KONGUNADU ARTS & SCIENCE COLLEGE [AUTONOMOUS]

COIMBATORE-29

MASTER OF SCIENCE IN COMPUTER SCIENCE

CURRICULUM & SCHEME OF EXAMINATION UNDER CBCS

[APPLICABLE TO STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2014-2015 AND ONWARDS]

Semester	Subject code	Title of the Paper	Instruction Hours / Cycle	Exam. Marks			Duration of Exam.(hours)	Credits
				CIA	ESE	Total		
I	13PCS101	C.P.1 Parallel Processing	4	25	75	100	3	4
	13PCS102	C.P.2 Data Structures using C++	4	25	75	100	3	4
	13PCS103	C.P.3 Data Communications and Networks	4	25	75	100	3	4
	14PCS104	C.P.4 Information Security	4	25	75	100	3	4
	13PCS105	C.P.5 Relational Database Management Systems	4	25	75	100	3	4
	13PCS1CL	C.Pr.1 Data Structures using C++ Lab	5	40	60	100	3	4
	13PCS1CM	C.Pr.2 RDBMS Lab	5	40	60	100	3	4
II	13PCS206	C.P.6 Advanced Java Programming	4	25	75	100	3	4
	13PCS 207	C.P.7 Wireless Networks	4	25	75	100	3	4
	12PCS 208	C.P.8 .NET Framework	4	25	75	100	3	4
	14PCS 209	C.P.9 Software Project Management	4	25	75	100	3	4
	14PCS2E1	Elective Paper – I	4	25	75	100	3	4
	13PCS2CN	C.Pr.3 Advanced Java Lab	5	40	60	100	3	4
	13PCS2CO	C.Pr.4 .NET Lab	5	40	60	100	3	4
III	13PCS 310	C.P.10 Open Source Systems	4	25	75	100	3	4
	13PCS 311	C.P.11 Data Mining and Warehousing	4	25	75	100	3	4
	13PCS 312	C.P.12 Software Testing	4	25	75	100	3	4
	13PCS 3Z1	Mini Project	4	20	80*	100	3	4
	14PCS 3E2	Elective Paper - II	4	25	75	100	3	4
	13PCS3CP	C.Pr.5 Open Source Lab	5	40	60	100	3	4
	13PCS3CQ	C.Pr.6 Software Testing Lab	5	40	60	100	3	4

IV	13PCS4Z2	Project and Viva-Voce	30	40	160**	200	3	6
TOTAL						**2300**		**90**

*Project Record – 60 and Viva-Voce – 20

**Project Record – 120 and Viva-Voce – 40

TALLY TABLE

Subject Groups	Total Marks	Total Credits
Core Theory/Practicals	1800	72
Electives	200	8
Mini Project	100	4
Project	200	6
	2300	**90**

List of Electives:

1. Computational Intelligence
2. Digital Image Processing
3. Extreme Programming
4. Network Security And Cryptography
5. Natural Language Processing
6. Grid and Cloud Computing
7. Agent Based Computing
8. Enterprise Web Services
9. Distributed Systems

ADVANCED LEARNERS COURSE [ALC]-SELF STUDY SCHEME [OPTIONAL]

Subject Code	Title of the Paper	Instruction Hours/Cycle	Exam Marks			Duration of the Exam.(Hours)	Credits
			CIA	ESE	TOTAL		
14PCS0D1	ALC.1 Programming in C#	-	-	100	100	3	4
12PCS0D2	ALC.2 J2EE	-	-	100	100	3	4

PCS1

SEMESTER I **13PSC101**

C.P.1. PARALLEL PROCESSING

Objective :

On successful completion of the course the students should have:

Learnt the concepts of Parallelism, Processor, Memory and Data flow Architectures

UNIT I **[12 Hrs]**

The state of computing - Multiprocessors and Multicomputers- Multivector and SIMD computers-PRAM and VLSI models-Conditions of parallelism-Program partitioning and scheduling-Program flow mechanism.

UNIT II **[12 Hrs]**

Processor and memory hierarchy: Advanced processor technology-Super scalar and vector processors-Memory hierarchy technology-Virtual memory technology

UNIT III **[12 Hrs]**

Bus, cache and shared memory: Bus systems and cache memory organization-Shared memory organization-Sequential and week consistency models

UNIT IV **[12 Hrs]**

Scalable, multithreaded and dataflow architecture: Latency - Hiding techniques-Principles of multithreading-fine-grain multi computers-Scalable and multithreaded architectures-Dataflow and hybrid architectures

UNIT V **[12 Hrs]**

Instruction and system level parallelism: Introduction-Basic design issues-Problem definition-Model of a typical processor – compiler - Detected instruction level parallelism - **Operand forwarding*** - Record buffer register renaming-branch prediction - Thread level parallelism-threads in parallel systems - brief overview of technology.

* Self study – Questions for examination may be taken from the self study portions also.

REFERENCE BOOKS:

1. Kai Hwang & Naresh Jotwani, "Advanced Computer Architecture" , Tata McGraw Hill Publication, 2nd Edition, 2000

2. M. Morris Mano, "Computer System Architecture" ,3rd Edition, Pearson Publication, 2007

3. John P.Hayes, "Computer Architecture & Organization", 3rd Edition, Tata McGraw Hill Publication, 1998

4. William Stallings, "Computer Organization & Architecture", 7th Edition, Pearson

   Publication, 2006

PCS3

SEMESTER I **13PSC102**

C.P.2. DATA STRUCTURES USING C++

Objective :

On successful completion of the course the students should have:

Learnt the concepts of OOPS, Stack, Queue, Linked List.

UNIT I **[12 Hrs]**

Object Oriented Programming Using C++: Abstract data types-Encapsulation-Inheritance--Polymorphism-C++ and Object oriented programming.-constructors, destructor-overloading-Recursion-exceptional handling.

UNIT II **[12 Hrs]**

Linear lists-Array representation: Data objects and Structures-the linear list data structures-array representation. Linear list-Linked representation: Singly linked lists and Chains-Circular list and header nodes-Doubly linked list

UNIT III **[12 Hrs]**

Stacks: Definition and applications-the abstract data type-array representation-linked representation-applications.

Queues: Definition and applications-the abstract data type-array representation-linked representation-applications.

UNIT IV **[12 Hrs]**

Sorting: elementary sorting algorithm-decision trees- efficient sorting algorithms-sorting in the standard template library

Hashing-hash function-Collision resolution-deletion-perfect hash function-hash function for extendible Files

UNIT V **[12 Hrs]**

Binary and other trees: Trees – Binary tree-properties of binary trees-Representation of binary trees-Common binary tree operations

Binary search trees: Definitions-Abstract data types-Binary search tree operations and implementations.

