BHARATHIAR UNIVERSITY, COIMBATORE – 641 046
M. Sc. COMPUTER SCIENCE (CBCS)
(Effective from the academic Year 2010 - 2011)

1. Eligibility for Admission to the Course

Candidates for admission to the first year course leading to the Degree of Master of Science in Computer Science (M. Sc-CS) will be required to possess:


2. Duration of the Course

The course shall be offered on a full-time basis. The course will consist of three semesters of course work and laboratory work and the fourth semester consists of project work.

3. Regulations

The general Regulations of the Bharathiar University Choice Based Credit System Programme are applicable to this programme.

4. The Medium of Instruction and Examinations

The medium of instruction and Examinations shall be in English.

5. Submission of Record Notebooks for Practical Examinations & Project Viva-Voce.

Candidates taking the Practical Examinations should submit bonafide Record Note Books prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Practical Examinations.

Candidates taking the Project Viva Examination should submit Project Report prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Project Viva-voce Examination.

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Subject Title: COMPUTER ORGANIZATION AND ARCHITECTURE

Course Number: 10CSEEC01  Number of credits: 4

Subject Description:

This course presents the principles of general register organization, addressing modes, multiprocessors and multicomputer, computer arithmetic, pipeline and superscalar techniques, message passing mechanisms.

Goals:
To enable the students learn the concepts of computer architecture and organization.

Objectives:
On successful completion of the course the student should have:
- Understood various addressing modes and program and network properties
- Learnt the computer arithmetic principles and super scalar techniques
- Learnt modern techniques of message passing mechanisms

Contents:
Unit – I
Central Processing Unit – General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer Instructions and Data Manipulation Instructions – Program Control Instructions – Reduced Instruction Set Computers(RISC).

Unit – II

Unit - III

Unit – IV

Unit – V
Reference Books:

Subject Title : OPERATING SYSTEMS

Course Number: 10CSEEC02  Number of credits : 4

Subject Description :
This course presents the principles and functions of various types of operating system and management of computer parts.

Goals:
To enable the student to learn the operating system and the functioning.

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

- Learnt different types of operating system, memory management and I/O systems.

Contents:
Unit - I

Unit - II
Unit - III

Unit - IV

Unit - V
Comparative study - DOS, UNIX/LINUX, Windows 9x, Windows NT.

Reference Books:

Subject Title :DATA STRUCTURES AND OBJECT ORIENTED CONCEPTS
Course Number: 10CSEEC03 Number of credits: 4

Subject Description:

This course presents the principles of object oriented concepts and various types of data structures.

Goals:

To enable the student to learn the object oriented concepts and various types of data structures.

Objectives:

On successful completion of the course the student should have:

- Understood the object oriented concepts and learnt various types of data structures and their function.

Contents: Unit - I
Unit – II

Unit - III

Unit - IV

Unit - V

Reference Book:

Subject Title : ADVANCED JAVA PROGRAMMING

Course Number: 10CSEEC04 Number of credits: 4

Subject Description:
This course presents the fundamentals of object oriented programming with Java.

Goals:
To enable the student to learn the advanced programming concepts in java.

Objectives:
On successful completion of the course the student should have:
• Understood advanced programming concepts in java.
Content:

Unit - I
Introduction to Java - Java features – Java programming structure – Java tokens - Java Literals - Java Data types-Type Casting Operators Arrays, Multi Dimensional array Control statements.

Unit –II

Unit – III

Unit –IV
Java Server Pages and Servlets : Basic JSP Architecture - Life Cycle of JSP (Translation, compilation) - JSP Tags and Expressions – Directives- JSP applications. Introduction to servlet - Developing and Deploying Servlets - Handling Request and Response - Accessing Database. RMI: RMI overview - RMI architecture - Example demonstrating RMI.

Unit – V

Reference Books:
Subject Title : Data Structures - Lab

Course Number: 10CSEEP01  
Number of credits: 3

List of Concepts to be covered:

1. stack
2. Queue
3. Linked list
4. Circular queue
5. Doubly linked list
6. Linked stacks and queue
7. Search: sequential search & Binary Search
8. Sorting
9. Binary search tree traversal
10. Depth first & breadth first algorithm

Subject Title : Advanced Java Programming – Lab

Course Number: 10CSEEP02  
Number of credits: 3

List of Concepts to be covered:

1. Method overloading
2. Types of inheritance
3. Method overriding
4. Interface
5. Package
6. Exception handling
7. Multithreading
8. GDI using Applets
9. Programs using Java Server pages
10. Servlets
11. RMI
12. Java Beans
Subject Title : PROGRAMMING IN C#

Course Number: 10CSEEC05  
Number of credits: 4

Subject Description:

This course presents an introduction on operations, class, constructors and about handling errors in C#.

