KONGUNADU ARTS AND SCIENCE COLLEGE [AUTONOMOUS]
COIMBATORE - 641 029

M.Sc COMPUTER TECHNOLOGY [MSc. CT]

Curriculum and scheme of Examination under CBCS

[Applicable to students Admitted from the Academic Year 2014-2015 onwards]

Semester	Part	Subject code	Title of the Paper	Instruction Hours / Cycle	Exam. Marks			Duration of Exam(hours)	Credits
					CIA	ESE	Total		
I	I	14PCT101	C.P.1 Data Structures and Algorithms	4	25	75	100	3	4
		12PCT102	C.P.2 Advanced Computer Organization and Architecture	4	25	75	100	3	5
		12PCT103	C.P.3 Advanced Java	4	25	75	100	3	4
		14PCT104	C.P.4 Relational Database Management system	4	25	75	100	3	5
		14PCT105	C.P.5 Advanced Operating Systems	4	25	75	100	3	5
		12PCT1CL	C.Pr.1 Advanced Java Programming Lab	5	40	60	100	3	2
		12PCT1CM	C.Pr.2 Relational Database Management system Lab	5	40	60	100	3	2
II	I	14PCT206	C.P.6 Multimedia	4	25	75	100	3	4
		12PCT207	C.P.7 Data communication & Networking	4	25	75	100	3	5
		12PCT208	C.P.8 .Net Technologies	4	25	75	100	3	4
		14PCT209	C.P.9 Data Mining and Warehousing	4	25	75	100	3	5
		14PCT210	C.P.10 Software Project Management	4	25	75	100	3	5
		12PCT2CN	C.Pr.3 Multimedia Lab	5	20	30	50	3	2
		12PCT2CO	C.Pr.4 .Net Technologies Lab	5	40	60	100	3	2
III	I	14PCT311	C.P.11 Software Testing	4	25	75	100	3	5
		14PCT312	C.P.12 Web Designing	4	25	75	100	3	5
		14PCT313	C.P.13 Mobile Computing	4	25	75	100	3	4
		14PCT3E1	Elective Paper - I	4	25	75	100	3	5
		14PCT3E2	Elective Paper - II	4	25	75	100	3	5
		14PCT3CP	C.Pr.5 Software Testing Lab	5	20	30	50	3	2
		12PCT3CQ	C.Pr.6 Web Designing Lab	5	40	60	100	3	2
		14PCT3SP	Summer Project	Grade **					
IV	I	12PCT4Z1	Project and Viva-Voce	30	40	160*	200	3	8
			Total				2200		90

Major Elective Papers
(Two Elective papers are to be chosen from the following four papers)

1. Information Security
2. Artificial Intelligence and Fuzzy Logic System
3. Cloud Computing
4. Advanced Digital Image Processing

Tally Table:

Part	Subject	No.of Subjects	Total Marks	Credits
I	Core-Theory/Practical/Project	20	2000	80
	Major Elective Paper	2	200	10
	Grand Total	**22**	**2200**	**90**

Note:

CBCS-Choice Based Credit System

CIA- Continuous Internal Assessment

ESE – End of Semester Examinations

25% CIA is applicable to all theory subjects except JOC, ALC and COP courses,which are considered as extra credit courses.

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		
14PCT0D1	ALC.1 Programming in C#	-	-	100	100	3	2
12PCT0D2	ALC.2 J2EE	-	-	100	100	3	2

****** The Students should do the summer project at the end of the second semester during summer vacation and submit the report in the third semester. The Project report will be evaluated for 100 marks along with the internal viva voce by the respective project guide. According their marks, the grade will be awarded as given below.

Marks %	**Grade**
85-100	O
70-84	D
60-69	A
50-59	B
<50	U (Reappear)

1.Break up Marks for CIA of Theory:

CIA Exam	- 15
Assignment	- 5
Attendance	- 5
Total	25

2. Components of Practical:

Break up Marks for CIA of Practical

CIA Practical Exam	- 25
Observation NoteBook	- 10
Attendance	- 5
Total	40

Break up Marks for ESE of Practical

Experiment	- 50
Record	- 10
Total	60

***** Project Report – 120 marks; Viva voce – 40 marks

PCT 1

SEMESTER I 14PCT101

C.P.1 DATA STRUCTURES AND ALGORITHMS

Credit Points: 4 **Total Hrs.: 60 Hrs.**

Objective:

This subject creates the ability for the students about the data structure arrays, stack, queue and linked list. The students should get the knowledge in various sorting techniques.

UNIT-I 12 Hours

Introduction-Algorithm- creating and analyzing programs-Linear data structure-Arrays-Ordered Lists-Stacks-Queues-Sparse Matrices- Evaluation of Expressions – Implementation and Applications.

UNIT-II 13 Hours

Linked Lists-Doubly Linked List and dynamic Storage Management-Polynomial Addition-Trees-General Binary Trees –Operations-Traversals- binary search Trees-Threaded Binary Trees-**Height balanced Trees***.

UNIT-III 12 Hours

Sorting – Insertion sort – Quick sort – Merge sort –Shell sort- Heap sort – Sorting on several keys – External Sorting-Sorting with Disks, K-Way Merging-Sorting with Tapes.

UNIT-IV 11 Hours

Graphs Terminology and representation **–Adjacency lists-Adjacency Matrix* –** Traversal –Minimum Spanning tree-Shortest path and Transitive closure- analyze the Algorithms.

Symbol Table-Hash Tables: Hashing Functions- overflow handling – Files – Sequential organization – Index Techniques – File organization – Implementation.

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UNIT-V **12 Hours**

Algorithm Design Techniques: Greedy Algorithms-Divide and Conquer-Dynamic programming-Randomized Algorithms

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

TEXT BOOKS:

1. Ellis Horowitz, Sartaj Shani, **"Fundamentals of Data Structures"**, Galgotia Publication Edition 1, 1994. **[UNIT I To IV]**

2. Mark Allen Weiss, **"Data structures and Algorithm Analysis in C"**, Edition-2, 2008. **[UNIT-V]**

REFERENCE BOOKS:

1. Robert Kruse, C.L.Jondo Bruce Leung, **"Data Structures and Program Design in C"** ,Pearson Edition Asia, 2nd Edition, 2005.

2. Tremblay Sorenson,**" An Introduction to Data Structures with Applications"**, 1st edition , Tata McGraw Hill Pub Company Ltd, 1994.

PCT 3

SEMESTER I 12PCT102

C.P.2 ADVANCED COMPUTER ORGANIZATION AND ARCHITECTURE

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

To learn the concepts about digital circuits, number systems and memories.

