BHARATHIAR UNIVERSITY, COIMBATORE.

M. Sc. INFORMATION TECHNOLOGY *(Affiliated Colleges)*
(Effective for the candidates admitted from the academic Year 2017-2018)

SCHEME OF EXAMINATIONS – CBCS PATTERN

Sem.	Study Components	Course title	Ins. hrs/ week	Dur.	CIA	Marks	Total Marks	Credit
I	**Semester I**							
	Paper I : Object Oriented Analysis and Design		5	3	25	75	100	4
	Paper II : Information Coding Techniques		5	3	25	75	100	4
	Paper III : Advanced Java Programming		5	3	25	75	100	4
	Paper IV : Web Designing		5	3	25	75	100	4
	Practical I : Advanced Java Lab		5	3	40	60	100	4
	Practical II : Web Designing Lab		5	3	40	60	100	4
II	Paper V : Data Mining and Warehousing		4	3	25	75	100	4
	Paper VI : Network Security and Cryptography		4	3	25	75	100	4
	Paper VII : **.**NET Programming		4	3	25	75	100	4
	Paper VIII : Software Project Management		4	3	25	75	100	4
	Elective – I		4	3	25	75	100	4
	Practical III: Data Mining using R		5	3	40	60	100	4
	Practical IV: **.**NET Programming Lab		5	3	40	60	100	4
III	Paper IX : Digital Image Processing		4	3	25	75	100	4
	Paper X : Big Data Analytics		4	3	25	75	100	4
	Paper XI : Cloud Computing		4	3	25	75	100	4
	Paper XII : PHP Programming		4	3	25	75	100	4
	Elective – II		4	3	25	75	100	4
	Practical V: Digital Image Processing using MATLAB		5	3	40	60	100	4
	Practical VI : PHP Programming Lab		5	3	40	60	100	4
IV	Project work and Viva voce						250*	10
	Total						2250	90

* Project report - 200 marks; Viva-voce – 50 marks

ELECTIVE – I
1.1. Multimedia and its Applications
1.2. Mobile Computing
1.3. Software Testing

ELECTIVE – II
 2.1. Soft Computing
2.2. Embedded Systems
2.3. Information Retrieval Techniques

Paper I : OBJECT ORIENTED ANALYSIS AND DESIGN

Subject Description:
This course presents the object model, classes and objects, object orientation, machine view and model management view.
Goal:
To enable the students to learn the basic functions, principles and concepts of object oriented analysis and design.
Objectives:
On successful completion of the course the students should have:
- Understood the object oriented system development and case models.

UNIT I
Object Orientation – System Development – Review of Objects – Inheritance – Object Relationships – Dynamic binding – OOSD life cycle – Process – Analysis- Design - Prototyping – Implementation – Testing – Overview of Methodologies

UNIT II
OMT – Booch methodology, Jacobson – Methodology – patterns – Unified approach – UML – Class Diagrams – Dynamic Modeling

UNIT III
Using Case model – Creation of classes – Noun Phrase approach – responsibilities – Collaborators and relationships – Super – Sub class - Aggregation

UNIT IV
OO Design axioms – Class visibility – refining attributes- Methods – Access layer – OODBMS – Class mapping view layer

UNIT V
Quality Assurance testing – Inheritance and testing - Test Plan – Usability testing – User satisfaction testing

References:
1. Ali Brahmi , " Object Oriented System Development" , TMH Intl Edition
2. Grady Booch, "Object-Oriented Analysis and Design", Addison – Wesley
3. James Rumbaugh , Micheal Blaha,"Object Oriented Modelling and Design", Prentice Hall

Paper II : INFORMATION CODING TECHNIQUES

Subject Description:
This course presents the Information Entropy Fundamentals, Data and Voice Coding, error control coding and encryption coding techniques

Goal:
To enable the students to learn the fundamentals of information coding techniques

Objectives:
On successful completion of the course the students should have:

- Understood the Information Entropy Fundamentals.
- Learnt various coding techniques

UNIT I
INFORMATION ENTROPY FUNDAMENTALS: Introduction, Information and Uncertainty, what is 'information', information – properties, amount of information, entropy, Shannon's Theorem,
Entropy coding – Shannon Fano coding, Huffman coding

UNIT II
DATA AND VOICE CODING: arithmetic codes, voice coding, PCM, Delta modulation, adaptive delta modulation, linear predictive coding, differential PCM, coding speech at low bit rate, silence coding, sub-band coding

UNIT III
AUDIO AND VIDEO CODING: Introduction, Linear predictive coding principles, perpetual coding, MPEG Audio coder, MPEG video standards, MIDI

UNIT IV
ERROR CONTROL CODING: Introduction – rationale, types of codes, discrete memory less, examples, methods of error control, types of errors, Important term definitions; Linear block codes – Hamming codes, syndrome decoding, other linear block codes; cyclic codes, convolution coding

UNIT V
PRINCIPLES OF DATA COMPRESSION: Basic principles, lossless/lossy, entropy coding, source encoding, Compression of Test – Static Huffman coding, dynamic HC, Arithmetic coding, L-Z coding, Compression of Image – GIF, TIFF, Digitized documents, JPEG

References:
1. J.S. Chitode , "Information coding techniques" Technical Publications , Pune, , 2006.
2. Viterbi, "Information Theory and Coding" , Tata McGrawHill publications.
3. Proakis, "Digital Communication", McGrawHill, 1994.
4. D.Salomon,G.Motto,"Hand Book of Data compression", BPB publication, 1992.

