SAKTHI COLLEGE OF ARTS AND SCIENCE FOR WOMEN, ODDANCHATRAM

(Recognized Under Section 2(f) and 12(B) of UGC Act 1956)

(Affiliated to Mother Teresa Women's University, Kodaikanal)

PG AND RESEARCH DEPARTMENT OF COMPUETR SCIENCE

CURRICULUM FRAMEWORK AND SYLLABUS FOR

OUTCOME BASED EDUCATION IN

SYLLABUS FOR

M.Sc., COMPUTER SCIENCE

FRAMED BY

MOTHER TERESA WOMEN'S UNIVERSITY, KODAIKANAL

UNDER

CHOICE BASED CREDIT SYSTEM

2015 – 2018

ALLOCATION OF PAPERS AND CREDITS FOR PG PROGRAMME

I SEMESTER

S.NO.	PART	SUBJECT NAME	CREDITS	HOURS
01.	MSCCS01	Mathematical Foundation of Computer Science	5	6
02.	MCSCS02	Advanced Programming in Java	5	6
03.	MSCCS03	Computer Networks / DS Lab Using C	5	6
04.	MSCCS04	Advanced Java Lab	5	6
05.	MSCCS05	Web Technology (Elective)	5	6
Total			**25**	**30**

II SEMESTER

S.NO.	PART	SUBJECT NAME	CREDITS	HOURS
01.	MSCCS06	Operating Systems	5	6
02.	MSCCS07	Dot Net Programming	5	6
03.	MSCCS08	Cryptography and Network Security	5	6
04.	MSCCS09	Dot Net Lab	5	6
05.	MSCCS10	Mobile Computing (Elective)	5	6
Total			**25**	**30**

III SEMESTER

S.NO.	PART	SUBJECT NAME	CREDITS	HOURS
01.	MSCCS11	Data Mining and Warehousing	5	6
02.	MSCCS12	Digital Image Processing	5	6
03.	MSCCS13	Neural Networks	5	6
04.	MSCCS14	MAT Lab	5	6
05.	MSCCS15	Compiler Design (Elective)	5	6
Total			**25**	**30**

IV SEMESTER

S.NO.	PART	SUBJECT NAME	CREDITS	HOURS
01.	MSCCS16	Grid and Cloud Computing	5	6
02.	MSCCS17	Software Project Management	5	6
03.	MSCCS18	Project	5	18
Total			**15**	**30**

SCHEME OF EXAMINATION

Internal - 40

Test - 25

Seminar/Activity - 10

Assignment - 5

Total - 40

External - 60

QUESTION PATTERN

Theory – Internal

Part -A	-	10 X 1 MARKS = 10
Part - B	-	2 X 3 MARKS = 6
Part - C	-	1 X 9 MARKS = 9

Total	-	25

Theory (External)

Part -A	-	10 X 1 MARKS = 10
Part - B	-	6 X 3 MARKS = 18
Part - C	-	4 X 8 MARKS = 32

Total	-	60

Practical (Internal – 40)

Process	-	10
Result Verification	-	10
Viva	-	5

Total	-	25
Record	-	15

Total	-	40

Practical (External– 60)

Process	-	25
Result Verification	-	25
Viva	-	10

Total	-	60

I SEMESTER

MCSCB1 - Mathematical Foundations of Computer Science

Unit I:

Sets: Basic Concepts. Relations: Binary relations-Equivalence relations and partition. Functions: Different types of functions-Composition and Inverse, Recursive and hashing functions.

Unit II:

Partial Ordering Relations: Partially Ordered set: Representation of Poset-Hasse Diagram-LUB-GLB-well ordered set-meet and join of elements. Lattices as partially ordered sets: Definition and Basic Properties.

Unit III:

Mathematical Logic: Logical operators-Conjunction-Disjunction-Negation-Conditional and Biconditional-Truth tables-Equivalence formula-tautology-Methods of proof-Direct-Indirect-Contradiction-Equivalence and induction.

Unit IV:

Graph Theory: Basic terminology: Different types of graphs-Directed and undirected-Simple-Pseudo-Complete-Regular-Bipartite-Incidence and degree-Pendant and Isolated vertex and Null graph-Isomorphism-Sub graphs-Walk-Path and Circuit-Connected and disconnected graphs and components-operations on graphs-Euler Graphs-Hamiltonian circuits and paths.