REFERENCE BOOKS:

1. Sartaj Sahni, "Data structures, algorithms and applications in C++" second edition, University Press, 2005
2. Adam drozdek, "Data structures and algorithms in C++" , third edition, 2006
3. D.S.Malik, "Data structures using C++" India edition,2003

SEMESTER I **13PCS103**

C.P.3. DATA COMMUNICATIONS AND NETWORKS

Objective:

On successful completion of the course the student should have:

Learnt different types of Signaling, Transimission media, Networking Devices and Protocols

UNIT I **[12 Hrs]**

Data communications – Networks- Protocols and Standards - Line Configuration – Topology - Transmission Mode-Categories of Networks – Internetworks - OSI Model - TCP/IP Protocol suite. Signals: Analog and Digital – Analog Signals - Composite signals - Digital signals.

UNIT II **[12 Hrs]**

Encoding and Modulating: Analog to Digital Conversion - Digital to Analog Conversion. Digital Data Transmission - DTE - DCE Interface – Modems - Cable Modems. Transmission Media: Guided Media-Unguided media

UNIT III **[12 Hrs]**

Data link control: Flow control - Error control. Switching: Circuit switching - Packet switching - Message switching.

Networking and Internetworking: Repeaters – Bridges – Routers – Gateways - Other devices. Routing Algorithm - Distance vector routing - Link state routing. Transport layer : Connection - OSI Transport Protocol – UDP - TCP.

UNIT IV **[12 Hrs]**

ISDN : Services – Subsriber Access to the ISDN – ISDN Layers. X.25: Layers - Other Protocols related to X.25.

Frame Relay: Introduction – Operations – Layers. ATM : Architecture – Switching – ATM Layers

UNIT V **[12 Hrs]**

TCP/IP :Overview –Network Layer – Addressing – Subnetting –Other protocols-BOOTP-DHCP - Telnet-Network Virtual network-SMTP-HTTP-

FTP- World Wide Web . Next Generation TCP/IP Protocol Suite *:IPv6 - ICMPv6.

* Self study – Questions for examination may be taken from the self study portions also.

REFERENCE BOOKS:

1. Behrouz A. Forouzan, "Data Communications and networking" 2 nd Edition, TATA McGRAW Hill Edition, 2003.
2. Achyut S Godbole "Data Communications and networks", Tata McGraw Hill Publication, 2002
3. Andrew S. Tanenbaum " Computer Networks" Pearson Fourth Edition 2005

C.P.4. INFORMATION SECURITY

Objective:

The subject is intended to provide the common goals of protecting the confidentiality, integrity and availability of information

UNIT I

Introduction to Information Security: Introduction-The history of information security- what is security?- components of an information system-The security systems development life cycle. The need for security: Threats-Attacks.

UNIT II

Legal,Ethical and professional issues in Information Security: Introduction-Law and ethics in information security- International Laws and Legal Bodies- Ethics and information security.Risk Management: An overview of risk management-Risk identification-Risk assessment-Risk Control strategies*.

UNIT III

Security Technology: Firewalls and VPNs: Introduction-Access control-Firewalls-Protecting remote connections.

UNIT IV

Security Technology: Intrusion detection and prevention systems, Other security tools: Intrusion detection and prevention systems-Honeypots, Honeynets and padded cell systems-Scanning and analysis tools-Biometric access controls.

UNIT V

Implementing Information Security: Introduction-Information Security project management-Technical aspects of implementation– nonTechnical aspects of implementation.Information Security

Maintenance: Security management maintenance models: The Security maintenance models-monitoring the external environment- monitoring the internal environment-Planning and risk assessment*.

REFERENCE BOOKS:

1. Michael E. Whitman, Herbert J. Mattord, **"Principles of Information Security "**,Cengage Learning Publications,2008
2. Debby Russell and Sr.G.T.Gangemi, "Computer Security Basics(paperback)", Second edition, O'Reilly Media, 2006.
3. Ross J.Anderson and Ross Anderson,"Security Engineering : A guide to building dependable distributed system",Wiley,2001.
4. Thomas R Peltier, Justin Peltier, John Blackley, "Information Security Fundamentals", Auerbach Publications, 2010.

PCS9

SEMESTER I **13PCS105**

C.P.5. RELATIONAL DATABASE MANAGEMENT SYSTEM

Objective :

On successful completion of the course the students should have:

learnt the concepts of relational database, distributed database and transaction management

UNIT I **[12 Hrs]**

Overview of Database Systems: Managing data-File System versus a DBMS-Advantages of DBMS-Describing and storing data in a DBMS -Database design: Database design and ER diagrams-Entities, Attributes and Entity sets-Relationship and relationship sets-Additional features of the E-R model-Conceptual design with E-R model-Logical database design-Introduction to Views-Destroying altering tables and views.

UNIT II **[12 Hrs]**

Queries, Constraints and Triggers: Overview-the form of a basic SQL query-Union, Intersect and Expect-Nested queries-Aggregate operators-Null values-Complex integrity constraints in SQL-Triggers and active databases

UNIT III **[12 Hrs]**

Transaction Management: The ACID properties-Transaction and schedule-Concurrent execution of transactions-Lock based concurrency control - **Performance of locking*** - Transaction support in SQL-Concurrency control: 2PL, Serializability and Recoverability-Introduction to lock management-Lock conversion-Dealing with deadlocks.

UNIT IV **[12 Hrs]**

Schema refinement and normal forms: Introduction-Functional dependencies - Normal forms - Properties of decomposition-Normalization-Schema refinement in database design-Other king of dependencies

Security and Authorization : Introduction-Access control-Discretionary access control - Mandatory access control.

UNIT V **[12 Hrs]**

Object-database system: New data types - Manipulating the new data - Structured data types - Operations on structured data – Encapsulation and ADT – Inheritance - Database design for ORDBMS - ORDBMS implementation challenges – OODBMS - Compare RDBMS, ORDBMS, OODBMS

Information Retrieval : Introduction to IR - DBMS versus Information Retrieval - Indexing for text search – Web search engines – Managing text in DBMS.

* Self study – Questions for examination may be taken from the self study portions also.

REFERENCE BOOKS:

1. Ragu Ramakrishnan, Johannes Gehrke , " Database Management Systems" , 3 rd Edition , Tata McGraw Hill Publication 2003.
2. Elmarsri Navathe, Ranez Shankand, "Fundamentals of Database Systems", 5th Edition, Pearson Publication 2008.
3. Silberschatz,Henry Korth, " Database System Concepts", 4th Edition, Tata McGraw Hill Publication 2002.

PCS 11

SEMESTER I **13PCS1CL**

C.Pr.1 DATA STRUCTURES USING C++ LAB

LIST OF PRACTICAL PROGRAMS

1. Array Creation and Operations.
2. Stack and Queue Operations.
3. Recursion, Infix to Postfix Conversion.
4. Polynomial Addition using Singly Linked List.
5. Doubly Linked List Operations.
6. Tree Traversals.
7. Graph-Shortest Path.
8. Searching-Linear, binary, Fibonacci.
9. Sorting-Radix, shell, Quick, Heap, Merge.