Goals:

To enable the student to be familiar in programming concepts

Objectives:

On successful completion of the course the student should be able to program in C#:

Contents:

Unit - I

Unit - II

Unit - III

Unit - IV
Working with collections and generics – Working with Components / Assemblies.

Unit - V
Data Access with ADO.NET - Introduction to SQL - Evolution of ADO.NET - Managed Providers – Develop database applications with ADO.NET.

Reference Books:

Subject Title: RELATIONAL DATABASE MANAGEMENT SYSTEM

Course number: 10CSEEC06 Number of credits: 4

Subject Description:

This course presents the concepts of designing and management of relational database system.

Goals:

To enable the student to learn the concepts of relational database management system.

Objectives:

On successful completion of the course the student should have:

- Understood designing of relational database systems.
- Learnt distributed databases.

Contents:

Unit - I

Unit - II

Unit - III
SQL: Data Definition – Data Manipulation – Integrity Constraints – Views – PL/SQL.

Unit - IV

Unit - V
Reference Books:

Subject Title : DESIGN AND ANALYSIS OF ALGORITHMS

Course Number: 10CSEEC07 Number of credits: 4

Subject Description:
This course presents the algorithmic analysis.

Goals:
To enable the student to learn the algorithmic concepts.

Objectives:
On successful completion of the course the student should have:
- Understood what is an algorithm
- Learnt basic designing of algorithm

Contents:
Unit - I

Unit - II

Unit - III

Unit - IV
Unit - V

Reference Books:

Subject Title : COMPUTER GRAPHICS

Course Number: 10CSEEC08 Number of credits: 4

Subject Description:
This course presents the survey and concepts of computer graphics and modeling.

Goals:
To enable the student to learn the computer graphics and geometric transformation of various dimensions.

Objectives:
On successful completion of the course the student should have:
- Understood overview of graphic systems.
- Learned various dimensional transformations.
- Learned various surface detection methods.

Contents:
Unit - I

Unit - II

Unit - III
Three-Dimensional Concepts
Unit - IV

Unit - V
Visible–Surface Detection Methods: Classification of Visible Surface Detection Algorithms –
Back Face Detection - Depth-Buffer Method - A-Buffer Method. Illumination Models and
Surface-Rendering Methods: Basic Illumination Models – Polygon Rendering Methods. Color
Sequences - Animation Functions – Morphing.

Reference Books:
   India, Second Edition.
2. Jones D.Foley, Andries Van Dan, Stevan K. Feiner and John F. Hughes, ‘Computer

Subject Title : Programming in C# - Lab
Course Number: 10CSEEP03 Number of credits: 3

List of Concepts to be covered:
1. Polymorphism
2. Inheritance
3. Interface
4. Delegates & Events
5. Exception handling
6. Develop programs using window form controls
7. Menus
8. Develop Program using GDI
9. Dialog box
10. Develop Program using collections and generics
11. Database application using ADO.NET
Subject Title: Relational Database Management Systems – Lab

Course Number: 10CSEEP04
Number of credits: 3

List of Concepts to be covered:

1. Study of Oracle DDL commands
   a. To create a table
   b. To alter a table
   c. To drop a table
   d. To create a view
   e. To drop a view
2. Study of Oracle DML commands
   a. To insert, delete and update rows into a table
   b. To write a simple queries using SELECT
   c. To write queries using SELECT and WHERE clause
   d. To write queries using Logical operators
   e. To write queries using NULL
   f. To write queries for pattern matching
   g. To write queries using order by, group by, having and distinct clauses
   h. To write queries using Arithmetic, group, character, data functions
   i. To write queries using Sub queries and joins
3. Program to learn Oracle DCL and TCL commands
4. Program to learn PL / SQL
   a. To create a cursor and trigger
   b. To create PL/SQL code using control statement
   c. To create PL/SQL code using sub programs

Subject Title: COMPUTER NETWORKS

Course Number: 10CSEEC09
Number of credits: 4

Subject Description:
This course presents the introduction to computer networks.