Unit V:

Trees: Basic properties-Rooted and binary trees- Binary Search Trees-Tree traversals-Pre order-In order- Post order-Spanning trees-Prims and Kruskals algorithm.

TEXT BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science by

J.P.Tremblay and R.Manohar.Tata McGraw-Hill Publications, 1997.

2.Graph Theory by NArsingh Deo, Prentice-Hall of India Publications, 2004.

REFERENCE BOOKS:

1. Theory of Computer Science (Automata Languages and Computation), Second Edition, Mishra K.L.P., N.Chandrasekharan, Prentice Hall of India Publications.

2. Discrete Mathematical Structures, Theory and Applications, D.S.Malik, Thomson Learning, First Edition.

3. Discrete Mathematics for Computer science, Haggard Thomson Learning, First Edition.

4. Discrete Mathematics and Its Applications by Kenneth H Rosen. Tata McGraw Hill Publications

5. Mathematical Foundation of Computer science by Y.N Sings. New Age International Publishers.

6. Bernard Kolman, Robert. C. Busby & Sharon Ross, " Discrete Mathematical Structures"
Prentice Hall of India, 2001

MCSCB2 - ADVANCED PROGRAMMING IN JAVA

UNIT I

Swing and GUI Components : The Origin of Swing – Creating Windows in Swing – JButton – JLabel – JToggleButton – JCheckBox – JRadioButton – JList – JScrollPane – JScrollBar – JTextField – JPasswordField.

UNIT II

JTextArea – JComboBox – JMenuItem, JMenu and JMenuBar – JDialog –JOptionPane – JFileChooser- JProgressBar – Layout Managers.

UNIT III

JDBC: JDBC AND ODBC – Using a JDBC – Driver Manager – Connection Interface – Statement Interface – Prepared Statement Interface – Callable Statement Interface –Result Set Interface.

UNIT IV

Servlets : Servlets – The HTML – Interface Servlet – HttpServlet Class – Servlet Programs – Servlet with I/O File – Servlet with JDBC – Session Handling.

UNIT V

JavaServerPages(JSP): JSP Syntax and Semantics – Directives – Comments – Expressions – Scriptlets – Declaratives – Standard Actions.

TEXT BOOKS:

1. Advanced Programminng in JAVA2, K.Somasundaram, Jaico Publishing House, Mumbai, 2008, Chapter 19, 21, 22.
2. JSP 2.0, Phil Hanna, TMH, New Delhi,2003, Chapter - 5.

REFERENCE BOOKS:

1. Java2 :The Complete Reference – Fifth Edition, Herbert Schildt, TMH Publishing Company, New Delhi, 2007.
2. Java2 Programming, Black Book, Steven Holzener et al, Paraglyph Press / Dream Tech Press, New Delhi, 2005.
3. Tech Yourself J2EE in 21 Days, Martin Bond et al, Pearson Education, 2nd Ed, 2005

MCSCB3 – COMPUTER NETWORKS

UNIT I

Introduction: User - Hardware – Software – Reference Models – Example Network – Example Data Communication service – Network Standardization.

UNIT II

Physical Layer: Transmission Media – Wireless Transmission – The Telephone system – Cellular radio – Communication satellites.

UNIT III

Data Link Layer & Medium Access Layer – D.L.L.Design Issues – Elementary Data link protocols – Multiple Access Protocols – Ethernet, Token bus, Token ring standards.

UNIT IV

Networks Layer & Transport Layer: N.W.L. Design Issues – Routing - Algorithms – T.P.L. Design Issues – Elements of T.P.L.Protocol.

UNIT V

Application Layer: Network Security – E-Mail – Use Net news – W.W.W – Multimedia.

Text Book

1. Computer Networks by Andrew S.Tenenbaum, PHI, Third edition, 1996.

Reference Book

1. Computer Networks - Fourouzan

MCSCB4 – ADVANCED JAVA LAB

1. Implementation of Multi Threading and Exception Handling Concepts
2. Implementation of I/O Stream
3. Program in AWT, Swing and Events Handling.
4. Network Programming.
5. Program using JDBC
6. Implementation Servlets / JSP

II SEMESTER

MCSCB5 – OPERATING SYSTEMS

Unit I:

Introduction : What is an operating system – Mainframe System – Desktop System – Multiprocessor systems – Distributed Systems – Clustered Systems – Real Time Systems-Hand held Systems-Features Migration – Computing Environments – Computer System Structures – Computer – System Operation – I/O Structure – Storage Structure – Storage Hierarchy – Hardware Protection – Network Structure .