Guidelines to the distribution of marks for Practical Examinations :

CIA : Total marks – 40 [Practical – 25, Observation- 10, Attendance – 5]

ESE : Two Questions will be given for each student (3 Hours / 60 Marks)

1. Record Work- 10 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 40 Marks
4. Modification- 5 Marks

Particulars	Program 1 (Marks)	Program II (Marks)
Algorithm	5	5
Coding	10	10
Execution	5	5

PCS 12

SEMESTER I **13PCS1CM**

C.Pr.2. RDBMS LAB

Study features of commercial RDBMS packages such as Oracle and Developer 2000.Laboratory exercise should include defining scheme of applications, creation of a database, writing SQL queries to retrieve information from database. Use of host language interface with embedded SQL. Use of forms and report writer package. Some sample applications, which may be programmed, are given below.

Banking system various schemes.

- Online reservation system.
- Personal information.
- Student mark processing system (Internal and External marks).
- Hotel management.
- Stock maintenance.
- College admission system.(both UG and PG)

Guidelines to the distribution of marks for Practical Examinations :

CIA : Total marks – 40 [Practical – 25, Observation- 10, Attendance – 5]

ESE : Two Questions will be given for each student (3 Hours / 60 Marks)

1. Record Work- 10 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 40 Marks
4. Modification- 5 Marks

Particulars	Program 1 (Marks)	Program II (Marks)
Algorithm	5	5
Coding	10	10
Execution	5	5

PCS13

SEMESTER II **13PCS206**

C.P.6. ADVANCED JAVA PROGRAMMING

Objective:

On successful completion of the course the student should have:

Learnt the concepts of packages, interface, applets, java bean and servlets

UNIT I **[12 Hrs]**

Introduction: Basics of java. Inheritance: basics-Using super keyword- Multilevel inheritance – overriding – Dynamic method dispatch – Abstract – Using final with inheritance.

Packages and Interfaces: Packages- Access protection-Importing Packages. Interface – Defining interface- Variables in interface-Implementing an interface.

UNIT II **[12 Hrs]**

Exception handling: Fundamentals – types – Using try and catch – Nested try statements - Throw – Throws – Finally – Using built in exceptions – Creating own exceptions.

Multithreading: Thread model – Creating a thread- Using isAlive() and join() Thread priorities – Synchronization – Deadlock- Suspending ,resuming and stopping threads.

File Input Stream-File OutputStream . Networking : Inet address TCP/IP client/ server sockets.- Datagrams.

Applet Class: Applet basics-Applet Skeleton-A simple Applet-HTML Applet tag

UNIT III **[12 Hrs]**

Event handling: Event model - Event classes - Event Listener interface- Adapter classes.

Graphics: Window Fundamentals - Working with graphics, color and font. AWT Controls Fundamentals – Labels-Buttons- Checkboxes-Lists – Text field – Layout managers -Menu bars and menus.

PCS14

UNIT IV **[12 Hrs]**

JDBC: Connecting java with Oracle

Images-File Formats-Image fundamentals-* **Image filter.**

Java Beans: advantages – using BDK – JAR files – Introspection- Developing simple bean using the BDK – ***using the Bean Info interface- J**ava beans API.

UNIT V **[12 Hrs]**

Swing – Japplet – Icons and JLabel, JTextField, JPasswordField, JButton, JCheckBox, JRadioButton, JComboBox, JScroll panes - JTabbed panes – Trees - Tables

Servlets – simple servlet – life cycle – Servlet API – Servlet Package – Servlet http Package- - Handling HTTP request and responses – session tracking **-** Cookies.

* **Self study** – Questions for examination may be taken from the self study portions also.

REFERENCE BOOKS:

1. Herbert Schildt , "The Complete Reference Java 2 ", fifth edition , Tata McGraw Hill Publication, 2002.
2. Deitel and Deitel, "Java How to Program", Eighth Edition, Pearson Education Asia, 2004.
3. C.Xavier, "Projects in java 2", SciTech Publications (India) Pvt.Ltd, second edition, 2003.
4. Kogent, "Java 6 Programming Black Book", DreamTech Press, New Delhi ,New Edition, 2008

PCS15

SEMESTER II **13PCS207**

C.P.7 WIRELESS NETWORKS

Objective :

On successful completion of the course the students should have:

Learnt the concepts of IEEE Concepts, Wi-Fi, Mobile IP, Cellular Concepts.

UNIT I **[12 Hrs]**

WIRELESS NETWORK ARCHITECTURE AND OPERATION: Cellular concept-cell fundamentals-mobility management-introduction to GSM –GSM network and system architecture. CDMA network and system architecture. CDPD, GPRS and EDGE data networks.

UNIT II **[12 Hrs]**

WIRELESS LANS and PANS Introduction to wireless LANs –evolution-design issues-mac layer operations-security.IEEE802.15x technologies-PAN application and architecture- Physical layer detail-bluetooth link controller –operational states

UNIT III **[12 Hrs]**

WIRELESS MAN: Wireless MAN-IEEE802.16x wireless MANS-mac layer details-IEEE802.16x/IEEE802.16a physical layer detail-common system operations

WIRELESS WANS: Cellular architecture- **Generation of cellular systems*** - wireless in local loop-wireless ATM

UNIT IV **[12 Hrs]**

WIRELESS INTERNET: Introduction-mobile IP-bindings-route optimization-handoffs-security in mobile IP. -Traditional TCP- TCP over wireless –mobile TCP.WAP-Model-Protocol stack-optimizing web over wireless.

ADHOC SENSOR NETWORKS: Introduction-issues-adhoc wireless internet

UNIT V **[12 Hrs]**

RECENT ADVANCES IN WIRELESS NETWORKS: Wireless Fidelity Systems: Service provider model – issues - Inter-operability of Wi-Fi systems and wwans. Optical wireless networks: Short range infrared communication - optical wireless WDM – Lan the multimode 802.11-IEEE 802.11 a/b/g.

* **Self study** – Questions for examination may be taken from the self study portions also.

REFERENCE BOOKS:

1. Gary J.Mullet, "Introduction to Wireless Telecommunication and networks ".India edition 2006

2. C.Siva Ram Murthy,B.S.Manoj , "Adhoc Wireless networks-Architecture and protocols" Pearson / Prentice Hall 2007

3. William Stallings, "Wireless Communications and networks" Pearson / Prentice Hall of India, 2nd Edition., 2007.

4. Vijay K.Garg, " Wireless communications and networking", 2008

SEMESTER II **12PCS208**

C.P.8 .NET FRAMEWORK

Objective:

On successful completion of the course the student should have:

Understood the .Net framework, VB.net controls, ASP.net controls, ADO.net

UNIT I **[12 Hrs]**

Understanding .Net-The .Net strategy-The origins of .Net technology-The.Net framework-The CLR-Framework base classes-Visual studio .net-.Net languages-Benefits of .Net approach-VB.NET-new in vb.net-operators-conditionals & loops-Procedures, scope & exception handling.

UNIT II **[12 Hrs]**

Windows forms and controls-General controls: Label, textbox, button, rich textbox, Link labels,check boxes, radiobutton, combobox, listbox, timer, progress bar.