Goals:
To enable the student to familiar of each layers and its functions in the network

Objectives:
On successful completion of the course the student should have: ● Understood computer network and its layers.
Contents:

Unit - I

Unit - II

Unit - III

Unit - IV

Unit - V

Reference Books:

Subject Title : VISUAL PROGRAMMING

Course Number: 10CSEEC10
Number of credits: 4

Subject Description:
This course presents the introduction to visual programming.

Goals:
To enable the student to be familiar with visual programming concepts.

Objectives:
On successful completion of the course the student should have:
- Understood the concepts in VB.NET & ASP.NET.

Contents:
Unit –I
Unit –II

Unit –III

Unit –IV

Unit –V
Data Management with ADO.NET - Introducing ADO.NET - ADO.NET features - Using SQL Server with VB.NET – Using SQL Server with ASP.NET.

Reference Books:

Subject Title : SOFTWARE PROJECT MANAGEMENT

Course Number: 10CSEEC11
Number of credits: 4

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

Goals:
Enable the student to be familiar with software project management

Objectives:
On successful completion of the course the student should have:
- Understood the system software project management, project evaluation effort estimation and risk management.
Contents: Unit - I

Unit - II

Unit - III

Unit - IV

Unit - V

Reference Books:
Subject Title : DATA MINING AND WAREHOUSING

Course Number: 10CSEEC12
Number of credits: 4

Subject Description:

This course presents the data mining concepts, classifications algorithms and data warehousing.
Goals: Enable the student to be familiar in data warehousing, clustering and rules.

Objectives:
On successful completion of the course the student should have: ● Understood data mining and data warehousing applications.

Contents:

Unit - I

Unit - II

Unit - III

Unit - IV

Unit - V
Capacity planning – Tuning and Data Warehouse – Testing and Data Warehouse – Data Warehouse Futures. Application: Data warehousing and data mining in government: Introduction-national data warehouses-other areas for data warehousing and data mining

Reference Books:
1. Sam Anahory and Dennis Murray, ‘Data Warehousing in the Real World’, Pearson Education.
Subject Title : Computer Networks – Lab

Course Number: 10CSEEP05  Number of credits: 3

List of Concepts to be covered:

1. Client / Server programs
2. Data sharing
3. Transfer file from system to system
4. Sending mails
5. Other concepts in computer networks
   Implementation of the above said concepts may be done in java.

Subject Title : Visual Programming – Lab

Course Number: 10CSEEP06  Number of credits: 3

List of Concepts to be covered:

1. Programs using overloading
2. Programs using inheritance
3. Programs using interfaces
4. Programs using Delegates and Events
5. Develop windows applications using window controls in VB.NET
6. Develop windows applications using rich web controls in VB.NET
7. Develop application using graphics in VB.NET
8. Develop data base application using ADO.NET in VB.NET
9. Develop windows applications using window controls in ASP.NET
10. Develop windows applications using rich web controls in ASP.NET
11. Programs using validation controls in ASP.NET
12. Develop data base application using ADO.NET in ASP.NET

ELECTIVE PAPERS

Subject Title: MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE
Course Number: 10CSEEE01  Number of credits: 4

Subject Description:
This course presents the properties of matrices and concepts of probability.

Goals:
To enable the student to learn the mathematical foundations of computer science.
Objectives:

On successful completion of the course the student should have:

- Understood the mathematical logic grammars and languages.
- Learned probability concepts.

Contents:

Unit - I

Unit - II

Unit - III

Unit - IV

Unit - V
Numerical Methods

Reference Book:
Subject Title: IMAGE PROCESSING

Course Number: _10CSEEE02
Number of credits: 4

Subject Description:
This course presents the introduction image processing fundamentals, segmentation, image enhancements and image perception.

Goals:
To enable the student to be familiar with image data compression, image recognition, image filtering and segmentation.

Objectives:
On successful completion of the course the student should have understood image processing fundamentals, segmentation, image enhancements and image perception, filtering and compression.