Unit II

Processes: Process Concept- Process Scheduling-Operations on Processes-Co-operating Process- Inter process Communication – Communication in Client Server System . Threads: Overview – Multithreading Models – threading issues-Java threads. CPU Scheduling: Basic concepts-Scheduling criteria-Scheduling Algorithms – Process Synchronization: Background – The Critical-Section Problem – Synchronization hardware – Semaphores- Classic Problems of Synchronization-Critical Regions-Monitors.

Unit III

Deadlock: System Model – Dead lock Characterization-Methods of Handling Deadlocks-Deadlock Prevention – Deadlock avoidance – Deadlock detection –Recovery from Deadlock .Memory Management: Background –swapping Contiguous Memory allocation-Paging –Segmentation –Segmentation with paging. Virtual Memory: Background-Demand Paging –Process Creation – Page Replacement – Allocation of Frames-Thrashing -.

Unit IV

I/O Systems : Over view –I/O Hardware –Application I/o Interface –Kernel I/o Subsystem – Transforming I/O Hardware operations- streams .Mass Storage Structure : Disk Structure – Disk Scheduling –Disk Management – Swap Space –Swap Space Management – RAID Structure – Disk attachment – Stable Storage Implementation – Tertiary Storage Structure

Unit V

Case Studies : The Linux System and Windows XP

Text Book

Operating System Concepts – Silberschatz,Galvin, Gagne Sixth Edition WILEY –INDIA 2003

Reference Book

Operating System, H.M.Deital, Addision Wesley Publications

MCSCB6 – Visual Programming

Unit I:

Introduction to .NET - Overview of .NET applications - .NET Framework – CTS – CLS – CLR - Managed Execution - Runtime Environment - Understanding assemblers - .NET security.

Unit II:

VB.NET: Introduction- The Foundation-Visual Basic.NET Mini Style Guide-Classes, Types and Objects: Point Types-Characters-Booleans-Literal Notation-Type Conversion-Methods: What is a Method: Types of Methods-Synchronous vs. Asynchronous Method Calls. Method Data - Method Access Characteristics - Properties.

Unit III:

Types, Structures and Enumerations-Classes: Getting the Semantics Correct-The Classes are the System-Class Characteristics - Inheritance-The Inherited Members of Object - Aggregation and Composition: Reuse by Containment - Ending Inheritance with sealed Classes-Improved Performance with Shared Classes and Modules.

Unit IV:

Interfaces-Abstraction and Interfaces in Object-Oriented Software Design-Interfaces and Inheritance-Benefits-Implicit Interfaces-Explicit Interfaces-Introduction to Design and Implementation-Designing and Defining Interfaces-Implementing Interfaces-Exceptions: Exceptions-Handling Models-Recovering from Exception-Exception Statements.

Unit V:

Collections, Arrays and Other Data Structures: NET's Array and Collections NameSpace-Stacks-Queues-Arrays-Array Class-Declaring and Initializing Arrays-Multidimensional Arrays-Jagged Arrays-Programming Against Arrays-Array Exception-Passing and Receiving Arrays to or from Methods.

TEXT BOOK:

1. Jeffrey R.Shapiro, "The Complete Reference Visual Basic .NET", TMH, 2002.

REFERENCE BOOKS :

1. Steven Holzner, "Visual Basic .Net Programming ", Dream Tech Press, 2011.

MCSCB7 - Cryptography and Network Security

UNIT- I

Introduction-Security Goal-Cryptography Attacks-Services and Mechanism – Techniques -**Traditional Symmetric-Key Ciphers:** Introduction-Substitution Ciphers-Transposition Cipher-Stream and Block Ciphers-Modern Symmetric-Key Ciphers-Modern Block Ciphers -Modern Stream Ciphers.