Container controls: Groupbox, panel, tabcontrol-tooltip-splitters- menus-menu items-context menus-builtindialogbox

UNIT III **[12 Hrs]**

ASP.NET: ebfoms:Buttons,textboxes,labels,Literals,placeholders,checkboxes,radiobuttons textboxes,labels,literals,placeholders,checkboxes,radiobuttons,tables,panels- images-imagelists-tree and list view-toolbars-status bar and progress bars

UNIT IV **[12 Hrs]**

Image button, list boxes, drop downlist, hyperlink & link button-Validation controls: required field, regular expression, compare, **range validators***-calendars-adrotators-html controls.

UNIT V **[12 Hrs]**

Data access with ADO.Net - **Binding controls to database***-database access with web applications-creating window services, web services-deploying applications.

* **Self study –** Questions for examination may be taken from the self study portions also.

REFERENCE BOOKS:

1. Steven Holzner, "Visual Basic.Net Black Book", Dream Tech, First Edition, 2002.
2. Mathew Macdonald, "The Complete Reference Asp.Net " , Tata McGraw Hill Publications.
3. Evangelos Petroustes, "Mastering Visual Basic.Net", BPB Publications, First Edition, 2002.

C.P.9. SOFTWARE PROJECT MANAGEMENT

Objective :

On successful completion of the course the students should have:

Learnt the concepts of Product Life Cycle, Software Quality Assurance and Risk Management.

UNIT I **[12 Hrs]**

Product life cycle-Project life cycle models-metrics-introduction-The metrics Roadmap-A typical metrics strategy-what should you measure-set targets and track them-Understanding and trying to minimize variability-Act on data.

UNIT II **[12 Hrs]**

Software Configuration management-some basic definitions and terminology-The processes and activities of Software configuration management-Configuration status accounting-Configuration Audit.

Software Quality Assurance-How do you define Quality?-Why is quality important in software?-Quality control and Quality Assurance-Cost and benefits of quality-Software Quality assurance tools.

Risk management-What is Risk management and why it is important?-Risk management cycle-Risk Identification: Common tools and techniques-Risk Quantification-Risk monitoring-Risk mitigation.

UNIT III **[12 Hrs]**

Software Requirements gathering-inputs and start criteria for requirements gathering-dimensions of requirements gathering-steps to be followed during requirements gathering- outputs and quality records from the requirements phase-skill sets required during the requirement phase

Estimation-what is estimation?-when and why is estimation done?-three phases of Estimation-estimation methodology-formal models for size estimation-translating size estimate into effort estimate-translating effort estimate into schedule estimate.

UNIT IV **[12 Hrs]**

Design and development phases-some differences in our chosen approach-salient features of design-evolving an architecture for blueprint-design for reusability-technology choices/constraints-Design for standards-Design for portability-Design for testability-Design for diagnosability-Design for maintainability-Design for installability-interoperability design.

Project management in testing phase-Introduction-what is testing?-what are the activities that make up testing?-Test scheduling and types of tests.

UNIT V

Project management in maintenance phase-introduction-activities during the maintenance phase-management issues during the maintenance phase-configuration management during the maintenance phase-estimating size, effort and people resources for the maintenance phase.

Globalization issues in project management-evolution of globalization-challenges in building global teams-models for the execution of global projects-some effective management techniques for managing global teams.

REFERENCE BOOKS:

1.Gopalaswamy Ramesh,"Managing Global Software Projects", Tata McGraw Hill publishing company,2003.

2.Bob Hughes and Mike Cotterell,"Software Project Management", 4th Edition, TMH 2006

PCS21

SEMESTER II **13PCS2CN**

C.Pr.3 ADVANCED JAVA LAB

List of Practical Programs :

1. Create an employee package to maintain the information about the employee. Use Constructors to initialize the employee number and use overloading method to set the basic pay of the employee. By using this package, create a Java Program.
2. Program to implement polymorphism, inheritance and inner classes
3. Create a frame with user specific size and position it at user specific position (use command line argument). Then different shapes with different colors (use menus)
4. Java program to handle different mouse events
5. Create an applet for a calculator application
6. Design a web page using applet and HTML.
7. Java program to maintain the student information in text file
8. Animate images at different intervals using multithreading concepts
9. Program to sent a text message to another system and receives the text message from the system using sockets.
10. Java program by using JDBC concepts to access an inventory database
11. Java program to implement RMI to add two matrices.
12. Java program to implement the tree viewer.
13. Java program to view an image.
14. Java program that prohibit the reading of text files that containing bad words
15. Java Program to implement Bean.

PCS22

Guidelines to the distribution of marks for Practical Examinations :

CIA : Total marks – 40 [Practical – 25, Observation- 10, Attendance – 5]

ESE : Two Questions will be given for each student(3 Hours / 60 Marks)

1. Record Work- 10 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 40 Marks
4. Modification- 5 Marks

Particulars	Program 1 (Marks)	Program II (Marks)
Algorithm	5	5
Coding	10	10
Execution	5	5

PCS23

SEMESTER II **12PCS2CO**

C.Pr.4 .NET LAB

List of Practical Problems

1. Program for Various font Application.
2. Program to simulate a simple calculator.
3. Program to simulate a digital clock with reset option.
4. Program for a notepad application.
5. Program to maintain Employee details.
6. Program to maintain supplier details.
7. Program to maintain student details.
8. Program for hospital management.
9. Program for newspaper vendor.
10. Program to create and read text file.

Guidelines to the distribution of marks for Practical Examinations :

CIA : Total marks – 40 [Practical – 25, Observation- 10, Attendance – 5]

ESE : Two Questions will be given for each student(3 Hours / 60 Marks)

1. Record Work- 10 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 40 Marks
4. Modification- 5 Marks

Particulars	Program 1 (Marks)	Program II (Marks)
Algorithm	5	5
Coding	10	10
Execution	5	5

PCS24

SEMESTER III **13PCS310**

C.P.10 OPEN SOURCE SYSTEMS

Objective :

On successful completion of the course the students should have:

Learnt the concepts of Open Source Operating Systems, , PHP, Tools and Technologies

UNIT I **[12 Hrs]**

INTRODUCTION: Introduction to Open sources – Need of Open Sources – Advantages of Open Sources – Application of Open Sources-Nature of Open sources.

OPEN SOURCE OPERATING SYSTEMS: General Overview - Linux - Files and Directories - Intermediate File Management - Process Management-Memory Addressing - Process Scheduling - Signals – Virtual File System- Page Cache- Program Execution.

UNIT II **[12 Hrs]**

OPEN SOURCE DATABASE: MySQL: Introduction – Setting up account – Starting, terminating and writing your own SQL programs – Record selection Technology – Working with strings – Date and Time – Sorting Query Results – Generating Summary – Working with metadata – Using sequences – MySQL and Web.

UNIT III **[12 Hrs]**

OPEN SOURCE PROGRAMMING LANGUAGES: PHP: Introduction – Programming in web environment – variables – constants – data types – operators – Statements – Functions – Arrays – OOP – String Manipulation and regular expression

UNIT IV **[12 Hrs]**

File handling and data storage – PHP and SQL database – PHP and LDAP – PHP Connectivity – Sending and receiving E-mails – Debugging and error handling – Security – Templates.

