Chhattisgharh Swami Vivekanand Technical University, Bhilai

SCHEME OF TEACHING & EXAMINATION FIFTH SEMESTER MCA

ESE: End Semester Examination CT: Class Test TA: Teacher's Assessment L: Lecture T: Tutorial

S.NO	Board of Study	Subject code	SUBJECT	Period /Week			Scheme of Exam Theory/ Practical			Total Marks	Credit L +(T+P)/2
				L	T	P	ESC	CT	TA		
1	Computer Applications	521551(21)	Cyber Security	4	1	0	100	20	20	140	5
2	Computer Applications	521552(21)	Computer Graphics and Multimedia	4	1	0	100	20	20	140	5
3	Computer Applications	521553(21)	Software Project Management	4	1	0	100	20	20	140	5
4	Refer Table - II		Elective - II	4	1	0	100	20	20	140	5
5	Refer Table - III		Elective-III	4	1	0	100	20	20	140	5
6	Computer Applications	521531(21)	Graphics and Multimedia Lab	0	0	4	50	_	25	75	2
7	Computer Applications	521532(21)	Software Technology Lab-IV	0	0	4	75	_	25	100	2
8	Computer Applications	521533(21)	Project-II	0	0	5	75	_	25	100	3
9	Management	521534(76)	Managerial Skills	0	0	2	_	_	25	25	1
			TOTAL	**20**	**5**	**15**	**700**	**100**	**200**	**1000**	**33**

P: Practical

** Industrial lectures/seminars should be conducted during the fifth semester*

Table 2 : List of Elective II

S.No.	Board of Study	Code	Subject
1	Management	521571(76)	Managerial Economics
2	Management	521572(76)	Enterprise Resource Planning
3	Management	521573(76)	Organizational Behavior
4	Management	521574(76)	Management Information Systems
5	Management	521575(76)	E-Commerce
6	Management	521576(76)	Management Accounting

Note (1)- 1/4th of total strength of students subject to Minimum Strength of twenty students is required to offer an elective in the college in a particular academic session

Note (2) - Choice of elective course once made for an examination cannot be changed for future examinations.

Table 3 : List of Elective III

S.No.	Board of Studies	Code	Subject
1	Computer Applications	521581(21)	Data Warehousing and Mining
2	Computer Applications	521582(21)	Natural Language Processing
3	Computer Applications	521583(21)	Mobile Computing
4	Computer Applications	521584(21)	Distributed Databases
5	Computer Applications	521585(21)	Robotics & Computer Vision
6	Computer Applications	521586(21)	Parallel Processing
7	Computer Applications	521587(21)	Digital Image Processing
8	Computer Applications	521588(21)	Big data Analytics

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Name of Program	**:** MCA V	**Subject**	**:Cyber Security**
Code	**: 521551(21)**	**Duration of period**	**:** 50 minutes
Total Theory Periods	**:** 50	**Total tutorial periods:**	12
Class Test	**:** 02	**Maximum Marks**	**:**100
Minimum Marks	**:** 40		

Course Objectives:

1. To make student know, the essentials of computer security, also to provide the basic knowledge of security issues.
2. To make students know, different type of security algorithms, which includes a set of protocol and its implementation?
3. To make students know, the authorization and authentication in security system.
4. To make students know, the general principles of IP based web security standards.
5. To make students know, the working of firewalls in detail.

Course Content:

UNIT I **FOUNDATION OF CRYPTOGRAPHY AND SECURITY**:-The OSI Security Architecture ,A model for network Security ,Symmetric cipher model Substitution techniques Mathematical Tools for Cryptography: Modular Arithmetic, Euclid's Algorithm. Design Principle of Block ciphers: Theory of Block Cipher Design, Feistel ciphers, DES and Triple DES, Strength Of DES, Modes of Operation (ECB, CBC, OFB, CFB).

.**UNIT-II** **PUBLIC KEY CRYPTOGRAPHY**:- Prime Numbers and Testing for Primality, Principles of public key Cryptosystems RSA, Key Management Diffie- Hellman, key exchange, Hashes and Message Digests: Message Authentication codes, MD5, SHA-1, HMAC.

UNIT-III **DIGITAL SIGNATURES, CERTIFICATES, AND STANDARDS**:- Digital Signature Standard (DSS and DSA), Authentication: Kerberos V4, Electronic Mail Security: Pretty Good Privacy (PGP), **System Security**: Computer Virus, Firewall and Design Principles, Electronic Commerce Security: Secure Electronic Transaction (SET).

UNIT-IV **CYBER SECURITY :** Cyber Security, Cyber Security policy, Domain of Cyber Security Policy, Laws and Regulations, Enterprise Policy, Technology Operations, Technology Configuration, Strategy Versus Policy, Cyber Security Evolution, Productivity, Internet, E commerce, Counter Measures, Challenges.

UNIT – V **CYBER SECURITY POLICY CATALOG:** Cyber Governance Issues, Internet Names and Numbers, Copyrights and Trademarks, Email and Messaging , Cyber User Issues , Cyber Crime, Geo location, Privacy, Cyber Conflict Issues, Intellectual Property Theft, Cyber Espionage.

Text Books:

(1) Cryptography and Network Security, William Stalling, PHI.
(2) Atul Kahate, "Cryptography and Network Security", Tata McGraw Hill, 2003.
(3) Cyber Security policy Guidebook, Jennifer, Jason, Paul, Marcus, Jeffery, Joseph. Wiley Publication, 2012.

Reference Books:

(1) Robertra Bragg "Network Security: The Complete Reference", Tata McGraw Hill.
(2) Cyber Security Essentials, James Graham,Richard,Ryan CRC press, 2011.

Course Outcomes:

a. The students will be able to understand the structure and organization of computer Security and cyber crims.
b. The students will have basic understanding of security techniques and function.
c. The students will have in depth understanding of network security algorithms.
d. The students will be able to understand the basic concepts of security threats.
e. The students will be able to understand the basic concepts of firewalls; including authentication, integrity and system security design challenges.

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Name of Program :MCA V	**Subject : Computer Graphics And Multimedia**
Code : 521552(21)	**Duration of period:** 50 minutes
Total Theory Periods: 40	**Total tutorial periods**: 10
Class Test : 02	**Assignments:** 02
Maximum Marks :100	**Minimum Marks:** 40

Course Objectives:

1. To give an understanding of fundamentals algorithm for output primitive
2. To make students learn what type of operation can be applied on graphical object and how they are applied
3. To give an understanding of surface rendering for realistic images for developing graphical application
4. To make student aware of fundamentals of multimedia concept
5. To learn principles of compression techniques for still images and video

Course Content:

UNIT-I **Fundamentals of Computer Graphics:** Concepts and applications, Random and Raster scan devices, input-output devices: CRT, LCD, laser printer. Output primitives**:** Line drawing algorithm: DDA and Bresenham's; Circle generating algorithm: Bresenham's, Midpoint algorithms, Ellipse: midpoint ellipse drawing algorithm. Antialising techniques: super sampling, pixel weighting, area sampling, pixel phasing Area filling: boundary fill algorithm, flood fill algorithm: Scan-line Polygon Fill Algorithm.

UNIT-II **Transformation, viewing, Clipping:** 2-D Transformation: Translation, scaling, rotation, reflection, shear, matrix representation of all homogeneous coordinates, composite transformations. Two dimensional viewing: Viewing pipeline Window-to-view port transformation. Clipping operations: Line Clipping: Cohen Sutherland, and Liang-barsky, Polygon Clipping: Cohen-Sutherland-Hodgeman and Weiler – Atherton Polygon clipping.