Contents: Unit - I

Unit - II

Unit - III

Unit - IV
Image Segmentation: Detection and Discontinuities-Edge Linking and Boundary deduction- Thresholding- Region-Based Segmentation -Segmentation by Morphological watersheds-The use of Motion in Segmentation.

Unit - V
Image Recognition and Interpretation-Image Data Compression.

Reference Books:
Subject Title : BIOINFORMATICS

Course Number: 10CSEEE03

Number of credits: 4

Subject Description:
This course presents the importance of biological concepts and biological databases.

Goals:
To enable the student to know about sequence analysis, all biological databases, perl programming.

Objectives:
On successful completion of the course the student should have:
- Understood different structure and functions.
- Learnt the different modeling techniques & sequence analysis.

Contents: Unit - I
Introduction – importance of bioinformatics – biological concepts – DNA & protein (Structure and functions)

Unit - II
Model organisms and genome projects, Biological Databases, Sequence databases, Primary, secondary, composite databases, Nucleotide sequence databases (NCBI, EBI, DDBJ), Protein sequence databases (SwissPROT, TrEMBL, PIR, Expasy), Structural databases, DNA structure databases, Protein structure database (PDB, SCOP, CATH), Genome databases, NCBI genome, Pathway database, KEGG.

Unit - III
Sequence analysis – gene identification methods (Prokaryotic and eukaryotic), Needleman and Wunsch algorithm, Smith and Waterman algorithm, pair wise sequence alignment (local and global alignment), scoring a matrix (Pam and Blosum), Multiple sequence alignment, sequence motif analysis

Unit - IV
Elements of PERL Programming – Data types, syntax, loops, input and outputs.

Unit - V
Structural biology and molecular modeling - Molecular visualization, RasMol, ViewerPro, Swiss PDB Viewer, Protein conformational analysis, Ramachandran plot, Secondary structure prediction, 3DPSSM, Protein Domains, Blocks and Motifs, CD Search, PDB Search, PDB Format, Comparative Modeling.

Reference Books:
3. Dr. K, Mani and N. Vijayaraj, “Bioinformatics for beginners”, Kalaikathir Achchagam
Subject Title : ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Course Number: 10CSEEE04 Number of credits: 4

Subject Description:
This course presents the problem solving and AI, search methods and expert systems.

Goals:
Enable the student to be familiar with theorems and algorithms.

Objectives:
On successful completion of the course the student should have:
- Understood the problem states and AI, state space methods, problem reduction search methods, predicate calculus, and knowledge engineering in expert systems.

Contents:
Unit- I
Problem solving and AI – Puzzles and Games – Problem States and operators – Heuristic programming – state space representations – state descriptions – graph notations – non-deterministic programs

Unit - II
State space search methods – breadth first and dept h first search – heuristic – dmissibility – optimality of algorithms – performance measures – problem reduction representations – AND/OR graphs and higher level state space

Unit - III

Unit - IV
Predicate calculus in problem solving – answer extraction process – resolution – Automatic program writing – predicate calculus – proof finding methods

Unit - V
Expert systems: Expert systems and conventional programs – expert system organization – Knowledge engineering: knowledge representation techniques – knowledge acquisition – acquiring knowledge from experts – automating knowledge acquisition –Building an expert system – difficulties in developing an expert system

Reference Books:
Subject Title: MICROPROCESSOR PRINCIPLES AND DESIGN
Course Number: 10CSEEE05
Number of credits: 4

Subject Description:
This course presents the architecture memory, I/Devices, interrupts, signals DMA controller and chips.

Goals:
To enable the student learn the programming concepts in microprocessor.

Objectives:
On successful completion of the course the student should have: ● Understood assembly languages.

Contents:
Unit - I

Unit - II

Unit - III

Unit - IV

Unit - V

Reference Books:
Subject Title : PRINCIPLES OF PROGRAMMING LANGUAGES

Course Number: 10CSEEE06 Number of credits: 4

Subject Description:
This course presents the various principles of programming languages.

Goals:
To enable the student to learn the Language Design Issues, data types, inheritance, control structure, and storage management.

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

- Understood the structure and operation of a computer with various programming Languages.

Contents:
Unit - I

Unit - II

Unit - III
Sequence Control: Implicit and Explicit Sequence Control – Sequencing with Arithmetic and Non arithmetic Expressions – Sequence Control between Statements. Subprogram Control: Subprogram Sequence Control – Attributes of Data Control – Shared Data in Subprograms.

