in different areas like NLP, Pattern Recognition etc.
CO5	Select the right AI tool for different AI based applications.

Detailed Contents	Contact hours
Unit-I Introduction -What is intelligence? Foundations of artificial intelligence (AI). History of AI. AI problems: Toy Problems, Real World problems- Tic-Tac-Toe,	10

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Water Jug, Question-Answering, 8-puzzle, 8-Queens problem. Formulating problems, Searching for Solutions.[CO1] Knowledge Representation: Propositional Logic, Propositional Theorem Proving-Inference and Proofs, Proof by Resolution, Horn Clauses and definite Clauses, Forward and Backward chaining; First order Logic, Inference in First Order Logic. [CO1]	
Unit-II Uncertain Knowledge and Reasoning: Basic probability, Bayes rule, Belief networks, Default reasoning, Fuzzy sets and fuzzy logic. Structured Knowledge: Associative Networks, Frame Structures, Conceptual Dependencies and Scripts.	10
Unit-III Uninformed Search strategies- Breadth-first search, Uniform-cost search, Depth-first search, Depth-limited search, Iterative deepening depth-first search, Bidirectional search, Comparing uninformed search strategies.[CO2] Informed (Heuristic) Search Strategies- Hill Climbing, Simulated Annealing, Genetic Algorithm, Greedy best-first search, A* and optimal search, Memory-bounded heuristic search.[CO2]	12
Unit-IV Natural language processing: Grammars, Parsing.[CO4] Pattern Recognition: Recognition and Classification Process-Decision Theoretic Classification, Syntactic Classification; Learning Classification Patterns, Recognizing and Understanding Speech. [CO5] Expert System Architectures: Characteristics, Rule-Based System Architectures, Nonproduction System Architectures, Knowledge Acquisition and Validation.[CO3]	12

Text Books:

1. Artificial Intelligence-A Modern Approach, Russel and Norvig, Prentice Hall.
2. Artificial Intelligence, Elaine Rich, Kevin Knight and SB Nair, 3 Ed.,Tata McGraw-Hill.
3. Artificial Intelligence And Expert Systems, D.W.Patterson, Prentice Hall.
4. Artificial Intelligence Structures and Strategies for complex Problem Solving, George F. Luger, Pearson Addison Wesley.

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Reference Books:

1. Artificial Intelligence-A New Synthesis, Nils J. Nilsson, Morgan Kaufmann Publishers.
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Course Code: UGCA1951

Course Name: Artificial Intelligence Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 weeks per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: Working Knowledge of Python Programming Language

Co requisite: Installing Python, Installing packages, Loading data

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify right tool for different AI based problems.
CO2	Develop basic applications using AI tools.
CO3	Represent various real life problem domains using logic based techniques and use this to perform inference or planning.
CO4	Outline the use of Bayesian approach to solve uncertain problems.
CO5	Implement basic Natural Language processing programs.

Instructions:

1.	Learn the building blocks of Logic Programming in Python.
2.	Python script for comparing mathematical expressions and finding out unknown values.
3.	Use logic programming in Python to check for prime numbers.
4.	Use logic programming in Python parse a family tree and infer the relationships between the family members.
5.	Python script for building a puzzle solver.
6.	Implementation of Naïve Bayes classifier, computing its accuracy and visualizing its performance.
7.	Creation of a fuzzy control system which models how you might choose to tip at a restaurant.
8.	Implementation of uninformed search techniques in Python.
9.	Implementation of heuristic search techniques in Python.

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10.	Python script for tokenizing text data.
11.	Extracting the frequency of terms using a Bag of Words model.
12.	Predict the category to which a given piece of text belongs.
13.	Python code for visualizing audio speech signal
14.	Python code for Generating audio signals
15.	Python code for Synthesizing tones to generate music

Reference Books:

1. Artificial Intelligence with Python, Prateek Joshi, Packt Publishing.

Course Code: UGCA1946

Course Name: R Programming

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact Hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 40%
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: Logics of basic programming terminologies.

Co requisite: Simulation study.

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course Outcomes
CO1	Identify the key components of R programming Language.
CO2	Define the concept of data Science.
CO3	Differentiate between vectors and arrays.
CO4	Outline the usage of data frames, lists, factors, tables and R structures.
CO5	Explain the need and utilization of various visualization tools.

Detailed Contents	Contact hours
Unit-I R Programming Fundamentals: Introduction to R, Installing R, Windows/Linux/Mac Installation, Setting up Path, Using Packages, and Running R: Interactive Mode, Batch Mode, Getting Help, Startup and Shut Down.[CO1]	11

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Vectors: Scalars, Vectors, Arrays and Matrices, Declarations, Recycling, Common Vector Operations, Using all() and any(), Na and Null Values, Filtering, ifelse() Function.[CO3] Matrices and Arrays: Creating Matrices, General Matrix Operations, Applying Functions to Matrix Rows and Columns, Adding & Deleting Matrix Rows and Columns, Difference Between Matrix and Vector.[CO3]	
Unit-II Lists: Creating Lists, General List Operations, Accessing List Components and Values, Applying Functions to Lists, Recursive Lists. Data Frames: Creating Data Frames, Merging Data Frames, Applying Functions to Data Frames. [CO4] Factors and Tables: Introduction, Common Functions use with Factors, Working with Tables.[CO4] R Programming Structures: Control Statements, Arithmetic and Boolean Operators, Default Values for Arguments, Return Values, Recursion.[CO4]	11
Unit-III Object Oriented Programming: Concept of Classes, S3 Classes, S4 Classes, S3 Versus S4 Classes, Managing Objects.[CO1] Input/Output: Accessing Keyboard and Monitor, Reading and Writing Files, Accessing the Internet. String Manipulation: Overview of String Manipulation Functions [grep(), nchar(), paste(), sprintf(), substr(), strsplit(), regexpr(), gregexpr(), Regular expression].[CO5]	12
Unit-IV Graphics: Creating Graphs, Customizing Graphs, Saving Graphs to Files, Creating 3D Plots. Debugging: Principles of Debugging, Use of Debugging Tool, Using R Programming Debugging Facilities. [CO3] Simulation: Generating Random Numbers, Setting the Random Number Seed, Simulating a Linear Model, Random Sampling.[CO5]	10

Text Books:

1. The ART of R Programming, Norman Matloff, No Starch Press.
2. R Programming for Data Science, Roger D. Peng, Lean Publishing.
3. R Programming for Beginners, S. Rakshit, TMH.

Reference Books:

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1. Data Analytics using R, Seema Acharya, TMH.

Course Code: UGCA1952

Course Name: R Programming Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of End Semester Exam (ESE): 3hrs
External max. marks: 40	Elective Status: Elective
Total marks: 100	

Prerequisite: - Logics of basic programming terminologies.

Co requisite: - Simulation study.

Additional material required in ESE: - Record the *Simulation Results* on practical file.

Course Outcomes: Students will be able to

CO#	Course Outcomes
CO1	Write programs for arrays and matrices.
CO2	Execute data frames and lists.
CO3	Differentiate between arrays from vectors.
CO4	Implement factors in R
CO5	Execute minor projects using R.

Instructions: All programs are to be developed in R Programming Language.

1.	Design a program to take input from the user (name and age) and display the values through R Programming.
2.	Write a program to get the details of the objects in memory using R Programming.
3.	Create a sequence of numbers from 20 to 50 and find the mean of numbers from 20 to 60 and sum of numbers from 51 to 91 using R Programming.
4.	Create a vector which contains 10 random integer values between -50 and +50 using R Programming.
5.	Demonstrate through a program to display the details of the objects in memory.
6.	Write a R program to get the first 10 Fibonacci numbers.
7.	Show all prime numbers up to a given number using R programming..
8.	Design a R program to find the factors of a given number.
9.	Write a R program to find the maximum and the minimum value of a given vector.
10.	Write a program to get the unique elements of a given string and unique numbers of vector.
11.	Convert a given matrix to a 1 dimensional array through R programming.
12.	Write a R program to create an array of two 3x3 matrices each with 3 rows and 3 columns from the given two vectors.

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13.	Create a 3 dimensional array of 24 elements using dim() function.
14.	Write a R program to create an array using four given columns, three given rows and two given tables, also display the contents of the array.
15.	To convert a given matrix to 1 dimensional array design a R program.
16.	Write a R program to concatenate two given factor in a single factor.
17.	Write a R program to create an 3 dimensional array of 24 elements using the dim() function.
18.	Construct a R program to create an array of two 3x3 matrices each with 3 rows and 3 columns from the given two vectors. Print the second row of the second matrix of the array and the element in the 3rd row and 3rd column of the 1st matrix.
19.	Write a R program to create a data frame from four given vectors.
20.	Write a program to get the structure of a given data frame.
21.	Design a R program to get the statistical summary and nature of the data of a given data frame.
22.	Write a R program to extract specific column from a data frame using column name.
23.	Design a R program to create a data frame from four given vectors.
24.	Demonstrate a R program to get the structure of a given data frame.
25.	Write a R program to get the statistical summary and nature of the data of a given data frame.
26.	Design a R program to extract specific column from a data frame using column name.
27.	Demonstrate a R program to create a data frame from four given vectors.
28.	Write a R program to create a matrix taking a given vector of numbers as input. Display the matrix.
29.	Construct a R program to create a matrix taking a given vector of numbers as input and define the column and row names. Display the matrix.
30.	Write a R program to access the element at 3 rd column and 2 nd row, only the 3 rd row and only the 4 th column of a given matrix.
31.	Develop a R program to create a vector of a specified type and length. Create vector of numeric, complex, logical and character types of length 6.
32.	Write a R program to add two vectors of integers type and length.
33.	Design a R program to append value to a given empty vector
34.	Write a R program to multiply two vectors of integers type and length.
35.	Design a R program to create a list containing strings, numbers, vectors and a logical values.
36.	Write a R program to list containing a vector, a matrix and a list and give names to the elements in the list.
37.	Demonstrate a R program to find the levels of factor of a given vector.
38.	Write a R program to change the first level of a factor with another level of a given factor.
39.	Design a R program to create an ordered factor from data consisting of the names of months.
40.	Construct graphical output & display the results of any five tasks using simulator.

Text Books:

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1. The ART of R Programming, Norman Matloff, No Starch Press.
2. R Programming for Data Science, Roger D. Peng, Lean Publishing.
3. R Programming for Beginners, S. Rakshit, TMH.

Reference Books:

1. Data Analytics using R, Seema Acharya, TMH.
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Course Code: UGCA1947

Course Name: Digital Marketing

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Highlight the key elements of a digital marketing strategy.
CO2	Choose the right platform for digital marketing
CO3	Identify the major digital marketing channels.
CO4	Design content for digital marketing.
CO5	Develop digital marketing strategy and plan.

Detailed Contents	Contact hours
Unit-I Introduction to Digital Marketing Difference between Traditional Marketing and Digital Marketing, Benefits of using Digital Media, Inbound and Outbound Marketing, Online marketing POEM: (Paid, Owned, and Earned Media), Components of Online Marketing (Email, Forum, Social network, Banner, Blog), Impact of Online Marketing, Basics of Affiliate Marketing, Viral Marketing, Influencer Marketing, Referral Marketing. [CO1] Email Marketing: Email newsletters, Digests, Dedicated Emails, Lead Nurturing, Sponsorship Emails and Transactional Emails, Drawbacks of Email Marketing [CO1]	11

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Social Media Marketing (SMM): Different types of Social Media Marketing like Facebook, LinkedIn, Twitter, Video, Instagram etc.[CO1]	
Unit –II Search Engine Optimisation (SEO) About SEO, Need of an SEO friendly website, Importance of Internet and Search Engines; Role of Keywords in SEO. [CO2] On-Page Optimization (Onsite): Basics of Website Designing / Development; HTML Basics for SEO; Onsite Optimization Basics; Website Structure and Navigation Menu Optimization; SEO Content Writing. Keywords Research and Analysis (eg. SWOT analysis of website, finding appropriate keywords). Off Page Optimization: Introduction; Local marketing of websites depending on locations; Promoting Subsequent pages of the website. Introduction to organic SEO vs non-organic SEO; Social Media Optimization Techniques and Page Rank Technology.[CO2]	11
Unit-III Website Planning & Creation Content Marketing Strategy: Goals and concepts, Strategic building blocks, Content creation & channel distribution, Tools of the trade, Advantages and challenges. Keywords Research and Analysis: Introduction to Keyword Research; Business Analysis; Types of Keywords; Keywords Analysis Tools.[CO3] Web Presence: How to increase online presence and drive more traffic for a website, Search result visibility in search engines for chosen keyword and phrases, Using e-mail marketing to drive traffic for a website, Posting social media content for lead generation, Tools to create and manage content, Use of Blogging as content strategy. [CO3] Creating content: Writing and posting content on the web and in social networks, blog and video; Create, manage and implement a content marketing strategy; Monitoring and recording results to improve content marketing campaigns; Successful content marketing strategies and case studies.[CO4]	12
Unit-IV Online Advertising, Mobile Marketing and Web analytics Introduction to Online Advertising and its advantages, Paid versus Organic, Pay Per Click (PPC) Model. Basic concepts Cost per Click (CPC), CPM, CTR, CR etc. About Mobile Marketing, Objectives of Mobile Advertising, Creating a Mobile Marketing Strategy, Introduction to SMS Marketing. About Web	10

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Analytics, Types of Web Analytics (On-site, Off-site), Importance of Web Analytics [CO5]	

Text Books:

1. Puneet Singh Bhatia, Fundamentals of Digital Marketing First Edition, Publication Pearson.
2. Vandana Ahuja, Digital Marketing 1st Edition, Publication Oxford
3. Shivani Karwal, "Digital Marketing Handbook: A Guide to search Engine Optimization, Pay Per Click Marketing, Email Marketing and Content Marketing", CreateSpace Independent Publishing Platform, 1st edition.

Reference Books:

1. Ian Dodson, The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted and Measurable Online Campaigns, Publication Wiley India Pvt Ltd.
2. Philip Kotler, Hermawan Kartajaya, Iwan Setiawan, Marketing 4.0: Moving from Traditional to Digital, Publication Wiley India Pvt Ltd.
3. Venakaramana Rolla, "Digital Marketing Practice guide for SMB: SEO, SEM and SMM", CreateSpace Independent Publishing Platform, First edition.
4. Enge, E., Spencer, S., Stricchiola, J., & Fishkin, R. (2012). The art of SEO. "O'Reilly Media, Inc."

E Books/ Online learning material:

1. www.sakshat.ac.in
2. <https://swayam.gov.in>
3. <https://www.edx.org/course/online-marketing-strategies-curtinx-mkt5x>
4. <https://www.emarketinginstitute.org/free-courses/> eMarketing Institute

Course Code: UGCA1953

Course Name: Digital Marketing Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

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CO#	Course outcomes
CO1	Highlight the key elements of a digital marketing strategy.
CO2	Implement common digital marketing exercise using SEO, Social media and Blogs.
CO3	Identify the major digital marketing channels.
CO4	Design content for digital marketing.
CO5	Develop digital marketing strategy and plan.