PCS25

UNIT V **[12 Hrs]**

OPEN SOURCE TOOLS AND TECHNOLOGIES: Open Source IDE-Modeling Tools- **Mozilla Firefox*- Wikipedia***- Eclipse- Apache Web server – Working with Web Server – Configuring and Using apache web services.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS:

1. Christopher Diaz, "Introduction to Unix/Linux", Charles River Media, India Edition, 2007.
2. Ivan Bayross and Sharanam Shah, "MySQL 5 for Professionals", Shroff Publishers and Distributors, First Edition, 2007
3. Ivan Bayross and Sharanam Shah," PHP 5.1 for Beginners", Shroff Publishers and Distributors, First Edition,2006
4. Vivek Chopra, Sing Li, Jeff genender, "Professional Apache Tomcat 6", Wiley India, 2007
5. Peter Wainwright, "Professional Apache", Wrox Press, 2002

PCS26

SEMESTER III **13PCS311**

C.P.11 DATA MINING AND WAREHOUSING

Objective :

On successful completion of the course the students should have:

Learnt the concepts of Clustering, Neural Networks and Genetic Algorithms.

UNIT I [12 Hrs]

Data Mining: Introduction - what is Decision tree? – Where to use Decision Trees – How the Decision Tree Works – Case Study – Strengths and Weaknesses.

Neural Networks: What is Neural Network? – Where to use Neural Networks – How the Neural Networks – Case Study - Strengths and Weaknesses.

UNIT II [12 Hrs]

Nearest Neighbor and Clustering: Where to use Clustering and Nearest-Neighbor Prediction – How Clustering and Nearest-Neighbor Prediction Work – Case Study - Strengths and Weaknesses.

Genetic Algorithms: What are Genetic Algorithms – Where to use Genetic Algorithms – How the Genetic Algorithm works – Case Study - Strengths and Weaknesses.

UNIT III [12 Hrs]

Rule Induction: Where to use Rule Induction – How Rule Induction Works – Case Study - Strengths and Weaknesses.

Data Visualization: Data Visualization Principles- Parallel Coordinates – Visualizing Neural Networks – **Visualization of Trees** *– State of the Industry.

UNIT IV [12 Hrs]

Business Analysis: Reporting and Query Tools and Applications: Tool Categories – The Need for Applications - Cognos Impromptu – Applications.

PCS27

On-Line Analytical Processing (OLAP): Need for OLAP – Multidimensional Data Model – OLAP Guidelines – Multidimensional versus Multirelational OLAP – **Categorization of OLAP Tools** *– State of the Market – OLAP Tools and the Internet.

UNIT V **[12 Hrs]**

Data warehousing: Introduction – Data Warehousing Components – Overall Architecture – Data Warehouse Database – Sourcing, Acquisition, Cleanup, and Transformation Tools – Metadata – Access Tools – Data Marts – Data Warehouse Administration and Management – Information Delivery System.

Building a Data Warehouse: Business Considerations: Return of Investment – Design Considerations – Technical Considerations – Implementation Considerations – Integrated Solutions – Benefits of Data Warehousing.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS:

1. Alex Berson ,Stephen J.Smith "Data Warehousing, Data Mining & OLAP" Tata McGraw Hill, 2004
2. Jiawei Han and Micheline Kamber ,"Data Mining Concepts and Techniques", Morgn Kaufman Publishers, Second Edition, 2008
3. Reema Thareja, "Data Warehousing", Oxford University Press, First Edition, 2009.

PCS28

SEMESTER III **13PCS312**

C.P.12 SOFTWARE TESTING

Objective :

On successful completion of the course the students should have:

Learnt the concepts of Software Life Cycle Models, Testing Tools.

UNIT I **[12 Hrs]**

Introduction – Software Life Cycle Models : Phases of Software Development – Quality, Quality Assurance and Quality Control – Testing, Verification & Validation – Process Model to represent different phases – **Life Cycle Models*.**

Types of testing – White Box Testing: What is White Box Testing? – Static Testing – Structural Testing – Challenges in White Box Testing.

UNIT II **[12 Hrs]**

Black box testing : What is Black Box Testing ? – Why Black Box Testing? – When to do Black Box Testing – How to do Black Box Testing?

Integration Testing : What is Integration Testing? – Integration Testing as a Type of testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash.

UNIT III **[12 Hrs]**

System & Acceptance Testing : System Testing overview – Why is System Testing done? – Functional Vs Non-Functional Testing – Functional System Testing – Non functional System Testing – Acceptance Testing – Summary of Testing Phases.

Performance Testing: Introduction – Factors governing Performance Testing – Methodology for Performance Testing - Tools for Performance Testing – Process for Performance Testing.

UNIT IV **[12 Hrs]**

Regression Testing : What is Regression Testing? –Types of Regression Testing-When to do Regression Testing? –How to do Regression Testing? –Best practices in Regression Testing.

Testing of Object Oriented Systems : Introduction –**Primer on Object oriented software*** – Differences in OO Testing .

UNIT V **[12 Hrs]**

Test planning, Management and Execution : Introduction – Test Planning – Test Management – Test Process – Test Reporting – Best Practices.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS:

1. Srinivasan Desikan, Gopalaswamy Ramesh, "Software Testing Principles and Practices" , Pearson Education, 2008
2. Boris Beizer , "Software Testing Techniques", Dream Tech Press, Second Edition, 2004
3. Renu Rajanai , Pradeep Oak, "Software Testing", Tata Mc Graw Hill, 2004.
4. William Perry, "Effective Methods for Software Testing ", John Wiley & Sons, Third Edition, 2007.

SEMESTER III **13PCS3Z1**

MINI PROJECT

MINI PROJECT & VIVA VOCE

Evaluated by both Internal and External examiners

Guidelines to the distribution of marks:

1. CIA -20 marks
2. ESE -80 marks*****

   ***** Project record-60 and viva voce-20

SEMESTER III **13PCS3CP**

C.Pr.5 OPEN SOURCE LAB

1. Installation of Linux
2. Queries using MySQL
3. Designing web site using PHP
4. Database Application using PHP/ MySQL
5. Searching and sorting using Eclipse IDE
6. Application using PHP, MySQL and Apache

Guidelines to the distribution of marks for Practical Examinations :

CIA : Total marks – 40 [Practical – 25, Observation- 10, Attendance – 5]

ESE : Two Questions will be given for each student (3 Hours / 60 Marks)

1. Record Work- 10 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 40 Marks
4. Modification- 5 Marks

Particulars	Program 1 (Marks)	Program II (Marks)
Algorithm	5	5
Coding	10	10
Execution	5	5

SEMESTER III **13PCS3CQ**

C.Pr.6 SOFTWARE TESTING LAB

List of Practical Programs

1. Calculation operation using Context Sensitive Mode using Winrunner Tool
2. Paint using Analog Mode
3. GUI Check point for Single, Object and Multitude property.
4. Synchronization Point for Object Window property.
5. Data driven Wizard for checking specific field.
6. GUI Spy using Context Sensitive mode
7. Bitmap Checkpoint using Analog mode.
8. User report Generation using Context sensitive mode

Guidelines to the distribution of marks for Practical Examinations :

CIA : Total marks – 40 [Practical – 25, Observation- 10, Attendance – 5]

ESE : Two Questions will be given for each student(3 Hours / 60 Marks)

1. Record Work- 10 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 40 Marks
4. Modification- 5 Marks

Particulars	Program 1 (Marks)	Program II (Marks)
Algorithm	5	5
Coding	10	10
Execution	5	5

SEMESTER IV **13PCS4Z2**

PROJECT & VIVA VOCE

Evaluated by both internal and external examiners

Guidelines to the distribution of marks:

3. CIA -40 marks
4. ESE -160 marks******

****** Project record-120 and viva voce-40

KONGUNADU ARTS AND SCIENCE COLLEGE [AUTONOMOUS]

COIMBATORE - 641 029

End Of Semester Examination Question Paper Pattern

[For the candidates admitted from the academic year 2014-2015 and Onwards]

MASTER OF SCIENCE IN COMPUTER SCIENCE

Duration: 3 Hours Maximum Marks: 75 Marks.