Paper III   :   ADVANCED JAVA PROGRAMMING

Subject Description:
This course presents the concepts of RMI, JDBC , Servlets and JSP.

Goal:
To enable the students to learn the basic functions, principles and concepts of advanced java programming.

Objectives:
On successful completion of the course the students should have:
- Acquired skill in advanced java programming.

UNIT I
Java Basics Review: Components and event handling – Threading concepts – Networking features – Media techniques

UNIT II
Remote Method Invocation-Distributed Application Architecture- Creating stubs and skeletons-Defining Remote objects- Remote Object Activation-Object Serialisation-Java Spaces

UNIT III
Java in Databases- JDBC principles – database access- Interacting- database search – Creating multimedia databases – Database support in web applications

UNIT IV
Java Servlets: Java servlet and CGI programming- A simple java servlet-Anatomy of a java servlet-Readingdata from a client-Reading http request header-sending data to a client and writing the http response header-working with cookies

Java Server Pages: JSP Overview-Installation-JSP tags-Components of a JSP page-Expressions-Scriptlets-Directives-Declarations-A complete example

UNIT V
JAR file format creation – Internationalization – Swing Programming – Advanced java techniques

References:
1. Jamie Jaworski, "Java Unleashed" , SAMS Techmedia Publications, 1999
2. Campione, Walrath and Huml, "The Java Tutorial", Addison Wesley,1999
3. Jim Keogh," The Complete Reference J2EE", Tata McGrawHill Publishing Company Ltd,2002

Paper IV : WEB DESIGNING

Subject Description:
    This Course presents the basics of Web designing.
Goals:
   To enable the students to learn the Programming Languages for Web designing
Objectives :
   On successful completion of the course the students should have:
- Understood the fundamentals of Web design and how to program using HTML,ASP and XML.

Contents

UNIT I
Introduction to Internet – World Wide Web – Browsers: Introduction – Popular Web Browsers – know your browsers – Electronic Mail : Introduction – E-mail networks and servers – E-mail protocols – Structure of an E-mail.

UNIT II
HTML : Introduction – Getting started – Creating and saving an HTML document – Document Layout of HTML Page – HTML elements – Some other formatting Styles – Hypertext Links.

UNIT III
HTML (contd) : URLs – Images – HTML tables – Frames - Forms – Special Characters – Meta tags - Style Sheet

Interactivity Tools and Multimedia : Introduction – DHTML – Scripting Languages – Java – ASP.

UNIT IV
XML : XML basics – Introduction – need for XML – Advantages – Working with an XML Document – Structure of an XML Document – DTD- XML Schema

UNIT V:
Working with XML Schema - Declaring Attributes – XML namespaces – Reusing Schema Components – Grouping elements and attributes. XML Style sheets : Introduction – CSS – eXtensible Style Sheet language – Formatting Data based on controls – Displaying data in a Tabular Format.

References:

1. Internet and Web Design, ITL Education, Macmillan India Ltd..
2. HTML and XML - an Introduction, NIIT, Prentice Hall of India Pvt. Ltd
3. World Wide Web Design with HTML – C. Xavier, 2007, TMH.
4. Steven Holzner ,"Inside XML ", 2000 Edition, Techmedia Publishers.

PRACTICAL I : ADVANCED JAVA LAB

1. Display a welcome message using Servlet.
2. Design a Purchase Order form using Html form and Servlet.
3. Develop a program for calculating the percentage of marks of a student using JSP.
4. Design a Purchase Order form using Html form and JSP.
5. Prepare a Employee pay slip using JSP.
6. Write a program using JDBC for creating a table, Inserting, Deleting records and list out the records.
7. Write a program using Java servlet to handle form data.
8. Write a simple Servlet program to create a table of all the headers it receives along with their associated values.
9. Write a program in JSP by using session object.
10. Write a program to build a simple Client Server application using RMI.

PRACTICAL II: WEB DESIGNING LAB

1. Develop a website for your college using advanced tags of HTML.

2. Write names of several countries in a paragraph and store it as an HTML document, *world.html*. Each country name must be a hot text. When you click India (for example), it must open *india.html* and it should provide a brief introduction about India.

3. Design a photo gallery using HTML tags

4. Develop a HTML document to i)display Text with Bullets / Numbers - Using Lists
                                        ii) to display the Table Format Data

5.   Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML

6. Write a HTML document to print your Bio-Data in a neat format using several components

7.   Develop a HTML document to display a Registration Form for an inter-collegiate function.

8.   Develop a HTML document to design Alumni Registration form of your college.

9. Display customer details using XML with XSL transformation.

10. Display student personal details in XML format.

Paper V   : DATA MINING AND WAREHOUSING

Subject Description:
This course presents the Introduction to Mining tasks, classification, clustering and Data Warehousing.

Goals:
To enable the students to learn the Data mining tasks& Data warehousing techniques.

Objectives:
On Successful completion of the course the students should have:

- Understood the Association rules, Clustering techniques and Data warehousing.

Contents

UNIT I

Basic data mining tasks – data mining versus knowledge discovery in databases – data mining issues – data mining metrics – social implications of data mining – data mining from a database perspective.

Data mining techniques: Introduction – a statistical perspective on data mining – similarity measures – decision trees – neural networks – genetic algorithms.

UNIT II

Classification: Introduction – Statistical – based algorithms - distance – based algorithms – decision tree - based algorithms - neural network – based algorithms –rule - based algorithms – combining techniques.

UNIT III

Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms - Partitional Algorithms.

Association rules: Introduction - large item sets - basic algorithms – parallel & distributed algorithms – comparing approaches- incremental rules – advanced association rules techniques – measuring the quality of rules.

UNIT IV

Data warehousing: an introduction - characteristics of a data warehouse – data marts – other aspects of data mart. Online analytical processing: introduction - OLTP & OLAP systems – data modelling –star schema for multidimensional view –data modelling – multifact star schema or snow flake schema – OLAP TOOLS – State of the market – OLAP TOOLS and the internet.

UNIT V

Developing a data WAREHOUSE: why and how to build a data warehouse –data warehouse architectural strategies and organization issues - design consideration – data content – metadata distribution of data – tools for data warehousing – performance considerations – crucial decisions in designing a data warehouse.

Applications of data warehousing and data mining in government: Introduction - national data warehouses – other areas for data warehousing and data mining.

References:
1. Margaret H. Dunham, "Data Mining: Introductory and Advanced Topics", Pearson education, 2003.
2. C.S.R. Prabhu, "Data Warehousing Concepts,Techniques, Products and Applications", PHI, Second Edition.
3. Arun K.Pujari, "Data Mining Techniques", Universities Press (India) Pvt. Ltd., 2003.
4. Alex Berson, Stephen J. Smith, "Data Warehousing, Data Mining and OLAP", TMCH, 2001.
5. Jiawei Han & Micheline Kamber, " Data Mining Concepts & Techniques", 2001, Academic press

Paper VI : NETWORK SECURITY AND CRYPTOGRAPHY

Subject Description:
This course presents the Introduction to Cryptography, Web Security and Case studies in Cryptography

Goals:
To enable the students to learn the concepts of Network Security and Cryptography

Objectives:
On Successful completion of the course the students should have:
- Understood the process of implementing the cryptographic algorithms.

Contents

UNIT I

Introduction to Cryptography – Security Attacks – Security Services –Security Algorithm - Stream cipher and Block cipher - Symmetric and Asymmetric-key Cryptosystem Symmetric Key Algorithms: Introduction – DES – Triple DES – AES – IDEA – Blowfish – RC5.

UNIT II

Public-key Cryptosystem: Introduction to Number Theory - RSA Algorithm – Key Management - Diffie-Hell man Key exchange – Elliptic Curve Cryptography Message Authentication and Hash functions – Hash and Mac Algorithm – Digital Signatures and Authentication Protocol.

UNIT III

Network Security Practice: Authentication Applications – Kerberos – X.509 Authentication services and Encryption Techniques. E-mail Security – PGP – S / MIME – IP Security.

UNIT IV

Web Security - Secure Socket Layer – Secure Electronic Transaction. System Security - Intruders and Viruses – Firewalls– Password Security

UNIT V

Case Study: Implementation of Cryptographic Algorithms – RSA – DSA – ECC (C / JAVA Programming).

Network Forensic – Security Audit - Other Security Mechanism: Introduction to: Stenography – Quantum Cryptography – Water Marking - DNA Cryptography

References:
1. William Stallings, "Cryptography and Network Security", PHI/Pearson Education.
2. Bruce Schneir, "Applied Cryptography", CRC Press.
3. A.Menezes, P Van Oorschot and S.Vanstone, "Hand Book of Applied Cryptography", CRC Press, 1997 [Free Downloadable].
4. Ankit Fadia,"Network Security", MacMillan.

Paper VII : .NET Programming

Subject Description:
This course presents an overview of .NET Framework, VB.NET and ASP.NET Programming
Goal:
To enable the students to learn the basic concepts of .NET Framework, VB. NET and ASP.NET.
Objectives:
On successful completion of the course the students should have:
   • Understood .NET Framework
   • Understood VB.NET
   • Understood ASP.NET

Contents

UNIT I
What is .NET Framework: What is .NET?-Requirement-What is .NET Built on? – Overview of the.NET Framework: .NET Framework Conceptual Overview – Common Language Runtime –Common Type System – Meta Data and Self describing Components – Cross- Language Interoperability – Assemblies in the Common Language Runtime –Application Domains - .NET Framework Class Library Overview – Runtime Hosts – Basic Structural Diagram of .NET Framework – Versions of .NET Framework.

UNIT II
Introduction to VB.NET – Properties windows and setting properties of forms and controls - Visual Basic.NET variables – Data Types – Constant – Building Project – Displaying Output – operators – Conditional statements – If-then, Select-case – Looping – Do, For next, nested loops. Import statement – Msg Box Functions – Input Box Functions – User defined and Built-in Functions – Controls.

UNIT III
Arrays – Menus – Built-in Dialog Boxes – Dialog classes – Files – Handling files using function and classes – Directory class – File class – File Processing.

UNIT IV
Features of ASP.NET – Developing a Web Application: ASP.NET pages – provider model – coding model – code sharing – Compilation in ASP.NET. Applications and State: Structure of an application – The global .asax Application File – using states – HTTP handlers.

UNIT V
Web Forms - The control class – The web control class – creating buttons – Enabling and Disabling controls – Hyperlinks – The Tree view model – Menu control – Site map path control – wizard control – validation controls – Login controls – HTML controls –Developing web sites.

References:
   1. Pankaj Agarwal, "Principles of .NET Framework", Vayu Education of India, 2009.
   2. Steven Holzner, "Visual Basic.NET Black Book",Paraglyph Press, 2002.
   3. Charul Shukla, "ASP.NET 2.0 black book", Paraglyph Press, 2006.
   4. Cornell, "Visual Basic 6 From the Ground up" Tata Mcgraw Hill Company Limited
   5. Dave Mercer, "ASP.NET A Beginner's Guide", Tata Mcgraw Hill Company Limited, 2002.
   6. Matt J.Couch, ASP.NET and VB.NET Web Programming", Pearson Education, 2002.

Paper VIII : SOFTWARE PROJECT MANAGEMENT

Subject Description: This course presents a deep insight to software project management concepts

Contents:

Unit – I

Introduction: Software Project Management - Software Project Versus Other Project – Requirement Specification – Information and Control in Organization – Introduction to step wise Project Planning – Select – Identify Scope and Objectives -   Identify Project Infrastructure – Analyze Project Characteristics – Products and Activities – Estimate Effort for each Activity – Identify Activity Risks – Allocate Resources - Review / Publicize Plan – Execute Plan and Lower Levels of Planning.

Unit – II

Project Evaluation : Introduction – Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation – Selection of an Appropriate Project App roach – Choosing Technologies – Choice of Process Models – Structured Methods – Rap id Application Development – Waterfall Model – V-Process Model – Spiral Model – Software Prototyping – Ways of Categorizing Prototypes – Tools – Incremental Delivery – Selection Process Model.

Unit – III

Software Effort Estimation : Introduction – Problem s with Over and Under Estimates – Basis for Software Estimating – Software Effort Estimation Technique – Albrecht Function Point Analysis – Function Points – Object Points – Procedural Code Oriented Approach – COCOMO – Activity Planning – Project Schedules - Projects and activities – Sequencing and Scheduling Activities – Network Planning Models – Formulating a Network Planning – Adding Time Dimension – Forward Pass – Backward Pas s – Identifying the Critical Path – Activity Float - Shortening Project Duration – Identifying Critical Activities – Precedence Networks.

Unit – IV

Risk Management : Introduction – Nature of Risk Man aging Identification – Analysis – Reducing – Evaluating – Z values – Resource Allocation – Nature of Resources – Requirements – Scheduling – Critical Paths – Counting the Cost – Resource Schedule – Cost Schedule – Scheduling Sequence – Monitoring and Control – Creating the Frame Work - Collecting the Data – Visualizing the Progress – Cost Monitoring – Prioritizing Monitoring – Change Control.

Unit – V

Managing Contracts : Introduction – Types of Contract – Stages in Contract Placement – Terms of Contract – Contract Management – Acceptance – Managing People and Organizing Teams – Organizational Behavior Background – Selecting the Right Person for the Job – Instruction in the Best Methods – Motivation – Decision Making – Leadership – Organizational Structures – Software Quality – Importance – Practical Measures – Product Versus Process Quality Management – External Standards – Techniques to Help Enhance Software Quality.

References:

1. Bob Hughes and Mike Cotterell, "Software Project Management , Mc Graw Hill, Second Edition.
2. Walker Royce, "Software Project Management , Addition Wesley.
3. Derrel Ince, H. Sharp and M. Woodman, "Introduction to Software Project Management and Quality Assurance , Tata Mc Graw Hill, 1995.

PRACTICAL III : DATA MINING USING R

1. Implement Apriori algorithm to extract association rule of data mining.

2. Implement k-means clustering technique.

3. Implement any one Hierarchal Clustering.

4. Implement Classification algorithm.

5. Implement Decision Tree.

6. Linear Regression.

7. Data Visualization.

PRACTICAL IV : .NET PROGRAMMING LAB

VB.NET PROGRAMS

1. Font Application

2. Notepad Application

3. Arithmetic Calculator

4. Employee Details

5. Students Information

6. Adding data into a text file

ASP.NET PROGRAMS

1. College Website

2. Online Examination System
3. Online Mobile phone shop

4. Online registration form

Paper IX : DIGITAL IMAGE PROCESSING

Subject Description:
This course presents the Introduction to Digital image Processing, fundamentals, image enhancement and image restoration techniques

Goals:
To enable the students to learn the fundamentals of Digital Image Processing, image compression and segmentation

Objectives:
On Successful completion of the course the students should have:
- Understood the fundamentals of Digital Image Processing, image compression and segmentation

Contents

UNIT I
Introduction: What is Digital image processing – the origin of DIP – Examples of fields that use DIP – Fundamentals steps in DIP – Components of an image processing system.

Digital Image Fundamentals: Elements of Visual perception – Light and the electromagnetic spectrum – Image sensing and acquisition – Image sampling and Quantization – Some Basic relationship between Pixels – Linear & Nonlinear operations.

UNIT II
Image Enhancement in the spatial domain:- Background – some basic Gray level Transformations – Histogram Processing – Enhancement using Arithmetic / Logic operations – Basics of spatial filtering – Smoothing spatial filters – Sharpening spatial filters – Combining spatial enhancement methods.

UNIT III
Image Restoration: A model of the Image Degradation / Restoration Process – Noise models – Restoration is the process of noise only – Spatial Filtering – Periodic Noise reduction by frequency domain filtering – Linear, Portion – Invariant Degradations – Estimating the degradation function – Inverse filtering – Minimum mean square Error Filtering – Constrained least squares filtering – Geometric mean filter – Geometric Transformations.

UNIT IV
Image Compression: Fundamentals – Image compression models – Elements of Information Theory – Error Free compression – Lossy compression – Image compression standards.

UNIT V
Image Segmentation: Detection and Discontinuities – Edge Linking and Boundary deduction – Threshold – Region-Based segmentation – Segmentation by Morphological watersheds – The use of motion in segmentation.

References:

1. Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing", Second Edition, PHI/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, 2004.

Paper X : BIG DATA ANALYTICS

Subject Description:
   This course presents the Importance of Big Data and the features of R and Hadoop.
Goal:
   To enable the students to learn the basics of cloud computing, architecture and its applications,
Objectives:
On successful completion of the course the students should have:
- Understood the big data handling concepts, R Programming, Map Reduce and Hadoop based analytics.
- Understood the HDFS architecture

Contents
UNIT I
Importance of Big Data: A Flood of Mythic "Start-Up" Proportions- A convergence of Key Trends- A Wider Variety of Data – The Expanding Universe of Unstructured Data. Industry Examples of Data: Digital Marketing and the Non - line World – Database Marketers, Pioneers of Big Data – Big Data and the New School of Marketing.
UNIT II

Installing R - Installing RStudio - Understanding the features of R language - Using R packages - Performing data operations - Increasing community support - Performing data modeling in R

UNIT III

Installing Hadoop - Understanding different Hadoop modes - Understanding Hadoop installation steps - Installing Hadoop on Linux, Ubuntu flavor (single node cluster) - Installing Hadoop on Linux, Ubuntu flavor (multinode cluster) - Installing Cloudera Hadoop on Ubuntu

UNIT IV

Understanding Hadoop features - Understanding HDFS - Understanding the characteristics of HDFS - Understanding MapReduce -Learning the HDFS and MapReduce architecture.

UNIT V

Understanding the HDFS architecture - Understanding HDFS components - Understanding the MapReduce architecture - Understanding MapReduce components - Understanding the HDFS and MapReduce architecture by plot - Understanding Hadoop subprojects

References:
1. Michael Minelli , Michele Chambers , Ambiga Dhiraj, " BIG DATA BIG ANALYTICS " , Wiley Publications, Indian Reprint 2014
2. Vignesh Prajapathi," Big Data Analytics with R and Hadoop", PACKT Publishing, 2013.

Paper XI   : CLOUD COMPUTING

Subject Description:
This course presents the introduction to Cloud computing, cloud services, architectures and applications.

Goal:
To enable the students to learn the basics of cloud computing, architecture and its applications,

Objectives:
On successful completion of the course the students should have:
- Understood the Cloud computing architectures, applications and challenges

Contents

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

UNIT – IV: 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 :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.

References:
1. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009

2. Anthony T. Velte,Cloud Computing A Practical Approach 1st Edition, Tata Mcgraw Hill Education Private Limited (2009)

Paper XII : PHP Programming

Subject Description:
 This course presents the Introduction to PHP, PHP functions ,database handling and in addition AJAX is taught.

Goals:
 To enable the students to learn the fundamentals of Open Source software and get experience in PHP and AJAX.

Objectives:
 On Successful completion of the course the students should have:
- Understood the features like functions, forms in PHP.
- Understood Files handling, OOPs concepts , Cookies, Sessions and Data base, draw images on the server with AJAX.
- Acquired skills to write PHP programs

Contents

UNIT I
 PHP: Introduction – Essential PHP – Operators and Flow control: Working with math, assignment, increment and decrement, string, bitwise, execution, comparison and logical operators, Working with loops – Strings and Arrays.

UNIT II
 PHP Functions and Browser handling power: Creating Functions, passing functions, passing arrays, pass by reference, default arguments, returning data, arrays, lists, references, accessing global data, working with static variables, PHP conditional functions, variable functions, nesting functions – Reading data in web pages: Handling text fields, areas, check boxes, radio buttons, list boxes, password controls, hidden controls, image maps, file uploads, buttons – PHP Browser handling power.

UNIT III
 Working with Object oriented programming and File handling: Object oriented programming: creating classes, objects, setting access to properties and methods, using constructors and destructors, inheritance, overriding and overloading methods, auto loading classes – File Handling: open, read, close, parsing files, copy, delete, write and append files.

UNIT IV
 Working with databases and setting sessions, cookies and FTP: Databases: creating, accessing, updating, inserting, deleting and sorting databases – Setting sessions, cookies and FTP: setting , reading, deleting cookies, working, downloading, uploading, deleting, creating and removing directories with FTP.

UNIT V
 AJAX and Drawing Images on the server: Ajax: Handling AJAX requests, downloading images using AJAX, downloading javascript with AJAX– Drawing images on the server: creating and displaying images, drawing lines, rectangles, ellipse, arcs, polygons, figures, individual pixels, text, virtual text, working with image files, tiling images, copying images.

References :

1."The Complete Reference PHP Covers PHP 5.2", Steven Holzner, Tata McGraw-Hill Edition 2008.
2. PHP6 and MySQL6 Bible – Steve Svehring
3. PHP Programming Solutions – Vickram Viswani

PRACTICAL V
DIGITAL IMAGE PROCESSING Using MATLAB

1. Implement Image enhancement Technique.
2. Histogram Equalization
3. Image Restoration.
4. Implement Image Filtering.
5. Edge detection using Operators (Roberts, Prewitts and Sobels operators)
6. Implement image compression.
7. Image Subtraction
8. Boundary Extraction using morphology.
9. Image Segmentation

Practical VI :   PHP PROGRAMMING LAB

1. Write a PHP Program for String handling.

2. Write a PHP Program for associative array.

3. Write a PHP Program to use various Functions of PHP.

4. Write a PHP Program to read form data.

 5.Write a PHP Program to implement Overloading and overriding.

6. Write a PHP Program to implement Inheritance.

7. Write a PHP Program for File handling.

8. Develop PHP Program to Create a Database and to Insert , Delete and List the records.

9. Write a PHP Program to implement cookies.

10. Write a PHP Program for Drawing images on a web page.

ELECTIVE I

ELECTIVE 1.1 : MULTIMEDIA AND ITS APPLICATIONS

Subject Description:
This course presents the Introduction to Multimedia, Images & Animation.
Goals:
To enable the students to learn the concepts of Multimedia.

Objectives:
On Successful completion of the course the students should have:
- Understood the Multimedia animation and Desktop Computing.

Contents

UNIT I
What is Multimedia – Introduction to making Multimedia – Macintosh and Windows Production platforms – Basic Software tools.

UNIT II
Making Instant Multimedia – Multimedia authoring tools – Multimedia building blocks – Text – Sound.

UNIT III
Images – Animation – Video.

UNIT IV
Multimedia and the Internet – The Internet and how it works – Tools for World Wide Web – Designing for the World Wide Web.

UNIT V
High Definition Television and Desktop Computing – Knowledge based Multimedia systems.

References:

1. Tay Vaughan, "Multimedia making it work", Fifth Edition, Tata McGraw Hill.
2. John F. Koegel Bufford, "Multimedia Systems", Pearson Education.
3. Judith Jeffloate, "Multimedia in Practice (Technology and Applications)", PHI, 2003

ELECTIVE 1.2 : Mobile Computing

Subject Description:
This course presents the overview of Mobile computing, Applications and Architectures. Also describes the futuristic computing challenges.

Goal:
      To enable the students to learn the concept of mobile computing

Objectives:
On successful completion of the course the students should have:

- Understood the mobile computing applications, techniques
- Understood the mobile computing environment

Contents

UNIT - I
Introduction: Advantages of Digital Information - Introduction to Telephone Systems –Mobile communication: Need for Mobile Communication – Requirements of Mobile Communication – History of Mobile Communication.

UNIT - II
Introduction to Cellular Mobile Communication – Mobile Communication Standards –Mobility Management – Frequency Management – Cordless Mobile Communication Systems.

UNIT - III
Mobile Computing: History of data networks – Classification of Mobile data networks - CDPD System – Satellites in Mobile Communication: Satellite classification – Global Satellite Communication – Changeover from one satellite to other – Global Mobile Communication – Interferences in Cellular Mobile Communication.

UNIT - IV
Important Parameters of Mobile Communication System – Mobile Internet: Working of Mobile IP – Wireless Network Security – Wireless Local Loop Architecture: Components in WLL – Problems in WLL – Modern Wireless Local Loop – Local Multipoint Distribution Service – Wireless Application Protocol.

UNIT -V
WCDMA Technology and Fibre Optic Microcellular Mobile Communication – Ad hoc Network and Bluetooth technology – Intelligent Mobile Communication system – Fourth Generation Mobile Communication systems.

References:

1. T.G. Palanivelu, R. Nakkeeran, "Wireless and Mobile Communication", PHI Limited.2009
2. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education.2007
3. Asoke K Talukder,Hasan Ahmed,Roopa Yavagal, "Mobile Computing" , TMH

ELECTIVE 1.3 : SOFTWARE TESTING

Subject Description : This course provides principles of Software Testing and tools.

Goal :
To enable the students to learn about the principle and tools of Software testing.

Objectives :
On successful completion of the course the students must have
- understood the concepts of Software testing
- got the skill of software testing
- exposed to software testing tools.

Contents

UNIT I
Purpose of Software testing – Some Dichotomies – a model for testing – Playing pool and consulting oracles – Is complete testing possible – The Consequence of bugs – Taxonomy of Bugs.

UNIT II
Software testing Fundamentals – Test case Design – Introduction of Black Box Testing and White Box testing – Flow Graphs and Path testing – Path testing Basics - Predicates, Path Predicates and Achievable Paths - Path Sensitizing – Path Instrumentation – Implementation and Application of Path Testing.

UNIT III
Transaction Flow testing – Transaction Flows – techniques – Implementation Comments – Data Flow Testing – Basics – Strategies – Applications, Tools and effectiveness – Syntax Testing – Why, What, How – Grammar for formats – Implementation – Tips.

UNIT IV
Logic Based Testing – Motivational Overview – Decision tables – Path Expressions – KV Charts – Specifications – States, State Graphs and transition Testing – State Graphs – Good & bad states – state testing Metrics and Complexity.

UNIT V
Testing GUIs – Testing Client – Server Architecture – Testing for Real-time System – A Strategic Approach to Software testing – issues – unit testing – Integration Testing – Validation testing – System testing – The art of Debugging.

References:
1. Boris Beizer, Software testing techniques, Dreamtech Press, Second Edition – 2003.
2. Myers and Glenford.J., The Art of Software Testing, John-Wiley & Sons,1979
3. Roger.S.Pressman, Software Engineering – A Practitioner's Approach ,Mc-Graw Hill, 5th edition, 2001
4. Marnie.L. Hutcheson, Software Testing Fundamentals, Wiley-India,2007

ELECTIVE II
ELECTIVE 2.1 : SOFT COMPUTING

Subject Description:
This course presents the introduction to the basic neuron, kohenen self- organizing network, hop field networks, associative memory, fuzzy.
Goal:
To enable the students to learn the basic functions, principles and concepts of Neural Networks.
Objectives:
On successful completion of the course the students should have:
- Understood the pattern classification in Neural Networks
- Understood the fuzzy relation and fuzzy logic

Contents

UNIT I
Pattern classification - Learning and Generalization - Structure of neural networks - ADA line, Delta rule - input output value - perceptions - Linear separability - Back propagation - XOR Function - Introduction to Boolean neural networks.
UNIT II
Hopfield Networks - Energy - The Hamming Network - RAM -Boltzmann machine - Instar, outstar network - ART - Kohonen's Network Neocognitron.
UNIT III
Fuzzy relation - Member function - Fuzzy matrices - Fuzzy entropy - Fuzzy operation - Fuzzy composition.
UNIT IV
Fuzzy variables - Linguistic variables - Measure of fuzziness - Transition Matrix - Concept of Defuzzication and Applications
UNIT V
CASE STUDY: Application of Neural Networks in character recognition, drug discovery, speech recognition; Application of Fuzzy logic concepts in Fuzzy controller design and Fuzzy querying in Relational database model.