Instructions:

The instructor needs to give an overview of digital marketing with case studies	
1.	Explore Facebook, LinkedIn, Twitter, Video, Instagram, blog etc
2.	Explore Online Display Advertising, Ecommerce Marketing, Mobile Web and Content marketing.
3.	Explore Email Marketing; Google AdWords and Google Analytics
The instructor needs to discuss a case study using Search Engine Optimisation (SEO). Case Study – I : Student will plan and create a webpage will display Web presence	
4.	How to increase online presence and drive more traffic for a website.
5.	Search result visibility in Google for chosen keyword and phrases.
6.	Using e-mail marketing to drive traffic for a website.
7.	Posting social media content for lead generation.
8.	Tools to create and manage content.
9.	Use of Blogging as content strategy
Case Study – II : Student will plan and create a commercial website	
10.	Show results for Search Engine Algorithms & Page Rank Technology
11.	How to promote home page, SWOT Analysis of Website & finding right appropriate keywords.
12.	Monitoring and recording results to improve content marketing campaigns
13.	Writing and posting content on the web and in social networks.
Case Study – III : Student will identify an activity for Email/ Mobile/ Social Media Marketing	
14.	Create a Video/ YouTuber
15.	Manage a Video/ YouTuber platform and enhance viewership.

Texts Books:

1. Puneet Singh Bhatia, Fundamentals of Digital Marketing First Edition, Publication Pearson.
2. Vandana Ahuja, Digital Marketing 1st Edition, Publication Oxford
3. Shivani Karwal, “Digital Marketing Handbook: A Guide to search Engine Optimization, Pay Per Click Marketing, Email Marketing and Content Marketing”, CreateSpace Independent Publishing Platform, 1st edition.

Reference Books:

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1. Ian Dodson, The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted and Measurable Online Campaigns, Publication Wiley India Pvt Ltd.
 2. Philip Kotler, Hermawan Kartajaya, Iwan Setiawan, Marketing 4.0: Moving from Traditional to Digital, Publication Wiley India Pvt Ltd.
 3. Venakataramana Rolla, "Digital Marketing Practice guide for SMB: SEO, SEM and SMM", CreateSpace Independent Publishing Platform, First edition.
 4. Enge, E., Spencer, S., Stricchiola, J., & Fishkin, R. (2012). The art of SEO. "O'Reilly Media, Inc."
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Course Code: UGCA1948

Course Name: Information Security

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify issues involved in the field of information security.
CO2	Categorize various types of viruses.
CO3	Outline the information security risks across de Internet and WWW.
CO4	Explain different encryption techniques
CO5	Define cryptography

Detailed Contents	Contact hours
Unit –I The Security Problem in Computing: The meaning of computer Security, Computer Criminals, Methods of Defense, Elementary Cryptography: Substitution Ciphers, Transpositions, Making “Good” Encryption algorithms, Secure Architecture of an open System. DES and RSA Algorithm, [CO1]	11

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Asymmetric and symmetric Key Cryptography, Role based Security, Digital Signatures, The Data Encryption Standard, The AES Encryption Algorithms, Public Key Encryptions, Uses of Encryption. [CO4]	
Unit-II Security in Program and Operating System: Secure Programs, Non malicious Program Errors, viruses and other malicious code, Targeted Malicious code, controls Against Program Threats, Protection in General- Purpose operating system protected objects and methods of protection memory and addmens protection, File protection Mechanisms, User Authentication Designing Trusted.[CO2] Operating System: Security polices, models of security, trusted Operating System design, Assurance in trusted Operating System Implementation examples.	11
Unit-III Database and Network Security: Database Integration and Secrecy, Inferential Control, Sensitive data, Inference, multilevel database, proposals for multilevel security. Security in Network: Threats in Network, Network Security Controls, Firewalls, Intrusion Detection Systems, Secure E-Mail [CO1]	11
Unit-IV Administering Security: Security Planning, Risk Analysis, Organizational Security policies, Physical Security. Legal Privacy and Ethical Issues in Computer Security: Protecting Programs and data, Information and the law, Rights of Employees and Employers, Software failures, Computer Crime, Praia, Ethical issues in Computer Security, Case Studies of Corporate Security. [CO3] [CO5]	11

Text Books

1. Charles P.Pfleeger, Shari Lawrence. Security in Computing, Pfleeger. PHI.
2. Jason Andress. The Basics of Information Security, Syngress
3. Mark Stamp. Information Security: Principles and Practice, Wiley.
4. A. Kahate, Cryptography and Network Security, TMH.

Course Code: UGCA1954

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Course Name: Information Security Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Outline various types of attacks.
CO2	Categorize various types of viruses.
CO3	Prepare solutions to various threats
CO4	Review security policy
CO5	Implement Encryption Techniques

Instructions:

1	Study of System threat attacks - Denial of Services.
2	Study of Sniffing and Spoofing attacks.
3	Study of Techniques uses for Web Based Password Capturing.
4	Study of Different attacks causes by Virus and Trojans.
5	Study of Anti-Intrusion Technique – Honey pot.
6	Study of Symmetric Encryption Scheme – RC4.
7	Implementation of S-DES algorithm for data encryption
8	Implementation of Asymmetric Encryption Scheme – RSA.
9	Study of IP based Authentication.
10	Study of Cryptography Techniques
11	Study of Encryption algorithms
12	Study of Security polices
13	Study of Network Security Fundamentals, Ethical Hacking and Social Engineering

Reference Books:

1. Charles P. Pfleeger, Shari Lawrence. Security in Computing, Pfleeger. PHI.
2. Jason Andress. The Basics of Information Security, Syngress
3. Mark Stamp. Information Security: Principles and Practice, Wiley.
4. A. Kahate, Cryptography and Network Security, TMH.

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Course Code: UGCA1949

Course Name: Cyber Laws & IPR

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify statutory, regulatory, constitutional, and organizational laws that affect the information technology professional.
CO2	Categorize case law and common law to current legal dilemmas in the technology field.
CO3	Outline the primary forms of intellectual property rights.
CO4	Compare the different forms of intellectual property protection in terms of their key differences and similarities.
CO5	Analyze the effects of intellectual property rights on society as a whole.

Detailed Contents	Contact hours
Unit-I Introduction Overview of Computer and Web Technology, Need for Cyber Law, Cyber Jurisprudence at International and Indian Level, Jurisdictional Aspects in Cyber Law Issues of jurisdiction in cyberspace, Types of jurisdiction, Minimum Contacts Theory, Sliding Scale Theory, Effects Test and International targeting, Jurisdiction under IT Act, 2000. [CO1]	12
Unit-II Cyber Crimes& Legal Framework Cyber Crimes against Individuals, Institution and State, Hacking, Digital Forgery, Cyber Stalking/Harassment, Ethics and Etiquettes of Cyber World, Cyber Pornography, Identity Theft & Fraud, Cyber Terrorism, Cyber Defamation, Right to Privacy and Data Protection on Internet, Concept of privacy, Threat to privacy on internet, Self-regulation approach to privacy.[CO2]	12

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Unit-III Overview of Intellectual Property introduction and the need for intellectual property right (IPR), IPR in India – Genesis and Development IPR in abroad, Data Protection, Open Source Software, Macro economic impact of the patent system, Patent and kind of inventions protected by a patent, Patent document How to protect your inventions?, Granting of patent, Rights of a patent.[CO3]	10
Unit-IV Copyright, Related Rights and Trademarks What is copyright? Latest editions of Designs, what is covered by copyright? How long does copyright last? Why protect copyright? What are related rights?, Distinction between related rights and copyright?, What is a trademark? Rights of trademark?, What kind of signs can be used as trademarks?, types of trademark, function does a trademark perform, How is a trademark protected?, How is a trademark registered?[CO4][CO5]	10

Text Books

1. Anirudh Rastogi. Cyber Law, LexisNexis.
2. Vakul Sharma. Information Technology Law and Practice Cyber Laws and Laws Relating to E-Commerce, Universal Law Publishing.
3. Pankaj Sharma. Information Security and Cyber Laws, Kataria, S. K., & Sons.
4. Navneet Nagpal. Intellectual Property Right, Ebooks2go Inc.
5. Dr. S.K. singh. Intellectual Property Rights, Central Law Agency.

Course Code: UGCA1955

Course Name: Cyber Laws & IPR Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Theory/Practical: Practical	Percentage of numerical/design problems: --
Internal max. marks: 60	Duration of end semester exam (ESE): 3hrs
External max. marks: 40	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

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CO#	Course outcomes
CO1	Identify statutory, regulatory, constitutional, and organizational laws that affect the information technology professional.
CO2	Categorize case law and common law to current legal dilemmas in the technology field.
CO3	Outline the primary forms of intellectual property rights.
CO4	Compare the different forms of intellectual property protection in terms of their key differences and similarities.
CO5	Analyze the effects of intellectual property rights on society as a whole.

Instructions:

1	Study of Jurisdictional Aspects in Cyber Law Issues
2	Study of Jurisdiction under IT Act, 2000.
3	Study of Hacking, Digital Forgery.
4	Study of threat to privacy on internet.
5	Study about the difference between related rights and copyright.
6	Study of Privacy and Data Protection on Internet.
7	Study about registration process of trademark.
8	Study about different kind of signs can be used as trademarks.
9	Study of Copyright, Related Rights and Trademarks.
10	Study of Self-regulation approach to privacy.
11	Study of intellectual property right (IPR) in India.
12	Study about impact of the patent system.
13	Study for Granting of patent.
14	Study related to Rights of Patents
15	Discussion with reference to authentication of Electronic Record using Digital Signatures

Reference Books:

1. Anirudh Rastogi. Cyber Law, LexisNexis.
2. Vakul Sharma. Information Technology Law and Practice Cyber Laws and Laws Relating to E-Commerce, Universal Law Publishing.
3. Pankaj Sharma. Information Security and Cyber Laws, Kataria, S. K., & Sons.
4. Navneet Nagpal. Intellectual Property Right, Ebooks2go Inc.
5. Dr. S.K. singh. Intellectual Property Rights, Central Law Agency.

Course Code: UGCA1950

Course Name: Machine Learning

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: 40%

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Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Define the concept of machine learning
CO2	Outline the key characteristics of machine learning algorithms
CO3	Compare the performance of different machine learning algorithms
CO4	Design solution for basic problems using machine learning algorithms
CO5	Explain the concept of reinforcement learning

Detailed Contents	Contact hours
Unit-I Introduction What is Machine Learning, Unsupervised Learning, Reinforcement Learning Machine Learning Use-Cases, Machine Learning Process Flow, Machine Learning Categories, Linear regression and Gradient descent.[CO1]	8
Unit-II Supervised Learning Classification and its use cases, Decision Tree, Algorithm for Decision Tree Induction Creating a Perfect Decision Tree, Confusion Matrix, Random Forest. What is Naïve Bayes, How Naïve Bayes works, Implementing Naïve Bayes Classifier, Support Vector Machine, Illustration how Support Vector Machine works, Hyper parameter Optimization, Grid Search Vs Random Search, Implementation of Support Vector Machine for Classification.[CO4]	12
Unit-III Clustering What is Clustering & its Use Cases, K-means Clustering, How does K-means algorithm work, C-means Clustering, Hierarchical Clustering, How Hierarchical Clustering works.[CO3]	12
Unit-IV	12

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Why Reinforcement Learning, Elements of Reinforcement Learning, Exploration vs Exploitation dilemma, Epsilon Greedy Algorithm, Markov Decision Process (MDP) Q values and V values, Q – Learning, α values.[CO5]	

Text Books:

1. Pattern Reorganization and Machine learning by Christopher M. Bishop.
2. The elements of Statistical learning by Jeromeh. Friedman, Robert Tivshirani and Trevorhaspie.
3. Introduction to Machine Learning by Ethem Alpaydin. PHI Publisher.
4. Machine Learning, A practical approach on the statistical learning theory by Rodrigo fernandes de Mello and Moacir Antonelli Ponti.
5. Machine Learning A probabilistic prospective by Kevin P. Murphy

Course Code: UGCA1956

Course Name: Machine Learning Laboratory

Program: BCA	L: 0 T: 0 P: 4
Branch: Computer Applications	Credits: 2
Semester: 6 th	Contact hours: 4 hours per week
Internal max. marks: 70	Theory/Practical: Practical
External max. marks: 30	Duration of End Semester Exam (ESE): 3hrs
Total marks: 100	Elective status: Core

Prerequisite: Students must have the knowledge of editors like Notepad etc. and basic understanding of Scripting Language/s.

Co requisite: Knowledge of Networking, Internet, Client Server concepts, Static & Dynamic environment of the websites etc.

Additional material required in ESE:

Course Outcomes: After studying this course, students will be able to:

CO#	Course Outcomes
CO1	Differentiate between various data types.
CO2	Implement programs for various Learning algorithms.
CO3	Compare different machine learning algorithms.
CO4	Choose the right algorithm for different problems.
CO5	Apply Machine Learning algorithms to solve real world problems.

Instructions: Instructor can increase/decrease the experiments as per the requirement.

Assignments:

1.	Read the numeric data from .CSV file and use some basic operation on it.

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2.	Write a program to demonstrate the working of the decision tree algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
3.	Write a program to demonstrate the working of the Random Forest algorithm.
4.	Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
5.	Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.
6.	Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
7.	Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.
8.	Write a program to demonstrate the working of the K-means clustering algorithm.
9.	Write a program to demonstrate the working of the Support Vector Machine for Classification Algorithm.
10.	Write a program to demonstrate the working of the Hierarchical Clustering

Reference Books:

1. Rodrigo fernandes de Mello and Moacir Antonelli Ponti., Machine Learning, A practical approach on the statistical learning
2. Christopher Bishop, “Pattern Recognition and Machine Learning” Springer, 2007.
3. Stephen Marsland, “Machine Learning – An Algorithmic Perspective”, Chapman and Hall, CRC Press, Second Edition, 2014.
4. Kevin P. Murphy, “Machine Learning: A Probabilistic Perspective”, MIT Press, 2012.
5. Ethem Alpaydin, “Introduction to Machine Learning”, MIT Press, Third Edition, 2014
6. Tom Mitchell, “Machine Learning”, McGraw-Hill, 1997.

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Course Code: UGCA1902

Course Name: Fundamentals of Computer and IT

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Identify of input and output devices of Computers
CO2	Utilize the functioning of various components of computer system
CO3	Define the role of Operating system
CO4	Prepare documents using word processing, Spreadsheet and Presentation Graphics Software's.
CO5	Highlight the Internet safety, legally, and other issues.

Detailed Contents	Contact hours
Unit-I Human Computer Interface Concepts of Hardware and Software; Data and Information. Functional Units of Computer System: CPU, registers, system bus, main memory unit, cache memory, Inside a computer, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors.[CO2] Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter. [CO1] Memory: Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks.[CO2]	12

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Data Representation: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal Systems, Conversions and Binary Arithmetic (Addition/ Subtraction/ Multiplication) Applications of IT. [C03]	
Unit-II Concept of Computing & PC Software – I Concept of Computing, Types of Languages: Machine, assembly and High level Language; Operating system as user interface, utility programs. Word processing: Editing features, formatting features, saving, printing, table handling, page settings, spell-checking, macros, mail-merge, equation editors. [CO4]	12
Unit-III PC Software – II Spreadsheet: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cell references, replication, sorting, filtering, functions, Charts & Graphs. [CO4] Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.[CO4]	10
Unit-IV The Impact of Computing and the Internet on Society Electronic Payment System: Secure Electronic Transaction, Types of Payment System: Digital Cash, Electronic Cheque, Smart Card, Credit/Debit Card E-Money, Bit Coins and Crypto currency, Electronic Fund Transfer (EFT), Unified Payment Interface (UPI), Immediate Payment System (IMPS), Digital Signature and Certification Authority. [CO5] Introduction to Bluetooth, Cloud Computing, Big Data, Data Mining, Mobile Computing and Embedded Systems and Internet of Things (IoT)	10

Text Books:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education
2. Computer Fundamentals, A. Goel, 2010, Pearson Education.
3. Fundamentals of Computers, P. K.Sinha & P. Sinha, 2007, BPB Publishers.
4. IT Tools, R.K. Jain, Khanna Publishing House

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5. “Introduction to Information Technology”, Satish Jain, Ambrish Rai & Shashi Singh, Paperback Edition, BPB Publications, 2014.