UNIT- II

Data Encryption Standard: Introduction - DES Structure - DES Analysis -Security of DES - Multiple DES-Advanced Encryption Standard - Introduction -Transformations - Key Expansion-The AES Ciphers - Use of Modern Block Ciphers - Use of Stream Ciphers.

UNIT- III

Asymmetric-Key Cryptography: Introduction - RSA Cryptosystem - **Message Integrity and Message Authentication:** Message Integrity - Random Oracle Model-Message Authentication-Digital Signature.

UNIT- IV

Network Security - E-Mail - PGP - S/MIME - SSL Architecture - Four Protocols - SSL Message Format-Transport Layer Security.

UNIT- V

Security at the Network Layer - Two Modes - Two Security Protocols - Security Policy - Internet Key Exchange - System Security - Worms - Viruses -IDS-Firewalls.

TEXT BOOK

1. Cryptography and Network Security by Behrouz A.Forouzan , Debdeep Mukhopadhyay, Mc Graw Hill Publications,2nd ed.

REFERENCE BOOK

1. Cryptography and Network Security by William Stallings, Pearson Publications, 5th edition.

MCSCB8 – Visual Programming Lab

1. Create minimum two simple applications using controls. Eg: Calculator, Drawing Pictures using GDI, Animation and Trainer Kit.
2. Write a program to simulate MS – OFFICE word and Excel packages with minimum five features.
3. Develop minimum two database applications using ADO.Net.

   Example:

   (i) Online Banking
   (ii) Online Shopping
   (iii) Online Recruitment System.
   (iv) Online Railway Reservation System.

The application should be developed with the option of navigation in between forms. For eg. The online Banking should be developed with the web pages to look into the account details, deposit and withdraw.

III SEMESTER

MCSCB9 - Data Mining

UNIT- I

Introduction - What is Data Mining - Data Mining definition - KDD vs. Data Mining - DBMS vs. Data Mining - DM Techniques - DM Application - **Data Warehousing**: Introduction - What is a Data Warehouse - Definition - Multidimensional data model - Data Warehousing Architecture - Data Warehouse Back end Process .

UNIT- II

Association Rules: Introduction - What is an association rule - Methods to discover association rule - A Priori Algorithm - Partition Algorithm - Pincer- Search Algorithm -Dynamic Item set Counting Algorithm - Rapid Association Rule Mining - Incremental Algorithm - Generalized Association Rule.

UNIT-III

Clustering Techniques: Introduction - Clustering Paradigms - Partitioning Algorithms-K-Medoid Algorithm – CLARANS - Hierarchical Clustering - DB SCAN - Categorical Clustering Algorithm - ROCK.

UNIT-IV

Decision Tree: Introduction - Decision Tree Construction Principle - Best Split - Splitting Indices - ID3 - C4.5 - **Rough set theory:** Introduction – Definition - Example - Reduct - Types of Reduct - Rule Extraction.

UNIT – V

Web Mining: Introduction - Web Mining - Web Content Mining - Web Structure Mining - Web Usage Mining - Text Mining - **Temporal and Spatial Data Mining:** Introduction - Temporal Association Rule - GSP Algorithm - Spatial Mining Task - Spatial Clustering.

TEXT BOOK

1. Arun K.Pujari, “Data Mining Techniques”, Universities Press (India) Limited,2001.

REFERENCE BOOKS

1. Pang-Ning Tan, Michael Steinbach,Vipin Kumar, Introduction to Data Mining, Pearson, 2008

2. JiaweiHan, MichelineKamber, JianPei, “Data Mining Concepts and Techniques”, Morgan Kaufmann Publishers an Imprint of Elsevier, 2012.

MCSCB10 - Digital Image Processing

Unit I: Digital Image Fundamentals And Transforms

Introduction: What is Digital Image Processing-Elements of visual perception-Image sampling and quantization-Basic relationship between pixels-Introduction to Fourier Transform and DFT-Properties of 2D Fourier Transform-FFT.

Unit II: Intensity Transformation and Spatial Filtering

Spatial Domain Methods: Basic Grey Level Transformation-Histogram Equalization-Image Subtraction-Image averaging-Spatial filtering:Smoothing,Sharpening filters-Laplacian filters-Frequency Domain Filters: Smoothing-Sharpening filters-Homomorphic filtering.