Answer all of the following questions

Section – A 10 x 1 = 10[10 Questions]

(Two multiple choice questions from each unit.)

Section – B 5 x 5 =25

Five questions either or type

(One question from each unit)

Section – C 5 x 8 = 40

Five questions either or type

(One question from each unit)

TOTAL 75 Marks

PCS35

ELECTIVE PAPERS

COMPUTATIONAL INTELLIGENCE

Objectives :

On successful completion of the course the students should have

Understands the Grammars for Conversational Agent, Natural Language, Linking Syntax and Semantics.

UNIT I **[12 Hrs]**

INTRODUCTION – ARTIFICIAL INTELLIGENCE : Artificial Intelligence: History and Applications – Production Systems – Structures and Strategies for state space search – Data driven and goal driven search – Depth First and Breadth First Search – DFS with Iterative Deepening – Heuristic Search – Best First Search – A* Algorithm – AO* Algorithm – Constraint Satisfaction – Using heuristics in games – Minimax Search – Alpha Beta Procedure planning.

UNIT II **[12 Hrs]**

ARTIFICIAL INTELLIGENCE – REPRESENTATION SCHEMES : Knowledge representation – Propositional calculus – Predicate Calculus – Theorem proving by Resolution – Answer Extraction – AI Representational Schemes – Semantic Nets – Conceptual Dependency – Scripts – Frames – Introduction to Agent based problem solving.

UNIT III **[12 Hrs]**

NEURAL NETWORKS : Neural networks (NNs) for machine learning – models of neuron – perceptrons and perceptron learning rule – limitations of perceptrons – Multilayer perceptrons (MLPs) – back propagation learning algorithm – MLPs as classifiers – local minima and ovefitting – applications of MLPs – Radial basis functions (RBFs) – interpolation and approximation with RBFs – RBFs *vs.* MLPS – related classical optimization.

UNIT IV **[12 Hrs]**

GENETIC ALGORITHM AND EVOLUTIONARY PROGRAMMING : Genetic algorithms: Introduction – genetic Operators – chromosomes – mutations and cross – over – Fitness functions – Evolutionary programming – learning classification systems Multi – agent

systems – PCA and SOM with evolutionary computations – Modeling uncertainty – distributions– intervals– fuzzy sets– rough sets– Fuzzy Vs Crisp– membership pas– Fuzzy systems.

UNIT V **[12 Hrs]**

EXPERT SYSTEM AND LANGUAGE PROCESSING : Overview of Expert System Technology – Rule based Expert Systems– Introduction to Natural Language Processing – Languages and Programming Techniques for AI – **Introduction to PROLOG and LISP*** – Search strategies and Logic Programming in LISP– Production System examples in PROLOG.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS:

1. George.F.Luger, "Artificial Intelligence –Structures and Strategies for Complex Problem Solving", 4th edition, Pearson Education, 2002.
2. E. Rich, K.Knight, "Artificial Intelligence", 2nd edition, Tata McGraw Hill, 1991 Winston. P. H, "LISP", Addison Wesley
3. Ivan Bratko, "Prolog Programming for Artificial Intelligence", 3rd edition, Addison Wesley, 2000
4. A.P. Engelbrecht, "Computational Intelligence", John Wiley &Sons, 2002.
5. M. Berthold, D. Hand, "Intelligent Data Analysis", Springer Verlag.

PCS37

DIGITAL IMAGE PROCESSING

Objectives :

On successful completion of the course the students should have

Understands the Grammars for Conversational Agent, Natural Language, Linking Syntax and Semantics.

UNIT I:

Digital Image Processing:The origins of Digital Image Processing-Example that use digital image processing-Fundamental Steps in Digital Image Processing-Components of an Image Processing System

Digital Image Fundamentals:Elements of Visual Perception-Light and the Electromagnetic Spectrum-Image Sensing and acquisition

UNIT II:

Digital Image Fundamentals:Image Sampling and quantization-Basic relationship between Pixels-Linear and NonLinear operations-Image Enhancement in the Spatial Domain:some Basic Gray Level Transformations –Histogram processing-Basics of Spatial filtering

UNIT III:

Image Restoration:Noise models-Restoration in the Presence of Noise Only Spatial Filtering-Color Image Processing:Color Fundamentals-Color Models-Pseudocolor Image Processing-Color Transformations-Color Segmentation

UNIT IV:

Image Compression:Fundamentals-Image Compression Models-Elements Of Information Theory-Error-Free compression-Lossy Compression

UNIT V:

Image Segmentation:Detection Of Discontinuities-Edge Linking And Boundary Detection-Thresholding:Foundation-The Role of Illumination-Basic global Threshholding-Region-Based Segmentation

PCS38

REFERENCE BOOKS:

1. Rafael C.Gonazalez,Richard E. Woods,"Digital Image Processing", 2nd Edition. Pearson Education,

2. B.Chanda, D.Dutta Majumder,"Digital Image Processing and Analysis", PHI,2003.

3. Nick Efford ,"Digital Image Processing a Practical Introducing using Java", Pearson Education.

PCS39

EXTREME PROGRAMMING

Objective :

On successful completion of the course the students should have Understand the Grammars for Conversational Agent, Natural Language, Linking Syntax and Semantics.

UNIT I **[12 Hrs]**

Introduction : Extreme Programming – **Importance** *- Extreme Principles – The players.

UNIT II **[12 Hrs]**

Conceptualizing The System : Creating a Vision of the system – Writing User stories – Writing Acceptance Tests - One simple solution – Watching our words.

UNIT III **[12 Hrs]**

Planning : Providing estimates – Planning releases – Planning Iterations – Tactical Planning.

UNIT IV **[12 Hrs]**

Development & Delivery : Pair Programming – Test First – Design – Code with Intention – Refactoring - Relentless Integration - Delivering the system.

UNIT V **[12 Hrs]**

Adopting and Adapting XP - Scaling XP - The Future of XP - **Case Studies***.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS:

1. David Astels, Granville Miller and Miroslav Novak, "A Practical Guide to Extreme Programming", The COAD Series, Prentice Hall PTR, Pearson Education Inc., 2002.
2. Kent Beck and Martin Fowler ,"Planning Extreme Programming", Pearson Education Inc., 2000.
3. Kent Beck, "Extreme Programming Explained", Addison Wesley, 1999.
4. William C. Wake "Extreme Programming Explored", Addison Wesley, 2001.