UNIT-III **3D Transformation, Visible Surface Detection and curves:**
Visible Surface detection Algorithm: Object based and image based methods, depth comparison, A-Buffer, Back face removal, Scan-line method, Depth Sorting Method Area subdivision method. 3-D Transformation: translation, scaling, rotation, reflection. Three- dimensional object representations 3-D Viewing Projections – parallel and perspective projection. Curved lines and Surfaces: Spline representations, Interpolating and approximation curves, continuity conditions Bezier curves: concept and characteristics; B-Spline curves: concept and characteristics.

UNIT-IV **Color Models and Basic Concept of Animation:**
Introduction of multimedia: Properties and applications, types of medium, data stream characteristics, Basic File and Data format: BMP, JPEG, GIF, TIFF. Color models: RGB, YIQ, CMY, HSV. Animation: Basic concept, animation languages, computer-based animation, methods of controlling animation, display of animation, animation techniques: onion skinning, motion cycling, masking, morphing, and transmission of animation, Multimedia Authoring tools.

UNIT-V **Multimedia Systems:** Data compression: storage space, coding requirements. Source, entropy and hybrid coding some basic compression technique: runlength

code, Huffman code. JPEG: Image preparation, Lossy sequential DCT –based mode, expanded Lossy DCT based mode, Lossless mode, and hierarchical mode. MPEG, Huffman Encoding, LWZ compression.

Text Books:

1 Computer Graphics by Donald Hearn & M. Pauline Baker PHI
2. Multimedia Computing communication& applications "By Ralf Steimnety & Kerla Neshtudt. Prince Hall.

Reference Books:

1 Principles of interactive compo Graphics; W.M. Newman & Robert F Sproull.
2 Computer Graphics By Rogers TMH
3 Introductions to Computer Graphics Anirban Mukhopadhyay &Arup Chattopadhyay
4 Schaum's outlines -computer Graphics Mc Graw Hill International Edition.5
5.Principles of Multimedia by Ranjan Parekh TMH
6. "Multimedia Systems Design", P. K.Andleigh & K. Thakrar, Prentice Hall Pvt. Ltd

Course Outcomes

1. Students will be able to implement the logic of drawing basic output primitive while developing graphical package
2. Student will have ability to apply various 2D and 3D transformation concept on objects
3. Students will be able to create graphical objects with realistic look by applying surface rendering and projection techniques
4. Students will be able to develop a small graphical package with defined fundamental output for a specific application
5. Students will be able to develop graphical based application interfaced with multimedia and animation
6. Students will have the concept of basic compression techniques for images students will be equipped with techniques used in graphical and multimedia applications

Chhattisgarh SwamiVivekanand Technical University

Name of the program: MCA V
Subject: Software Project Management
Code : 521553(21)
Duration of period : 50 minutes
Total Theory periods: 40
Total Tutorial Periods :10
Class tests : 2
Assignments :2
Maximum marks : 100
Minimum Marks :40

Course objectives:

1. Define and highlight importance of software project management.
2. Describe the software project management activities
3. Train software project managers and other individuals involved in software project planning and tracking and oversight in the implementation of the software project management process.

UNIT-I **Software Management Renaissance:**Conventional Software Management, Evolution of Software Economics, Improving Software Economics, The Old Way and the New Way.

UNIT-II Software Management Process Framework: Life – cycle phases, Artifacts of the process, Model based software architecture, Workflows of the process, checkpoints of the Process.

UNIT-III **Software Management Discipline:** Iterative process planning, Project control and process instrumentation, tailoring the process. Looking forward: Modern project profiles, Next generation software economics, and modern process transitions.

UNIT-IV **Quality Planning.** Quality Concepts, Procedural Approach to Quality Management, Quantitative Approaches to Quality Management, Quantitative Quality Management Planning, Setting the Quality Goal, Estimating Defects for Other Stages, Quality Process Planning, Defect Prevention Planning.

UNIT-V **Risk Management –** Concept of Risk and Risk Management, Risk Assessment- Risk Identification, Risk Prioritization, Risk Control – Risk Management Planning, Risk Monitoring and Tracking

The Project Management Plan: Team Management, Team Structure, Communication, Team development, Customer Communication and Issue Resolution, The Structure of the Project Management Plan.

Text Books:

1. Walker Royce, "Software Project Management", Pearson Education.
2. JalotePankaj : Software Project Management in Practice, Addison Wesley .

ReferenceBooks :

1. B. Hughes & M Cotterell, Software Project Management, TMH

Course Outcomes:

1. Students will be able to develop a project management plan (PMP).
2. Students will be able to track project execution through collecting artifacts and metrics according to procedures described in PMP.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code: 521571(76)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Managerial Economics
Duration of period :50 minutes
Total Tutorial Period: 10
Assignments :2
Minimum Marks : 40

Course objectives:

1. To provide students a basic understanding of the economic theory and analytical tools for solving business problems.
2. To make student understand the nature of market forces of demand and supply
3. To make student learn techniques to solve business problem related to cost pricing and profits.
4. To develop understanding of students for market structures techniques for deciding pricing policy specific to market structure.
5. To make student understand the concept of profits acquire the knowledge of macro environmental variables so as to enhancing the practical decision making

UNIT-I **Introduction:** Nature, concept and scope of managerial economics. Objectives of the firm, Management and Behavioral theories of the firm, Role and responsibilities of Managerial Economist.

UNIT-II **Demand and Cost analysis:** Cost Concepts, Law and nature of demand, demand determinants, elasticity of demand, methods of demand forecasting, Product and cost analysis: short run and long run average cost curves.

UNIT-III **Law of Returns and Production functions**. Law of supply. Economies and diseconomies of scale, law of variable proportions

UNIT-IV **Pricing:** prescriptive approach, Price determination under perfect competition, Monopoly, oligopoly and monopolistic competition, Non price competition, price discrimination, price differentiation, Full cost pricing, Product strategies.

UNIT-V **Profits:** Nature and measurement policy. Theories of profit, Business fluctuations and trade cycles, Break-even analysis, Input-output analysis, Social cost benefit analysis, Case study.

Text Books:

1. Mehta P.L., "Managerial Economics- Analysis, Problems and cases", Sultan Chand and Sons,New Delhi.
2. K.L.Maheshwari, R.L.Varshney :" Managerial Economics", S.Chand

References:

1. Dwivedi D.N., "Managerial Economics" Vikas publications, Edition 6.
2. Dean J "Management economics " Prentice Hall of India, New Delhi, 1982 Mote. V.I. " Management economics " concepts and cases" Tata McGraw Hill. New Delhi 1980

Course Outcomes:

1. Student will have a good understanding of economic concepts and tools that have direct managerial applications.
2. The student will be able to forecast future demand and supply situation for their product.
3. The student will be able to take decisions related to cost and price.
4. The student will have better understanding of market structure and will be able to design pricing policies related to specific market and industry
5. Student will have a better understanding of profit management techniques and macro environmental factors and their impact on business decision making.

Chhattisgarh Swami Vivekanand Technical University

Name of the program : MCA V
Code : 521572(76)
Total Theory Periods : 40
Class Test : 02
Maximum Marks :100

Subject: Enterprise Resource Planning
Duration of period: 50 minutes
Total tutorial periods: 10
Assignments: 02
Minimum Marks: 40

Course objectives:

1 To provide student knowledge about BPR and role of IT in BPR and how to improve Business Process.
2 Describe the evolution of ERP Systems, provide an overview of how ERP systems help address issues caused by all functional systems.
3 Provide an overview of Typical business process like HR , Finance, Sales order processing, marketing etc and problem in traditional view.
4 Provide an overview about ERP Models like production scheduling ,forecasting, distribution, and flow of data across the modules and supporting databases.
5 Review issues associated with implementing ERP systems and to discuss pros and cons of implementing ERP.