Reference Books:

1. “Introduction to Computers”, Peter Norton
2. Computers Today, D. H. Sanders, McGraw Hill.
3. “Computers”, Larry long & Nancy long, Twelfth edition, Prentice Hall.
4. Problem Solving Cases in Microsoft Excel, Joseph Brady & Ellen F Monk, Thomson Learning

E Books/ Online learning material

1. www.sakshat.ac.in
 2. <https://swayam.gov.in/course/4067-computer-fundamentals>
-

Course Code: UGCA1903

Course Name: Problem Solving using C

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Express the logical flow used in Programming.
CO2	Design algorithms for solving various real life problems
CO3	Implement programs using C .
CO4	Choose the right data type and statements for programs.
CO5	Explain various concepts of C programming language.

Detailed Contents	Contact hours
Unit-I	10

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Logic Development: Data Representation, Flowcharts, Problem Analysis, Decision Trees/Tables, Pseudo code and algorithms. Fundamentals: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants. [CO1] Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, Library functions. [CO2]	
Unit-II Data Input and Output: formatted & unformatted input output. Control Statements: While, Do-while and For statements, Nested loops, If-else, Switch, Break – Continue statements. [CO4]	10
Unit-III Functions: Brief overview, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion. [C05] Arrays: Defining, processing arrays, passing arrays to a function, multi-dimensional arrays.[CO5] Strings: String declaration, string functions and string manipulation Program Structure Storage Class: Automatic, external and static variables.[CO5]	12
Unit-IV Structures & Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, unions. Pointers: Understanding Pointers, Accessing the Address of a Variable, Declaration and Initialization of Pointer Variables, Accessing a Variable through its Pointer, Pointers and Arrays[CO5] File Handling: File Operations, Processing a Data File [CO3]	12

Text Books:

4. Programming in C, Atul Kahate
5. Programming in ANSI C, E. Balagurusami, Fourth Edition, Tata McGraw Hill
6. The C Programming Language, Kernighan & Richie, Second Edition, PHI Publication

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Reference Books:

6. Object Oriented Programming, Lafore R, Third Edition, Galgotia Publications
 7. Problem Solving and Programming in C, R.S. Salaria, Second Edition
 8. Let us C, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.
 9. Programming in C, Byron S. Gottfried, Second Edition, McGraw Hills.
-

Course Code: UGCA1909

Course Name: Object Oriented Programming using C++

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Outline the role of programming for solving real world problems.
CO2	Explain Object oriented approach for finding Solutions to various problems with the help of C++ language.
CO3	Implement computer based solutions to various real-world problems using C++
CO4	Select the right Object Oriented Concept for optimal solution.
CO5	Review different solutions for a common problem.

Detailed Contents	Contact hours
Unit-I Principles of object oriented programming Introduction to OOP and its basic features, Basic components of a C++, Program and program structure, Compiling and Executing C++ Program. Difference between Procedure Oriented Language(C) and Object Oriented Language [CO1]	12
Unit-II Classes & Objects and Concept of Constructors	10

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Defining classes, Defining member functions, Declaration of objects to class, Access to member variables from objects, Different forms of member functions, Access specifiers (Private, public, protected), Array of objects.[CO2] Introduction to constructors, Parameterized constructors, Copy Constructor, Multiple constructors in class, Dynamic initialization of objects, Destructors. [CO2]	
Unit-III Inheritance and Operator overloading Introduction to Inheritance, Types of inheritance: - Single inheritance, Multiple inheritance, Multilevel inheritance, Hierarchical inheritance, Hybrid inheritance, Defining operator overloading, Overloading of Unary and Binary operators, Rules for overloading operators [CO3]	12
Unit-IV Polymorphism and File Handling Early Binding, Late Binding, Virtual Functions, pure virtual functions, Abstract Classes.[CO4] [CO5] Opening and Closing File, Reading and Writing a file.[CO3]	10

Text Books:

1. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill.
2. Object Oriented Programming in Turbo C++, Robert Lafore, Fourth Edition Galgotia Publications.
3. The C++ Programming Language, Bjarna Stroustrup, Third Edition, Addison-Wesley Publishing Company.
4. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.

Course Code: UGCA1913

Course Name: Computer Networks

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours

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Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: Information Technology

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Highlight the characteristics of various protocols.
CO2	Define different network technologies and their application.
CO3	Identify Hardware and software components for designing network.
CO4	Compare the performance of different network media
CO5	Implement various configuration settings

Detailed Contents	Contact hours
Unit-I Data communications concepts: Digital and analog transmissions-Modem, parallel and serial transmission, synchronous and asynchronous communication. Modes of communication: Simplex, half duplex, full duplex.[CO1] Types of Networks: LAN, MAN, WAN [CO1] Network Topologies: Bus, Star, Ring, Mesh, Tree, Hybrid[CO2] Communication Channels: Wired transmissions: Telephone lines, leased lines, switch line, coaxial cables-base band, broadband, optical fiber transmission. [CO2] Communication Switching Techniques: Circuit Switching, Message Switching, Packet Switching.	12
Unit-II Network Reference Models: OSI Reference Model, TCP/IP Reference Model, Comparison of OSI and TCP/IP Reference Models. Transmission impairments – Attenuation, Distortion, Noise. Multiplexing – Frequency division, Time division, Wavelength division. [CO1]	10

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Data Link Layer Design Issues: Services provided to the Network Layer, Framing, Error Control (error detection and correction code), Flow Control, Data Link Layer in the Internet (SLIP, PPP)[CO1]	
Unit-III MAC sub layer: CSMA/CD/CA, IEEE standards (IEEE802.3 Ethernet, Gigabit Ethernet, IEEE 802.4 Token Bus, IEEE 802.5 Token Ring) Network Layer: Design Issues, Routing Algorithms: Optimality Principle, Shortest Path Routing, Congestion Control Policies, Leaky bucket and token bucket algorithm, Concept of Internetworking. [CO4]	12
Unit-IV Transport Layer: Design issues, Elements of transport protocols – Addressing, Connection establishment and release, Flow control and buffering, Introduction to TCP/UDP protocols. [CO5] Session, Presentation and Application Layers: Session Layer – Design issues, remote procedure call. Presentation Layer – Design issues, Data compression techniques, Cryptography. Application Layer – Distributed application (client/server, peer to peer, cloud etc.), World Wide Web (WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP), HTTP as an application layer protocol.[CO5]	10

Text Books:

1. Computer Networks, Tanenbaum, Andrew, Fifth Edition, PHI.
2. Data Communication and Networking, Behrouz A. Forouzan, Fourth Edition.
3. Computer Today, S.K. Basandra, First Edition, Galgotia.

Reference Books:

1. Data Communication System, Black, Ulysse, Third Edition, PHI.
2. Data and Computer Communications, Stalling, Ninth Edition, PHI.
3. James F. Kurose and Keith W. Ross, “Computer Networking”, Pearson Education.
4. Douglas E. Comer, “Internetworking with TCP/IP”, Volume-I, Prentice Hall, India.

Course Code: UGCA1922

Course Name: Database Management Systems

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Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Define the basic concepts of DBMS.
CO2	Design SQL queries.
CO3	Illustrate the concept of data normalization with the help of real life examples.
CO4	Explain the concept of transaction management.
CO5	Outline features of advanced database management systems.

Detailed contents	Contact hours
Unit-I Introduction of DBMS, Data Modeling for a Database, Three level Architecture of DBMS, Components of a DBMS. Introduction to Data Models, Hierarchical, Network and Relational Model, Comparison of Network, Hierarchical and Relational Model, Entity Relationship Model. [CO1]	10
Unit-II Relational Database, Relational Algebra and Calculus, SQL Fundamentals, DDL, DML, DCL, PL/SQL Concepts, Cursors, Stored Procedures, Stored Functions, Database Triggers. [CO2]	12
Unit-III Introduction to Normalization, First, Second, Third Normal Forms, Dependency Preservation, Boyce-Codd Normal Form, Multi-valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form, Domain-key normal form (DKNF).[CO3]	12
Unit-IV Database Recovery, Concurrency Management, Database Security, Integrity and Control. Structure of a Distributed Database, Design of Distributed Databases.[CO4][CO5]	10

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Text Books:

1. "An Introduction to Database System", Bipin C. Desai, Galgotia Publications Pvt Ltd-New Delhi, Revised Edition, (2012).

Reference Books:

1. "SQL, PL/SQL The Programming Language of Oracle", Ivan Bayross, BPB Publications, 4th Revised Edition (2009)
 2. "An Introduction to Database Systems", C. J. Date, A. Kannan, S. Swamynathan, 8th Edition, Pearson Education, (2006).
 3. "Database System Concepts", Abraham Silberschatz, Henry F. Korth, S. Sudharshan, Tata McGraw Hill, 6th Edition, (2013).
 4. Database Management Systems, Raghu Ramakrishnan, McGraw-Hill, Third Edition, 2014.
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Course Code: UGCA1957

Course Name: Software Project Management

Program: BCA	L: 3 T: 1 P: 0
Branch: Computer Applications	Credits: 4
Semester: 6 th	Contact hours: 44 hours
Theory/Practical: Theory	Percentage of numerical/design problems: --
Internal max. marks: 40	Duration of end semester exam (ESE): 3hrs
External max. marks: 60	Elective status: Elective
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes:

CO#	Course outcomes
CO1	Define the principal tasks of software project managers. And basic concepts in software projects.
CO2	Outline the basic concepts of Software projects.
CO3	Explain the fundamentals of Process Planning, effort estimation and quality planning.
CO4	Comment upon risk and quality management.
CO5	Apply management and development practices to develop software.

Detailed Contents	Contact hours
Unit-I	12

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Project Management Concepts, Processes and Project Management, Project Management and the CMM, The Project Management Process, The Process Database, The Process Capability Baseline, Process Assets and The Body of Knowledge System. [CO1][CO2]	
Unit-II The Development Process, Requirement Change Management, Estimation and Scheduling Concepts, Effort Estimation, Scheduling, The Bottom-up Estimation Approach, The Top-Down Estimation Approach, The Use Case Points Approach, Quality Concepts, Quantitative Quality Management Planning, Defect Prevention Planning. [CO3]	12
Unit-III Concepts of Risks and Risk Management, Risk Assessment, Risk Control, Concepts in Measurement, Measurements, Project Tracking, Team Management, Customer Communication and Issue Resolution, The Structure of The Project Management Plan.[CO4]	10
Unit-IV Concepts in Configuration Management, The Configuration Management Process, The Review Process, Data Collection, Monitoring and Control, Project Tracking, Defect Analysis and Prevention, Process Monitoring and Audit, Project Closure Analysis.[CO5]	10

Text Books:

1. Software Project Management in Practice, Pankaj Jalote, 2002, Pearson Education.

Reference Books:

1. Software Engineering-A Practitioner's Approach, Roger S. Pressman, 2010, McGraw-Hill Higher Education, seventh edition.
2. Software Engineering, Ian Sommerville, 2009, Pearson Education.
3. Software Project Management, Bob Hughes, Mike Cotterell, Rajib Mall, McGraw-Hill, Sixth Edition, 2018.

**Guidelines regarding Mentoring and Professional
Development**

**I. K. Gujral Punjab Technical University
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The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

**Part – A
(Class Activities)**

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

**Part – B
(Outdoor Activities)**

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

Study Scheme & Syllabus of Bachelor of Commerce (Hons.) Batch 2018 onwards



**Department of Academics
IK Gujral Punjab Technical University**

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Courses & Examination Scheme:

First Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BCOM 101-18	Core Theory 1	Business Organization and Management	5	1	0	40	60	100	6
BCOM 102-18	Core Theory 2	Financial Accounting	5	1	0	40	60	100	6
BCOMGE101-18	General Elective 1	Managerial Economics	5	1	0	40	60	100	6
BTHU103/18	Ability Enhancement Compulsory Course (AECC)	English	1	0	0	40	60	100	1
BTHU104/18	Ability Enhancement Compulsory Course (AECC)	English Practical/Laboratory	0	0	2	30	20	50	1
HVPE101-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules	3	0	0	40	60	100	3
HVPE102-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules (Lab/ Seminar)	0	0	2	25	--**	25	1
BMPD102-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		19	3	6	280	320	600	25

**The Human Values, De-addiction and Traffic Rules (Lab/ Seminar) and Mentoring and Professional Development course will have internal evaluation only.

Note: One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the seminar at least once during the semester. It will be binding for all students to attend the seminar.

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Second Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BCOM 201-18	Core Theory 3	Cost Accounting	5	1	0	40	60	100	6
BCOM 202-18	Core Theory 4	Business Environment	5	1	0	40	60	100	6
BCOMGE201-18	General Elective 2	Business Statistics	5	1	0	40	60	100	6
EVS102-18	Ability Enhancement Compulsory Course (AECC) -III	Environmental Science	2	0	0	40	60	100	2
BMPD202-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		17	3	2	195	240	425	21

Third Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BCOM 301-18	Core Theory 5	Management Accounting	5	1	0	40	60	100	6
BCOM 302-18	Core Theory 6	Mercantile Law	5	1	0	40	60	100	6
BCOM 303-18	Core Theory 7	Human Resource Management	5	1	0	40	60	100	6
BCOMGE 301-18	General Elective 3	Indian Economy	5	1	0	40	60	100	6
BCOMSEC 301-18	Skill Enhancement Course-1	Workshop on IT tools for Business & E-Commerce	2	0	0	40	60	100	2
BMPD302-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		22	4	2	225	300	525	27

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Fourth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BCOM 401-18	Core Theory 8	Corporate Accounting	5	1	0	40	60	100	6
BCOM 402-18	Core Theory 9	Company Law	5	1	0	40	60	100	6
BCOM 403-18	Core Theory 10	Income Tax Law & Practice	5	1	0	40	60	100	6
BCOMGE 401-18	General Elective 4	Entrepreneurship Development	5	1	0	40	60	100	6
BCOMSEC 401-18	Skill Enhancement Course-2	Workshop on Computerized Accounting	2	0	0	40	60	100	2
BMPD402-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		22	4	2	425	300	525	27

Fifth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BCOM 501-18	Core Theory 11	Financial Management	5	1	0	40	60	100	6
BCOM 502-18	Core Theory 12	Goods and Services Tax	5	1	0	40	60	100	6
	Discipline Specific Elective 1	Elective – I	5	1	0	40	60	100	6
	Discipline Specific Elective 2	Elective – II	5	1	0	40	60	100	6
BMPD502-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		20	4	2	225	240	425	25

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SPECIALISATIONS

Any of the following groups each having two papers in Semester V can be chosen as specialization by the students.

1. Accounting & Finance

BCOP 511-18	Personal Financial Planning
BCOP 512-18	Advanced Financial Management

2. Banking & Insurance

BCOP 521-18	Banking Services Management
BCOP 522-18	Insurance Services Management

Sixth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BCOM 601-18	Core Theory 13	Industrial Relations and Labour Laws	5	1	0	40	60	100	6
BCOM 602-18	Core Theory 14	Operation Research	5	1	0	40	60	100	6
	Discipline Specific Elective 3	Elective – III	5	1	0	40	60	100	6
	Discipline Specific Elective 4	Elective – IV	5	1	0	40	60	100	6
BMPD602-18		Mentoring and Professional Development	0	0	2	25	--**	25	1
	TOTAL		20	4	2	185	240	425	25

SPECIALISATIONS:

Any of the following groups each having two papers in Semester VI can be chosen as specialization by the students.