PCS40

NETWORK SECURITY AND CRYPTOGRAPHY

Objectives

On Successful completion of the course the students should have:

Understood the process of implementing the cryptographic algorithms.

UNIT I **[12 Hrs]**

Introduction: The OSI Security Architecture-Security Attacks-Security Services-Security Mechanisms-A model for network security. Classical Encryption Techniques: Symmetric Cipher Model-Substitution technique-Transposition Technique-Rotor Machnies-Steganography.

UNIT II **[12 Hrs]**

Block Ciphers and the data Encryption Standard: Block Cipher Principles-The Data Encryption Standard-Block Cipher Design Principles. Advanced Encryption Standard: Evaluation Criteria for AES-The AES Cipher.

Public Key Encryption and Hash Functions: Introduction to Number theory-Public Key Cryptography and RSA-Key Management.

UNIT III **[12 Hrs]**

Message Authentication and Hash Functions: Authentication Registration-Authentication Functions-Authentication Codes-Hash Functions-Security of Hash Functions and MACs.

Hash and MAC Algorithms: Secure Hash algorithm-Whirlpool-HMAC-CMAC.Digital Signatures-Authentication protocols-Digital Signature Standard.

UNIT IV **[12 Hrs]**

Network Security Applications: Authentication Applications-Electronic Mail Security-IP Security-Web Security.

UNIT V **[12 Hrs]**

Intruders-Intrusion Detection-Password Management-Viruses and Related Threats-Virus Counter measures-Firewall Design Principles-Trusted Systems.

REFERENCE BOOKS:

1.William Stallings, “Cryptography and Network Security Principles and Practices”, Fourth Edition PHI 2011

2. Atul Kahate, ”Cryptography and Network Security”, Third Edition, TMH ,2005.

3. Haribhaskar,”Cryptography and Network Security”,Sams Publishers, First Edition 2008.

PCS42

NATURAL LANGUAGE PROCESSING

Objectives :

On successful completion of the course the students should have

Understands the Grammars for Conversational Agent, Natural Language, Linking Syntax and Semantics.

UNIT I **[12 Hrs]**

Introduction to Natural Language Understanding – Linguistic Background – Grammars and Parsing – Features and Augmented Grammars.

UNIT II **[12 Hrs]**

Grammars for Natural Languages – Towards Efficient Parsing – Ambiguity Resolution Statistical Methods – Semantics and Logical Forms.

UNIT III **[12 Hrs]**

Linking Syntax and Semantics – Resolution – Strategies for Semantic Interpretation – Scoping and Interpretation of Noun Phrases.

UNIT IV **[12 Hrs]**

Knowledge Representation and Reasoning* – Local Discourse Context and Reference – World Knowledge – Discourse Structure.

UNIT V **[12 Hrs]**

Conversational Agent – Logic and Natural Language – Model – Theoretic Semantics – Semantics of Set Theoretic Models.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS :

1. James Allen, "Natural Language Understanding", Pearson Education, Second Edition.1995
2. Nitin Indurkhya, Fred J.Damerau "Handbook of Natural Language Processing" Second Edition
3. Philip M.McCarthy "Applied Natural language Processing:Identification Investigation and Resolution" Hampton University.2011

PCS44

GRID AND CLOUD COMPUTING

Objectives

On successful completion of the course the students should have:

Understood the process of SOA, Data Management, Operating Systems and cloud services

UNIT - I **[12 Hrs]**

Introduction to Grid Computing- Anatomy and Physiology of Grid – Early Grid Activities – Current Grid Activities– Grid Standards - Grid Business Areas – Grid Challenges and Applications- Grid Computing Organization and their roles.

UNIT – II **[12 Hrs]**

Service Oriented Architecture – Web Service Architecture – Grid Architecture – Implementing Grid Architecture- Globus Toolkit – Services - Open Grid Services Architecture - Grid Scheduling and Resource Management– Framework– Grid Resource Management Systems – Principles of Local Schedulers - Grid Scheduling with QoS – Data Management -Grid Security.

UNIT - III **[12 Hrs]**

Cloud Computing – Overview – Applications-Intranets and the Cloud – **Companies in the Cloud Today***- Cloud Computing Services- On Demand Computing – Discovering Cloud Services-Development Services and Tools.

UNIT - IV **[12 Hrs]**

Cloud hardware and infrastructure-clients-security-network-services-platforms-cloud storage-Cloud software architecture issues- Classification of Cloud Implementations

. **UNIT - V** **[12 Hrs]**

Operating System for the Cloud - Application Patterns and Architecture – Case Studies- Cloud Computing services available under various platforms.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS:

1. Joshy Joseph, Craig Fellenstein, "Grid Computing", IBM Press, Pearson Education, 2004.

2. Ian Foster, Carl Kesselman (eds.),"The Grid: Blueprint for a New Computing Infrastructure", Morgan Kaufmann Publishers, 2004.

4. Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, "Cloud Computing –A Practical Approach", Tata McGraw Hill Education Pvt. Ltd, 2010.

5. Michael Miller," Cloud Computing: Web based Applications that change the way you work and Collaborate online", Que Publishing, August 2008.

6. Haley Beard, "Cloud Computing Best Practices for Managing and Measuring Processes for on demand computing, Applications and Data Centers in the Cloud with SLAs", Emereo Pvt. Ltd, July 2008.

PCS46

AGENT BASED COMPUTING

Objectives

On successful completion of the course the students should have:

Understood the process of Practical Design, Rule Learning and Intelligent Learning etc.

UNIT I **[12 Hrs]**

Introduction to Software Agents: What is a software agent? - Why software agents? - Applications of Intelligent software agents-Practical design of intelligent agent systems.

UNIT II **[12 Hrs]**

Intelligent Agent Learning- Approaches to Knowledge base development-Disciple approach for building intelligent agents- **Knowledge representation***-Generalization-Problem solving methods-Knowledge elicitation.

UNIT III **[12 Hrs]**

Rule learning: Rule learning problem- Rule learning method- Learned rule characterization. Rule refinement: Rule refinement problem- Rule refinement method- Rule experimentation and verification-Refined rule characterization-Agent interactions.

UNIT IV **[12 Hrs]**

Disciple shell: Architecture of Disciple shell- Methodology for building Intelligent Agents - Expert - Agent interactions during knowledge elicitation process- Expert - Agent interactions during rule learning process - Expert - Agent interactions during rule refinement process.

UNIT V **[12 Hrs]**

Case studies in building intelligent agents: Intelligent Agents in portfolio management-Intelligent Agents in financial services. Java Agent Development framework [JADE]: Creating multi-agent systems with JADE- Agent platform- Agent Tasks and behaviors-Agent Communication Language - Interaction protocols- Using JADE from Java.