Unit III: Image Restoration

Model of Image Degradation/restoration process-Noise models-Restoration in the presence of Noise only-Spatial filtering-Periodic Noise Reduction by frequency domain filtering- Inverse filtering- Constrained least mean square filtering.

Unit IV: Image Compression

Fundamentals: Coding Redundancy-Spatial and Temporal Redundancy-Irrelevant Information-Measuring Image Information-Some basic Compression Methods: LZW coding-Bit plane coding-Block Transform coding-Predictive coding-wavelet coding.

Unit V: Image Segmentation and Representation

Edge detection – Thresholding - Region based segmentation-Boundary representation: Chain codes-Polygonal approximation-Boundary segments-Boundary descriptors: Simple descriptors-Fourier descriptors-Regional descriptors-Simple descriptors-Texture.

TEXT BOOK:

Rafael C Gonzalez, Richard E Woods 3rd Edition, Digital Image Processing-Pearson Education 2011.

Reference Books:

1. William K Pratt, Digital Image Processing Jhon Willey (2001).

2. Image Processing Analysis and Machine Vision- Millman Sonka, Vaclav hlavac,Roger

Boyle ,Broos/colic, Thompson Learniy(1999)

3. A.K.Jain,PHI,NewDelhi(1995)-Fundamentals of Digital Image Processing.

MCSCB11 - Neural Networks

UNIT- I

Basic Concepts of Neural Networks - Model often Artificial Neuron - Neural Networks Architectures - Characteristics of Neural Networks - Learning Method - Taxonomy of Neural Networks - Early Neural Network Architecture - Application domain - **Back Propagation Network:** Introduction - Architecture - Back Propagation Learning.

UNIT- II

Back Propagation Application - Selection of various parameters in BPN - **Variations of standard Back Propagation Algorithm:** Decremental Iteration Procedure - Adaptive Back Propagation - Genetic algorithm Based Back Propagation - Quick Prop Training - Augmented BP Networks - Sequential Learning Approach for single Hidden Layer Neural Networks.

UNIT-III

Associative Memory : Autocorrelators - HetroCorrelators - Associative Memory for Real coded Pattern Pairs - Application - Adaptive Resonance Theory - Introduction - ART1 - ART 2 - Application.

UNIT-IV

Fuzzy set theory: Fuzzy versus crisp - Crisp sets - Fuzzy Sets - Crisp Relations - Fuzzy Relations.

UNIT – V

Fuzzy Systems: Crisp Logic - Predicate Logic - Fuzzy logic - Fuzzy Rule based System - Defuzzification Methods - Applications.

TEXT BOOK

1. S.Rajasekaran, G.A.Vijayalakshmi Pai “Neural Networks Fuzzy Logic, and Genetic Algorithms Synthesis and Applications”, PHI Learning Private Limited, New Delhi,2010.

REFERENCE BOOK

1. James A. Freeman, David M. Skapura, "Neural Networks, Algorithm, Applications, and Programming Techniques, Pearson Education, 2008

MCSCB12 – DIGITAL IMAGE PROCESSING LAB

Implementing data mining algorithm using Mat lab.

1. Feature Selection
2. Clustering
3. Classification
4. Association rule mining

Implementing Image processing algorithm using Mat lab

1. Image Filtering
2. Image Restoration
3. Image Compression
4. Image Resizing

IV SEMESTER

MCSCB13 – Grid and Cloud Computing

UNIT I: Concepts and Architetcture: Introduction - Parallel and Distributed Computing - Cluster computing Grid computing - Anatomy and physiology of Grid - Review of web services – OGSA – WSRF

UNIT II : GRID Monitoring : Grid Monitoring Architecture (GMA) - An overview of Grid Monitoring systems - Grid ICE – JAMM – MDS - Network Weather Service - R – GMA – Other Monitoring systems Ganglia and Grid Mon

UNIT III : Grid security and Resource management : Grid Security - A Brief security primer – PRI - X509 Certificates - Grid security – Grid Scheduling and Resource management - Scheduling paradigms - Working principles of scheduling - A review of condor ,SGE, PBS and LSF - Grid scheduling with QoS

UNIT IV : **Examining the Value Proposition :** Defining Cloud Computing, Assessing the Value Proposition, Understanding Cloud Architecture, Understanding Services and Applications by Type