1. Accounting & Finance

BCOP 611-18	Security Analysis & Portfolio Management
BCOP 612-18	Management of Financial Services

2. Banking & Insurance

BCOP 621-18	Banking Laws & Services
BCOP 622-18	Risk Management & Insurance

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BCOM 101-18 BUSINESS ORGANIZATION AND MANAGEMENT

Objective: - to acquaint the students with the fundamentals of managing business. It focuses on the basic roles, skills and functions of management, with special attention to managerial responsibility. The course will use and focus on Indian experiences, approaches and cases.

Unit – I

Management: Meaning, definitions, nature and scope, functions of management. Managerial roles and skills, **Basic forms of organizations:** Sole Proprietorship, Partnership, Joint stock company, HUF, Cooperative societies and trust. **Evolution of management thoughts and thinkers:** scientific management, general administrative theories, quantitative approach, behavioral approach, systems approach, contingency approach.

Unit – II

Planning: nature, scope, objectives, and types of plans, planning process, Business forecasting: Concept and techniques, MBO: concept and process of MBO. **Decision Making:** process, types and techniques.

Social responsibility of business: Meaning and concept, significance, arguments against and in favour of social responsibility, approaches for measuring CSR, **Business ethics: Concept, issues and ethical dilemma.**

Unit – III

Organizing: concept, nature, types, principles and process; Formal and Informal organizations, Organization chart, **Organization structure:** different forms of organizational structure, factors affecting organization structure, features of a good organization.

Departmentalization: concept and bases, **Authority:** Definition, types, Responsibility and Accountability, Delegation, Decentralization v/s Centralization, determinants of effective decentralization, Line and staff authority: Issues and Remedies, **Coordination** – types, techniques

Unit IV

Staffing: concept, nature, importance and process of Recruitment and selection, **Motivation** – concept, importance, theories of motivation: Maslow's need hierarchy theory, Herzberg's theory, Theory X and theory Y, Vroom's Expectancy model.

Control: function, process and types of control, significance and span of control. **Span of Control:** Nature and significance.

Suggested Readings:

- Harold Koontz, and Heinz Weihrich, *Essentials of Management: An International Perspective*, New Delhi, McGraw-Hill, 2010.
- Richard L Daft, *The New Era of Management*, New Delhi, Thomson, 2007.
- Stephen P Robbins, Mary Coulter and Neharika Vohra, *Managemnt*, New Delhi, Pearson , 2011.
- V S P Rao & V H Krishna, *Management*, Excel Books
- P. Subba Rao, *Principles of Management*, Himalaya Publishing
- Dubrin, *Management: Concepts & Cases*, Cengage Learning
- Ferrell, *Business: A Changing World*, Tata McGraw Hill
- P C Tripathi & P N Reddy, *principles of management*, Mc Graw Hill
- Mukherjee, *Principles of Management and Organisational behaviour*, Tata McGraw Hill.

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BCOM 102-18 FINANCIAL ACCOUNTING

Objective: The aim course is to familiar students with basic concepts and principles of accounting and different types of accounts in business.

UNIT-I

Basics of Accounting: Accounting, Accountancy and Book-Keeping, Accounting equation, Accounting Cycle: Journal, Ledger and Trial Balance; Subsidiary books, **Introduction to financial Accounting** – meaning, nature, scope, objectives, limitations. Accounting concepts and conventions (GAAP), Capital, Revenue and deferred revenue expenditure and receipts – **Financial Statements of Sole Proprietor and Partnership Firm** (with adjustments): Income Statement, Balance Sheet

UNIT-II

Joint Venture – Meaning, types, determination of profits under different methods. **Royalty Accounts, Consignment Accounts**– Meaning, features, consignee's commission, account sales, distinction between joint venture & consignment, accounting treatment in the books of consignor & consignee.

UNIT-III

Voyage Accounts– Meaning, accounting treatment in case of complete voyage & incomplete voyage, **Departmental Accounts** – Meaning – Objects – Advantages – Accounting procedure – Apportionment of Expenses and incomes – Interdepartmental transfers – Provision for unrealized profit.

UNIT-IV

Branch Accounts – Features – Objects– Types of branches – Dependent and Independent Branches (Excluding Foreign Branches)– Account Systems –Stock and Debtors System – Preparation of Consolidated Profit and Loss Account and Balance Sheet.

Suggested Readings:

1. Maheshwari, S.N. and Maheshwari, S.K, “*Financial Accounting*”, 2009, Vikas Publishing House, New Delhi.
2. Mukherjee, A. and Hanif, M., “*Financial Accounting*”, 1st Edition, 2003, Tata McGraw Hill.
3. Sehgal, Ashok & Deepak , “*Financial Accounting*”, Taxman's Allied Services.
4. Ramchandran, N. and Kakani, R.K., “*Financial Accounting for Management*”, 2nd Edition, 2007, Tata McGraw Hill.
5. Tulsian, P. C. “*Financial Accounting*”, Person.

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BCOMGE 101-18 MANAGERIAL ECONOMICS

Objective: The objective of the paper is to acquaint the students with the economic concepts and principles and to enable them to use them to address business problems in a globalized economic environment.

Unit-I

Introduction to Managerial Economics: Managerial Economics: Meaning, Nature, Scope & Relationship with other disciplines, Role of managerial economics in decision Making, Opportunity Cost Principle, Production Possibility Curve, Incremental Concept, Scarcity Concept.

Demand: Demand and its Determination: Demand function; Determinants of demand; Demand elasticity – Price, Income and cross elasticity, Use of elasticity for analyzing demand. Demand forecasting: Introduction and techniques.

Unit-II

Indifference Curve Analysis: Meaning, Assumptions, Properties, Consumer Equilibrium, Importance of Indifference Analysis, Limitations of Indifference Theory

Production Function: Meaning, Concept of productivity and technology, Short Run and long run production function, Introduction to Isoquants; Least cost combination of inputs, Producer's equilibrium; Returns to scale.

Unit-III

Theory of Cost: Cost Concepts and Determinants of cost, short run and long run cost theory, Modern Theory of Cost, Relationship between cost and production function

Revenue Curve: Concept of Revenue, Different Types of Revenues, concept and shapes of Total Revenue, Average revenue and marginal revenue, Relationship between Total Revenue, Average revenue and marginal revenue, Elasticity of Demand and Revenue relation

Unit-IV

Market Structure: Market Structure: Meaning, Assumptions and Equilibrium of Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly: Price and output determination under collusive oligopoly, Price and output determination under non-collusive oligopoly.

Supply: Introduction to supply and supply curve.

Pricing: Pricing practices; Commodity Pricing: Economics of advertisement costs; Types of pricing practices.

Note: Relevant Case Studies will be discussed in class.

Suggested Readings:

- D. M. Mithani, *Managerial Economics Theory and Applications*, Himalaya Publication
- Peterson and Lewis, *Managerial Economic*, Prentice Hall of India
- Gupta, *Managerial Economics*, Tata McGraw Hills
- Geetika, *Managerial Economics*, Tata McGraw Hills
- D.N.Dwivedi, *Managerial Economic*, Vikas Publications
- Koutsoyiannis, *A Modern Micro Economics*, Palgrave Macmillan Publishers, New Delhi.
- H. L Ahuja *Advanced Economic Analysis*, S. Chand & Co. Ltd, New Delhi. 7.
- G.S Gupta, *Managerial Economics*, Tata McGraw Hill.
- K.K .Dewett, *Modern Economic Theory*, S. Chand Publication

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AECC
BTHU103/18 ENGLISH

Course Outcomes:

- The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
- To help the students become the independent users of English language.
- To develop in them vital communication skills which are integral to their personal, social and professional interactions.
- The syllabus shall address the issues relating to the Language of communication.
- Students will become proficient in professional communication such as interviews, group discussions, office environments, important reading skills as well as writing skills such as report writing, note taking etc.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Detailed Contents:

Unit1- 1 (Introduction)

- Theory of Communication
- Types and modes of Communication

Unit- 2 (Language of Communication)

- Verbal and Non-verbal
- (Spoken and Written)
- Personal, Social and Business
- Barriers and Strategies
- Intra-personal, Inter-personal and Group communication

Unit-3 (Reading and Understanding)

- Close Reading
- Comprehension
- Summary Paraphrasing
- Analysis and Interpretation
- Translation(from Hindi/Punjabi to English and vice-versa)

OR

• **Precis writing /Paraphrasing (for International Students)**

- Literary/Knowledge Texts

Unit-4 (Writing Skills)

- Documenting
- Report Writing
- Making notes
- Letter writing

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.
2. *Business English*, Pearson, 2008.
3. *Language, Literature and Creativity*, Orient Blackswan, 2013.
4. *Language through Literature* (forthcoming) ed. Dr. Gauri Mishra, DrRanjanaKaul, DrBrati Biswas
5. *On Writing Well*. William Zinsser. Harper Resource Book. 2001
6. *Study Writing*. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press. 2006.

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AECC

AECC

BTHU104/18 ENGLISH PRACTICAL / LABORATORY

Course Outcomes:

- The objective of this course is to introduce students to the theory, fundamentals and tools of communication.
- To help the students become the independent users of English language.
- To develop in them vital communication skills which are integral to personal, social and professional interactions.
- The syllabus shall address the issues relating to the Language of communication.
- Students will become proficient in professional communication such as interviews, group discussions and business office environments, important reading skills as well as writing skills such as report writing, note taking etc.

The recommended readings given at the end are only suggestive; the students and teachers have the freedom to consult other materials on various units/topics given below. Similarly, the questions in the examination will be aimed towards assessing the skills learnt by the students rather than the textual content of the recommended books.

Interactive practice sessions in Language Lab on Oral Communication

- Listening Comprehension
- Self Introduction, Group Discussion and Role Play
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations
- Monologue
- Effective Communication/ Mis- Communication
- Public Speaking

Recommended Readings:

1. *Fluency in English* - Part II, Oxford University Press, 2006.
2. *Business English*, Pearson, 2008.
3. *Practical English Usage*. Michael Swan. OUP. 1995.
4. *Communication Skills*. Sanjay Kumar and PushpLata. Oxford University Press. 2011.
5. *Exercises in Spoken English*. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

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AECC

HVPE 101-18 HUMAN VALUES, DE-ADDICTION AND TRAFFIC RULES

Course Objective: This introductory course input is intended

- a. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- b. To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Value based living in a natural way.
- c. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.

Thus, this course is intended to provide a much needed orientational input in Value Education to the young enquiring minds.

Course Methodology

- The methodology of this course is universally adaptable, involving a systematic and rational study of the human being vis-à-vis the rest of existence.
- It is free from any dogma or value prescriptions.
- It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as proposal and the students are facilitated to verify it in their own right based on their Natural Acceptance and Experiential Validation.
- This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and within the student himself/herself finally.
- This self-exploration also enables them to evaluate their pre-conditionings and present beliefs.

Content for Lectures:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education [6]

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration-what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels

Module 2: Understanding Harmony in the Human Being - Harmony in Myself! [6]

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - *Sukh* and *Suvidha*
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure *Sanyam* and *Swasthya*
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

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**Module 3: Understanding Harmony in the Family and Society- Harmony in Human-
Human Relationship** AECC
[6]

13. Understanding harmony in the Family- the basic unit of human interaction
14. Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*;
Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
15. Understanding the meaning of *Vishwas*; Difference between intention and competence
16. Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
17. Understanding the harmony in the society (society being an extension of family):
Samadhan, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
18. Visualizing a universal harmonious order in society- Undivided Society (*Akhand Samaj*), Universal Order (*Sarvabhaum Vyawastha*)- from family to world family!
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence [4]

19. Understanding the harmony in the Nature
20. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
21. Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
22. Holistic perception of harmony at all levels of existence
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics [6]

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct
25. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
26. Competence in professional ethics:
 - a) Ability to utilize the professional competence for augmenting universal human order,
 - b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,
 - c) Ability to identify and develop appropriate technologies and management patterns for above production systems.
27. Case studies of typical holistic technologies, management models and production systems
28. Strategy for transition from the present state to Universal Human Order:
 - a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers
 - b) At the level of society: as mutually enriching institutions and organizations

Text Book

R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

Reference Books

1. Ivan Illich, 1974, *Energy & Equity*, The Trinity Press, Worcester, and HarperCollins, USA
2. E.F. Schumacher, 1973, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
3. A Nagraj, 1998, *Jeevan Vidya ek Parichay*, Divya Path Sansthan, Amarkantak.

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4. Sussan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991
5. PL Dhar, RR Gaur, 1990, *Science and Humanism*, Commonwealth Publishers.
6. A.N. Tripathy, 2003, *Human Values*, New Age International Publishers.
7. Subhas Palekar, 2000, *How to practice Natural Farming*, Pracheen(Vaidik) Krishi Tantra Shodh, Amravati.
8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth – Club of Rome’s report*, Universe Books.
9. E G Seebauer & Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists & Engineers*, Oxford University Press
10. M Govindrajran, S Natrajan & V.S. Senthil Kumar, *Engineering Ethics (including Human Values)*, Eastern Economy Edition, Prentice Hall of India Ltd.
11. B P Banerjee, 2005, *Foundations of Ethics and Management*, Excel Books.
12. B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow. Reprinted 2008.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, <http://uhv.ac.in>
2. Story of Stuff, <http://www.storyofstuff.com>
3. Al Gore, *An Inconvenient Truth*, Paramount Classics, USA
4. Charlie Chaplin, *Modern Times*, United Artists, USA
5. IIT Delhi, *Modern Technology – the Untold Story*

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AECC

HVPE 102-18 Human Values, De-addiction and Traffic Rules (Lab/Seminar)

One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the Seminar atleast once during the semester. It will be binding for all the students to attend the seminar.

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BMPD102-18 MENTORING AND PROFESSIONAL DEVELOPMENT

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.

For achieving the above, suggestive list of activities to be conducted are:

**Part – A (Class
Activities)**

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

**Part – B
(Outdoor Activities)**

1. Sports/NSS/NCC
2. Field project.
3. Society Activities of various professional student chapters, Cultural Clubs, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department and details shall be uploaded on websites of the institutions.

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BCOM 201-18

Cost Accounting

Course Objective: The main aim of this Paper is to familiarize the students with the basics of Cost Accounting and acquaint them with the application of Cost Accounting tools and techniques to aid managerial decision-making. It also aims at making them aware of various latest developments in this field.

UNIT I

Cost Accounting: Meaning, Objectives, Nature and Scope, , Comparison between Cost, financial and management accounting – Application of Cost Accounting – Designing and Installation of Cost Accounting System –**Cost Concepts:** Cost Classification, Cost Unit – Cost Center –Elements of Cost –Preparation of Cost Sheet, Tenders and Quotations

UNIT-II

Material: Purchase, Storage and Material Control, Setting of Levels of Stock, Inventory Control Techniques. Methods of Pricing Material Issues. **Labour:** Meaning and Components of Labour Cost. Accounting and Control of Idle time and Overtime. Methods of Wage Payment and Incentive Plans, Labour Turnover, **Overheads:** Collection, Classification, Allocation, Apportionment and Absorption of Overheads, Machine Hour Rate.