UNIT-I **Conceptual foundation of Business Process reengineering**: Role of information Technology and BPR; Process improvement and Process redesign, Process identification and mapping; Role/Activity diagrams, Process Visioning, and benchmarking**.**

UNIT-II **Enterprise Resource Planning**: Evolution of ERP, structure of ERP- two tier architecture, three tier architecture, Electronic data processing, management information system, Executive information system, overview of supporting technologies, ERP as an integrator of information needs at various Levels**.**

UNIT-III **Typical Business Processes:** Core processes, Product control, Sales order processing, Purchase, Materials management, Human resource, Finance processes, Marketing, Strategic planning, Research and development, Problems in traditional view.

UNIT-IV **ERP models / functionality:** ERP domain, Sales order processing, Production scheduling, forecasting, distribution, finance, features of each of the models, description of data flow across each module.

UNIT-V **ERP implementation :** Reasons for growth of ERP market, Process of ERP**,** ERP implementation: process, implementation strategies, problems, people involved, cost of implementation, critical success factors for ERP implementations, ERP selection, identifying ERP benefits, Risks involved, team formation, Consultant intervention, Role of users and vendors. Case studies: SAP, ORACLE, SARA.

Text Books:

1. ERP, Concepts and Practices, V.K. GARG & N .K. VENKATKRISHNAN: 2n^{d} edition, PHI.
2. Enterprise wide Resource Planning-theory and practice, Rahul V. Altekar, PHI

References:

1. ALEXIS LEON: Enterprise Resource Planning, TMH------ERP Demystified
2. S. SADAGOPAN: Management Information System, PHI Learning Pvt. Ltd.
3. V. RAJARAMAN: Analysis and Design of Information Systems, PHI
4. MONK' & BRADY: Concepts in ERP, Thomson learning.

Course Outcomes:

1 Student will acquire an understanding of business process, organizational functional areas, need of reengineering, business process efficiency.
2 Student will be aware of advantages of an enterprise, how technology acts as business process enabler.
3 Student will be able to select best ERP vendor, Contracts with vendors, consultants and employees.
4 Student will get acquainted with different ERP implementation Strategies. know the reasons for the growth of ERP market ,top companies of ERP market and understanding of TQM.
5 Student will have an understanding of ERP modules. ERP project management and monitoring, Pitfalls of ERP packages, ERP implementation lifecycle, Implementation methodology, organizing the implementation
6 Student will have an understanding of an ERP package with emphasis on: - Application basics, cross-sectional analysis of the other ERP systems with the application.

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Name of the program: MCA V
Code : 521573(76)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Organizational Behavior
Duration of period: 50 minutes
Total Tutorial Period: 10
Assignments: 2
Minimum Marks: 40

Course objectives:

1. To enable the students to understand nature and scope of organizational behavior.
2. To make students learn the concepts of perception, attitude and theories of learning.
3. To enable the students to understand individual behavior, their personality and motivation in an organization.
4. To develop an understanding amongst students about group, its formation and group dynamics.
5. To enable the students to learn about team, team decision making, Transactional Analysis and Conflict.
6. To develop an understanding amongst students about organizational designs structures and culture.

UNIT I **Introduction**: Introduction to Organizations and individuals. What is Organization, components of Organization, nature and variety of organizations (in terms of objectives, structure etc), models of Analyzing Organization Phenomena (Hawthorne Experiments), organizational and business variables.

UNIT II **Individual Dimension On OB**: Organization in Indian Context, institutions and structures, basic roles in an organization, Perception, Attitude, values, Motives(achievement, power, affiliations), commitment, creativity, emotions, Learning, Stress and other personality factors, s Profile of a Manager and an entrepreneurs.

UNIT III **Interpersonal and Group Processes**: Interpersonal trust, understanding the person from his/her point of view, Interpersonal Communication, listening, feedback, counseling, transactional analysis, self-fulfilling prophecies.

UNIT IV **Understanding Work Teams**: Leadership, motivating people, working as a member of a team, team functioning, team decision-making, team conflict resolution, team problem solving.

UNIT V **Organization Structure**: Elements of structure, functions and days functionalities of structure, determinants of structures, structure-technology-people-environment relationship, principles underlying the design of organizations. Organization Culture, Power and Politics, Organization Change. Case studies.

Text Book:

1. Robbins (4th ed), "Essentials of Organizational Behavior", PHIs
2. L.M Prasad ' Organizational Behaviour' Sultan Chand & Sons

References:

1. Dwivedi R.S. 'Human Relations and Organizational Behavior: A global perspective' Mac Muillan India ltd. Delhi
2. French and bell 4th edition ' Organization Development: Behavioral Science Inventions for Organization Improvement' PHI
3. Stephens P. Robbins ' Organizational behavior' PH

Course Outcomes:

1. Students will understand the need to study Organizational behavior and hence its significance.
2. Students will understand the difference of perception and attitude and various theories of learning.
3. Students will be able to apply motivational and personality theories in organizational context after getting an understanding individual behavior.
4. Students will develop an understanding of group dynamics.
5. They will be able to work in teams, resolve team conflicts and solving interpersonal issues while working in a corporate.
6. Students will understand the structure of an organization and its complexities as well as organizational culture.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code : 521574(76)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Management Information Systems
Duration of period: 50 minutes
Total Tutorial Period: 10
Assignments: 2
Minimum Marks: 40

Course objectives:

1. The objective of this course is to make the student aware about the MIS and role, impact of MIS.
2. To explain the student decision making concept method and tool.
3. Explain to students the concept of system and planning control.
4. The course also includes DSS and Expert system concepts.
5. Identify the major management challenges to building and using information systems and learn how to find appropriate solutions to those challenges;

UNIT-I **Introduction**: Introduction to MIS, definition, Role, impact, subsystems of MIS, structure of MIS, MIS and computer, Executive information system, Transaction processing, Office Automation and information processing control functions.

UNIT-II **Conceptual Foundations**: Decision making concept, method, tools, procedures, MIS and Decision making, Concept of information- mathematical definition, classification, methods of collection, value, age of information, Human as an information processor.

UNIT-III **Systems, Planning and Control:** System concept – definition, General model of system, types, subsystems, preventing system entropy, system stress and system change, system concept applied to MIS. Concept of planning and computational support for planning, characteristics of control.

UNIT-IV **DSS and Expert Systems:** Concept and philosophy, characteristics, structure of decision making, classes of DSS, users of DSS, support for decision making process, AI systems, Knowledge based Expert systems, semantic networks, MIS and role of DSS

UNIT-V **Development and Implementation**: Development of long range plans, ascertaining the class of information, determining the information requirement, Development and implementation of MIS, management of quality in MIS, organization for development of MIS, factors of success and failure of MIS

Text Books:

1. Godon B. Davis & Margrethe H. Olson, "Management Information Systems",TMH (2nd ed)
2. W.S. Jawadekar 'Management Information Systems' TMH

Reference Books:

1. S. Sadagopan 'Management Information Systems' PHI
2. Jerome Kanter ' Managing with Information' PHI(4th edition)
3. James A. Senn ' Analysis and Design of Information systems ' MC Graw-Hill, International Edition

Course Outcomes:

1. Understand the basic concepts and technologies used in the field of management information systems.
2. Will able to make decision using DSS tool.
3. Have the knowledge of the different types of system and the concept of planning.
4. Develop an understanding of how DSS and Expert system work.
5. Understand the processes of developing and implementing information systems.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code: 521575(76)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: E-Commerce
Duration of period: 50 minutes
Total Tutorial Period: 12
Assignments: 2
Minimum Marks: 40

Course objectives:

1. To gain an understanding of the theories and concepts underlying e-commerce
2. To understand how electronic commerce is affecting business enterprises, governments, consumers and people in general.
3. Understanding of e-commerce with a specific emphasis on Internet Marketing.