UNIT V : Using Platforms : Understanding Abstraction and Virtualization, Capacity Planning, Exploring Platform as a Service, Using Google Web Services, Using Amazon Web Services, Using Microsoft Cloud Services

TEXT BOOKS

1. The Grid : Core Technologies - Maozhen Li , Mark Baker - John Wiley & Sum 2005

2. Cloud Computing Bible - Barrie Sosinky - Wiley Publishing Inc , 2011

REFERENCE BOOKS

5. Grid Computing - Joshy Joseph & Craig Fellenstein - _Pearson Education, 2004

6. The Little Book of Cloud Computing - A New Street Executive Summary -

7. Lars Nielson - 2011 Edition

MCSCB14– Software Project Management

Unit I:

Introduction to Software project management- Project evaluation and programme management.

Unit II:

Overview of Project Planning- Selection of appropriate project approach-.

Unit III:

Software effort estimation - Activity Planning-Risk Management.

Unit IV:

Resource Allocation- Monitoring and control-Managing contracts

Unit V:

Managing people in software environments-working in teams-Software quality

Text Book:

Software Project Management - Bob Hughes, Mike Cotterell, Rajib Mall- Fifth Edition McGraw Hill - 2002.

Reference Books:

1. Applied Software Project Management – Andrew Stellman and Jeniffer Greene – O'Reilly Media Inc., - 2006.

2. Quality Software Project Management - Robert T. Futrell, Donald F. Shafer, Linda Shafer – Prentice Hall – 2002.
3. Software project management in practice - Pankaj Jalote – Pearson Education - 2004.
4. Software project management: A real-world guide to success – Joel Henry - Pearson/Addison Wesley – 2004.

ELECTIVE PAPERS

MCSCE1 - Web Technology

Unit I:

Introduction-What is the internet-History of internet-internet services and accessibility-uses of the internet-protocols-web concept-internet standards-internet protocols: Introduction-Internet protocols-Host name-Internet application-Application protocols-HTML: Introduction-SGML-Body section-HTML forms.

Unit II:

Java network programming: Introduction-UDP/IP-TCP/IP communications-I / Ostreams-Sockets-multicast sockets-remote method-innovation-protocol handler-content handler. java script: Introduction language elements-objects of java script-other objects.

Unit III:

Dynamic HTML: Introduction-Cascading Style Sheets-DHTML document-objects model and collection-event handling-filter and transitions-Data binding-Extensible Markup Language: Introduction-HTML vs XML-syntax of the XML document-XML attributes-DTD elements-Data attributes

Unit IV:

Common Gateway Interface(CGI): Introduction-server-browser interaction-CGI script structure-CGI PM module - Servlets: Introduction-advantages of servlets over CGI-Installing servlet - servlet life style - servlet API-A simple servlet - handling HTTP get request-handling HTTP post request-cookies-session tracking.

Unit V:

Java Server Pages (JSP): Introduction-Components of JSP-Reading Request Information-Retrieving the Data Posted from a HTML File to a JSP File-JSP Sessions-Active

Server Pages(ASP): Introduction-Processing of ASP Scripts with Forms-Variables and Constructs-Subroutines-ASP Objects.

TEXT BOOK:

1.” Web Technology” N.P.Gopalan, J.Akilandeswari, Prentice Hall of India, 2007

REFERENCE BOOK:

1.” Web Technologies” A.A Puntambekar”, Technical Publication, I Edition,2009 .

MCSCE2 – MOBILE COMPUTING

Unit I

Introduction: Mobility of Bits and Bytes-Wireless The beginning-Mobile computing-Dialog Control-Networks-Middleware and Gateways-Applications and Services-Developing Mobile Computing Applications –Security in Mobile Computing –Standards-why is it necessary-Standard Bodies-Players in the wireless space. **Mobile computing Architecture**: History of computers-History of Internet-Internet the Ubiquitous Network - Architecture for Mobile computing - Three-tier Architecture - Design considerations for mobile computing - mobile computing through Internet - Making existing applications mobile-enabled.

Unit II

Mobile Computing through Telephony: Evolution of Telephony - Multiple Access Procedures – mobile computing through telephone – developing an IVR Application - voice XML - Telephony Application Programming Interface. **Emerging Technologies:** Introduction -Bluetooth - radio Frequency Identification – wireless broadband - mobile IP - Internet Protocol version 6 - Java card.