UNIT III:

Reconciliation of Cost and Financial Accounts: Need for reconciliation – Reasons for difference in profits – Problems on preparation of Reconciliation statements, **Methods of Costing:** Process Costing, Contract Costing, **Marginal Costing and Cost-Volume Profit Analysis** (Basics)

UNIT IV

Budgetary Control: Concept, Classification, Cash and flexible budgets, Zero Base Budgeting.

Contemporary Developments in Costing:. Activity-Based Costing, Just In Time (JIT), Target Costing , Life Cycle Costing, Value Analysis, Kaizen Costing, Total Quality Management, Back-flush Costing.

SUGGESTED READINGS:

- Arora, M. N. (2017). *Cost Accounting: Principles & Practice. 12th Edition,*, Vikas publishing house.
- Dutta , M. (2013), *Cost Accounting – Principles & Practice, 12th Edition,* Pearson
- Horngren, C. T. (2017). *Cost accounting: A Managerial Emphasis, 16th Edition* Pearson Education India.

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- ✓ Jain S.P & Narang K.L. (2017). *Advanced Cost Accounting*, 17/e, Kalyani Publishers.
- ✓ Jain, P. K. & Khan, M,Y,(2017). *Cost Accounting*. 2nd Edition, Tata McGraw-Hill Education.
- ✓ Kishore, R. M. (2016). *Cost and Management Accounting*.6th Edition, Taxmann Publications.
- ✓ Kishore, R. M. (2017). *Strategic Cost Management*. 5th Edition, Taxmann Publications.
- ✓ Lall, Nigam and Jain I.C. (2013). *Cost Accounting, Principles, Methods and Techniques*, PHI Pvt. Ltd, New Delhi.
- ✓ Saxena VK & Vashist CD (2015). *Advanced Cost & Management Accounting*, Sultan Chand.

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BCOM 202-18
Business Environment

Course Objective: The objective of this paper is to acquaint students with the issues of business environment in which corporate sector has to operate. It will also familiarize them with the techniques available for scanning and monitoring the environment. It also aims at providing some basic knowledge about international environment pertaining to business.

Unit I

Introduction to Business Environment: Nature and Significance Business Environment. Components of Business Environment, Techniques of Environment Scanning. **Economic Environment of Business:** Economic Systems. Economic Planning in India, Brief idea of Industrial Policy, Fiscal policy, Monetary policy and EXIM policy.

Unit II

Political and Legal Environment of Business: Three political institutions: Legislature, Executive and Judiciary. Foreign Exchange Management Act (FEMA), Consumer Protection Act. Introduction to Liberalization, Privatization and Globalization: Factors facilitating and impeding globalization in India.

Unit III

Socio- Cultural Environment: Critical elements of socio-cultural Environment. Social responsibility of business. Business Ethics and Corporate Social Responsibility. **Public Sector-**Changing Role of Public Sector - Relevance of public sector – Public Sector reforms. Regulatory framework with reference to Banking and Security Market. Technological Environment.

Unit IV

International Business Environment: Multinational Corporations-Benefits and Problems. Mergers and acquisitions - reasons - trends - Advantages and Disadvantages. WTO ,Consequences of WTO for India. IMF. Regional Groupings.

SUGGESTED READINGS:

- Aswathappa, K : Essentials of Business Environment-Text, Cases and Exercises - Himalya Publishing House(13th Revised Edition-2016)
- Cherunilam, Fransis– Business Environment- Text and Cases ,Himalya Publishing House Pvt. Ltd.(20th Edition-2011)
- Paul, Justin-Business Environment- Text and Cases-McGraw Hill Education (India) Private Limited.(4th Revised Edition-2018)
- Ramachandara, Archana and Ravi-Business Environment. Himalya Publishing House Pvt. Ltd.(New Edition-2017)
- Sheikh, Saleem and Sahu Jayadev, Business Environment, Pearson.

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BCOM GE201-18
Business Statistics

Course Objective: The course aims to familiarize students with the basic statistical tools used to summarize and analyze quantitative information for decision making. Analysis of numbers is required for taking decisions related to every aspect of business.

Unit I

Introduction to Statistics: Meaning, Definitions, Features of statistics, Importance, Functions, Scope and Limitations of Statistics.

Data Collection: Sources of Primary and Secondary data. Presentation of Data. Frequency distribution.

Sampling Concepts: Meaning of Population and Sample, Parameters and Statistics, Descriptive and Inferential Statistics, Probability and Non Probability Sampling Methods including Simple Random Sample, Stratified Sampling, Systematic Sampling, Judgement Sampling and Convenience Sampling.

Unit II

Measures of Central Tendency: Mathematical averages including arithmetic mean, geometric mean and harmonic mean, properties and applications. Positional Averages: Mode and median (and other partition values including quartiles, deciles and percentile. Graphic presentation of measures of central tendency.

Measures of Variation: Absolute and relative measures. Range, quartile deviation, mean deviation, standard deviation and their coefficients. Properties of Standard Deviation and Variance.

Sampling Distribution: Concept of Sampling Distribution, Formulation of Sampling Distribution of Mean and Sampling distribution of standard deviation/Variance.

Unit III

Simple Correlation Analysis: Meaning of Correlation, Simple, multiple and partial, linear and non linear correlation, correlation and causation, scatter diagram, Pearson's correlation coefficient and Rank Correlation.

Simple Regression Analysis: Meaning of Regression, Principle of least square and regression analysis, Calculation of regression coefficient, properties of regression coefficient, Relationship between correlation and regression coefficient.

Unit IV

Theory of Probability: Meaning of Probability, Approaches to the calculation of probability, calculation of event probabilities, Addition and Multiplication, Laws of

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Probability (Proof not required), Conditional Probability and Bayes' Theorem (Proof not required).

Probability Distribution: Binomial Distribution: Probability Distribution function, Constants, Shape, Fitting of Binomial Distribution, Poisson Distribution: Probability Function (including Poisson approximation to binomial distribution) Constants, Fitting of Poisson Distribution, Normal Distribution: Probability Distribution Function, Properties of Normal Curve, Calculation of Probabilities.

Suggested Readings:

1. Levin, Richard and David S. Rubin. “*Statistics for Management*”. Prentice Hall of India, New Delhi.
2. Chandan, J.S., “*Statistics for Business and Economics*”, Vikas Publishing House Pvt. Ltd.
3. Render, B. and Stair, R. M. Jr., “*Quantitative Analysis for Management*”, Prentice–Hall of India, New Delhi.
4. Gupta C B, Gupta V, “*An Introduction to Statistical Methods*”, Vikas Publications.
5. Siegel, Andrew F, *Practical Business Statistics*. International Edition, McGraw Hill
6. Berenson, L.M., Krehbiel, T.C., Vishwanathan, P.K. and Levine, D.M., *Business Statistics: A First Course*, Pearson Education.

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**AECC
EVS102-18 Environment Studies**

*** 40 Hours are kept for various activities under the head of activities. There will be a final theory examination for the students of 50 marks but these marks will not be added to their final result as assessment will be satisfactory or non-satisfactory.**

Course Outcomes:

1. Students will enable to understand environmental problems at local and national level through literature and general awareness.
2. The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
3. The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world

Environnemental Studies [L:2; T:0; P:0 (Credits-0)]

1. Environment Science (Mandatory non-credit course)

We as human being are not an entity separate from the environment around us rather we are a constituent seamlessly integrated and co-exist with the environment around us. We are not an entity so separate from the environment that we can think of mastering and controlling it rather we must understand that each and every action of ours reflects on the environment and vice versa. Ancient wisdom drawn from Vedas about environment and its sustenance reflects these ethos. There is a direct application of this wisdom even in modern times. Idea of an activity based course on environment protection is to sensitize the students.

Detailed Contents

Module 1 : Natural Resources :Renewable and non-renewable resources
Natural resources and associated problems.

- Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
- Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

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- Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Module 2 : Ecosystems

Concept of an ecosystem. Structure and function of an ecosystem. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of following ecosystems:

Forest ecosystem

Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Module 3 : Biodiversity and its conservation

- Introduction – Definition : genetic, species and ecosystem diversity.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation
- Hot-spots of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
-

Module 4 : Social Issues and the Environment

- From Unsustainable to Sustainable development
- Resettlement and rehabilitation of people; its problems and concerns.
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, Nuclear accidents and holocaust. Case Studies.
- Public awareness.

***ACTIVITIES**

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Nature club (bird watching, recognizing plants at institute/at home, recognizing local animals, appreciating biodiversity)

Impart knowledge and inculcate the habit of taking interest and understanding biodiversity in and around the college campus. The students should be encouraged to take interest in bird watching, recognizing local plants, herbs and local animals. The students should be encouraged to appreciate the difference in the local biodiversity in their hometown, in the place of their study and other places they visit for vacation/breaks etc.

Following activities must be included.

Identify a tree fruit flower peculiar to a place or having origin from the place.

Making high resolution big photographs of small creatures (bees, spiders, ants, mosquitos etc.) especially part of body so that people can recognize (games on recognizing animals/plants).

Videography/ photography/ information collections on specialties/unique features of different types of common creatures.

Search and explore patents and rights related to animals, trees etc.

Studying miracles of mechanisms of different body systems.

1 (A) Awareness Activities:

- a) Small group meetings about water management, promotion of recycle use, generation of less waste, avoiding electricity waste
- b) Slogan making event
- c) Poster making event
- d) Cycle rally
- e) Lectures from experts
- f) Plantation
- g) Gifting a tree to see its full growth
- h) Cleanliness drive
- i) To live with some eminent environmentalist for a week or so to understand his work
- vi) To work in kitchen garden for mess
- j) To know about the different varieties of plants
- k) Shutting down the fans and ACs of the campus for an hour or so
- l) Visit to a local area to document environmental assets
river/forest/grassland/hill/mountain/lake/Estuary/Wetlands
- m) Visit to a local polluted site-Urban/Rural/Industrial/Agricultural

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- n) Visit to a Wildlife sanctuary, National Park or Biosphere Reserve

Suggested Readings

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email:mapin@icenet.net (R)
3. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
4. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
5. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
6. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
7. Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
8. Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
9. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
10. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
11. Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
12. Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media (R)
13. Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
14. Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

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BMPD202-18 Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- / Overall Personality
- / Aptitude (Technical and General)
- / General Awareness (Current Affairs and GK)
- / Communication Skills
- / Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.

For achieving the above, suggestive list of activities to be conducted are:

**Part – A (Class
Activities)**

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

**Part – B (Outdoor
Activities)**

1. Sports/NSS/NCC
2. Field Project
3. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

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BCOM 301-18 Management Accounting

Course Objective: This course aims to provide understanding of concepts of management accounting relevant in business and to familiarize them with tools and techniques used in business decision making.

Unit – I

Introduction: Meaning, Objectives, Nature and Scope of management accounting, Difference between Cost Accounting, Financial Accounting and Management accounting

Analysis and Interpretation of financial Statements: Meaning- Types and Methods of Financial Analysis – Comparative statements – Trend Analysis – Common size statements.

Unit – II

Ratio Analysis: Meaning –Nature, different types of ratios, their uses and limitations. Computation of ratios – liquidity ratios, turnover ratios, profitability ratios, coverage ratios, solvency ratios, solvency ratios, etc.

Budgetary Control: Concept of budget, budgeting and budgetary control, objectives, merits, and limitations. Budget administration. Functional budgets. Fixed and flexible budgets. Zero base budgeting.

Unit – III

Fund Flow Statement: Meaning and concept of fund-Flow of Fund –Preparation of Fund flow statements – uses and significance

Cash Flow Statement: Difference between fund flow statement and cash flow statements – Preparation of cash flow statements as per AS-3 Norms.

Unit – IV

Responsibility Accounting: Concept, Significance, Different Responsibility Centres, Divisional Performance Measurement: Financial and Non-Financial measures.

Suggested Reading:

- Horngren, C. T., Sundem, G. L., Stratton, W. O., Burgstahler, D., & Schatzberg, J. (2011). *Introduction to management accounting*. Pearson Education International.
- Anthony A. Atkinson, Robert S. Kaplan, Ella Mae Matsumura, S. Mark Young. (2006). *Management Accounting*. Dorling Kindersley(India) Pvt. Ltd.
- Singh, Surender. (2016). *Management Accounting*. Scholar Tech Press, New Delhi.
- Garrison H., Ray and Eric W. Noreen. (2016). *Managerial Accounting*. McGraw Hill.
- Goel, Rajiv. (2013). *Management Accounting*. International Book House,

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- Arora, M.N. (2012). *A Textbook of Cost and Management Accounting*. Vikas Publishing House, New Delhi.
- Maheshwari, S.N. and S.N. Mittal. (2017). *Management Accounting*. Shree Mahavir Book Depot, New Delhi.

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BCOM 302-18 Mercantile Law

Course Objective: To provide the brief idea about the frame work of Indian Business Laws. To orient students, about the legal aspects of business. Along with these the course aims to familiarize the students with case law studies related to Business Laws.

Unit I

Introduction to Contract Act: Agreement, kinds of Agreements, Contract- kinds of contracts: Valid, Void, Voidable, Contingent and Quasi Contract and E contract, distinguish between agreement and contract.

Offer or Proposal- definition, Essentials of Valid proposal or offer, counter offer, Standing or open offer, distinguish between offer and invitation to offer, Acceptance- definition, essentials of a valid acceptance, Promise. Communication of offer, acceptance and Revocation. Capacity to contract, Free Consent, Consideration, Legality of Object and Consideration. Performance and discharge of contract, remedies for breach of contract.

Unit II

Law of Indemnity and Guarantee, Law of Bailment and pledge, Law of Agency.

Partnership Act: Introduction to Partnership Act, Admission of Partner, Retirement and Death of Partner, Dissolution of Partnership Firm.

Unit III

The Sale of Goods Act 1930: Introduction, definitions, Formalities of the contract of sale, Distinction between ‘sale’ and ‘agreement’ of sell, Distinction between ‘sale and hire-purchase agreement’, Conditions and Warranties, Transfer of property as between the seller and buyer Rights of an unpaid seller. **Consumer Protection Act, 1986:** Objectives, features and structure.

Unit IV

Negotiable Instrument Act: Meaning and Characteristics of Negotiable Instrument, Operational rules of Evidence –Presumptions, classification of Negotiable Instruments, Promissory Notes and Bills of Exchange, Essential elements of promissory Note and Bill of Exchange, distinguish between Promissory note Bill of Exchange. Acceptor and Acceptance, definition of Acceptor, Acceptance for honour, Absolute and qualified or conditional acceptance, Drawer, Drawee in case of Need, Payee, Cheques, types of cheques and Penalties in case of dishonour of certain cheques, distinguish between cheque and Bill of exchange, Holder, Holder in Due Course, Rights and privileges of H.D.C. Payment in due course, Maturity of an Instrument.

References:

- Majumdar A.K. and Kapoor G.K. ‘Company Law’ Taxmann Publishers
- C. L. ‘Business Laws’ Taxmann Publishers.
- Kuchhal M. C. and Parkash D. ‘Business Legislations for Managements’ Vikas Publications.

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- ✓ Singhanian V. K. and Singhanian K. 'Direct Tax Laws and Practice' Taxmann Publishers.
- ✓ Chawla, Garg and Sarin 'Mercantile Law' Kalyani Publishers.

BCOM 303-18 Human Resource Management

Course Objective: To provide an in-depth overview of the field of HRM, what are the roles and responsibilities of HR professionals how the primary functions affect the broader business strategy.

Unit I

Nature, scope, role and importance of HRM. New trends in HRM due to globalization deregulation and technological advancements, HRM practices in India, issues and challenges. Human Resource Planning: Meaning, factors affecting HRP, Human Resource Planning process.