UNIT-I 11 Hours

Number system: Binary, Decimal, Octal, Hexadecimal – Conversion from one to another – complements – Binary codes.

Basic Logic Gates – Basic Theorems and Properties of Boolean Algebra – NAND, NOR implementation – Sum of Products – Product of Sums – Karnaugh map – Tabulation Method – Don't Care Conditions.

UNIT-II 12 Hours

Combinational Logic Circuit Design : Multiplexers – Demultiplexers – Decoders-Encoders –Half Adder- Full Adder-Subtractor- Parallel Adders.

Flip-Flops: RS,D,JK Flip-Flops – Registers – Shift Registers – Ripple Counters – **Synchronous Counters***.

UNIT-III 13 Hours

Register Transfer and Micro Operations: Arithmetic Circuit – Logic Circuit – Shift Circuit – Arithmetic Logic Shift Unit – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer, Data Manipulation and Program control instructions.

UNIT-IV 13 Hours

Input – Output organization: Peripheral Devices – Input – Output Interface – Asynchronous Data Transfer (Strobe and Handshaking Method – DMA – IOP.

Memory Organization: Memory Hierarchy – Main Memory – Auxillary Memory – Associative Memory – Cache Memory **– Virtual Memory***.

PCT 4

UNIT-V **11 Hours**

Multiprocessors: Characteristics of multiprocessors-Structure of general purpose multiprocessors – multi computer – inter processor arbitration-Inter processor communication And Synchronization.

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

TEXT BOOKS:

1. M.Morris Mano, **"Digital Logic and Computer Design"**, PHI, 2000. **[UNIT I and II]**

2.M.Morris Mano, **"Computer System Architecture"**, Third Edition, Pearson Education, 2002. **[UNIT III and IV]**

3.N.Malarvizhi**,"Computer Architecture and Organization"**, Eswar Publications,2007, first edition**[UNIT V]**

REFERENCE BOOKS:

1. Albert Paul Malvino, Donald P.Leach, **" Digital Principles and Applications"** , Sixth Edition Tata McGraw Hill Pub.Company.Ltd-2006

2. J.P.Hayes, **" Computer Architecture and Organization"** ,Third Edition, Tata Mc Graw Hill Pub.Company.Ltd-1998

3. William Stallings**," Computer Organization & Architecture – Designing for performance"**, Pearson Education, Seventh Edition-2006.

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SEMESTER I 12PCT103

C.P.3 ADVANCED JAVA

Credit Points: 4 **Total Hrs.: 60 Hrs.**

Objective:

To develop the programming skills using the JAVA language.

UNIT-I **12 Hours**

Object Oriented Programming: Introduction-Objects and Classes-Characteristics of OOPs-Difference between OOPs procedure oriented programming-Benefits of OOPs-Introduction to JAVA Programming: History-Features of Java-Comparing Java and other languages-JDK.

Java Language Fundamentals-Literals-White spaces-Comments-Data types-Variable Declarations-operators-Control structures.

UNIT-II **12 Hours**

Arrays-Strings-String Buffers-String Tokenizers-Defining Classes-Interfaces-Packages-Exception Handling: Exception Hierarchy-Unchecked and checked Exception-Handling Exception in Java-Throwing –user defined Exceptions.

UNIT-III **12 Hours**

Multithreading : Creating Threads-Life Cycle-Priority-Synchronization.

Files I/O Streams-Applets-AWT: Basic classes in AWT-Drawing with Graphics Class-Hierarchy of AWT-AWT controls-**Layout managers*** Swings: JApplet- JTextField-JButton- JComboBox- JScrollPanes- JTrees.

UNIT-IV **12 Hours**

Event Handling and Event Listener: The Action Event-Item Event-Key Event-Mouse Event- Mouse Wheel Event-Action Listener-Item Listener-Key Listener-Mouse Listener-Mouse Wheel Listener.

Servlets: Introduction-How to Run Servlets-Life cycle of the Servlets- Servlet API.

JDBC:JDBC Architecture-Working with JDBC-Handling Exception.

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UNIT-V **12 Hours**

RMI: A Sample Client/Server Application using RMI-Network: Socket overview-Client/Server-Internet Address-DNS-URL Connection-TCP/IP server socket-UDP **Data grams*.**

Java Beans : Java Bean-Advantages of Java Beans-Installing the BDK.

BDK window - JAR Files - Simple Bean.

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

TEXT BOOKS:

1. P.Radha Krishna, **"Object Oriented Programming Through Java"**, Universities Press, 1st Edition,2007. **[UNIT I]**

2.Herbert Schildt , **"Java 2 The complete Reference"**, Tata McGraw Hill, 5th edition,40th reprint 2008. **[UNIT II ,III,IV,V]**

REFERENCE BOOKS:

1. Deitel and Deitel, **"Java How to Program"**,PHI Learning Private Ltd, 4th Edition, 2011.

2 E.Blagurusamy,**"Programming with Java & Primier"**, Tata McGram Hill,4th Edition,2011.

PCT 7

SEMESTER I **14PCT104**

C.P.4 RELATIONAL DATABASE MANAGEMENT SYSTEMS

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

The completion of this paper should develop the knowledge in various database concepts, queries, normalization and reports.

UNIT-I **12 Hours**

Overview of database systems: Managing data-A historical perspective-File system versus DBMS-Advantages of a DBMS-Describing and storing Data in a DBMS - Queries in a DBMS-Transaction management-Structure of a DBMS.

Database design & ER diagrams - Entities, Attributes, and Entity Sets – Relationships and Relationship sets- Additional feature of the ER model -conceptual Database design with the ER model-The Unified Modeling Language.

UNIT-II **12 Hours**

Relational Model: Integrity constraints over relations-Enforcing integrity constraints-Querying relational data-Logical database design: ER to Relational-Introduction to Views- Destroying/Altering Tables & Views.

Relational Algebra and Calculus: Relational Algebra-Relational Calculus.

UNIT-III **12 Hours**

SQL: Queries, Constraints, Triggers: The form of a basic SQL Query -Complex integrity constraints in SQL-Triggers & Active data bases.

Transaction Management Overview: The ACID Properties-Transactions & Schedules – Concurrent execution of Transactions-Lock-based concurrency control-performance of Locking –**Transaction support in SQL***.

UNIT-IV **12 Hours**

Schema Refinement and Normal forms: Introduction to Schema refinement-Functional dependencies- Reasoning about FDS-Normal forms-Properties of

Decompositions -Normalization-Schema Refinement in data base design-other kinds of dependencies.