Unit III

Global System for Mobile Communications: Global system for Mobile communications – GSM Architecture – GSM Entities – call routing in GSM – PLMN Interfaces – GSM address and Identifiers – Network aspects in GSM - GSM Frequency Allocation – Authentication and security. **General Packet Radio Service**: Introduction – GPRS and packet Data Network - GPRS Network operations – Data Services in GPRS – Applications for GPRS -Limitations of GPRS - Billing and charging in GPRS

Unit IV

Wireless Application Protocol: Introduction – WAP – MMS - GPRS applications. **CDMA AND 3G**: Introduction - Spread spectrum technology – IS95 – CDMA versus GSM – Wireless Data – Third Generation Networks – Applications on 3G

Unit V

Wireless LAN: Introduction – wireless LAN advantages – IEEE 802.11 standards – wireless LAN architecture – mobility in wireless LAN **–** deploying wireless LAN – Mobile adhoc Networks and sensor Networks – Wireless LAN Security – WiFi versus 3G **- Internet networks and Interworking**: Introduction – fundamentals of call processing – Intelligence in the networks – SS#7 signaling – IN Conceptual Model – softswitch – programmable networks – technologies and Interfaces for IN.

Books Prescribed:

1. Mobile Computing, Technology applications and Service creation, Asoke K Talukder, Roopa R Yavagal, Tata McGraw - Hill Publishing company New Delhi 2007.

Reference Books:

1. Mobile Communication – Jochen Schiller 2nd edition Pearson 2003.

MCSCE3 - Compiler Design

UNIT- I

Introduction to Compiling: Compilers - Analysis of Source Program - The Phases of a Compiler - Compiler Construction tool - **A Simple One-pass Compiler:** Overview Syntax Definition- Syntax Directed Translation –Parsing-Lexical Analysis.

UNIT- II

Lexical Analysis: The Role of the Lexical Analyzer - Input Buffering - Specification of Token - Recognition of Token - Finite Automata. **Syntax Analysis:** The Role of the Parser - Context - free grammars - Top down Parsing – Bottom-up Parsing.

UNIT-III

Syntax-Directed Translation: Syntax-Directed definitions-Construction of Syntax trees- L-attributed definitions-Top down translation-Bottom-up evaluation of inherited attributes. **Type Checking**: Type system-Specification of a simple type checker-Type conversion.

UNIT-IV

Intermediate code generation: Intermediate Language - Declaration - Assignment Statement - Boolean Expression - Case Statement-Back Batching - Procedure calls - **Code generation:** Issues in the design of a code generation - Run time storage management - Basic Blocks and flow graphs - A simple code generator - Register allocation and assignment

UNIT – V

Code optimization: Introduction - The Principle sources of optimization - Optimization of basic blocks - Loops in flow graphs - Introduction to global data - flow

analysis - Iterative solution of data flow equations - code improving transformation - Data - flow analysis of structured flow graphs - Efficient data - flow algorithms.

TEXT BOOK

1. Compilers Principles, Techniques and Tools by Alfred V. Aho Ravi Sethi Jeffrey D.Ullman, Published by Pearson Education.

MCSCE4 - DISTRIBUTED SYSTEMS

Unit I: Characterization of Distributed Systems:

Introduction, Examples, Key Characteristics, And Historical Background. Design Goal: Introduction, Basic Design Issues, and User Requirements.

Unit II: Inter process Communication:

Introduction, Building Blocks, Client Server Communication, and Group Communication.

Remote Procedure Calling: Introduction, Design Issues, Implementation, And Asynchronous RPC.

Unit III: Distributed Operating Systems:

Introduction, the Kernel, Process and threads, Naming and Protection, Communication and Invocation, Virtual Memory.

File service: A model: Introduction, File service Components, Design issues, Interfaces, Implementation, Techniques- CASE studies- Introduction, math, chorus, Unix, Emulation in mach and chorus.

Unit IV: Name Services:

Introduction, The SNS a name Service model, Discussion of SNS and further design issues,

Time and Co-ordination: Introduction, Synchronizing physical clock-logical time and logical clock- distributed co-ordination.