*** Self Study and questions for examinations may be taken from the self study portions also.**

REFERENCE BOOKS:

1. Jeffrey M Bradshaw, "Software Agents", AAAI Press/ The MIT Press, 2000.

2. Nicholas R Jennings, Michael J Wooldridge (Eds.), "Agent Technology – Foundations, Applications and Markets", Springer, 1997.

3. Gheorghe Tecuci et al., "Building Intelligent Agents", Academic Press, 2003.

4. Eduardo Alanso, Daniel Kudenko, Dimitar Kazakov (Eds.), "Adaptive Agents and Multi-Agent Systems", Springer Publications, 2003.

PCS48

ENTERPRISE WEB SERVICES

Objectives:

On successful completion of the course the student should have:

To enable the student to be familiar with Distributed services, XML and web services

UNIT I: **[12 Hrs]**

Introduction-Why is it important-Web services and Enterprises-Xml Documents-Namespaces-Xml schema-Implementing schema Types-"any" element-Inheritance-Type declaration Managing Schema-SAX-DOM-XSL-XPath

UNIT II: **[12 Hrs]**

SOAP &WSDL: SOAP Model-SOAP messages-SOAP Encoding-SOAP RPC-Document-RPC-Literal-Encoded-WSDL-Structure-Binding-Types Element-Services-Managing WSDL Description-Using SOAP and WSDL –Implementation &Deployment-Invoking WebServices

UNIT III : **[12 Hrs]**

UDDI Business registry-UDDI Specification & Data Structures-Accessing UDDI-Lifecycle Management-Dynamic access point Management. Webservices Conversation language-WSCL Interface Components. Workflow Management systems.

UNIT IV: **[12 Hrs]**

Security: Security is an end-end process-Web Services security issues-Types of security attacks and threats-WS security roadmap-WS security.

Quality of Service - QOSmetrics- What are holes?-Design Pattern and practices-Building Qos into Webservices.

UNIT V: **[12 Hrs]**

Mobile WebService-Direct Mobile Webservice Access-J2ME Webservices –Portals:WSRP and WSIA Specifications-Building portals with WSRP-Deploying services. **Case study** Real World webservice application development: Enterprise Procurement-System functionality and architecture-Running EPS application.

REFERENCE BOOKS:

1. Sandeep Chaterjee and James Webber-"Developing Enterprise Webservices-An architect's guide Pearson Education 2009

2. Ron Schmalzer, Travis Vandersypen, Jason Bloomberg, et al, "XML and Web Services Unleashed", Pearson Education, 2008

3. Eric New Comer, "Understanding Web Services: XML, WSDL, SOAP and UDDI", Addison-Wesley, USA, 2002.

PCS50

C.P.4. DISTRIBUTED SYSTEMS

Objective:

On successful completion of the course the students should have:

Learnt the concepts of Distributed Processing, Database, Client/Server Network Model.

UNIT I **[12 hrs]**

Introduction: Definition – Goals - Hardware concepts - Software concepts - The Client /Server model.

UNIT II **[12 hrs]**

Communication: Layered Protocols - Remote Procedure Call - Message Oriented Communication - Stream Oriented Communication.

UNIT III **[12 hrs]**

Naming: Naming Entities – Locating Mobile Entities. Synchronization: Clock Synchronization - Logical Clock - Global State.

UNIT IV **[12 hrs]**

Consistency and Replication: Introduction - Data Centric Consistency model - Client Centric Consistency model - Consistency Protocols.

UNIT V **[12 hrs]**

Fault Tolerance: Introduction - Process Resilience - Reliable client/Server Communication- Recovery.

Security: Threats - Policies and Mechanism – **Authentication*** – Firewall - Security Management.

*** Self study** – Questions for examination may be taken from the self study portions also.

REFERENCE BOOKS:

1. Tanenbaum,A.S & Van Steen M, "Distributed System", Prentice Hall,2002.

2. Coulouris,G.F,Dollimore J.B & Kind Berg,T, "Distributed System: Concepts and Design" 4th Edition, Addison Wesley,2005

3. William Buchanan, "Distributed System and Networks", McGraw Hill, 2000

PCS52

ADVANCED LEARNERS COURSE (ALC)

SEMESTER II ***14PCS0D1***

ALC. 1 PROGRAMMING IN C #

Credit Points: 4

UNIT I

Basic Elements of C #: .Net frame work – C # language – Features – Character set – Lexical elements - Escape sequence – Identifiers – Keywords – Concepts of data – Operators – Punctuators – Primitive data types – Preprocessing Directives.

UNIT II

C# Program Structure**:** Program Structure – Methods – Instance – new operator – Member access – Invoking a method – Parameter Types - Constructor – Destructor – Default Constructor – this reference – Access Modifiers – Static members – Formatted method – Header of main method – Enumeration operators types – type conversion – Merging of String - is operator – Checked & unchecked operator.

UNIT III

Statements: Classification – Expression – Control Flow – Block – Declaration – Empty – Exception – Lock – Labeled – Checked & unchecked. Arrays: Regular & Jagged Arrays – Two & Three dimensional arrays – Local Arrays - Features of arrays – System Arrays – Passing array as a parameter – Application of arrays – Recursive methods – Structure – Nested Structures.

UNIT IV

Inheritance: Introduction – Types - .Net building blocks – Name Hiding – Virtual and override methods – Dynamic binding – Abstract method & class –

Advantages. Interface and Operator overloading: Interface – Declaration of Interface – Polymorphism of Interface – Operator overloading – method overloading – Collection Interfaces – Variable method Interfaces list.

PCS53

UNIT V

File Operations and Multithreading**:** Stream – File management – File operations – Multitasking – Multi threading – Operation of threads - Secondary threads **–** Synchronization.

REFERENCE BOOK:

1. S.Thamarai Selvi, R.Murugesan, **"A Text Book on C# A systematic approach to Object Oriented Programming"**, Pearson Education, first Edition 2003. **[UNIT I to V]**

PCS54

SEMESTER III ***14PCS0D2***

ALC. 2 J2EE

Credit Points: 4

UNIT-I

J2EE and J2SE - The Birth of J2EE - Databases - The Maturing of Java - Java Beans and Java Message Service - Why J2EE? J2EE Multi-Tier Architecture - J2EE Best Practices - J2EE Design Patterns and Frameworks.

UNIT-II

J2EE FOUNDATION - Java servlets - Java Server Pages

UNIT-III

Enterprise JavaBeans - JavaMail API - Java Interface Definition Language and CORBA.

UNIT-IV

Java Remote Method Invocation - Java Message Service – Security - Java Naming and Directory Interface API

UNIT-V

WEB SERVICES - SOAP - Universal Description, Discovery, and Integration (UDDI) - Electronic Business XML - The Java API for XML Registries (JAXR) - Web Services Description Language (WSDL)

REFERENCE BOOKS:

1.James Keogh, **"J2EE - The complete Reference"**, Mc-Graw Hill, 2002.

2. Stephanie Bodoff, Eric Armstrong, Jennifer Ball, Debbie Bode Carson, Ian Evans, Dale Green Kim, Haase Eric Jendrock, **" *The J2EE Tutorial"***, Second Edition, Pearson Education, 2004.