Unit II

Job analysis: steps in analysing job and introduction to methods of collecting job analysis information, Job description, job specification. Job design: job simplification, job rotation, job enrichment and job enlargement.

Recruitment: sources of recruitment, policies and procedure of recruitment. Selection process, testing and interviews, Placement and induction.

Unit III

Training and Development: Identification of training needs, process of training and methods of training and development.

Career planning and development: career life cycle, process of career planning and development.

Unit IV

Performance appraisal: Meaning, process of performance appraisal, methods and problems of performance appraisal.

Compensation Management- Wage & Salary Administration: Meaning & Concept of Wage & Salary Administration, Elements & Methods of Wage & Salary, Incentive Plans & Fringe Benefits.

Industrial Relations: Meaning & Concept of Industrial Relations.

Suggested Readings:

1. Rao V.S.P. *Human Resource Management*, Excel books
2. Monnappa and Saiyadan, *Personnel Management*, Tata Mcgraw Hill.
3. Dessler, Garg, *Human Resource Management*, Pearson education.
- 4 C.B. Memoria *Personal Management* Himalaya
- 5 K. Aswathappa *Human Resource Management* Tata McGrawHill

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B.COMGE 301-18 Indian Economy

Course Objective: The purpose of this course is to familiarize the students with various aspects of Indian economy. It also aims to develop a perspective on the different problems and approaches to economic planning and development in India.

UNIT-I

Nature and Structure of Indian Economy, Basic Features and Problems of Indian Economy. Concept of Economic Development, Difference between Economic Growth and Economic Development. Demographic Features of Indian Population. Hurdles created by Population Explosion in India. Effects of Population Explosion. Problems of Poverty, Unemployment, Inflation, income inequality, Black money in India.

UNIT-II

Sectoral composition of Indian Economy: - Issues in Agriculture sector in India ,land reforms Green Revolution and agriculture policies of India , Industrial development , MSMEs and cottage industries, Industrial Policy, Public sector in India.

UNIT-III

Nature and Features of Economic Planning, Objectives of Indian Planning. Planning commission v/s NITI Aayog, Monetary Policy and Fiscal Policy in India, Centre State Finance Relations, Finance commission in India. Liberalisation, Privatisation and Globalisation. Impact of Globalization on Indian Economy.

UNIT-IV

India's Foreign Trade- Value, Composition and Direction, Balance of Trade Vs. Balance of Payments. Disequilibrium in Balance of Payments. Export Promotion-Need for Export Promotion in India, Role of Government in Export Promotion. Obstacles in Export Promotion. Suggestions for Export Promotion. Import Substitution-Suggestions to Improve Import Substitution. WTO and India.

Suggested Readings:

1. Shukla,M.B., Taxmann Publications, New Delhi.
2. Jain,T.R.,Trehan, Mukesh and Trehan,Ranju, "Indian Economy" VK Global Publications Pvt.Ltd., New Delhi.
3. Dutt Rudder and K.P.M Sunderam (2001): Indian Economy, S Chand & Co. Ltd. New Delhi.
4. Mishra S.K & V.K Puri (2001) "Indian Economy and –Its development experience", Himalaya Publishing House.

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BCOM SEC 301-18 Workshop on IT tools for Business and E-Commerce

Course Objective: To develop an understanding and practical exposure to different IT tools used as an aid in business and ecommerce. The aim is to equip the students with the relevant skills and working knowledge of various office management tools, Windows based operating systems and software packages such as Windows-95, 98, 2000-Professional, windows -XP and MS -Office. Further develop an understanding of the practices and technology required for the running an Ecommerce business.

Unit –I

Computer Fundamentals: Meaning, Features of Computers, Advantages and Limitations of Computer, Classification of Computers. **Components of Computer :** Input Unit, output Unit and CPU. **Memory and storage:** Primary Memory & Secondary memory, Input devices, output devices. **Operating System-** Meaning and functions **Computer Software:** Types of Software, Application software and system software

Introduction to Windows Operating System: Directory Manipulation: Creating Directory, Sub Directory, Renaming, Copying and Deleting the Directory. File Manipulation: Creating a File, Deleting, Copying, renaming a file.

Unit –II

MS-Word: History, Creating, Saving, Opening, Importing, Exporting and Inserting document, Formatting pages, Alignment, Paragraphs and Sections, creating lists and numberings Formatting Commands: Headings, Styles, Fonts and Size editing, Viewing Text, Finding and Replacing text, Headers and Footers, Inserting page breaks, Page numbers, mail merge. **MS-PowerPoint:** History, Creating, Saving, Opening, existing presentation, Creating and Saving a Presentation using Auto Content Wizard, Design Template, Blank Presentation the Slide Sorter View, Slide Show, Inserting pictures and graphics and Printing Slides.

Unit III

MS-Excel: Introduction, Components of Excel History, Creating, Saving, Opening, Spreadsheet, Formatting numbers and Text, Graph and Chart Formatting Commands, Menu Bar, Toolbars, Producing Charges, Protecting Cell Macro and Printing Operation, Spell Checking, Cell Editing, Calculation of various Financial and Statistical Functions using Formulas.

Unit IV

Introduction to E- commerce : Meaning and concept – E- commerce v/s Traditional Commerce- E- Business, features & benefits of E- Commerce – Impacts, Challenges & Limitations of E-Commerce , **Website – components of website** – Concept & Designing website for E- Commerce – Corporate Website – Portal – Search Engine –

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Internet Advertising – Emergence of the internet as a competitive advertising media,
Electronic Payment system, Security Issues in E-Commerce.

Note: Relevant Case Studies should be discussed in class.

Suggested Readings:

- Ram, B.(2018). *Computer Fundamentals Architecture and Organization*. New Delhi: Age Publications
- Sinha, P.K. and Sinha, P. (2017). *Foundation of computing*. New Delhi: BPB Publications.
- Arora, A.(2015) *Computer fundamentals and applications*. Vikas Publishing.
- Rajaraman, V.(2014). *Fundamentals of Computers*. Delhi: Prentice-Hall.
- Roger, J. (2010). *Microsoft Access 2010*. Delhi: Pearson Education.
- Forouzan, (2009). *Basic of Computer Science*. India: Cengage Learning
- Levi, D.S., Kaminsky, P. (2007) *Designing and Managing the Supply Chain*. McGraw Hill
- Turban, E., Aronson JE., Liang, TP. (2005). *Decision Support Systems and Intelligent Systems* (7th Edition). Pearson Publishers.
- Jaiswal, M., Mittal, M. *Management Information Systems*. OUP
- Turban, Efraim, and David King, “Electronic Commerce: A Managerial Perspective”, 2010, Pearson Education Asia, Delhi.

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BMPD302-18 Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- / Overall Personality
- / Aptitude (Technical and General)
- / General Awareness (Current Affairs and GK)
- / Communication Skills
- / Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.

For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

4. Sports/NSS/NCC
5. Field project.
6. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors / Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

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BCOM 401-18 Corporate Accounting

Course Objective: To enable the students to acquire the basic knowledge of the corporate accounting and to learn regulatory framework for preparing the financial statements of different corporations.

Unit – I

Accounting for Share Capital and Debentures: Issue of Shares at Par, at Premium and at Discount. Accounting treatment in case of forfeited shares. Issue of rights and bonus shares; Buy back of shares; Redemption of preference shares; Issue and Redemption of Debentures

Final Accounts: Preparation of profit and loss account and balance sheet of corporate entities, excluding calculation of managerial remuneration, Disposal of company profits

Unit – II

Valuation of Goodwill and Valuation of Shares: Concepts and calculation: simple problems only.

Accounts of Banking Companies: Difference between balance sheet of banking and non-banking companies; Prudential norms; Asset structure of a commercial bank; Non-performing assets (NPA)

Unit – III

Amalgamation of Companies: Concepts and accounting treatment as per Accounting Standard: 14 (ICAI) (excluding intercompany holdings). Internal reconstruction: concepts and accounting treatment excluding scheme of reconstruction.

Unit – IV

Insurance Companies: Books maintained by insurance companies, Explanation of special terms peculiar to insurance business, Accounts for life insurance business, types of policies, Annuity business, surrender value, paid up policy, life assurance fund – valuation balance sheet, preparation of final accounts of Life and General insurance business (as per the provisions of IRDA Act)

Suggested Readings

- Monga, J.R. *Fundamentals of Corporate Accounting*. Mayur Paper Backs, New Delhi.
- Shukla, M.C., Grewal, T.S., and Gupta, S.C. (2018). *Advanced Accounts*. Vol.-II. S. Chand & Co., New Delhi.
- Maheshwari, S.N. and Maheshwari, S.K. (2018). *Corporate Accounting*. Vikas Publishing House, New Delhi.
- Sehgal, A. (2011). *Fundamentals of Corporate Accounting*. Taxman Publication, New Delhi.
- Goyal, V.K. and Goyal, R. (2012). *Corporate Accounting*. PHI Learning.
- Tulsian, P. C. and Tulsian, B. (2016). *Corporate Accounting*, S.Chand

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B.COM 402-18 Company Law

Course Objective: The objective of the course is to impart basic knowledge of the provisions of the Companies Act 2013. This course will provide better understanding of the different clauses of company law which a business manager must know for better decision making.

UNIT-I

Nature of a company: Definition of a company, Characteristics of a company, Lifting the corporate veil, Company distinguished from partnership. types of companies including one person company, small company, associate company, dormant company, producer company; association not for profit; illegal association; **Formation of a company:** Steps involved in the formation and incorporation of a company, on-line filing of documents, promoters, their legal position, pre-incorporation contract; on-line registration of a company.

UNIT-II

Memorandum of association: Meaning and Importance, Form and Contents, Alteration of Memorandum. **Articles of association:** Meaning, Relationship of and distinction between MOA and AOA. **Prospectus:** Meaning, Definition and contents, statutory requirements in relation to prospectus.

UNIT-III

Share capital: Kinds of share capital, Alteration of share capital, Ways for raising share capital, Allotment of shares, share certificate and share warrant, calls on shares, Forfeiture and surrender of shares, transfer of shares. Borrowing powers, Debentures and charges. **Management:** Classification of directors, women directors, independent director, small shareholder's director; Disqualifications, director identity number (DIN); Appointment; Legal positions, powers and duties; removal of directors; Key managerial personnel, managing director, manager; **Meetings of shareholders and board;** Types of meeting, convening and conduct of meetings, postal ballot, meeting through video conferencing, e-voting.

UNIT-IV

Dividends, Accounts, Audit– Provisions relating to payment of Dividend, Provisions relating to Books of Account, Provisions relating to Audit, Auditors' Appointment, Rotation of Auditors, Auditors' Report, Secretarial Audit. **Winding Up** - Concept and modes of Winding Up. **Administration of Company Law** [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts.

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uggested Readings/Books:

- ❖ Singh Avtar: Company Law; Eastern Book Co., Lucknow
- ❖ Kuchal M.C.: Modern India Company Law; Shri Mahavir Books, Noida.
- ❖ Kapoor N.D.: Company Law -Incorporating the Provisions of the Companies, Amendment Act, ; Sultan Chand & Sons, New Delhi
- ❖ Bagrial A.K.: Company Law; Vikas Publishing House, New Delhi.
- ❖ Ramaiya, A Guide to Companies Act, LexisNexis, Wadhwa and Buttersworth.
- ❖ Manual of Companies Act, Corporate Laws and SEBI Guideline, Bharat Law House, New Delhi,
- ❖ A Compendium of Companies Act 2013, along with Rules, by Taxmann Publications.
- ❖ Gower and Davies, Principles of Modern Company Law, Sweet & Maxwell
- ❖ Sharma, J.P., An Easy Approach to Corporate Laws, Ane Books Pvt. Ltd., New Delhi

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BCOM 403-18 Income Tax Law & Practice

Course Objective: To acquire expert knowledge of practical and procedural aspects relating to Income Tax.

UNIT-I

Concept and Mechanism of Income Tax – Definitions, Concept of Income, Previous Year, Assessment Year, Distinction between Capital and Revenue, Receipts and Expenditure, Residential Status – Basis of Charge and Scope of Total Income, Incomes which do not form part of Total Income

UNIT-II

Computation of Total Income under Salaries, Income from House Property, Profit and Gains of Business or Profession, Capital Gains, Income from Other Sources, Clubbing/Aggregation of Income.

UNIT-III

Set-off and Carry-Forward of Losses and Deductions from Total Income. Taxation of Individuals, Hindu Undivided Family, Firms and Association of Persons.

UNIT-IV

Tax and Other Special Provisions Relating to Companies. Collection and Recovery of Tax, Tax Deduction at Source, Tax Collection at Source, Recovery and Refund of Tax; Provisions of Advance Tax. Procedure for Assessment, Appeals, Revisions, Settlement of Cases and Penalties & Offences, Provisions concerning Procedure for Filing Returns, Signatures, E-Filing, Penalties and Prosecution.

Suggested Readings:

1. Ahuja, Girish and Gupts, Ravi, "Systematic Approach to Income-tax" ,Bharat Law House, New Delhi.
2. Ahuja, Girish and Gupts, Ravi, "Professional Approach to Direct Taxes Law & Practice", Bharat Publications.
3. Mehrotra, Dr. H.C. and Dr. S.P., "Income Tax Law & Practice (2019), Sahitya Bhawan Publications.
4. Mundra, Vikas, "Tax Laws and Practices", Law Point publications, Kolkata.
5. Singhanian, Dr. V. K. , "Students Guide to Income-tax", Taxmann Publications Pvt. Ltd., New Delhi.

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BCOMGE 401-18 Entrepreneurship Development

Course Objective: The objective of the course is to make the student understand the concept and importance of entrepreneurship and facilitate generation of young entrepreneurs.

Unit I

Definition and Concept of Entrepreneurship, Theories of Entrepreneurship, Myths about Entrepreneurship, Entrepreneurial Traits and Motivation, Role of Entrepreneurship in economic development. Types of Entrepreneurs. Barriers in the way of Entrepreneurship. Entrepreneurship Development (ED) Cycle.

Unit II

Creativity and Business Ideas, Blocks to creativity. Business Plans and reasons of failure of business plans. Micro-Small-Medium (MSME) Enterprise – Definition – Characteristics- Objectives- Advantages- Disadvantages-Role in developing countries- Problems- steps for starting- – Government Policies.

Unit III

EDP in India – Phases of Entrepreneurial programs – Government Policies- Administrative Frame work – Policy instruments – Statutory Boards – Industrial Estates –Industrial clusters – Incentives and subsidies – Advantages - Needs & Problems – Promotional agencies. Business Incubators& Start-ups.

Unit IV

Financing Options - Bridge capital, Seed capital assistance, Margin money scheme, Industrial Sickness, Causes-Remedies- An overview on the roles of institutions/schemes in entrepreneurial development- SIDBI, Commercial Banks. Other financing options- venture capital, lease funding, Angel Investors. Revival, Exit and End to a venture.

Suggested Readings:

- Kumar,Arya(2018), “Entrepreneurship”, Pearson, New Delhi.
- Gopal,V.P.Nanda (2015), “Entrepreneurial Development”, Vikas Publishing, New Delhi.
- Desai, Vasant, “Dynamics of Entrepreneurial Development & Management”, Himalaya Publishing House.
- Khanka,S S, Entrepreneurial Development, S.Chand & Co.,New Delhi.

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BCOM SEC 401-18 Workshop on Computerised Accounting

Course Objective: To impart basic knowledge about computerised accounting and equip students with application of Tally package.