Unit - IV

Unit - V

Reference Books:
Subject Title : NEURAL NETWORKS AND FUZZY SYSTEMS

Course Number: 10CSEEE07 Number of credits: 4

Subject Description:
This course presents the fundamentals of neural networks and fuzzy systems

Goals:
To enable the student to familiar with to Fuzzy Set Theory, Fuzzy Systems Adaptive Resonance Theory and Back Propagation Networks

Objectives:
On successful completion of the course the student should have: ● Understood concepts and principles of fuzzy and neural networks.

Concepts:
Unit - I

Unit - II

Unit - III

Unit - IV
Fuzzy Set Theory: Fuzzy versus Crisp – Crisp Sets – Fuzzy Sets – Crisp Relations – Fuzzy Relations.

Unit - V

Reference Books:
Subject Title : MOBILE COMPUTING

Course Number: 10CSEEE08  Number of credits: 4

Subject Description:
This course presents an introduction to mobile communications, Digital cellular system, Mobile switching systems, Network management systems

Goals:
To enable the student learn Digital cellular system.

Objectives:
On successful completion of the course the student should have: ● Understood the generation of mobile communication.

Contents:
Unit - I
Introduction: Introduction to mobile communications – generation of mobile communication FM, TDMA, CDMA – basic cellular architecture.

Unit - II

Unit - III
Mobile switching systems: Mobile service switching centre (MSC) – inter working functions (IWF) – home location register (HLR) and Vister Location register (VLR) – Gateway MSC – Signaling transfer point (STP)

Unit - IV
Base station sub systems: Base station controller (BSC) – base transceiver station (BTS) – transcoder rate adaptation unit (TRAU) – opensystem interconnection – frequency management.

Unit - V
Network management systems: Operating sub systems – network operation, maintenance and administration – subscription management and charging – mobile equipment management.

Reference Books:
Subject Title : TCP/IP

Course Number: 10CSEEE09
Number of credits: 4

Subject Description:
This course presents the introduction of TCP/IP architecture.

Goals:
To enable the student to learn routing mechanisms and applications.

Objectives:
On successful completion of the course the student should have:
- Understood OSI layers, features and its applications.

Contents:

Unit - I

Unit - II
Technical Features: Mapping Internet addresses to Physical addresses – RARP-Connectionless Datagram Delivery – Routing IP Datagrams – Error and Control Messages (ICMP)

Unit - III
Subnet and Supernet address Extensions-User Datagram Protocol (UDP) – Internet Multicasting – The Domain Name System (DNS)

Unit - IV

Unit - V
Applications: Remote Login (Telnet) – File Transfer and Access (FTP, NFS) –Electronic Mail (SMTP) – Internet Management (SNMP).

Reference Books:
Subject Title : EMBEDDED SYSTEMS

Course Number: 10CSEEE10  
Number of credits: 4

Subject Description:
This course presents the Hardware Fundamentals, Software Architecture Interrupts, RTOS Operating System Services, Embedded software life cycle and tools.

Goals:
To enable the student to learn fundamentals, and concepts of operating system.

Objectives:
On successful completion of the course the student should have:
- Understood: Hardware fundamentals, Software Architecture, Interrupts, Embedded software lifecycle and tools.

Contents:

Unit - I

Unit - II

Unit - III

Unit - IV
Embedded software life cycle and tools Embedded software Lifecycle : Software Algorithm complexity-Software development process life cycle and its models Software development tools: development tools-hosts and target machine-linker/locators for embedded software-getting embedded software into the target machine Debugging techniques: testing on your host machine-instruction set simulators-the asset macro-using laboratory tools

Unit – V
Case Study

Reference Books:
Subject Title : GENETIC ALGORITHMS

Course Number: 10CSEEE11
Number of credits: 4

Subject Description:
This course presents an introduction to genetic algorithms and its applications

Goals:
To enable the student to familiar with the concepts of genetic algorithms

Objectives:
On successful completion of the course the student should have:
- Understood the concepts and applications of genetic algorithms

Contents:
Unit - I

Unit - II
Applications of GA: The Rise of GA – Bagley and Adaptive Game playing program, Tosenberg and Biological cell simulation – pattern recognition – metalevel GAs – Hollstien and Function optimization – Real genes – Box and Evolutionary operations – Evolutionary optimization techniques, programming. Function optimization – improvements in basic techniques – Current applications – Pipeline system s – Structural optimization – medical registration

Unit - III

Unit - IV

Unit - V
Genetic Based Machine Learning (GBML) – Development of CS-1-Smith’s Poker Player – LS – 1 Performance – GBML efforts – ANIMAT classifier system pipeline operation classifier system.