UNIT-I Introduction to e-Commerce, e-Commerce Framework, e-Commerce and Media Convergence, Anatomy of e-Commerce Applications, e-Commerce Consumer Applications, e-Commerce Organization Applications.

UNIT-II Components of I-way, Network Access Equipment, National-Independent ISPs, Regional- level ISPs, Local -level ISPs.

UNIT-III Client-Server Network Security, Emerging Client-Server Security Threats, Firewalls and Network Security, Data and Message Security, Encrypted Documents and Electronic Mail, Challenge Response System.

UNIT-IV Architectural Framework for e-Commerce, WWW as the Architecture, Security and the Web, Consumer Oriented Applications, Mercantile Process Models, Types of E-Payment Systems, Smart Cards, Credit Card -Based e-payment Systems

UNIT-V Electronic Data Interchange, EDI Applications in Business, EDI and E-Commerce, Standardization and EDI, EDI Software Implementation, Value Added Networks (VANs), Internal Information Systems.

Text Books:

1. Frontiers of Electronic Commerce by Ravi Kalakota & Andrew B. Whinston, Pearson Education.
2. E-Commerce – The Cutting Edge of Business by Bajaj, Tata McGraw-Hill

Reference Books:

1. Electronic Commerce by David Kosiur, Published by Microsoft Press.
2. E-business roadmap for success by Dr. Ravi Kalakota & Marcia Robinson

Course Outcomes:

1. Students are expected to realize the problems involved in designing and building e-commerce systems.
2. Explain the components and roles of the Electronic Commerce environment.
3. Describe E-Commerce payment systems.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of the program: MCA-V
Code: 521576(76)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Management Accounting
Duration of period : 50 minutes
Total Tutorial Period: 10
Assignments : 2
Minimum Marks : 40

Course Objective

1. To develop an insight into the utilization of financial and cost accounting information.
2. To learn planning, controlling and decision making in the business.
3. To learn clear understanding of other important tools useful for financial, cost and price related decision making

.

UNIT-I Management Accounting: Nature, scope and tools of Management Accounting; Management Accounting vs. Financial accounting and Cost Accounting. Cost Accounting- Meaning, Scope and Classification of costs , full costing , overhead allocations , and preparation of cost sheet.

UNIT-II Marginal Costing: Marginal Costing versus Absorption Costing,Cost-Volume-Profit Analysis and P/V Ratio Analysis and their implications , Concept and uses of Contribution & Break even Point and their analysis for various types of decision-making Like single product pricing , multi product pricing , replacement , sales etc. Differential Costing and Incremental Costing : Concept, uses and applications, Methods of calculation of these costs and their role in management decision making like sales , replacement, buying etc.

UNIT-II Budgeting: Concept of Budget, Budgeting and Budgetary Control, Types of Budget, Static and Flexible Budgeting, Preparation of Cash Budget, Sales Budget, Production Budget, Materials Budget, Capital Expenditure Budget and Master Budget, Advantages and Limitations of Budgetary Control.

UNIT-IV Standard Costing: Concept of standard costs, establishing various cost standards, Calculation of Material Variance, Labour Variance, and Overhead Variance, and its applications and Implications.

UNIT-V
Responsibility Accounting & Transfer Pricing: Concept and various approaches tto Responsibility Acco unting, concept of investment center, cost center, profit center and responsibility centres and its managerial implications , Transfer Pricing : concept, types & importance ; Neo Concepts for Decision Making: Act ivity Based Costing, Cost Management,Value Chain Analysis, Target Costing, Decision involving alternati ve choices.

Text Books

1.Horngreen, C.T. Sundem G.L., Stratton W.O., Introduction to Management Accounting, PI India, New Delhi
2. M Y Khan & P K Jain, Management Accounting, Tata McGraw-Hill, New Delhi
3. Shah: Management Accounting, Oxford University Press.

Reference Books

1. Hansen, D.R. & Mowen, M.M., Management Accounting, Thomson South Western.
2. Bamber, L.S., Braun K.W., Harrison, T.W., Managerial Accounting, Pearson Education, New Delhi.

3.Bhattacharyya, S.K. & Dearden, John, Costing for Management¸ Vikas Publishing House, New Delhi.
4. Pandey, I. M, Management Accounting¸ Vikas Publishing House, New Delhi.
5. Arora M N, Cost and Management Accounting, Vikas Publishing House, New Delhi.

Course Outcomes:

1. Student will be familiar with different Management Accounting & cost sheets.
2. Student will be familiar with Marginal Costing & it's benefits.
3. Student will be familiar with Budget and it's planning.
4. Student will be familiar with standard costing.
5. Student will be familiar with Responsibility Accounting & Transfer Pricing.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code: 521581(21)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Data warehousing and Mining
Duration of period: 50 minutes
Total Tutorial Period: 10
Assignments: 2
Minimum Marks: 40

Course objectives:

1. To make learners know the basic concepts of Data Mining and Data Warehouse, its applicability in an organization with detailed implementation strategy of data warehousing technology.
2. To make learners know the various data pre-processing techniques and its necessity, application through DMQL statements and data mining functionalities in depth.
3. To make learners know the functioning of various knowledge mining tools, such as association, classification and prediction.
4. To make learners know, how to apply the different clustering techniques and what are its basic differences.
5. To make learners know the basic details of various Mining techniques on different databases.

Course Content:

UNIT-I **Introduction:** KDD (Knowledge Discovery from Databases),Fundamentals of data mining, Data Mining Functionalities, Major issues in Data Mining, Data Warehouse and OLAP Technology, Multidimensional Data Model, Data Warehouse Architecture, OLAP operations, Warehouse schema.

UNIT-II **Data Preprocessing & Data Mining Languages:** Need of Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation, Data Mining Primitives, Data Mining Query Languages, Architectures of Data Mining Systems, Concepts Description: Characterization and Comparison, Analytical Characterization.

UNIT-III **Association Rule Mining, Classification and Prediction:** Association Rule Mining, Market Basket Analysis, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Apiori algorithm, FP-Tree growth algorithm, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation.

UNIT-IV **Cluster Analysis:** Types of Data in Cluster Analysis, Outlier Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Heirarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods.

UNIT-V **Mining Complex Types of Data:** Web Mining, Text Mining, Multimedia Mining, Temporal and Spatial Data Mining, Trends in Data Mining, Data Mining Applications.

Text Books:

1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India.
2. Data Mining Techniques – ARUN K PUJARI, University Press
3 Building the Data Warehouse- W. H. Inmon, Wiley Dreamtech India Pvt. Ltd..

Reference Books:

1. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.
2. Data Warehousing Fundamentals – PAULRAJ PONNAIAH WILEY STUDENT EDITION
3. The Data Warehouse Life cycle Tool kit – RALPH KIMBALL WILEY STUDENT
4. Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON

Course Outcome:

1.Learner will be able to differentiate between a database and a data warehouse.
2. Learner will be able to classify various data mining systems.
3.Learner will be able to prepare data for data warehouse.
4.Learner will be able to perform data mining functionalities on data warehouse data.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Subject: Natural Language Processing
Code: 521582(21)
Duration of period: 50 minutes
Total Theory periods: 40
Total Tutorial Period: 10
Class tests: 2
Assignments: 2
Maximum marks: 100
Minimum Marks: 40

Course Objective:

1. To introduce the fundamental techniques of natural language processing.
2. To develop an understanding of the limits of those techniques.
3. Current research issues, and to evaluate some current and potential applications.