Unit V: Shared data and Transaction:

Conversations between client and server Fault tolerance and recovery, Transactions and nested transactions. Distributed shared Memory: Design and implementation issues, Sequential consistency and Lvy, Release consistency and munin, Other Consistency models.

Text Book:

Distributed Systems: “Concepts and Design” George F. Coulouris, Jean Dollimore, Tim Kindberg, Fourth Edition Addison Wesley – 2005.

Reference Books:

- Distributed Component Architecture – G. Sudha Sadasivam – Wiley – Indian Edition – 2008
- Distributed Systems and Networks – William Buchanan – Tata McGraw Hill Publishing Company Ltd – New Delhi – 2000.
- Distributed Systems Design – Jie Wu – CRC Press – London – 1999.

MCSCE5 -MANAGEMENT INFORMATION SYSTEM

Unit I: Foundation of Information system in Business- IS framework-Major role of IS-e-Commerce -e-Type of IS-IS Models-IS Resources- IS Activities.Competing with Information Technology- Competive strategies concepts –Business use of IT-Customer focused Business-Value Chain –Re-engineering order management-Strategies available for virtual company-Benefit for creating virtual company- Knowledge creating in Virtual Company

Unit II: Computer Hardware- Input Technologies-Micro computer system –Network computers- PDA-Mainframe computer system-Processing speed- GUI- Pen based Computing- Speech recognition system-optical scanning method-OCR-– Output Technologies- Data Storage elements- Storage device- RAID Storage- types of magnetic disks- optical disks

Computer software-types of S/W – COTS Software-e-mail-groupware software- ASP-Software Licensing-Outline of Operating system – Multitasking-Resource management-Assembler language- High-level language- Object oriented language- XML

Unit III: Telecommunication and Networks- Internet revolution- application of Internet in IS-Web Publishing- Extranets- Types of Networks-Optical cables- Multiplexers- VPN –PTP-Wireless LAN- Wireless Web-Protocols- Network Management-Enterprise application architecture- Enterprise Collaboration system.

Electronic Business system- Cross-functional enterprise application-Architecture-Transaction Processing System-outline for TP-Cycle-enterprise collaboration system-Tools for Enterprise collaboration- Marketing information system-trends in target marketing-computer integrated manufacturing- HRM-Financial management system- EDI.

Enterprise Business System - CRM- Trends in CRM- SCM-Trend in SCM- ERP.

Electronic Commerce system- Scope of e-commerce-Categories for e-commerce-Security in e-commerce-Access control- Content and Catalogue management-Work flow management in e-commerce-e-commerce success factors-Collaboration and trading in e-commerce.

Decision Support system- Introduction - Decision components - Reporting alternative for DSS

Structure-Components Management- OLAP- GIS –DVS-EIS- Expert system- Benefits-Neural Networks- Fuzzy Logic System-Fuzzy Logic System in business-Genetic algorithm.

Unit IV: Developing business/IT strategies – Organizational Planning – SWOT analysis-Components for business- Change management.

Developing Business/ IT Solutions- Developing business /IT solution- SDLC-Prototyping process- System Analysis- Functional requirement Analysis- UID.

Network management-Protocol-Electronic Business System- Cross –functional enterprise applications- Electronic commerce system- E-commerce-

Unit V: Security and Ethical challenges - Principles- Business ethics- Computer Crime-Software piracy-Privacy issues- Encryption- Auditing IT security-

Enterprise and Global Management of IT- Components- Failure Components- Global Data Access issues-Managing Global IT

Text Book:

Management Information System (conceptual foundations, Structure and Development) - Gorden B. Davis, Margrethe H.Olson-Second Edition Tata McGraw Hill Pvt., Ltd.–2000.

Reference Books:

- Management Information System – Dharminder Kumar, Sangeetha Gupta, I Edition - Excel Books – Anurag Jain For Excel Book – 2006.
- Management Information System – Woman & Jawadekar - III Edition Tata McGraw Hill Publishing Company – 2007.
- Management Information System – James A O'Brien, George M Marakas Seventh Edition, Tata McGraw Hill Pvt., Ltd. - 2007.
- Management Information System – James A O' Brien, I Edition Galgotia Publications P Ltd., - 1991.