Security and Authentication: Introduction to Database security-Access control-Discretionary Access control-Mandatory Access control- **Additional issues to security*.**

UNIT-V **12 Hours**

Visual Basic 6.0-Getting started with VB 6.0-ODBC and Data Access Object-Data Environment and Data Report-Working with Active X Data Object-Crystal Report.

Oracle PL/SQL Programming: Introduction –Syntax-Block Structure-Var declaration -Types-Operators-Control Structures. SQL within PL/SQL-SQL Statement-DML in PL/SQL-Built in SQL function –Grant,Revoke and privileges-Transactions controls-Cursors-Procedures,Functions.

*** Self Study and questions for examinations may be taken from the**

self study portions also.

TEXT BOOKS:

1. Raghu Ramakrishnan, Johannes Gehrke, **"Database Management Systems"**, Third Edition, McGraw-Hill Higher Education, 2000. **[UNIT I – UNIT IV]**
2. **"Visual Basic 6.0 Programming"**, By Content Development Group-Tata McGraw Hill,2008 **[UNIT-V]**
3. **"Oracle PL/SQL Programming"**-Scott Urman Mc Graw Hill,2008, **[UNIT-V]**

REFERENCE BOOKS:

1. Silberschatz, Korth, Sundarashan, **"Database system Concepts"**, Fourth Edition, McGraw-Hill Higher Education,2002.
2. Elmasri, Navathe, **"Fundamentals of Database Systems"**, Third Edition, Pearson Education Asia,1997.

PCT 9

SEMESTER I 14PCT105

C.P.5 ADVANCED OPERATING SYSTEMS

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

To learn the advanced concepts of operating systems, process management, memory management, I/O systems and distributed systems.

UNIT I **12 Hours**

Introduction: What is an OS-Mainframe Systems-Desktop Systems - Multiprocessor systems-Distributed Systems-Clustered Systems-Real Time Systems. Operating System Structures: System Components-OS Services-System Calls-System Programs-System Structure -Virtual Machines-System Design and Implementation-System Generation.

UNIT II **12 Hours**

Process Management: Process Concept - Process Scheduling-Operations on Processes -Cooperating Process – Inter process Communication. Threads: Overview-Multithreading Models-Threading issues-Windows 2000 Threads-Linux Threads-Java Threads. CPU Scheduling: scheduling criteria - scheduling algorithms. Process Synchronization: The critical section problem-Semaphores-Classic Problems of Synchronization-Critical region-Monitors.

UNIT III **12 Hours**

Deadlocks: Deadlock Characterization - Methods for Handling Deadlocks – Deadlocks. Prevention - Deadlock Avoidance - Deadlock Detection - Recovery from Deadlock. Memory Management: Background-Swapping-Contiguous Memory Allocation- Paging - Segmentation—Segmentation with Paging.

Virtual Memory: Demand Paging—Process Creation –Page Replacement- Allocation of Frames—**Thrashing***.

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UNIT IV **12 Hours**

I/O Systems: Mass-Storage Structure: Disk Structure - Disk Scheduling –Disk Management – Swap - Space Management. File Systems: File Concepts - Access Methods -Directory Structure. File System Implementation: File System Structure - File System Implementation -Directory Implementation - Allocation Methods - Free - Space Management - Efficiency & Performance - Recovery.

UNIT V **12 Hours**

Distributed Systems: Distributed System Structures: Background-Topology-Network Types-Communication-Communication Protocols-Robustness-Design issues. Distributed File Systems: Background-Naming and Transparency-Remote File Access-**Stateful Versus Stateless Service***-File Replication.

Distributed Coordination: Event Ordering-Mutual Exclusion-Atomicity-Concurrency Control-Deadlock Handling-Election Algorithms-Reaching Agreement.

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

TEXT BOOK:

1. Silberschatz, Galvin, Gagne, **"Operating Systems Concepts"** ,Sixth Edition, John Wiley&sons., 2004.

REFERENCE BOOKS:

1. Andrew S. Tanenbaum, **"Modern Operating System"**, PHI/Pearson Education Asia, Second Edition, 2006

2. D.M. Dhamdhere, **"Operating Systems"** , TMCH, 2001.

3. Deitel, **"Operating Systems"**, Pearson education Asia, second edition, 1996.

4. Godbole, **"Operating Systems"**, TMCH, second edition, 1999.

PCT 11

SEMESTER I **12PCT1CL**

C.Pr.1 ADVANCED JAVA PROGRAMMING LAB

Credit Points: 2 **Total Hrs.: 75 Hrs.**

1. Write a Java Program to implement Multiple Inheritance.
2. 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 to display the pay slip.
3. Java program to view an image in an Applet.
4. Write a Java Program to Handle Divide by Zero Errors & user defined Exception using Exception Class Concepts.
5. Create a frame with user specific size and position it at user specific position (use command line argument). Then display different shapes with different colors (use menus)
6. Java program to handle different mouse events
7. Create a calculator application.
8. Write a java program to implement the Key Adapter Class Concept.
9. Design a e-mail id creation form using swing components.
10. Write a Java Program to perform some string functions & String Tokenizer by using multithreading concepts
11. Java program by using JDBC concepts to access an inventory database [use MS-Access]
12. Java program to maintain the student information in text file
13. Java program that prohibit the reading of text files that containing bad words
14. Program to send a text message to another system and receives the text message from the system using sockets.
15. Java program to implement RMI to add two matrices.
16. Java program to implement the tree viewer.
17. Java Program to implement Bean.
18. Write a Java Program to add two integer numbers using servlet.

PCT 12

Guidelines to the distribution of marks for Practical Examinations :

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

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

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

PCT 13

SEMESTER I **12PCT1CM**

C.Pr.2 RELATIONAL DATABASE MANAGEMENT SYSTEMS LAB

Credit Points: 2 **Total Hrs.: 75 Hrs.**

1. Write Queries to CREATE, INSERT, SELECT and ALTER the table.
2. Write a Query to perform AGGREGATE function with GROUP BY
3. Write a Query to perform outer and inner JOIN two tables.
4. Write a Query to check the constraints.

Study features of commercial RDBMS packages such as Oracle. 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.
- Library Maintenance.
- Electricity Bill Maintenance

Guidelines to the distribution of marks for Practical Examinations :

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

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

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

PCT 14

SEMESTER II **14PCT206**

C.P.6 MULTIMEDIA

Credit Points: 4 **Total Hrs.: 60 Hrs.**

Objective:

To learn the concept of basics in multimedia, photo shop, dream weaver, Corel draw and flash.