Course Content:

UNIT - I **Grammars and Parsing:** Grammar and sentence structure, good grammar, top-down and bottom-up chart parser, transition network grammars, finite state models and morphological processing, grammar and logic programming.

UNIT - II **Features and unification:** Human preferences in parsing, encoding uncertainty: shift- Reduce Parsers, A deterministic Parser, Techniques for efficient encoding of ambiguity, semantics and logical form, word senses and ambiguity, partial parsing, feature stems and augmented grammars, some basic feature systems for English, morphological analysis and the lexicon, parsing with features, augmented transition networks, definite clause grammars, generalized feature systems and unification grammars.

UNIT - III **Linking syntax and semantics:** Semantics and logical form, word senses and ambiguity, the basic logical form language, encoding ambiguity in the logical form, verbs and states in logical form, thematic roles, speech acts and embedded sentences, defining semantic structure: Model theory, semantic interpretation and compositionality, a simple grammar and lexicon with semantic interpretation, prepositional phrases and verb phrases, lexicalized semantic interpretation and semantic roles. Semantics interpretation using feature unification, generating sentences from logical form.

UNIT - IV **Strategies for Semantic Interpretation:** Selection restrictions, semantic filtering using selection restrictions, semantic networks, statistical word sense disambiguation, statistical semantic preferences, combining approaches to disambiguation, grammatical relations, semantic grammars, template matching, semantically driven parsing techniques, scooping phenomena, descriptions and scooping, scooping with parsing, co-reference and binding constraints, adjective phrases, relational nouns and nominalizations.

UNIT - V **Natural language generation and translation:** Introduction to language generation, architecture for generation, surface realization, systemic grammar, functional unification grammar, discourse planning, text schemata, rhetorical relations, micro planning, lexical selection, evolution generation stems, generating speech, language similarities and differences, the transfer metaphor, syntactic transformations, lexical transfer, the interlingua idea, direct translation, statistical techniques, quantifying fluency, quantifying faithfulness, usability and system development

Text Books:

1. Speech and Language Processing, Daniel Jurafsky & James H.Martin, LPE, Pearson Education.
2. Natural Language Understanding, James Allen, 2nd edition, Pearson Education.

Reference Books:

1. Natural language processing in prolog, G.Gazder, Benjamin/cunnings

Course Outcome:

1. Understand the fundamentals of natural language processing
2. Have practical experience using NLP tools
3. Have practical experience applying NLP to a real-world problem
4. Understand how NLP relates to search engines
5. Understand how NLP relates to text mining

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code: 521583(21)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Mobile Computing
Duration of period: 50 minutes
Total Tutorial Period: 10
Assignments: 2
Minimum Marks: 40

Course objectives:

1. The course aims to impart the concepts of wireless communication techniques.
2. Provide extension to communications fundamentals acquired.
3. Helps to understand basics of mobile environment and the technology in the various wireless communications.

UNIT-I **Introduction to Wireless Technology:** Mobile and wireless communications, Applications, history, market vision, overview Frequency of Radio Transmission, Signal Antennas, Signal Propagation, Multiplexing, Modulation, Spread Spectrum, Error Detection: Parity Check, CRC. Block Error Correction Code: BHC Code, Reed- Solomon Code.

UNIT-II **Wireless Communication**: Cellular systems: CDMA, FDMA, TDMA, CSDMA and comparison between them, Generations of Cellular Networks 1G, 2G, 2.5G, 3G and 4G

UNIT-III **Wireless Lan:** IEEE 802.11, WiFi, IEEE 802.16 Bluetooth: Packet Format and architecture, WIMAX: Standards, Architecture and Services.

UNIT-IV **Mobile Communication Systems :** GSM- Mobile services, System architecture, Radio interface, Protocols & Localization and calling, Handover & Security . DECT: System architecture, Protocol architecture. TETRA, UMTS:UMTS system architecture.
Mobile Network Layer : Mobile IP – Dynamic Host Configuration Protocol, Mobile Ad Hoc Routing Protocols– Multicast routing

UNIT-v **Mobile Transport Layer :** TCP over Wireless Networks – Indirect TCP – Snooping TCP – Mobile TCP – Fast Retransmit / Fast Recovery Transmission/Timeout Freezing-Selective Retransmission – Transaction Oriented TCP , TCP over 2.5 / 3G wireless Networks.
Application Layer: Wireless application protocol: Architecture, Wireless datagram protocol, Wireless transport layer security, Wireless transaction protocol, Wireless session protocol, Wireless application environment, WML – WMLScripts – WTA - iMode- SyncML.

Text Book:

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education
2. William Stallings, "Wireless Communications and Networks", Pearson Education

Reference Books:

1. Vijay Garg, "Wireless network evolution: 2G to 3G", Prentice Hall, 2002.
2. MISRA "Wireless Communication and Networks: 3G and Beyond", McGraw Hill
3. Principles of mobile computing and mobile communications by Melizza Othman CRC press
4. 802.11 Wireless Networks: The Definitive Guide , 2nd Edition Matthew Gast, O'Reilly
5. Handbook of Wireless Networks and Mobile Computing, Ivan Stojmenovic, Wiley India Edition
6. Wireless and Mobile Network Architectures Yi-Bing Lin, ImrichChlamtac
7. Wireless and Mobile Networks: Concepts and Protocols, Dr. Sunilkumar S. Manvi S.Kakkasageri

Course Outcomes:

1. Students will learn wireless technologies, tools and frameworks which will help them to understand the mobile and the other wireless communications.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code: 521584(21)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Distributed Databases
Duration of period: 50 minutes
Total Tutorial Period: 10
Assignments: 2
Minimum Marks: 40

Course objectives:

1. To understand and learn the differences between distributed databases and centralized databases, the architecture of distributed databases.
2. To understand query processing and query optimization techniques.
3. To understand transaction processing, concurrency control and deadlock management.
4. To attain exposure over Text Databases, parallel Databases, Spatial Databases and Multimedia Databases and their reliability in distributed environment.
5. To understand and analyze the features of object oriented database systems, the ODMG data model, the object definition language, object query language

UNIT-I **Introduction:** Distributed Data Processing, Distributed Database System, Promises of DDBS, Problem areas. Distributed DBMS Architecture: Transparencies in a Distributed DBMS, - DBMS Standardization, Architectural Models for Distributed DBMS, DDMBS Architecture. Distributed Database Design: Alternative Design Strategies, Distribution Design issues, Fragmentation, Allocation..

UNIT-II **Query Processing and decomposition**: Query Processing Problem, Query Processing Objectives, Characterization of query processors, layers of query processing, query decomposition, Localization of distributed data. **Distributed query Optimization**: Inputs to Query Optimization, centralized query optimization, Join Ordering in Fragment Queries Distributed query optimization algorithms.

UNIT-III **Transaction Management and Distributed Concurrency Control**: Definition, properties of transaction, types of transactions. Distributed concurrency control: Serializability, concurrency control Mechanisms & Algorithms, Locking-based Concurrency Control Algorithms Time stamped & Optimistic concurrency control Algorithms, Deadlock Management.

UNIT-IV **Distributed DBMS Reliability:** Reliability concepts and Measures, fault-tolerance in Distributed systems, failures in Distributed DBMS, local & Distributed Reliability Protocols, site failures and Network partitioning. Architectural Considerations **Parallel Database Systems**: Database Series, Parallel Architecture, Parallel DBMS Techniques, Parallel execution problems, Parallel Execution for Hierarchical architecture.