Reference Books:
Subject Title: SYSTEMS PROGRAMMING AND COMPILER DESIGN

Course Number: 10CSEEE12
Number of credits: 4

Subject Description:
This course presents the introduction to systems programming and compiler design.

Goals:
To enable the student to be familiar with the systems programming and compiler design.

Objectives:
On successful completion of the course the student should have:
- Understood the system software with assemblers.
- Learned macroprocessors and load techniques.

Contents:
Unit - I

Unit - II

Unit - III

Unit - IV

Unit-V

Reference Books:
Subject Title : MAINFRAME COMPUTING

Course Number: 10CSEEE13  Number of credits: 4

Subject Description:
This course presents the introduction to COBOL, DB2, CICS

Goals:
To enable the student to familiar with to be familiar with the concepts in databases

Objectives:
On successful completion of the course the student should have: ● Understood concepts of COBOL, JCL, and DB2.

Contents:
Unit-I
History of MVS- Basic concepts of JCL- Introduction to ISPF-JOB statement-EXEC statement-DD statement- Procedures-GDG-Utility program-VSAM-JES2 and JES3-ALTER, DELETE, EXPORT, IMPORT command in VSAM-SMS.

Unit-II
Introduction to COBOL- IDENTIFICATION DIVISION-ENVIRONMENT DIVISION-DATA DIVISION-PROCEDURE DIVISION-SYNCHRONIZED clause-JUSTIFIED clause-REDEFINES clause- RENAMES clause- SIGN clause- VERBS-CONDITIONAL and SEQUENCE CONTROL VERBS.

Unit-III
Table Handling- Sequential files-sorting and merging of files-EXAMINE verbs-INSPECT verb-STRING and UNSTRING verb- Direct access files- Report.

Unit-IV
Introduction to DB2- Data types-Literals-Scalar operators and functions- assignment and comparison - DDL statement-DML statement: Simple queries, sub queries correlated queries; join queries, quantified comparison-Catalog: Introduction, Quantifying catalog, Updating catalog, Aliases and Synonyms, labels- Views- Security and Authorization –Integrity – Embedded SQL-Transaction processing –Lock and Dead Lock – Dynamic SQL.

Unit–V
Introduction to CICS-House Keeping: HANDLE CONDITION, IGNORE CONDITION, PUSH & POP, Alternates to HANDLE CONDITION, SERVICE RECORD, ADDRESS, ASSIGN, EXEC Interface Block-Program control- File control-Terminal control-BMS-Transient Data Control- Systems security –Recovery and Restart - Test and Debugging – Inter communication.

Reference Books:
7. Mainframe Handbook

**Subject Title: CRYPTOGRAPHY AND SYSTEM SECURITY**

**Course Number:** 10CSEEE14  
**Number of credits:** 4

**Subject Description:**  
This course presents an idea on different threats and security issues

**Goals:**  
To enable the student to familiar with attacks, and security

**Objectives:**  
On successful completion of the course the student should have:
- Understood authentication applications, web security, intruders and viruses.

**Contents:**

**Unit - I**  

**Unit - II**  

**Unit - III**  

**Unit - IV**  

**Unit - V**  

**Reference Books:**
Subject Title : NATURAL LANGUAGE PROCESSING

Course Number: 10CSEEE15

Number of credits: 4

Subject Description:
This course presents an idea on natural language processing

Goals:
To enable the student
Understanding, Grammars for to familiar with to Introduction to Natural Language Natural
Conversational Agent Languages, Linking Syntax and Semantics, and

Objectives:

On successful completion of the course the student should have: • Understood the natural language processing.