UNIT-I **12 Hours**

Multimedia-Introduction-Multimedia presentation and production-Characteristics-multiple media- Digital representation: Analog representation-Digital representation-Analog to Digital Convertor- Digital to Analog. Text: Types of Text-Font-File formats. Image: Image Types-Color models-Basic steps for image processing-CMS-Image processing software. Audio: Acoustics-Sound waves-Characteristics of sound-MIDI-audio processing software-Video: digital video-**video editing software***.

UNIT-II **12 Hours**

Photoshop CS3: Introduction to Photoshop cs3-Working with images-Creating, modifying and transformation the selections-Drawing tools-Painting tools-Layers style and filter effects.

UNIT-III **12 Hours**

Dreamweaver: Introduction-Site management-working with text-tables-images-CSS-links-Forms and frames.

UNIT-IV **12 Hours**

CorelDRAW11: Introduction-Understanding CorelDraw 11 - Working in CorelDraw11 - Working with objects-Working with Colors: Using Color Docker-Color Sliders-Color Viewers-Fixed palettes-Color palette Browser docker-Creating child colors-Creating shades of styles-Creating styles from selections.

UNIT-V **12 Hours**

Flash: Introduction – flash concepts – **working with Graphics***-working with text-Symbols & Library-All about animation-All about Tweening-Adding interactivity to flash movie: Behaviors-creating a movie clip-Action Scripts.

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

PCT 15

TEXT BOOKS:

1. Ranjan Parekh , **"Principles of Multimedia"**,Tata Mc Graw Hill,2008**(UNIT-I)**
2. Kogent Solutions INC, **"Photoshop CS3 in Simple Steps"**, DreamTech Press, 2008**(UNIT-II)**
3. Kogent Solutions INC, **"Dreamweaver in Simple Steps"**, DreamTech Press, 2007 **(UNIT-III)**
4. **"CorelDRAW–Version 11"**, Law Point publication, 1st edition, 2005**. (UNIT-IV)**
5. Shalini Gupta,Adity Gupta, **"Flash 8 in Simple Steps"**, DreamTech press, 2008**(UNIT-V)**

REFERENCE BOOKS:

1. Judith Jeffcoate, **"Multimedia in Practice (Technology and Applications)"**, PHI New Delhi, 2003.

PCT 16

SEMESTER II **12PCT207**

C.P.7 DATA COMMUNICATION AND NETWORKING

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

The students should expertise in the concepts of digital and analog transmission, reference models and various layers.

UNIT- I 12 Hours

Introduction to data communication and networking: Introduction-fundamental concepts-data communications-protocols-standards organizations-analog and digital signals.

Analog and digital transmission methods : introduction-analog signal, analog transmission- digital signal, digital transmission-digital signal, analog transmission-analog signal, digital(storage and) transmission.

Modes of data transmissions: introduction-parallel and serial communication-asynchronous, synchronous and isochronous communication-simplex, half-duplex and full-duplex communication.

UNIT-II 12 Hours

Introduction: Uses of computer networks-Network Hardware – Network Software – Reference Models.

The Physical layer: Guided transmission media – Communication satellites – The Public Switched telephone network: **Structure of the telephone system*** – The local loop : modems, wireless local loops – Switching.

UNIT-III 12 Hours

The Data link layer: Data link layer design issues .The Medium access control sub layer: The channel allocation problem – Multiple access protocols: Carrier sense multiple access protocols, collision-free protocols, Limited-Contention protocols – Blue tooth: Blue tooth Architecture, **Blue tooth applications***.

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UNIT-IV **12 Hours**

Data link layer switching: repeaters, hubs, bridges, switches, routers and gateways.
The Network layer: Network layer design issues – Routing algorithms: The optimality principle, shortest path routing, flooding, distance vector routing, routing for mobile hosts.
The Transport layer: The Transport service: Services provided to the upper layers, transport service primitives, Berkeley sockets – Elements of Transport protocols.

UNIT-V **12 Hours**

The Application layer: DNS – The Domain Name System.
Network Security: Cryptography – DES – Digital Signatures: Symmetric-Key Signatures, Public-Key signatures.

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

TEXT BOOKS:

1. Achyut S Godbole , **"Data Communications and Networks"**, First Edition,Tata McGraw-Hill 2007 **[Unit I]**
2. Andrew S. Tanenbaum, **"Computer Networks"**, Forth Edition, Pearson EdUCAtion Publ-2003 **[Unit II To V]**

REFERENCE BOOKS:

1. Behrouz A. Forouzan, "**Data Communications and Network",** Tata MCGraw Hill - Second Edition 2003.
2. William A Shay, **"Understanding data communications and Networks"**, 2nd Edition, Vikas Publication, 2001.

PCT 18

SEMESTER II **12PCT208**

C.P.8 .NET TECHNOLOGIES

Credit Points: 4 **Total Hrs.: 60 Hrs.**

Objective:

To study the concepts of .NET Framework technologies and programs.

UNIT-I **12 Hours**

VB.NET - .Net Frame work and the CLR-IDE-Building VB.Net Applications. Operations-Conditionals and Loops-Procedures, Scope and Exception Handling.

UNIT-II **12 Hours**

Adding Controls-Handling Events-Creating MDI Applications-Textboxes, Rich Textboxes, Labels-Buttons, Check boxes, Radio buttons, Panels and Group boxes-List box, Checked list box, **Combo box*** and Picture boxes.

UNIT-III **12 Hours**

ASP.NET- What are Active Server Pages-Operating Systems - Servers- ASP Objects-ADO and ADO.NET Objects-ASP Components-Data Types- Arrays- Designing. Applications: Process Modeling – Designing a User Interface for the Web.

UNIT-IV **12 Hours**

C Sharp: Introduction-Variable-Definition-**Parameter reference***-Exception, Exception in Method-Exception throw-Data Types: Integer-Boolean-Bitwise- Enum- Float- Escape sequence- decimal- XOR.

UNIT-V **12 Hours**

Operators-Statement-String-Struct-Class: Class definition –Class instance-Object reference-Operator Overload. Inheritance and Polymorphism, Interface: Multiple Inheritance, Operator Overloading, Multithreading in C#.