UNIT-V **Distributed object Database Management Systems:** Fundamental object concepts and Models, Object Distributed Design, Architectural Issues, Object Management, Distributed Object storage, Object query Processing.

Text Books:

1. M. Tamer OZSU and Patuck Valduriez: Principles of Distributed Systems, Pearson Edn. Asia, 2001.
2. Steafano Ceri and Willipse Pelagatti: Distributed Databases, McGraw Hill

Reference Books:

1. Henry F Korth, A Silberchatz and Sudershan: Database System Concepts, MGH
2. Raghuramkrishnan and Johhanes Gehrke: Database Management Systems, MGH
3. Data Mining introductory and advanced topics: MARGARET H DUNHAM, PEARSON EDUCATION

Course Outcomes:

1. Understand the nature of distributed database systems in and its use in modern enterprises.
2. Know the difference between centralized database models and distributed database systems.
3. Program in distributed SQL.
4. Improve and fine tune distributed database systems reliability.
5. Interface distributed database systems to the web using the latest in technologies.
6. Learn the importance of security and integrity and how to implement it in distributed database systems and how to set and reset access permissions to distributed database objects.
7. Understand the importance of distributed transaction and how to implement processing and concurrency control in distributed database systems and how to grantee the consistency of a distributed database relation

8. Build and implement a prototype distributed database systems
9. Practice teamwork which includes division of their roles and tasks, communication and discussion of ideas among team members to complete the project.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Subject: Robotics and Computer Vision
Code: 521585(21)
Duration of period: 50 minutes
Total Theory periods: 40
Total Tutorial Period: 10
Class tests: 2
Assignments: 2
Maximum marks: 100
Minimum Marks: 40

Course Objective:

1. To make learner understand a simplistic point of view about computer vision.
2. To give learner an understanding of image processing for computer vision.
3. Stimulating interests in Robotics as a career, encouraging technical education using the attractiveness of robotics.

UNIT-I **From Tele operation To Autonomy:** What can Robots be used for? A brief history of Robotics, Tele operation, attributes of the hierarchical paradigm, closed world assumption and the frame problem, representative architectures.

UNIT-II **The reactive Paradigm:** Reflexive behaviors, innate releasing mechanisms, perception in behaviors : Action-perception cycle, Two functions of perception, Gibson: Ecological approach, Neisser: Two perceptual systems, behaviors and schema theory, characteristics and connotations of reactive behaviors, subsumption summary, potential fields methodologies, steps in designing a reactive behavioral system.

UNIT-III **Common Sensing Techniques for Reactive Robots :** Logical sensors, Behavioral sensor fusion, Designing a sensor suite: attributes of a sensor, attributes of sensor suite, Proprioceptive Sensors: Inertial navigation system (INS), GPS , Computer vision: CCD cameras, Gray scale & color representation , Region segmentation, Color histogramming.

UNIT-IV **Projection:** Pinhole cameras, cameras with lenses, the human eye, sensing, least – squares parameter estimation, a linear approach to camera calibration, taking radial distortion into account, the physics of color, human color perception, representing color, a model for image color.

UNIT-V **Stereo Vision:** Two views, epipolar geometry, the calibrated case, small motions, the uncalibrated case, weak calibration, three views, image rectification, human stereopsis, correlation, affine structure and motion from two images.

Text Books:

1. Introduction to AI Robotics by Robin Murphy, PHI
2. Computer Vision: A Modern Approach by Forsyth and Ponce, Pearson Education, LPE.

Reference Books:

1. J. Latombe, Robot Motion Planning
2. O. Faugeras, Three Dimensional Computer Vision, MIT Press
3. Nalwa V.S., A guided tour of computer vision

Course Outcomes:

- Demonstrate an ability to implement, test, and deploy a computer-based system applying current and emerging methodologies and technologies.
- Student will able to describe the basic components that allow an operator to program robots.
- Student will be able to envision robotics as a career.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code: 521586(21)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Parallel Processing
Duration of period: 50 minutes
Total Tutorial Period: 10
Assignments: 2
Minimum Marks: 40

Course Objective:

1. To learn how to design parallel programs and how to evaluate their execution .
2. To understand the characteristics, the benefits and the limitations of parallel systems and distributed infrastructures
3. Build experience with interdisciplinary teamwork

UNIT –I Introduction to parallel processing: Trends towards parallel processing; Parallelism in Uniprocessor systems: Basic Uniprocessor Architecture, Parallel Processingmechanisms, Multiprogramming and Time Sharing;Parallel Computer Structures: Pipeline computers, Array computers, Multiprocessor systems, Performance of Parallel Computers;Architectural classification schemes; Parallel processing applications.

UNIT-II Principles of Pipelining and Vector Processing: Principles of Linear Pipelining, Classification of Pipelined processors, General pipelines & Reservation tables, Instruction and Arithmetic Pipelines: Design examples and principles of design ,Vector Processing: characteristics, Multiple Vector Task Dispatching, Pipelined Vector Processing methods. Architecture of Cray-I.

UNIT–III Structure of Array Processors- SIMD Array Processors: Organizations, Masking and Data Routing Mechanisms; SIMD Interconnection Networks: Static, Dynamic, Mesh-Connected, Cube Interconnection Networks, Shuffle Exchange, Omega Networks; Performance Enhancement methods; Associative Array processing: Associative Memory Organization, Associative Processors.

UNIT–IV Multiprocessor Architecture: Functional Structures – Loosely Coupled and Tightly coupled multiprocessors; Interconnection Networks for multiprocessors: Crossbar Switch and multiport memories, Multistage Networks for multiprocessors; Exploiting Concurrency for multiprocessors, Parallel Memory Organizations: High order & Low order interleaved memory; Multiprocessor Scheduling strategies, Interprocess communication mechanisms: Process Synchronization Mechanisms, Synchronization with Semaphores, Conditional critical section & monitors.

UNIT–V Algorithms on Array processors; Parallel Algorithms on Array Processors- SIMD Matrix Multiplication, Parallel Sorting on Array Processors, SIMD Fast Fourier Transform, Parallel Algorithms of Multiprocessors- Classification of Parallel Algorithms, Synchronized Parallel Algorithms, Asynchronous Parallel Algorithms, Performance of Parallel Algorithms.

Text Book:

1.Computer Architecture & parallel Processing- Kai Hwang & A. Briggs (McGraw Hill)
2.Designing Efficient Algorithms for Parallel Computers – H.J. Quinns (McGraw- Hill)

Reference Book:

1. Advanced Computer Architecture: parallelism, Scalability, Programmability- By:- Kai Hwang(TMH)
2. Computer Organization & Programming – By – Gear (TMH)
3. Parallel Processing for Supercomputers & Artificial Intelligence –By – Hwang & Degroo

Course Outcomes:

1. Be able to reason about ways to parallelize a problem
2. Understand, appreciate and apply parallel and distributed algorithms in problem solving
3. Understand the evolution of high performance computing (HPC) with respect to laws and the contemporary notion that involves mobility for data, hardware devices and software agents

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of the program: MCA V
Code: 521587(21)
Total Theory periods: 40
Class tests: 2
Maximum marks: 100

Subject: Digital Image processing
Duration of period: 50 minutes
Total Tutorial Period: 10
Assignments: 2
Minimum Marks: 40

Course Objectives:

- To understand the image fundamentals and mathematical transforms necessary for image processing.
- To study the image enhancement techniques.
- To understand the image segmentation and representation techniques.
- To study the image compression procedures.
- To understand the image representation.

UNIT- I **Introduction:** Digital image processing, origin, usage and application of image processing. Fundamental steps and component of image processing system. Image formation model, Spatial & Gray level resolution, Image enhancement in special domain: Piecewise Linear transformation functions, Histogram equalization, Histogram specification, image averaging, spatial filters- smoothing and sharpening, Laplacian filter, Canny edge detector.