UNIT-I

Introduction to Computerised Accounting: Meaning, Features, Advantages and Limitations. Manual Accounting versus Computerised Accounting systems: Special aspects of computerised Accounting, Development of Computerised Accounting system.

UNIT-II

Introduction to Accounting Packages. Tally, Salient Features of Tally ERP 9, Getting Started with Tally ERP 9: Start Up, Components of Tally ERP 9 Windows, Close Button, Minimise Button, Creating a company, Company Info, Menu, Quitting Tally ERP 9.

UNIT-III

Advanced Inventory Information in Tally ERP 9, Stock Groups, Creation of Single Stock Group, Stock Categories, Stock Items, Type, Symbol, Formal Name, Number of Decimal Places, Groups, Capital Account, Current Asset, Current Liability, Loans, Revenue Primary Group, Net Debit/Credit Balance for Reporting, Purchase Invoice, Ledger, Process of creating Ledgers, Orders, (Purchase and Sales Order), Inventory Vouchers.

UNIT-IV

Implementing Final Accounts, Display/Reports in Tally ERP 9. Accounting Reports Display in TALLY: Working with Trial Balance, Books and Registers, Cash Book, Bank Book, Balance Sheet, Profit and Loss Account, Principal Ratios.

SUGGESTED READINGS/BOOKS:

1. Nadhani, A.K (2018): Tally ERP 9 Training Guide, BPB Publications, New Delhi.
2. Singh, Shraddha & Mehra, Navneet (2015): "Tally ERP 9 (Power of Simplicity): Software for Business and Accounts", V and S Publishers, New Delhi.
3. Tally Education Private Ltd. (2015), "Computerised Accounting Using Tally.ERP 9", Sahaj Enterprises.

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BMPD402-18 Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- ✓ Overall Personality
- ✓ Aptitude (Technical and General)
- ✓ General Awareness (Current Affairs and GK)
- ✓ Communication Skills
- ✓ Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Field project.
3. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Note: Evaluation shall be based on rubrics for Part – A & B.

Mentors / Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

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BCOM 501-18
Financial Management

Course Objective: To provide an in-depth understanding of the core finance functions and decisions in the area of corporate financial management. Further provide a practical and problem insight for effective financial decision-making.

UNIT-I

Introduction to Financial Management: Meaning, Scope and Objectives of Financial Management. Functions and role of a financial Manager.

Time Value of Money- Compounding Techniques and Discounting Techniques.

Cost of Capital: meaning, significance and determination of Cost of Capital, Components of Cost of Capital.

UNIT II

Capital Structure: meaning and features of capital structure decision. Factors affecting capital structure. Theories of capital structure.

EBIT – EBTEPS –analysis .Financial and Operating Leverages

UNIT III

Capital Budgeting Decision: Meaning and Nature of investment decisions; process of capital budgeting, investment evaluation criteria: Discounted and Non-Discounted Methods (Pay-Back Period, Average rate of return, Net Present Value, Benefit Cost Ratio and Internal Rate of Return. Capital rationing.

Dividend Policy Decisions – Determinants of dividend policy – types of dividend policy– forms of dividend. Dividend theories: Walter’s Model- Gordon’s Model- MM’s Hypothesis (problems)

UNIT IV

Working Capital Management: Planning and forecasting of working capital, importance of adequate working capital- excess or inadequate working capital – determinants of working capital requirement. sources of working capital Cash management, receivable management and inventory management.

Suggested Readings:

- Van Horne, J C, Wachowicz, J W. “*Fundamentals of Financial Management*” 13th Edition, Prentice Hall of India
- Chandra ,Prasanna, “*Financial Management*’ Tata McGraw Hill.
- Khan and Jain, “*Financial Management- Text and Problems*” 2nd Edition, Tata McGraw Hill’
- Maheshwari, S N, *Financial Management*.
- Pandey, I M, “*Financial Management*”, Vikas Publishing House, 9th Edition

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BCOM 502-18
Goods and Service Tax

Course Objective: To provide conceptual knowledge of Goods and Service Tax and to enable the students to apply this knowledge in practical application of GST Laws.

UNIT-I

Indirect Taxes: Background, Concept, Features; Major shortcomings of Pre-GST Era, Administration of Indirect Taxation in India; **Goods and Services Tax:** Basics concept and overview. Need and Benefits, Constitutional Framework of GST.

UNIT-II

GST Model – CGST / IGST / SGST / UTGST; Concept of Taxable Event; Concept of supply, Composite Supply and Mixed Supply; Provisions regarding Levy and Collection of CGST and IGST. **Concept of Composition scheme** & Reverse Charge.

UNIT-III

Power of Granting Exemptions .Basic Exemptions under Goods and Services Tax, Concept of Time, Value & Place of Taxable Supply of Goods/Services, Input Tax Credit & Computation of GST Liability.

UNIT-IV

Procedural Compliance under GST: Registration; Tax Invoice, Debit & Credit Note, Account and Record, Electronic way Bill; Provisions regarding filing of Return, Payment of Tax, Provisions related to Refund.

Suggested Readings: (Latest Edition only):

- Dattey, V S, Taxmann's *GST Ready Reckoner*, Taxmann, New Delhi.
- Gupta, N K, *Goods and Services Tax (Law, Practice and Procedures)*, Bharat Law House Private Limited.
- Mehrotra, H.C. and Agarwal V.P., *Goods and Services Tax GST*, Sahitya Bhawan Publications.

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BMPD502-18
Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

Overall Personality

- Aptitude (Technical and General)
 - General Awareness (Current Affairs and GK)
 - Communication Skills
 - Presentation Skills
- The course shall be split in two sections i.e. class activities and outdoor activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures (The experts can be from the fields of industrial practices, professionals, recognized motivational speakers to speak on ethics, self-development, situation handling skills etc The choice of topics will be a matter of choice for the teachers)
2. Aptitude Test (with respect to business practices, emotional quotient, learning abilities, placement aptitude, job culture aptitude etc)
3. Group Discussion (The students can be divided of not more than 8 in a group, a write up as a case study, cuttings of news series, current affairs etc followed by a GD).
4. Quiz (General/Technical) (quizzes can be oral using a PPT, written MCQs/short answer type questions covering general knowledge (Business world, economic affairs) and current affairs)
5. Presentations by the students (Preferably to an individual student or at the most more than a group of 2 students; Topics can be success stories of business personalities, Resilience of business houses, caselets etc)
6. Team building Exercises (team events within the class for problem solving)

Part – B (Outdoor Activities)

(A brief report of minimum 10-15 pages must be submitted at the end of semester)

1. Sports/NSS/NCC
2. Field project (surveys, social awareness campaigns etc); The whole class can be made to visit to a mall, village, specific locality etc).
3. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc. Group events in the form of social campaigns, humanitarian activities, making students turn Samaritans etc)

Note: Evaluation shall be based on rubrics for Part – A & B. Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

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BCOP 511-18
Personal Financial Planning

Course Objective: The objective of this course is to enable the students to analyze their personal financial decisions, evaluate the costs and benefits of their decisions, identify numerous investment opportunities, understand tax implications of their investments, attain financial security and apply the knowledge learned in school to financial situations encountered later in life.

UNIT I

Financial planning: Time value of money, Need and importance of personal financial planning, Principles of personal finance, Financial planning process, Factors influencing personal financial planning. **Financial statements and ratios analysis:** Personal financial statements, Income and expenditure statement, Balance sheet, Budget, Analyzing financial statements via ratios. **Investor profiling:** Investor's life cycle, Financial goals of investor, Risk profiling.

UNIT II

Investment fundamentals: Saving and investment, Rules of investing, Debt and equity. **Banking products:** Deposit and loan products, Other special products for senior citizens, NRIs, Understanding credit score and credit information report. **Insurance products:** Meaning and features of insurance, Principles of insurance, Types of insurance - life, health, personal accident insurance. **Investment in Equity:** NSE/BSE, Investment strategies and portfolio construction, Fundamental and technical analysis, Demat account, Derivatives. **Investment in mutual funds:** Meaning, Structure of mutual funds in India, Mutual funds schemes, Systematic Investment Plan (SIP). **Investment in debt market:** Types of debt instruments, Government securities, Corporate bonds, Certificate of deposits, Commercial paper, PO saving schemes.

UNIT III

Personal taxation: Introduction to personal income tax planning, Methods of accounting for various heads of income, Tax avoidance, tax evasion and tax planning, Income tax deductions, Gift tax, Wealth tax. **Regulatory guidelines:** Know Your Customer (KYC) norms, Anti Money Laundering (AML) standards, Permanent Account Number (PAN).

UNIT IV

Dynamics of real estate: Documentation, Verification, Real estate and bank loan, Buying vs. renting, Tax implications of real estate. **Introduction to retirement planning:** Need of retirement planning, Rules of retirement planning, Retirement planning process, Estimation of retirement expenses, Basic retirement plans. **Estate planning:** Meaning, Objectives, Estate planning tools, Will, Power of attorney. **Ethics in personal financial planning:** Code of ethics and rules of conduct.

Suggested Readings:

- Murali, S., & Subbakrishna K.R. *Personal Financial Planning (Wealth Management)*. Himalaya Publishing House.
- Gitman, Lawrence J., Joehnk Michael D., & Billingsley. *Personal Financial Planning*. Cengage Learning India Private Limited.
- Madura, J. *Personal Finance*. Pearson.
- Koh, B. *Personal Financial Planning*. FT Press.
- Nayan, K. *Personal Finance: An Indian Perspective*.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards

BCOP 512-18

Advanced Financial Management

Course Objective: To provide an in-depth understanding of the advancements in financial management for effective financial decision-making.

UNIT-I

Role and responsibility of the Senior Financial Adviser, Financial strategy formulation:

Ratio Analysis and Strategy, Gearing considerations

Sources of Finance: Equity, debt, hybrids, lease finance, venture capital, business angel finance, private equity, asset securitization

UNIT-II

Risk and Return: Identifying Risk and Return, Business Risk and Financial Risk including operational, reputational, political, economic, regulatory and fiscal risk, Risk return trade-off-

Ethical and governance issues: Fundamental Principles, Ethical issues in financial management, Agency Relationship, Transaction Cost Theory, Governance structures and policies, Social and Environmental Issues, Purpose and content of an integrated report

UNIT-III

Advanced Investment Appraisal: Capital rationing: Single period, Types, Capital rationing & divisible projects, Capital rationing & indivisible projects, Capital rationing & Multi-period, Risk and uncertainty in investment appraisal including sensitivity analysis, use of a risk adjusted discount factor, simulation, probability analysis and scenario analysis.

Valuation and the use of free cash flows: Valuations – Introduction, Market Capitalisation, Asset Based Valuations, Using PE ratio, Earnings Yield, Dividend Valuation, Discounted Cash flows, Discounted Free cash flow basis, Free cash flows, Free cash flow to equity

UNIT-IV

Corporate Reconstruction and Re-Organisation: Financial reconstruction, Capital reconstruction schemes. Acquisitions and mergers: Reasons for and against acquisitions, mergers and divestments (corporate expansion, high failure rate of acquisitions, synergy and others), Legal and procedural aspect, process, financing and valuation of mergers & acquisitions, Reverse Takeovers, Overview of mergers & takeover in India

Business re-organisation: Unbundling, Divestment, Spin-offs/demerger, Sell-offs, Management buy-out (MBO) and buy-in, Share repurchase, Going private

Suggested Readings:

- Khan M Y & Jain P K, *Financial Management: Text and Problems*, TMH, New Delhi.
- Chandra P., *Financial Management Theory & Practice*, TMH, New Delhi.
- Pandey I. M., *Financial Management*, Vikas Publishing House, New Delhi.
- Horne V., *Fundamentals of Financial Management*, Prentice Hall of India.
- Aurora R., Shetty K., and Kale S., *Mergers and Acquisitions*, Oxford University Press.
- Sudarsanam S., *Creating Value from Mergers and Acquisitions*, Prentice Hall of India.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards

BCOP 521-18
Banking Services Management

Objective: The course offers to the candidates the knowledge of different aspects of Banking along with thorough understanding of the practical application of the theory. The paper aims at acquainting the students, the concepts of Banking services and relevant aspects.

UNIT – I

Bank: Definition, importance and functions. **Indian Banking System;** Structure and organization and services provided by Banks: Commercial Banks; Regional Rural Banks; co-operative Banks. Functions of a Bank in an Economic development

UNIT – II

The Reserve Bank of India: Management and Structure, Functions of RBI, Monetary Policies and Techniques of Credit Control. **Reforms in Indian Banking:** Overview, Recommendations of Narasimham Committee, Verma Panel Report, Basel II Norms, Capital Adequacy Ratio (CAR), Revised NPA Norms- Grievance Mechanism and Banking Ombudsman, Impact of Reforms.

UNIT – III

Emerging Trends in Banking: Concept of E-Banking, Mobile Banking, Electronic Fund Transfer- (RTGS & NEFT) Core Banking Wholesale and Retail Banking, Universal and Narrow Banking, Off-shore Banking. Asset. Classification, RBI Guidelines on Internet Banking, **Challenges faced by Indian Banking**, Cheque Truncation System.

UNIT IV

Interest Rate Risk Management in Banks, credit risk, **Liquidity management**, Operational Risk Management in Banks, Market Risk Management in Banks, Capital Adequacy of Banks, Issues in Bank Management, Investment Banking and Other Services. **Analysis of Bank Statements**– Analysis of Balance Sheet and Profit and Loss Account – Financial Performance Analysis with Ratios.

Suggested Readings:

- Vaish, M. C. “Money, Banking and International Trade” New Age International Pvt. Ltd.
- Hajela, T. N. “Money, Banking and International Trade” Ane Books Pvt. Ltd.
- Seth, M. L. “Money, Banking and International Trade” Lakshmi Narayan Agarwal.
- Mishra, Jagannath “Money, Banking and International Trade” Thacker, Spink and Company.
- Jain T. R. “ ModernBanking ” V. K. Publications.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards
BCOP 522-18
Insurance Service Management

Objective: Understand the different types of insurance policy products and its fundamental principles; Know about various management concepts that can be implemented in insurance service; Infer about the IRDA guidelines and Frauds.

UNIT-I

Concept of Insurance: Basic principles of insurance, Role and importance of Insurance in Society; Concept of micro Insurance; **Types of Insurance;** Insurance Documents and Policy Terms & Conditions; **Insurance Agents:** types, roles and functions. Role of Insurance in the economy. **Risk and Uncertainty,** Classification of risks, sources of risk-external and internal, risk management.

UNIT-II

Life Insurance: History and Importance, Products, Types of Claims, private sector companies in life insurance sector, recent trends in life insurance. **Health Insurance:** Determinants, Factors affecting the health system in India; Health Insurance Intermediaries, Health Insurance Products, Claim Process, Challenges in Health Insurance; Health Insurance to Poorer Section. **General and Commercial Insurance:** History and significance, Distribution channel, Types of General Insurance, Types of Commercial Insurance.

UNIT-III

IRDA Act: Salient feature, duties, powers and functions of the authority, financial Accounts and audit, power of Central Government to issue directions, IRDA (Protection of Policy Holders Interest) Regulation 2002, Rationale of opening up of the insurance sector to the private sector. Credit and deposit Insurance: Nature, terms and conditions, claim, recovery etc. public liability insurance, emergency risk insurance.

UNIT-IV

Concept and Importance of Reinsurance: Tax benefits under Life Insurance Policies, Application of Management concepts in Insurance: Marketing of Insurance Policies, issues related to human resource management in insurance sector, application of financial management in insurance sector, Application of Information technology in insurance.