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

TEXT BOOKS:

1. Steven Holzner, **"Visual Basic.NET Black Book"**, Dream Tech, First Edition, 2005. **[UNIT I,II]**
2. Dave Mercer, **"ASP.Net, A Beginner's Guide"**, Tata McGraw Hill, 2002. **[UNIT III]**
3. Balagurusamy, **"Programming in C#"**, Tata McGraw Hill, Second Edition. **[UNIT IV,V]**

REFERENCE BOOKS:

1. Evangelos petroustes, **"Mastering Visual Basic.Net"**, BPB Publications, First Edition,2002.
2. Bill Hatfield, **"ASP.NET 2.0 for Dummies"**
3. John Smiley, **"Learn to program with C#"** , TatamcGraw Hill,Edition 2003.

PCT 20

SEMESTER II 14PCT209

C.P.9 DATA MINING AND WAREHOUSING

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

This subject develops the knowledge of the research area in data mining.

UNIT-I 12 Hours

Data Mining: Introduction: Basic Data Mining tasks- Data Mining versus Knowledge discovery in Database- Data Mining issues- Data Mining metrics-Social implications of Data Mining- Data Mining from a database perspective. Data Mining techniques: Introduction-Statistical perspective on Data Mining-Decision trees-Neural networks-Genetic algorithms.

UNIT-II 12 Hours

Classification: Introduction- Statistical based algorithms-Distance based algorithms-Decision tree based algorithms. Clustering: Introduction-Similarity and distance measures-Outliers-Hierarchical algorithms-**Partitional algorithms***-Clustering large databases. Association rules: Introduction-Basic algorithms-Parallel and distributed algorithms.

UNIT-III 12 Hours

Web Mining: Introduction-Web content mining-Web structure mining-Web usage mining. Spatial Mining: Introduction-Spatial data overview- Spatial data mining primitives- Spatial rules- Spatial Classification algorithms. Temporal mining: Introduction-Modeling temporal events-Time series-Sequences-Temporal association rules.

UNIT-IV 12 Hours

Data Warehousing : Introduction-Characteristics of a data warehouse-Data marts-Other aspects of data marts. Online Analytical Processing: Introduction-OLTP and OLAP systems-Data modeling-OLAP tools-State of the market-OLAP tools and internet.

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UNIT-V **12 Hours**

Developing a Data Warehouse: Why and how to build a Data Warehouse?- Data Warehouse Architectural strategies and Organizational issues-Design considerations-Data content-Metadata-Distribution of data-Tools for Data Warehouse. Applications of Data Warehouse& Data Warehouse in Government: Introduction-National data Warehouse-Other Areas of Data Warehousing- **Data Warehousing in Tamil Nadu Government***

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

TEXT BOOKS:

1. Margaret H.Dunham, **"Data Mining introductory and advanced topics"** , Pearson education,2012. **[UNIT I, II, III]**

2. C.S.R.Prabhu, **"Data Warehousing – concepts, techniques, products and applications"**,3rd edition,2008. **[UNIT IV,V]**

REFERENCE BOOKS:

1.Jiawei Han and Micheline Kamber**, "Data Mining concepts and Techniques"**, Morgan Kaufmann Publishers, Second Edition

2. Arun K. Pujari, **"Data Mining Techniques"**, Universities Press (India) Pvt.Ltd., 2003

3. Aler Berson, Stepen J. Smith, **"Data warehousing, data mining, & OLAP"**, TMCH,2001.

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SEMESTER II 14PCT210

C.P.10 SOFTWARE PROJECT MANAGEMENT

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

- Understand the basic concepts of Software Development Life Cycle.
- Familiarize the different models and significant.

UNIT I **12 Hours**

Product Life Cycle: Introduction-Idea Generation-Prototype Development Phase-Alpha Phase-Beta Phase-Protection Phase-Maintenance And Obsolescence Phase. Project Life Cycle Models: What Is Project Life Cycle Model-A Frame Work For Studying Different Life Cycle Models-The Waterfall Model-The Prototype Model-The Rapid Application Development Model-The Spiral Model and its Variants.

Metrices: Introduction-The Metrices roadmap-A Typical Metrices Strategy-What Should You Measure-Set Targets and Track Them-Understanding and Trying to Minimize Variability-Act On Data-People and Organizational Issues In Metrices Programmes-Common Pitfalls To Watch Out For In Metrices Programs-**Metrices Implementation Checklists And Tools*.**

UNIT II **12 Hours**

Software configuration management: introduction-basic definitions and terminology-the process and activities of software configuration audit-software configuration management in geographically distributed teams-metrices in software configuration management-software configuration management tools and automation.

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 analyst’s function-some popular misconceptions about the SQA’s role-software quality assurance tools-organizational structures-profile of a successful SQA-measures of SQA success-pitfalls to watch out for in the SQA’s role.

Risk management: introduction-what is risk management and why is it important-risk management cycle-risk identification: common tools and

techniques-risk quantification-risk monitoring –risk mitigation-risks and mitigation in the context of global project –teams-some practical techniques in risk management – metrices in risk management.

UNIT III **12 Hours**

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-skills sets required during the requirements phase- differences for a shrink-wrapped software –challenges during the requirements management phase- metrices for the requirement phase.

Estimation: what is estimation-when and why is estimation done – the three phases of estimation – estimation methodology- formal models for size estimation- translation effort estimated into schedule estimates-common challenges during estimation-metrices for the estimation processes.

UNIT IV **12 Hours**

Design and development phases: some difference in our chosen approach – salient features of design – evolving an architecture / blueprint- design for reusability-technology choices / constraints- design to standards – design for portability – user interfaces issues - design for testability-design for diagnosability-design for maintainability-design for installability-inter- operability design- challenges during design and development phases- skills sets for design and development metrices for design and development phases.

Project management in the testing phase: Introduction- what is testing- what are the activities that make up testing – test scheduling and types of tests-

people issues in testing – **management structures for testing in global teams***-metrices for testing phase.

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UNIT V **12 Hours**

Project management in the maintenance phase: Introduction- activities during the maintenance phase- management issues during the maintenance phase- configuration management during the maintenance phase- skills sets for people in the maintenance phase-estimating size, effort and people resources for the maintenance phase-advantages of using geographically distributed teams for the maintenance phase-metrices for the maintenance phase.

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

Impact of the Internet on project management: Introduction-the effect of Internet on project management – managing projects for the Internet – effect on project management activities.

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

TEXT BOOK:

1.Gopalswamy Ramesh, **"Managing Global Software Projects"**,Tata McGraw Hill Publishing Company,2003. **[UNIT I to V]**

REFERENCE BOOKS:

1. S.A Kelkar, **"Software Project Management – A Concise Study"**, PHI ,2003.

2. Mike Cotterel , Bob Hughes, **"Software Project Management"**, Inclination / Thomas Computer Press, 1995.

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SEMESTER II **12PCT2CN**

C.Pr.3 MULTIMEDIA LAB

Credit Points: 2 **Total Hrs.: 75 Hrs.**

Programs implementing the following:

1. Design a sports day certificate using Photoshop.
2. Animate an images and text using Photoshop.
3. Design a layers with Filter effects using Photoshop.
4. Create an image with morphing effects using Photoshop.
5. Create a website using Dreamweaver.
6. Create a website using Templates in Dreamweaver.
7. Create a website using with Frames Dreamweaver
8. Create a website using Rollovers, drawing image maps & image tricks Dreamweaver
9. Create a patterns from Symbols and filling objects using CorelDRAW.
10. Create a 3D effects using CorelDRAW.
11. Create a Transparencies and lenses using CorelDRAW.
12. Simulate a Traffic Signal using Flash.
13. Simulate a Seashore with ship floating effects using Flash.
14. Simulate a 4 roads with light effects using Flash.
15. Create a Interactive pages with buttons using Flash.

Guidelines to the distribution of marks for Practical Examinations :

Two Questions will be given for each student (3 Hours / 30 Marks)

1. Record Work- 5 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 20 Marks

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SEMESTER II **12PCT2CO**

C.Pr.4 .NET TECHNOLOGIES LAB

Credit Points: 2 **Total Hrs.: 75 Hrs.**

VB.Net:

1. Perform Matrix addition using polymorphism concepts
2. Program to simulate a digital clock with reset option.
3. Program to maintain Employee details.
4. Program to maintain Student details.

ASP.Net:

5. Programs using Components.
6. Design a website to display your Bio-data.
7. Programs using web services
8. Programs using ADO.Net

C#:

9. Write a program to implement Exceptional Handling.
10. Write a program to implement String Manipulation.
11. Write a program to implement Operator Overloading.
12. Write a program to implement Multiple Inheritance

Guidelines to the distribution of marks for Practical Examinations :

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

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

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

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SEMESTER III **14PCT311**

C.P.11 SOFTWARE TESTING

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

To learn the concepts of various software testing techniques.

UNIT I **12 Hours**

Software Development Life Cycle models: Phases of Software project –Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing -**Challenges in White-Box Testing** *.

UNIT II **12 Hours**

Black-Box Testing**:** What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing**:** Integration Testing as Type of Testing – Integration Testing as a Phase fTesting – Scenario Testing – Defect Bash

UNIT III **12 Hours**

System and Acceptance Testing**:** system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing -Functional testing - Non-functional Testing – Acceptance Testing –**Summary of Testing Phases *.**

UNIT IV **12 Hours**

Performance Testing: Factors governing Performance Testing –methodology of Performance Testing – tools for Performance Testing –Process for Performance Testing – Challenges. 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.

UNIT V **12 Hours**

Test Planning, Management, Execution and Reporting**:** Test Planning– Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics –Productivity Metrics – Release Metrics.

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

TEXT BOOK:

1. Srinivasan Desikan & Gopalswamy Ramesh, **" SOFTWARE TESTING PRINCIPLES AND PRACTICES"**, 2006, Pearson Education. **[UNIT I to V]**

REFERENCE BOOKS:

1. William E.Perry, **"EFFECTIVE METHODS OF SOFTWARE TESTING",** 3rd edition,Wiley India.
2. Renu Rajani, Pradeep Oak, **"SOFTWARE TESTING"** , 2007, TMH

PCT 29

SEMESTER III **14PCT312**

C.P.12 WEB DESIGNING

Credit Points: 5 **Total Hrs.: 60 Hrs.**

Objective:

To develop the knowledge for designing the web site.

UNIT-I 12 Hours

Introduction to computers and the Internet: **history of the World Wide Web***.

Introduction to XHTML: Introduction – Editing XHTML-Headers – linking – images - special characters and more line breaks - unordered lists- ordered lists. Intermediate XHTML- Introduction-basic XHTML tables-intermediate XHTML tables and formatting-basic XHTML forms-more complex xhtml forms-internal linking-creating and using image maps – META Elements – FRAMESET Elements – Nested Frameset.

Cascading Style Sheet (CSS): Introduction-Inline Styles-Embedded style sheet Conflicting Styles-Linking External Style Sheets-Positioning Elements-Backgrounds-Element Dimensions-Text flow and the box model-user style sheets.

UNIT-II 12 Hours

Dynamic HTML: Event model: Introduction-event ON CLICK-event ON LOAD-error handling with ON ERROR-Tracking the mouse with event ON MOUSE MOVE-rollovers with ON MOUSE OVER and ON MOUSE OUT – Form Processing with ON FOCUS and ONBLUR-more form processing with ON SUBMIT and ON RESET-Event bubbling -more DHTML events.

Java script: Introduction to java scripting –memory concept – arithmetic – Decision Making – Equality and Relational Operators –Assignment Operator - Increment & Decrement Operators – Note on Data Types. Control Statements I - Control Statements II – Functions – Arrays. JavaScript Objects :

Introduction – Thinking about Objects – Math Object – **String Object** *–Date Object – Boolean and Number Objects – Document Object – Window Object.

UNIT-III **12 Hours**

Web Servers: Client side scripting versus server side scripting – Accessing Web Servers - Microsoft Internet Information Services – Apache Server.

Active Server Pages (ASP): Introduction - How ASP works - ASP Objects - File System Objects - Session tracking and cookies – Active Data Objects - accessing a database from an ASP.

UNIT-IV **12 Hours**

PHP- Introduction – String processing and regular expressions – viewing client/ server environment variables – form processing and basic logic –

verifying a user name and password – connecting to a database – cookies – dynamic contents in PHP – operator precedence chart.

UNIT-V **12 Hours**

XML: Introduction –Structuring data – XML name space – DTDs and Schemas – XML vocabularies – document object model (DOM) – DOM methods – simple API for XML – Extensible style sheet language (XSL) – simple object access protocol (SOAP) – Web services.

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

TEXT BOOKS:

1.Deitel, Deitel, GoldBerg, **"Internet and World Wide Web-How to program "**, Prentice Hall of India Pvt Ltd., Third Edition **[UNIT I , II, III, V]**

2.Deitel, Neito, **"Internet and World Wide Web-How to program"** ,Pearson Education Asia,2003. **[UNIT IV]**

REFERENCE BOOKS:

1. Thomas A.Powell, **"The Complete Reference HTML and XHTML"** ,fourth edition, Tata McGraw Hill pub. Company Ltd, New Delhi,2004.

2. Achyut S. Godbole, Atul Kahate , **"Web Technologies-TCP/IP to Internet Application Architectures"**, Tata McGraw- Hill Pub. Company Ltd.2003.

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SEMESTER III **14PCT313**

C.P.13 MOBILE COMPUTING

Credit Points: 4 **Total Hrs.: 60 Hrs.**

Objectives:

To grasp the knowledge about mobile generations and mobile computing techniques.

UNIT-I: **12 Hours**

Introduction: Mobility of bits and bytes, wireless- The beginning, mobile computing – Networks – Middleware and Gateways – Application and Services – Developing Mobile computing Applications – Security in Mobile Computing.

Mobile Computing Architecture: History of Computers – History of Internet – Internet – The ubiquitous network – Architecture for Mobile Computing– Three Tire Architecture - Design consideration for Mobile Computing- Mobile Computing through Internet – Making existing Applications Mobile - Enabled.

UNIT-II: **12 Hours**

Mobile Computing through Telephony: Evolution of Telephony – Multiple Access Procedures - Mobile Computing through Telephone – Developing an IVR application – Voice XML.

Emerging Technologies: Introduction – Bluetooth- Radio Frequency Identification – Wireless broadband – Mobile IP- Internet Protocol Version 6(IPV6)- Java Card.

UNIT-III: **12 Hours**

Global system for Mobile Communication (GSM): Global system for Mobile Communication- GSM Architecture – GSM entities – Call routing in GSM, PLMN Interface – GSM Address Identifiers – Network aspects in GSM- GSM frequency allocation – Authentication and Security.

Short Message Service (SMS) : Mobile Computing over SMS - Short Message Service- Value added services through SMS – Accessing the SMS bearer.

UNIT – IV: 12 Hours

General Packet Radio Service (GPRS):Introduction – GPRS and packet data network – GPRS network architecture.

Wireless Application Protocol (WAP): Introduction – WAP – MMS- GPRS application.

J2ME:JAVA in the handset-The Three-prong approach to JAVA Everywhere-GUI in MIDP-UI Design Issues-Multimedia.

UNIT- V: 12 Hours

Voice Over Internet Protocol and Convergence: Voice Over IP- H.323 Framework for Voice Over IP-Voice Over IP Applications-Mobile VoIP.

Next Generation Networks: All in One –The Converged Scenario-Narrowband to Broadband-All IP and B3G Network-OFDM-MPLS-Multiple Play-Future Trends.

TEXT BOOK:

1. Ashok K Talukder, Roopa R Yavagal, **"Mobile Computing"**, Tata McGraw Hill Publishing Company Ltd, Second Edition,2011. **[UNIT I to V]**

REFERENCE BOOKS:

1. Jochen Schiller, **"Mobile Communication"** , Edison Wesely Pub, Second Edition, 2003.

2. Hansmann, Lothar Mark, Martin and Nicklaus, Thomas Stober, **"Principles of mobile computing"**, Second Edition, springer international edition.

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SEMESTER III **14PCT3CP**

C.Pr.5 SOFTWARE TESTING LAB

Credit Points: 2 **Total Hrs.: 75 Hrs**

1. Calculation operation using Context Sensitive Mode.
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. Perform Bitmap checkpoint using Analog Mode.
7. Perform GUISPY using Context Sensitive Mode.
8. Perform User Report Generation using Context Sensitive Mode.

Guidelines to the distribution of marks for Practical Examinations :

One Question will be given for each student (3 Hours / 30 Marks)

1. Record Work- 5 Marks
2. Viva Voce – 5 Marks
3. Algorithm, Coding and execution – 20 Marks

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SEMESTER III **12PCT3CQ**

C.Pr.6 WEB DESIGNING LAB

Credit Points: 2 **Total Hrs.: 75 Hrs**

List of Practical Problems

1. Design a web page for College using Frames in XHTML tags.
2. Design a web page for Resume and include CSS using XHTML tags.
3. Design a web page for color an image viewer in background using DHTML
4. Design a web page with menus and sub menus using DHTML.
5. Design a calculator using JavaScript.
6. Implement Online Quiz using JavaScript.
7. Create an ASP that displays Online Result using Database.
8. Write a program in ASP to demonstrate Server Side ActiveX components.
9. Write an XML document to display your bio-data and validate it.
10. Create a web Service for Currency conversion using xml.
11. Write a program in PHP for processing form.
12. Write a program in PHP for File manipulation.

Guidelines to the distribution of marks for Practical Examinations :

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. Modifications – 5 Marks

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

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SEMESTER IV **12PCT4Z1**

PROJECT AND VIVA – VOCE

Credit Points: 8 **Total Hrs.: 450 Hrs.**

Guidelines to the distribution of marks :

CIA/ESE	Particulars	Project Out of 200 Marks(PG)
CIA	Project Review	30
	Regularity	10
	Total Internal Marks	40
*ESE	Project Report Present	120
	Viva voce	40
	Total Internal Marks	160
Total Marks(CIA+ESE)		200

*** Evaluated by both Internal & External Examiners jointly.**

MAJOR ELECTIVE PAPERS

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ELECTIVE PAPER FOR THIRD SEMESTER

INFORMATION SECURITY

Credit Points: 5 **Total Hrs. : 60 Hrs.**

Objective:

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

UNIT I: **12 Hours**

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: **12 Hours**

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: **12 Hours**

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

UNIT IV: **12 Hours**

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: **12 Hours**

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***.

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

TEXT BOOK:

1.Michael E. Whitman, Herbert J. Mattord, **"Principles of Information Security "**,Cengage Learning Publications,2008

REFERENCE BOOKS:

1.Debby Russell and Sr.G.T.Gangemi, **"Computer Security Basics(paperback)"**, Second edition, O'Reilly Media, 2006.

2.Ross J.Anderson and Ross Anderson**,"Security Engineering : A guide to building dependable distributed system"**,Wiley,2001.

3. RANJAN BOSE, **"Information Theory, Coding And Cryptography"**, Tata McGraw-Hill Publications,2nd Edition,2008.

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ARTIFICAIL INTELLIGENCE & FUZZY LOGIC SYSTEM

Credit Points: 5 **Total Hrs. : 60 Hrs.**

Objective:

The subject is intended to provide the common goals of Artificial Intelligence and Fuzzy Logics.

UNIT – I **12 Hours**

Introduction-Stimulus-Response Agents: Perception & Action-Represe4nting & Implementing Action Functions. Neural Networks: Training Single TLUs-Neural Networks. Machine Evolution: Genetic Programming-Robot Vision.

UNIT – II **12 Hours**

Search in State spaces: Agents that plan-State-space Graphs-Searching Explicit state spaces-Graph Notation. Uniformed Search: Breath-First search-Depth-/First or Backtracking search. Heuristic search: A general-graph searching algorithm-Algorithm A*.Adversarial search: Two-agent Games –The minimax procedure-**The alpha-beta procedure*.**

UNIT – III **12 Hours**

Knowledge Representation & Reasoning: The Propositional Calculus-Resolution in the Propositional Calculus-The predicate calculus-Resolution in the predicate calculus. Knowledge Based system-Representing Common sense knowledge. Planning method Based on Logic: Planning: STRIPS planning systems.

UNIT – IV **12 Hours**

Fuzzy Logic: The Concept of uncertainty and associated Solution-Fuzzy Sets: Introduction-Classical Sets(Crisp Sets)-Concept of a Fuzzy Set-Basic Properties and characteristics of Fuzzy Sets-Fuzzy Set Operations-Fuzzy Reasoning-Introduction-A conventional Control System-Major Components of a Fuzzy Logic System-Fuzzification-**Interference Engine***.

UNIT – V **12 Hours**

Design Aspects of Fuzzy Systems: A few suggestions on Fuzzy System Design-Extracting Information from Knowledge Engineer-Curve Fitting-Iterative Algorithm-Adaptive Fuzzy Control-Rule Based Design Using Dynamic Response Analysis. Miscellaneous Fuzzy Logic Applications: Introduction-Fuzzy /decision-Making-Neuro-Fuzzy Systems-Fuzzy Logic Genetic Algorithms-DC motor Speed control Using Fuzzy logic Principle-Fuzzy Logic-Based Washing Machine.

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

TEXT BOOKS:

1. Nils J.Nilsson, **"Artificial Intelligence A New Synthesis"**, Stanford University, Morgan Kaufmann Publishers,2008. **[UNIT I,II,III]**

2. Dr.K.Sundareswaran ,**"A Learner's Guide To Fuzzy Logic Systems"**, Jaico Publishing,2005. **[UNIT IV,V]**

REFERENCE BOOKS:

1.Elaine Rich and Kelvin Knight,**" Artificial Intelligence"**, Tata McGraw Hill Publishers company Pvt Ltd, Second Edition, 1991.

2. George F Luger, **"Artificial Intelligence"**, 4th Edition, Pearson Education Publication-2002.

3. M.Ganesh,**"Introduction to fuzzy sets and fuzzy logic"**, PHI Learning private Ltd, New Delhi, 2009

PCT 40

CLOUD COMPUTING

Credit Points: 5 **Total Hrs.:60 Hrs.**

Objective:

Presents the basic concepts of Cloud computing techniques and recent trends.

UNIT – I **12 Hours**

INTRODUCTION : Cloud Computing Introduction, From, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.

UNIT – II **12 Hours**

CLOUD COMPUTING FOR EVERYONE : Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedulesm managing projects**, presenting on road***.

UNIT – III **12 Hours**

USING CLOUD SERVICES : Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating oncontact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

UNIT – IV **12 Hours**

OUTSIDE THE CLOUD : Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis.

UNIT – V **12 Hours**

STORING AND SHARING : Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, **exploring on line photo editing applications***, exploring photo sharing communities, controlling it with web based desktops.

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

TEXT BOOK:

1. Michael Miller, **"Cloud Computing"**, Pearson Education, New Delhi, 2009 **[UNIT I to V]**

REFERENCE BOOK:

1. Judith Hurwitz, Robin Bloon**," Cloud Computing for Dummies",** 2009

PCT 42

ADVANCED DIGITAL IMAGE PROCESSING

Credit Points: 5 **Total Hrs.:60 Hrs.**

Objective:

This subject provides the learning principles and how they are applied in real applications.

UNIT I **12 Hours**

DIGITAL IMAGE FUNDAMENTALS: Image formation, Image transforms – Fourier transforms, Walsh, Hadamard, Discrete cosine, Hotelling transforms.

UNIT II **12 Hours**

IMAGE ENHANCEMENT AND RESTORATION: Histogram modification techniques - Image smoothening – Image sharpening - Image restoration - Degradation model – Noise models-Spatial filtering – **Frequency domain filtering***.

UNIT III **12 Hours**

IMAGE COMPRESSION AND SEGMENTATION:

Compression Models - Elements of information theory - Error free compression - Image segmentation – Detection of discontinuities - Edge linking and boundary detection - Thresholding – Region based segmentation - Morphology.

UNIT IV **12 Hours**

REPRESENTATION AND DESCRIPTION:

Representation schemes – Boundary descriptors – Regional descriptors –**Relational descriptors***.

UNIT V **12 Hours**

OBJECT RECOGNITION AND INTERPRETATION: Patterns and pattern classes - Decision - Theoretic methods - Structural methods.

TEXT BOOKS:

1.Gonzalez, R.C., Woods, R.E., **"Digital Image Processing"**, 2nd Edition, Pearson Education ,2002. **[UNIT I to V]**

REFERENCE BOOKS:

1. Anil Jain, K., **"Fundamentals of Digital image Processing"** , Prentice Hall of India, 1989.

2. Sid Ahmed, **"Image Processing",** McGraw Hill, New York, 1995.

ADVANCED LEARNERS COURSE

(ALC)

PCT 44

SEMESTER II 14PCT0D1

ALC. 1 PROGRAMMING IN C #

Credit Points: 2

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.

UNIT V

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

PCT 45

TEXT 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]**

REFERENCE BOOK:

1. E.Balaguruswamy, "**Programming in C#",** Tata McGraw Hill, 2002.

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SEMESTER III 12PCT0D2

ALC. 2 J2EE

Credit Points: 2

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)

TEXT BOOK:

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

REFERENCE BOOK:

1. 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.

PCT 47

KONGUNADU ARTS AND SCIENCE COLLEGE [AUTONOMOUS]
COIMBATORE - 641 029

End Of Semester Examination Question Paper Pattern

[For the candidates admitted from the academic year 2012 Onwards]

Theory

Maximum Marks: 75

Section – A (10 X 1=10 Marks)

Q.No.1 to 10: Multiple choice types alone with four distractors each.

Section – B (5 X 5=25 Marks)

Q.No.11 to 15: Either or/Short notes type questions (one question 'a' or 'b' from each unit).

Section – C (5 X 8=40 Marks)

Q.No.16 to 20: Either or/essay type questions (one question 'a' or 'b' from each unit).

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