UNIT- II **Image enhancement in frequency domain & Image Segmentation:** 2D discrete fourier transform & its inverse, filtering in frequency domain, Ideal & Gaussian low pass filters, High pass filtering, FFT, Line detection, Edge detection, Edge linking & boundary detection, Thresholding, Region based segmentation.

UNIT III **Morphological Image Processing:** Logic operations involving binary image, Dilation & Erosion, Opening & Closing, Applications to Boundary extraction, region filling, connected component extraction.

UNIT IV **Image Compression:** Coding redundancy- Huffman coding, LZW coding, run length coding, Lossy compression- DCT, JPEG, MPEG, video compression.

UNIT V **Image Representation & 3D:** Boundary descriptors, Shape numbers, Texture, Projective geometry, Correlation based and feature based stereo correspondence, shape from motion, optical flow.

Text Books:-

1) Rafael C. Gonzalez and Richard E.Woods, Digital Image Processing, Pearson Education.

2) Anil K. Jain, Fundamental of Digital Image Processing, Pearson 2002.

Reference Books :-

1. Jain and Rangachar, Machine Vision, MGH.
2. Schalkoff, Digital Image Processing, John Wiley and sons.
3.Anil K. Jain, Fandamentals of Digital Image Processing' Pearson 2002.

Course Outcomes:

1. The students will be able to understand the digital image fundamentals.
2. The students will be able to understand Image enhancement techniques.
3. The students will be able to understand the image segmentation and processing techniques.
4. The students will be able to study the image compression procedures.
5. The students will be able to know the representation of images.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Name of Program	**:**MCA V	**Subject: Big Data Analytics**	
Code	**: 521588(21)**	**Duration of period:**	50 minutes
Total Theory Periods	**:** 40	**Total tutorial periods**:	10
Class Test	**:** 02	**Assignments:**	02
Maximum Marks	**:** 100	**Minimum Marks:**	40

COURSE OBJECTIVES:

1. To explore the fundamental concepts of big data analytics
2. To learn to analyze the big data using intelligent techniques.
3. To understand the various search methods and visualization techniques.
4. To learn to use various techniques for mining data stream.
5. To understand the applications using Map Reduce Concepts.

Course Content:

UNIT I **INTRODUCTION TO BIG DATA:** Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

UNIT II **MINING DATA STREAMS :**Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window.

UNIT III **HADOOP** :History of Hadoop- The Hadoop Distributed File System – Components of Hadoop- Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS-Java interfaces to HDFS-Basics-Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and Formats- Map Reduce Features

UNIT IV **HADOOP ENVIRONMENT:** Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenance-Hadoop benchmarks-Hadoop in the cloud.

UNIT V **FRAMEWORKS:** Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper. Visualizations - Visual data analysis techniques, interaction techniques.

Text Books:

1. Michael Berthold, David J. Hand, “Intelligent Data Analysis”, Springer, 2007.
2. Tom White “ Hadoop: The Definitive Guide” Third Edition, O’reilly Media, 2012.
3. Anand Rajaraman and Jeffrey David Ullman, “Mining of Massive Datasets”, Cambridge University Press, 2012.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: Master of Computer Applications **Semester: V**
Subject: Graphics and Multimedia Lab **Code: 521531(21)**
Lab Periods/Week: 4 **Batch Size: 30**
Maximum marks: 50 **Minimum Marks:30**

Course Objective:

1. To develop an efficient graphics program using basic algorithms and built-in graphics functions in order to make innovative programs using different shapes.
2. To develop graphics programs based on 2-D transformations.
3. To build graphics program in order to perform clipping.
4. To develop useful application(like Analog Clock or a moving object)/user-friendly applications (e.g Game) and real time applications.
5. To implement the concept of text compression using basic text compression algorithm(Huffman coding).

Experiments to be performed:

(i) Write a program to draw a Line Using DDA algorithm.
(ii) Write a program to draw a Line Using Bresanham's algorithm.
(iii) Write a program to draw polygon (Triangle, square, pentagon etc).
(iv) Write a program to draw Circle/Ellipse using Mid Point Circle algorithm.
(v) Write a program to implement Area filling using Scan Line Method.
(vi) Write a program to implement Boundary fill 4-connected / 8-connected Algorithm using Recursion/Non Recursion.
(vii) Write a program to implement Flood fill Algorithm using Recursion/ Non Recursion.

OR

Write a program to Fill a solid colored area./ Write a program to Fill a Multicolor Boundary area.

(viii) Write a program to Translate a Line/Polygon.
(ix) Write a program to Rotate and Scaling of a Line/Polygon With respect to
i) Origin
ii) Pivot Rotation
(x) Write a program to perform Shearing of Polygon with respect to
i) X-axes
ii) Y-axes
(xi) Write a program to perform reflection of polygon with respect to
i) X-axes
ii) Y-axes
iii) With respect to origin
iv) With respect to line Y=X
v) With respect to line Y=mX+C

(xi)Write a program to display horizontal and vertical mirror image of alphabets(A TO Z)

(xii) Draw Bazier curve using Local Control Point (60,20),(80,100),(150,90),(180,50).
(xiii) Write a program to perform Clipping of Line using Cohen Sutherland Algorithm.
(xiv) Prepare a game using graphics basic object and various transformations.

OR

Create a Paint Brush Like Application that include facility to draw all the basic object.

OR

Develop any useful tool (like watch) using graphics basic object and various

transformations.

(xv) Implementation of text compression using dynamic Huffman coding/ static Huffman coding

OPTIONAL

1. Draw a Bar chart for monthly sales over a period of one year. Indicate the sales & months.
2. Draw a line graph for monthly sales over a period of one year. Indicate the sales & months.
3. Write a program to simulate a Clock. (i) Analog (ii) Digital Give a relevant heading using gothic font.
4. An airplane is flying across the screen and a tank is moving on the ground and trying to hit the airplane with bombs. When a bomb strikes the airplane an explosion occurs. Represent this graphically.
5. Animate a square that takes the shapes of a circle, triangle, Rectangle and back to square. The axis of rotation is at the center of the square & normal to the screen

List of Equipments/Machine required:

(i) PC with Windows XP

(ii) Turbo C/C++ compiler

Recommended Books:

(i) Graphics and programming in C Rogers T , Stevens BPB

(ii) Graphics under C by Yashwant Karnetkar BPB

COURSE OUTCOME

1. Student will be able to draw different shapes like line,circle,ellipse arc, polygon (like triangle, rectangle, rhombus,pallelogram) etc.
2. Student will also be able to develop innovative programs like Analog clock, a flying kite , geometrical designs, a moving object.
3. An ability to apply all types of 2-D transformation in C programs and to develop interactive/ user-friendly application which can be used in real time situation like paint brush.
4. An ability to acquire practical knowledge and experience of modeling technologies and techniques with an understanding of the algorithm that form the basis of computer graphics.
5. Ability to build Programs specifically based on subjects.(for e.g. a user-manual/ guide to describe different cyclic compounds in chemistry, matrix multiplication,respresentation of pie /bar chart demonstration in Maths, captcha programs and few Illusion figures).
6. To develop a program in C using text compression technique.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: Master of Computer Applications **Semester: V**
Subject: Software Technology Lab-IV **Code:521532(21)**
Lab Periods/Week: 4 **Batch Size: 30**
Maximum marks: 75 **Minimum Marks: 45**
Course Objective:

1. Create Android applications by using application life cycle, manifest, Intents, and external resources
2. Create useful Android applications with compelling user interfaces by extending, and create custom layouts, Views and using Menus.
3. Create feature rich Android applications by using advantage of Android's APIs for data storage, retrieval, user preferences, files, databases.
4. Create location-based services and rich map-based applications
5. Utilize the power of background services, threads, and notifications.
6. Use Android's communication APIs for telephony, network management, and internet resources.

Program 1: Create an application that will display Text in the middle of the screen in the red color with white background.
Program 2: Create a login page by using EditTextView, TextView and Button.
Program 3: Android program to count the number of button click by user andDisplay the count value in TextView.
Program 4: Android program to transfer the data from login page to welcome page.
Program 5: Create an application to call specific phone number provided by user in the Edit Text control.
Program 6: Create an application that will accept a number in EditText control,and display the same number of item in ListView control.
Program 7: Create an application that will display a list with Image Controlassociated with each list item.
Program 8: Create an application to add menu items to the list view.
a) Add New item menu
b) Delete and Update menu item
Program 9: Create an application that display custom dialog box onbutton click.
Program 10: Create an application that displays result of arithmetic calculations in the form of Toast Message.
Program 11.Create an application that will create database with table of User credential.
Program 12: Create an application that perform student registration, save the registration information in SQLite Database.
Program 13: Create an application that performs CRUD operations in SQLite database

Program 14: Create an application that display one Activity on the basis of specific time interval using Handler.

Program 15: Create an application that display downloading progress through Asyn Task and display the notification on download completion.
Program 16: Create an application that display longitude and latitudes by using Location Manager.
Program 17: Create an application with Google map integration.
Program 18: Create an application that capture image from mobile camera and store it in External Storage.

Program 19: Create an application that will check the status of Internet connectivity features and calculate data transfer rate of phone.
Program 20: Create an application that will play a media file from the memory card.

Text Book:

1. Retro Meier Professional Android™ Application Development, Wrox Publication
2. Ed Burnette, Hello, Android, The Pragmatic Bookshelf
3. Beginning Android 4 Application Development BY WEI-MENG LEE

Reference Books:

1. Lauren Darcey and Shane Conder,Sams Teach Yourself Android™ Application Development in 24 Hours, Sams Press.
2. Mark L. Murphy, Android Programming Tutorials, CommonsWare.

Course Outcome:

1. Learner will be able to understand the basics about mobile computing, including the devices, applications, markets.
2. Learner will be able to develop mobile user interface through the Android platform using the GUI tools.
3. Learner will be able to comprehend the various components for interactive mobile computing, user interface, graphics, multi-media, network and database in Android.
4. Learner will be able to develop location aware and map enabled android application.
5. Learner will be able to develop faster, optimized application using AsynTask and use notification center for notifying user.
6. Learner will be able to develop Android application which utilizes internet, telephony and other network resources.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: Master of Computer Applications **Semester: V**
Subject: Project-II **Code: 521533(21)**
Lab Periods/Week: 5 **Batch Size: 30**
Maximum marks: 75 **Minimum Marks: 45**

Course objectives:

A mini-project should be done by the students based on concepts of JAVA. It may be primarily based on database concepts, object oriented concepts, etc.

Objectives of the mini project:.
Working on Mini project is to get used to the larger project, which will be handled in the 6th semester. The project work constitutes an important component of the MCA programme of CSVTU and it is to be carried out with due care and should be executed with seriousness by the students.
Guidelines:

1. A student must find a suitable title within 2 weeks of the start of session.
2. A Synopsis and presentation regarding the work to be done must be conducted after the first month
3. Data Dictionary and ER diagram to be completed in the subsequent 2 weeks followed by DFD and Form design.

Practical manual format :
The evaluation of the mini-project will be based on the project reports submitted by the student a presentation and a demonstration. The format of the project Report :

1 Abstract
2 List of Tables
3 List of Figures
4 List of Abbreviations/Symbols
5 Project Development Process Model Used (Methodology)
Project's Process Documentation
5.1 Object Oriented Analysis and Design (OOA & OOD)
5.1.1 Initial Description of Problem
5.1.2 Object Model
5.1.2.1. Object Classes
5.1.2.2 Data dictionary containing description of class attributes (data members, and methods)
5.1.2.3 Association between classes
5.1.2.4 Simplifying objects classes using Inheritance
5.1.2.5 Group classes into module
5.1.2.6 Object Diagram
5.1.3 Functional Model
5.1.3.1 Identification of Input/output values
5.1.3.2 DFD as needed to show functional dependencies
5.1.3.3 Identification of constraints
5.2. CASE Tools used to design
5.3 Coding Language and Operating System (OS) used (Including explanation)
5.4 Detail Databases Design and Connectivity Procedure E-R Diagram Table Relationship Diagram etc
5.5 Testing and Quality Measurement Criterion (T&Q)
5.6 Software Costing by using COCOMO Model

5.7 Maintenance Criteria
5.8 Developed Project Interfaces and Reports (i.e., I/O Interface)
5.9 Features of Project
5.10 Future Enhancement scope of the project

6. Summary and Conclusions
7 Reference/Bibliography
8. Short questions for each experiment :

- What is the aim of the project?
- Why the particular software is used?
- What are the limitations and scope of improvement of your project?
- Explain the source of data collection and its reliability?
- What was the importance of analysis and design in your project?

List of equipment / machines / instruments / tools / software, if any :

- The student must develop the project using JAVA.
- Backend can be ORACLE/ ACCESS/

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of the program: MCA V
Code: 521534(76)
Total Theory periods: 40
Class tests:
Maximum marks: 75

Subject: Managerial Skill
Duration of period:
Total Tutorial Period:
Assignments:
Minimum Marks:

Course Objectives :

The objective of the course is

1. To understand the fundamental principles of communication.
2. To demonstrate 7 C's of effective communication.
3. To organize and express ides in oral and return communication in contemporary business environment.
4. To communicate effectively and persuasively within teams.
5. To understand the fundamentals of corporate communication and apply discretion ethically.

UNIT-I **Managerial Communication Skill –** Writing business letters, memorandum, minutes, notices, reports writing – informal and formal.

UNIT-II Oral Communication Skills – Presentation skills, preparing presentation meeting, group discussion, interview, telephonic conversation.

UNIT-III Body language, audience feedback analysis, Table manners

UNIT-IV Listing skills, negotiation skills

UNIT-V Legal aspects in communication, ethics in communication

Reference Books

- Ober scot 2004. Contemporary Business Communication, Fifth Edition, New Delhi: Biztantra
- Bell A.H. and Dayle M. smith.1999. Management Communication, Singapore: John Wiley & Sons (Asia) Pvt. Ltd.
- How to develop a pleasing personality by Atul john Rego, better yourself books Mumbai 2006.
- The powerful personality by Dr. Ujjawal Patni & Dr. Pratap Deshmukh, Fusion Books, 2006.

Suggested Readings

- Taylor, Shirley, Communication for business: A Practical Approach, Addison Wesley Longman Ltd, 1991.

Course Outcomes :

At the end of the course students

1. Should be able to demonstrate the basic concepts of communication.
2. Should be able to correspond effectively verbally as well as in written form.
3. Should be able to write and reply to business enquiries and requests
4. Should be able to write a resume and application letter and prepare for job interviews.
5. Should be able to prepare content of presentations, use visual aids.
6. Should be able to deliver presentations.
7. Should be able to curtail stage fear and handle audience.
8. Should be able to apply persuasive techniques to group discussions, meeting and conferences.
9. Should have an understanding of corporate business communication.
10. Should be able prepare proposals that meet professional standards of format, presentation and style and have an understanding of table manners.
11. Should understand the importance of business communication ethics and advertising ethics.