Contents:

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

Unit - II

Unit - III

Unit - IV

Unit - V

Reference Books:
Subject Title : VIRTUAL REALITY

Course Number: 10CSEEE16

Number of credits: 4

Subject Description:
This course presents an idea on Computer graphics, Generic VR Systems, Physical Simulation, VR Hardware

Goals:
To enable the student to familiar with to computer graphics, 3D Computer graphics, and simulation

Objectives:
On successful completion of the course the student should have: ● Understood virtual reality in detail

Contents:
Unit - I

Unit - II

Unit - III

Unit - IV

Unit - V

Reference Books:
Subject Title : SPEECH PROCESSING

Course Number: 10CSEEE17  
Number of credits: 4

Subject Description:
This course presents an idea on fundamentals of speech recognition, pattern comparison techniques and processing

Goals:
To enable the student to familiar with to Overview of signals and systems, Fundamentals of speech recognition, Pattern-comparison techniques.

Objectives:
On successful completion of the course the student should have: ● Understood concepts and principles in speech recognition.

Contents:
Unit - I
Overview of signals and systems – Review of One dimensional and two dimensional signal processing and discrete Fourier transforms and digital filters- domain models for speech processing.

Unit - II

Unit - III

Unit - IV
Homomorphic speech processing-Speech Recognition algorithm: Pattern Recognition based and knowledge based – Discrete utterance and continuous speech recognition systems-Principles of speaker recognition-projects.

Unit - V
Speech recognition based on connected word models-Large vocabulary continuous speech recognition – Task oriented applications of automatic speech recognition.

Reference Books:
2. Lawrence Rabiner, "Fundamentals of speech recogniti on", Prentice Hall.
Subject Title: E-COMMERCE

Course Number: 10CSEEE18

Number of credits: 4

Subject Description:
This course presents an idea on fundamentals of E-Commerce

Goals:
To enable the student to familiar with network infrastructure, Information Publishing Technology, Search Engines and Directory Services.

Objectives:
On successful completion of the course the student should have: Understood concepts and principles in E-Commerce

Contents:
Unit - I
Introduction to E-Commerce: Benefits-Impacts-Classification and Application of E-Commerce-Business Model-Architectural Frame Work

Unit - II

Unit - III

Unit - IV

Unit - V

Reference Books:
Subject Title: PARALLEL PROCESSING

Course Number: 10CSEEE19 Number of credits: 4

Subject Description:
This course presents an Introduction to parallel processing, Memory and input/output system, Pipeline computers, Array Processors, Multiprocessor architecture

Goals: To enable the student to familiar definition and functions of parallel processing, Interrupt Mechanism and special hardware, principles of linear pipelining

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

- Understood concepts and principles of parallel processing, Multiprocessor architecture.

Contents:

Unit - I

Unit - II

Unit - III
Pipeline computers – principles of linear pipelining – pipelined structures of a typical central processing unit – classification of pipeline processors – interleaved memory organization – S access memory organization – C access memory organization – C & S access memory organization – Static & dynamic pipelining – principles of designing static pipeline processors – Instruction prefetch and branch handling – data buffering and busing structures – Internal forwarding and register tagging – vector processing – requirements and characteristics of pipelined vector processing methods.

Unit - IV
Unit - V
Multi-processor architecture – Functional structures of a multiprocessor system loosely and tightly coupled multiprocessor – Processor characteristics of multiprocessing – Inter processor communication mechanism – Instruction set – Interconnection networks – Time shared or common bus – cross bar switch and multi port memories and multistage networks for multiprocessor – Parallel memory organization – Interleaved memory configurations – classification of multiprocessor operating system.

Reference Books:

Subject Title: DISTRIBUTED SYSTEMS

Course Number: 10CSEEE20 Number of credits: 4

Subject Description:
This course presents an Introduction to Distributed Systems, Client/Server Network Model, Distributed Databases

Goals:
To enable the student to familiar with distributed systems and client server computing

Objectives:
On successful completion of the course the student should have: ● Understood Distributed Systems in detail

Contents:
Unit - I
Distributed Systems: Fully distributed processing systems – Networks and Interconnection structures – Designing a Distributed Processing System.

Unit - II
Distributed Systems: Pros and Cons of Distributed processing – Distributed databases – the challenge of distributed data – loading factors – managing the distributed resources – division of responsibilities.

Unit - III

Unit - IV
Client/Server Network Model: Concept – file server – printer server – an e-mail server.
Unit - V

Reference Books:
2. Uyless D. Black, ‘Data Communications & Distributed Networks’.