References:

1. P.D.Wasserman, "Neural computing and practice", Van Nostran Reinhold, New York, 1991.
2. Limin Fu, "Neural Network in computer Intelligence ", McGraw Hill   International editions, 1994.
3. B Kosko, " Neural Network and Fuzzy systems", Prentice Hall, 1996.
4. Klir & Yuan, "Fuzzy sets and Fuzzy logic", Theory and Applications, Prentice Hall of India, 1996.

ELECTIVE 2.2 : EMBEDDED SYSTEMS

Subject Description
This course presents the Introduction to 8051 Microcontroller Instruction Set, concepts on RTOS & Software tools.
Goals
To enable the students to learn about Microcontroller and software tools in the embedded systems.
Objectives
On Successful completion of the course the students should have:
*   Understood the Instruction Set and Programming.
*   Understood the Embedded software Development

Contents

UNIT I
    8051 Microcontroller: Introduction - 8051 Architecture-Input/Output Pins, Ports and Circuits - External Memory - Counters / Timers - Serial Data Input / Output - Interrupts.

UNIT II
    Instruction Set and Programming Moving Data-Addressing Modes-Logical operations-Arithmetic Operation-Jump and Call Instructions-Simple Program. Applications: Keyboard Interface-Display Interface-Pulse Measurements-DIA and AID Conversions-Multiple Interrupts.

UNIT III
    CONCEPTS ON RTOS: Introduction to RTOS-Selecting an RTOS-Task and Task states - Tasks and data- Semaphores and shared data. MORE operating systems services: Interrupt Process communication - Message Queues, Mailboxes and pipes- Timer Functions-Events - Memory Management-Interrupt Routines in an RTOS Environment.

UNIT IV
    Basic Design using a RTOS: Principles - Encapsulating semaphores and Queues-Hard real time scheduling considerations-Saving memory space and power- introductions to RTL & QNX.

UNIT V
    SOFTWARE TOOLS: Embedded software Development Tools:Hosts and Target Machines- Linker/Locators for Embedded   software-getting Embedded software into the Target systems. Debugging Techniques: Testing on your Host machine -Instruction set simulators- The assert macro-using laboratory tools.

References:
1. David.E.Simon, "An Embedded Software Primer", Pearson Education-2001.
2. The 8051 Microcontroller and Architecture programming and application II Edition - Kenneth J Ayala- Penram International.

ELECTIVE 2.3 :INFORMATION RETRIEVAL TECHNIQUES

Subject Description:

This course presents the introduction to retrieval of information from the web, various applications and query structures. Also describes multimedia information retrieval process.

Goal:

To enable the students to learn the basics of search operation on the web

Objectives:

On successful completion of the course the students should have:

- Understood the various methods being followed to retrieve the contents from the web like text, image and multimedia contents.

UNIT I

INTRODUCTION : Basic Concepts – Retrieval Process – Modeling – Classic Information Retrieval – Set Theoretic, Algebraic and Probabilistic Models – Structured Text Retrieval Models – Retrieval Evaluation –Word Sense Disambiguation

UNIT II

QUERYING : Languages – Key Word based Querying – Pattern Matching – Structural Queries – Query Operations – User Relevance Feedback – Local and Global Analysis – Text and Multimedia languages

UNIT III

TEXT OPERATIONS AND USER INTERFACE : Document Preprocessing – Clustering – Text Compression - Indexing and Searching – Inverted files – Boolean Queries – Sequential searching – Pattern matching – User Interface and Visualization – Human Computer Interaction – Access Process – Starting Points –Query Specification - Context – User relevance Judgment – Interface for Search

UNIT IV

MULTIMEDIA INFORMATION RETRIEVAL : Data Models – Query Languages – Spatial Access Models – Generic Approach – One Dimensional Time Series – Two Dimensional Color Images – Feature Extraction

UNIT V

APPLICATIONS : Searching the Web – Challenges – Characterizing the Web – Search Engines – Browsing – Meta-searchers – Online IR systems – Online Public Access Catalogs – Digital Libraries – Architectural Issues – Document Models, Representations and Access – Prototypes and Standards

References:

1. Ricardo Baeza-Yate, Berthier Ribeiro-Neto, "Modern Information Retrieval", Pearson Education Asia, 2005.
2. G.G. Chowdhury, "Introduction to Modern Information Retrieval", Neal-Schuman Publishers; 2nd edition, 2003.
3. Daniel Jurafsky and James H. Martin, "Speech and Language Processing", Pearson Education, 2000
4. David A. Grossman, Ophir Frieder, " Information Retrieval: Algorithms, and Heuristics", Academic Press, 2000
5. Charles T. Meadow, Bert R. Boyce, Donald H. Kraft, "Text Information Retrieval Systems", Academic Press, 2000