Suggested Readings:

- Bhole LM, *Financial Institutions and Markets*, Tata McGraw Hill, 2004, 4th Edition
- Srivastava, R M, *Management of Indian Financial Institutions*, Himalaya Publishing.
- Niehaus, Harrington, *Risk Management and Insurance*, 2007, Tata McGraw-Hill
- Mishra, K.C. and. Thomas, G.E, *General Insurance - Principles and Practice*, Cengage Learning: New Delhi.
- George, Rejda.E, *Principles of risk management and insurance*, Pearson publications, ninth Edition

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards
BCOM 601-18
Industrial Relations and Labour Laws

Course objective: To provide an idea and exposure to the industrial relations and various labour laws applicable to industries in India and to acquaint the students with ways to compute the emoluments and compensation payable to workers.

UNIT-I

Industrial Relations- Concept, Definition and Importance, Factors affecting industrial relations. Approaches to industrial relations, Impact of Technology on industrial relations. Nature of Trade Unions, Trade Union movement in India, benefits of trade Unions for workers, Problems of Trade Unions & Remedies. Quality Circles, Benefits and Problems of Quality Circles.

UNIT-II

Concept of Collective Bargaining, Prerequisites for collective bargaining, the collective bargaining process, Principles of Collective Bargaining, Collective Bargaining and Labour Management Co-Operation in India, Conditions for the success of collective bargaining. Grievance Management – causes of grievance – effects of grievance, Negotiation and Collective Settlements, Grievance redressal procedure.

UNIT-III

Industrial Conflicts- Meaning & Causes and Types, Strikes & Lockouts, Machinery for resolving Industrial Disputes under Law. Meaning of workers participation in management, concepts and objectives of workers participation in management, growth and development of workers participation in management, types of workers participation in management.

UNIT-IV

Emergence and Objectives of Labour Laws- The Industrial Relations Code-2019-An Introduction Overview of Factories Act, Industrial Disputes Act, Payment of wages Act, Payment of Bonus Act, ESI Act, Payment of Gratuity Act, Minimum Wage Act, PF Act. Workmen's Compensation Act

Suggested Readings:

- Memoria, C.B. and Memoria, Satish, *Dynamics of Industrial Relations*, Himalaya Publications.
- Chhabra, T.N. and Suri, R.K. *Industrial Relations – Concepts & Issues*, Dhanpat Rai & Company.
- Srivastava, S C, *Industrial Relations and Labor Laws*, Vikas Publishing House.
- Singh, B. D., *Industrial Relations and Labor Laws*, Excel Books.
- Sinha, P.R.N., Sinha, Indu Bala & Shekhar, Seema Priyadarshini, *Industrial Relations, Trade Unions, and Labor Legislation*, Pearson Publishing House.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards
BCOM602-18
Operation Research

Course objective: This course aims at providing fundamental knowledge and exposure to the concepts, theories and practices in use of quantitative techniques for optimum decision making and to facilitate the students in appreciating need/significance and applications of various techniques of operation research in decision making.

UNIT-I

Introduction: Introduction to Operations Research: Basics definition, scope, objectives, phases, models and limitations of Operations Research.

Deterministic Models: Formulation of Linear Programming Problem, Graphical solution of LPP, Simplex Method, Artificial variables, Big-M method, **Transportation Problem:** Formulation, solution, unbalanced Transportation problem. Finding basic feasible solutions, Optimality tests, **Assignment Model:** Formulation, Hungarian method for optimal solution, Solving unbalanced problem, Travelling salesman problem.

UNIT-II

Probabilistic Models: Decision making under uncertainty : Maximum and minimum models; Introduction to decision tree. Game theory : Solution of simple two person zero-sum games :Examples of simple competitive situation.

Dynamic Programming: Introduction to deterministic and probabilistic dynamic programming, Solution of simple problems.

UNIT-III

Queuing theory: Types of queuing situation, Queuing models with Poisson's input and exponential service, their application to simple situations.

Network Models: PERT & CPM, Introduction, analysis of time bound project situations, construction of net works, identification of critical path, slack and float, crashing of network for cost reduction.

UNIT-IV

Replacement Models: Replacement of Items that deteriorate whose maintenance costs increase with time without change in the money value. Replacement of items that fail suddenly: individual replacement policy, group replacement policy.

Inventory Models: Inventory costs. Models with deterministic demand model (a) demand rate uniform and production rate infinite, model (b) demand rate non-uniform and production rate infinite, model (c) demand rate uniform and production rate finite.

Suggested Readings:

- Wagner, HM, *Principles of Operations Research*; Prentice Hall.
- Gupta, PK and Hira, DS, *Operations Research*, S. Chand & Co.
- Taha, *Introduction to Operation Research*; Pearson.
- Hiller, F.S. and Libermann, G.I. *Introduction to Operation Research*; Holden Ray.
- Sharma, J.K. *Operations Research Theory & Applications*; Macmillan India Ltd.
- Sharma J.K. *Operations Research, Problems and Solutions*; Macmillan India Ltd.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards
BMPD 602-18
Mentoring and Professional Development

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

Overall Personality

- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills
- The course shall be split in two sections i.e. class activities and outdoor activities.

For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures (The experts can be from the fields of industrial practices, professionals, recognized motivational speakers to speak on professionalism, discipline, time management etc. The choice of topics will be a matter of choice for the teachers)
2. Aptitude Test (with respect to business practices, intellectual creativity, team skills, Decision making skills, leadership skills etc)
3. Group Discussion (The students can be divided of not more than 8 in a group, a write up as a case study, cuttings of news series, current affairs etc followed by a GD).
4. Quiz (General/Technical) (quizzes can be oral using a PPT, written MCQs/short answer type questions covering general knowledge (latest business developments and key announcements by government/autonomous bodies, world bodies etc
5. Presentations by the students (Preferably to an individual student or at the most more than a group of 2 students; Topics can be success stories of business personalities, Resilience of business houses, caselets etc)
6. Team building Exercises (team events within the class for problem solving)

Part – B (Outdoor Activities)

(A brief report of minimum 10-15 pages must be submitted at the end of semester)

1. Sports/NSS/NCC
2. Field project (may be general topics, business topics or awareness about government social schemes, health and hygiene, UGC social initiatives etc).
3. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc. (Group events in the form of social campaigns, humanitarian activities, making students turn Samaritans etc)

Note: Evaluation shall be based on rubrics for Part – A & B. Mentors/Faculty in-charge will maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards
BCOP 611-18
Security Analysis and Portfolio Management

Objective:

The aim of the course is to provide the students a comprehensive knowledge about fundamentals of investments and equipping for taking profitable investment decisions.

UNIT – I

Investment: Meaning, Nature, Objectives and Process. Difference Between Investment and Speculation, Investment and Gambling. **Various Investment Avenues/ Alternatives.**

Investment Philosophy, Value Investing and Growth Investing, Investment Strategy, Individual and Institutional Investors.

UNIT – II

Security Analysis: Meaning, Concept of Risk, Risk Management; Analysis of Risk and Return. Relationship between Risk and return

Types and Measurement of Risk, Risk and Return Trade Off.

UNIT – III

Investment Analysis: Fundamental Analysis– Economic, Industry and Company Analysis.

Technical Analysis- Charting techniques and Indicators. Fundamental v/s Technical Analysis.

Efficient Market Theory, Random Walk Theory

UNIT – IV

Portfolio Management: Concept, Portfolio Management Models- Capital Asset Pricing Model, Arbitrage Pricing Theory, Markowitz Model, Capital Market Line, Security Market Line,

Portfolio Performance Evaluation- Sharpe Model, Jensen and Treynor Model **Portfolio**

Revision: Techniques of Portfolio Revision, Formula Plans, Constant Rupee Value Plan, Constant Ratio Plan, Variable Ratio Plan, Rupee Averaging Technique. **Global Investing** – Benefits and Options for Global Investment.

Recommended Readings:

- Pandian, Punithavathy. *Security Analysis and Portfolio Management*, Vikas Publishing House
- Pring, Martin, *Technical Analysis Explained*, McGraw Hill.
- Avadhani, V. A. *Investment and Securities Market in India*, Himalaya Publishing House.
- Singh, Preeti, *Investment Management*, Himalaya Publishing.
- Ranganatham, M. Madhumathi, R., *Security Analysis & Portfolio Management*, Pearson Education
- Bhalla, V. K. *Portfolio Analysis and Management*, Sultan Chand & Sons
- Fischer & Jordan, *Security Analysis and Portfolio Management*, Prentice Hall India.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards
BCOP 612-18
Management of Financial Services

Course Objective:: The objective of this course is to enable students to understand the concepts and types of various financial services available in the market. This course is also aimed to enable students to compare and analyze the performance of various financial services available in the market.

UNIT I

Financial services: meaning, features, importance, contribution of financial services in promoting industry – service sector.

Merchant banking: meaning, origin and growth of merchant banking in India. Scope of merchant banking services, merchant bankers and management of public issues, merchant banking practices in India. Weakness in the functioning of merchant bankers in India.

UNIT II

Lease financing: Meaning, types of leasing – factors influencing lease, performance of leasing industry in India. **Hire purchase:** concept and characteristics of Hire purchase. Difference between hire purchase and leasing. Mathematics of Hire purchase: calculation of Effective interest Rate - Legal Aspects of Hire purchase - Tax implications of Hire Purchase. RBI guidelines for hire purchase, problems of hire–purchasing companies in India.

UNIT III

Credit Rating: concept of credit Rating. Types of credit Rating - Advantages and Disadvantages of credit Rating - credit Rating Agencies & their Methodology - Emerging A venues of Rating services - International credit Rating practices.

Mutual funds: Concept of mutual funds. Growth of mutual funds in India. Mutual fund schemes money market mutual funds – private sector mutual funds – functioning of mutual funds in India.

Factoring: Concept of factoring -why factoring, types of factoring, factoring mechanism, securitization of debt – concept and mechanism

UNIT IV

Retail banking services : personal loan , home loans , car loans , consumer loans , educational loans concept of plastic money credit cards debit card (meaning , features , types , merits and de merits of each services are covered)

Venture Capital: Concept of venture capital fund, characteristics, growth of venture capital funds in India.

Suggested Readings:

- Avadhani, “*Financial Services and Market*”, 1999, Himalaya Publishing House.
- Bhole, “*Indian Financial System*”, 2009, Himalaya Publishing House.
- Chandra, P, “*Security Analysis and Portfolio Management*”, 2011, Tata McGraw Hill.
- Desai, Vasanth, “*The Indian Financial System*”, 1999, Himalaya Publishing House
- Varshney, PN & Mittal DK, “*Indian Financial System*”, 2000, Sulthan Chand & Sons.

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards
BCOP 621-18
Banking Laws & Services

Course Objective: The main objective of this module is to make the student aware about the various laws applicable to banks and the various practices prevalent in the banking industry and creating a base for advanced level study of the Banking laws and practices.

UNIT I

Origin and evolution of Indian Banking, Banking system and structure in India: Types of banks viz., Commercial Banks, Small Finance Banks Payments Banks, Co-operative Banks, public sector banks, private sector banks, foreign banks and Regional Rural Banks (RRB). Role of Reserve Bank as regulator of banking system; Changes in the role and functions of commercial Banks

UNIT II

Regulatory and Compliance Framework: Reserve Bank of India act, 1934- its incorporation, central banking functions provisions relating to Non-banking institution, receiving deposits and financial institutions, penalties. Role and functions of RBI- Credit control Techniques.

Banking Regulation Act, 1949- Definitions, business of banking companies, suspension of business and winding up of banking companies, provisions relating to certain operations of banking companies.

UNIT III

NPA and Securitization: NPAs, NPA categories, Provisioning norms, SARAFESI Act. **Basel Framework:** Bank for International Settlements (BIS), Basel Accords.

Banker Customer Relationship and their Roles & Responsibilities: Banker – Customer relations; Types of relationship between banker and customer, Bankers obligations to customers, Right of lien, set off, appropriation, Provisions of Negotiable Instrument Act, 1881 – Bankers legal duty of disclosure and related matters

UNIT IV

Banking Services: Payment and Collection of cheques- Duties and responsibilities of paying and collecting banker, Protection available to paying and collecting banker under Negotiable Instrument Act. **Security Creation:** Pledge, Hypothecation, Mortgage, Assignment. **Other Banking Services:** Fund based services, Non fund based services, Money remittance services, banking channels, Financial inclusion.

Suggested Readings:

- Varshney P.M., *Banking Law & Practice*, Sultan Chand & Sons
- Tannan M. L., *Tannan's Banking law and practice in India*, LexisNexis Butterworths Wadhwa Nagpur
- Desai V. J., *Indian Banking Law and Practice*, Himalaya Publishing Home
- Sheldon & Folder's, *Practice and Law of Banking*, Financial Times Prentice Hall
- Gupta S. N., *The Banking Law in Theory and Practice*, Law Publishers
- Hapgood M., *Paget's Law of Banking*, Lexis Nexis UK
- Singh A., *Laws of Banking and Negotiable Instruments*, Eastern Book Company

I.K.G. Punjab Technical University
Bachelor of Commerce (Hons.) Batch 2018 onwards

BCOP 622-18
Risk Management and Insurance

Course objective: This course aims at providing fundamental knowledge and exposure to the concepts and theories of risk management and insurance and to facilitate the students in appreciating need/significance of various types of insurance to mitigate the risks.

UNIT-I

Concept of Risk: Risk and Uncertainty, Types of Risk, Burden of Risk, Sources of Risk, Methods of handling Risk, Degree of Risk, Management of Risk.

Corporate and Personal Risk Management: Risk Management Process, Objectives of Risk Management, Risk Management Techniques, Need for a Rationale for Risk Management in Organizations, Understanding the cost of Risk, Individual Risk Management and the Cost of Risk.

UNIT-II

Identification of Risk: Tools/Techniques for perception of risk; Methods for determining the operative causes of peril; Safety audit.

Evaluation of Risk: Risk Avoidance & Reduction of Risk: methods of loss prevention and risk reduction; Role of surveyors in loss prevention/ risk reduction.

Techniques of Risk Financing: Retention of risk; Captive insurance companies,

UNIT-III

Insurance: Definition and Basic Characteristics of Insurance, Requirements of an Insurable Risk, Adverse Selection and Insurance, Insurance vs. Gambling Insurance vs. Hedging; Essentials of Insurance Contracts, Principles of Insurance, Legal Aspects of Insurance Contract

Types of Insurance: Life Insurance, General Insurance: Fire and Motor Insurance, Health Insurance, Marine Insurance, Automobile Insurance.

UNIT-IV

Regulatory Framework of Insurance: Role, Power and Functions of IRDA, Composition of IRDA, IRDA Act'1999.

Control of Malpractices, Negligence, Computation of Insurance Premium, Loss Assessment and Loss Control, Exclusion of Perils

Suggested Readings:

- George, E. R., *Principles of Risk Management and Insurance*, Pearson Education.
- Dorfman, M. S., *Introduction to Risk Management and Insurance*, Pearson
- Gupta. P.K, *Insurance and Risk Management*, Himalaya Publishing House.
- Mishra, M. N., *Principles and Practices of Insurance*, S. Chand and Sons.
- Black, K. and Skipper H.D., *Life and Health insurance*, Pearson Education
- Crane, F., *Insurance Principles and Practices*, John Wiley and Sons, New York.
- Vaughan, E. J. and T. Vaughan, *Fundamentals of Risk and Insurance*, Wiley & Sons