Subject Title: DATA COMPRESSION

Course Number: 10CSEEE21 Number of credits: 4

Subject Description:
This course presents an brief introduction to compression schemes and modulation

Goals:
To enable the student to familiar with Information and Coding and Compression of

Still Images

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

* Understood data compression concepts and principles

Contents:
Unit - I

Unit - II
Huffman Coding – Arithmetic Coding - Dictionary Techniques - Sampling and Quantization

Unit - III

Unit - IV
Unit - V

Reference Books:

Subject Title : WEB SERVICES

Course Number: 10CSEEE22 Number of credits: 4

Subject Description:
This course presents an Overview of Distributed Computing, XML, web services

Goals:
To enable the student to be familiar with distributed services, XML and web services

Objectives:
On successful completion of the course the student should have:
- Understood the concepts of web services

Contents:
Unit - I
Overview of Distributed Computing. Introduction to web services – Industry standards, Technologies and concepts underlying web services – their support to web services. Applications that consume web services.

Unit - II
XML – its choice for web services – network protocols to back end databases- technologies – SOAP, WSDL – exchange of information between applications in distributed environment – locating remote web services – its access and usage. UDDI specification – an introduction.

Unit - III
A brief outline of web services – conversation – static and interactive aspects of system interface and its implementation, work flow – orchestration and refinement, transactions , security issues – the common attacks – security attacks facilitated within web services quality of services – Architecting of systems to meet users requirement with respect to latency, performance, reliability, QOS metrics, Mobile and wireless services – energy consumption, network bandwidth utilization, portals and services management.

Unit - IV
Building real world enterprise applications using web services – sample source codes to develop web services – steps necessary to build and deploy web services and client applications to meet customer’s requirement – Easier development, customization, maintenance, transactional requirements, seamless porting to multiple devices and platforms.
Unit - V
Deployment of Web services and applications onto Tomcat application server and axis SOAP server (both are free wares) – Web services platform as a set of enabling technologies for XML based distributed computing.

Reference Books:

Subject Title  : SOFTWARE QUALITY ASSURANCE

Course Number: 10CSEEE23 Number of credits: 4

Subject Description

This Course presents the essentials of Software Quality, Plan for SQA, Standards, Tools for SQA.

Goals:
To enable the students to learn the Concepts and Principles of SQA.

Objectives :
On successful completion of the course the students should have: ● Understood the principles of SQA ● Must be able to judge the quality of Softwares.

Content
Unit - I
Introduction to software quality – Software modeling – Scope of the software quality program – Establishing quality goals – Purpose, quality of goals – SQA planning software – Productivity and documentation.

Unit - II

Unit - III

Unit - IV
Tools, Techniques and methodologies, Code control, Media control, Supplier control, Records collection, Maintenance and retention, Training and risk management.
Unit -V
ISO 9000 model, cmm model, Comparisons, ISO 9000 weaknesses, cmm weaknesses, SPICE – Software process improvement and capability determination.

Reference Books:

Subject Title : SOFTWARE RELIABILITY
Course Number: 10CSEEE24 Number of credits: 4
Subject Description
This course provides the insight in to the reliability factors of the Software.
Goal :
To enable the students to learn about the principle and concepts of Software reliability.
Objectives :
On successful completion of the course the students must have
- understood the concepts of Software reliability
- analysed the quality standards

Content
Unit - I

Unit - II
The phases of a Software Project - Monitoring the development process – The software life cycle models - software engineering - Structured Analysis and structured Design - Fault tolerance - Inspection - Software cost and schedule.

Unit - III
Software quality modeling - Diverse approaches and sources of information - Fault avoidance, removal and tolerance - Process maturity levels (CMM) - Software quality assurance (SQA) - Monitoring the quality of software - Total quality management (TQA) - Measuring Software Reliability - The statistical approach - Software reliability metrics.

Unit - IV
Data Trends - Complete prediction Systems - overview of some software reliability models - The recalibration of the models - Analysis of model accuracy - Reliability growth models and trend analysis - Software Costs Models - Super models.
Unit -V

Reference Books:

Subject Title : SOFTWARE TESTING
Course Number: 10CSEEE25 Number of credits: 4

Subject Description
This course provides principles of Software Testing and about 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

Unit – II

Unit – III
Unit –IV

Unit- V

Reference Books: