BHARATHIAR UNIVERSITY: COIMBATORE
M. Sc. (SOFTWARE TECHNOLOGY) DEGREE COURSE WITH COMPULSORY
DIPLOMA IN WEB APPLICATIONS (DWA)
For Affiliated Colleges (Effective from 2009-2010)
SCHEME OF EXAMINATION - (CBCS PATTERN)

Sem	Study Components	Course title	Ins. hrs/ week	Dur.Hrs	CIA	Marks	Total Marks	Credit
	Paper I	Advanced Computer Organization & Architecture	4	3	25	75	100	4
	Paper II	Internet Concepts and WAP Technology	4	3	25	75	100	4
	Paper III	Object Oriented Modeling and Design	4	3	25	75	100	4
	Paper IV	Advanced Java Programming	5	3	25	75	100	4
	Paper V	Software Engineering	4	3	25	75	100	5
	Practical I	JAVA Lab	6	3	40	60	100	5
	Dip. Paper I	Web Designing	3	3	25	75	100	3
	Paper VI	Software project management	5	3	25	75	100	4
	Paper VII	Database Technology	6	3	25	75	100	4
	Paper VIII	Operating System	5	3	25	75	100	4
	Paper IX	Elective - I	5	3	25	75	100	5
	Practical II	RDBMS Lab	6	3	40	60	100	5
	Dip.Paper II	Web Services	3	3	25	75	100	3
	Paper X	Programming in C# .NET	6	3	25	75	100	4
	Paper XI	Multimedia Technologies	5	3	25	75	100	4
	Paper XII	Data Communications and Networking	5	3	25	75	100	4
	Paper XIII	Elective - II	5	3	25	75	100	5
	Practical III	C#. NET Lab	6	3	40	60	100	5
	Dip.PaperIII	Asp. Net	3	3	25	75	100	3
	Dip.PaperIV	Asp.Net Programming Lab	3	3	40	60	100	3
IV	Project work and Viva voce						200*	8
		Total					2200	90

* Project report - 160 marks; Viva-voce – 40 marks

ELECTIVE –I
E.1.1. Data Mining
E.1.2. Embedded Systems
E.1.3. Artificial Intelligence

ELECTIVE – II
E.2.1. Programming Languages
E.2.2. Real Time System
E.2.3. Data warehousing

SEMESTER I

Subject Title: ADVANCED COMPUTER ORGANIZATION AND ARCHITECTURE

Number of Instruction Hours: 4
Subject Description:
This course presents the architecture and organization of computers.

Goal:
To enable the students to learn the basic functions, principles and concepts of Computer architecture**.**

Objectives:
On successful completion of the course the students should have:
 Understood computer architecture
 Understood number systems, I/O, Registers and memory

Contents

UNIT I:

   Introduction -   Computer Components – Computer function – Interconnection structures – Bus Interconnection – Computer memory system overview –Semi conductor main memory – Cache memory – Magnetic disk –RAID – Optical memory – Magnetic tape.

UNIT II:

   Input/Output: External Device – I/O modules – Programmed I/O – Interrupt driven I/O – Direct memory access – I/O channels and processors – The external interface – Operating system overview- scheduling – memory management - The arithmetic and logic unit [ALU] – Integer representation – Integer arithmetic – Floating point representation – Floating point arithmetic.

UNIT III:

   Machine instruction characteristics – Types of operands- Types of operations – Assembly language – Addressing – Instruction formats – Processor organization – Register organization – The instruction cycle – Instruction pipelining – The Pentium processor – The power pc processor.

UNIT IV:

   Instruction execution characteristics – The use of a large register file – compiler based register optimization – Reduced instruction set architecture – RISC pipelining – Motorola 88510 – The RISC versus CLSC controversy – Super scalar - Processor overview –Design issues – Power pc Pentium.

UNIT V:

   Micro operations – Control of the CPU – Hardwired Implementation – Micro programmed control: Basic concepts – Micro instruction sequencing – Micro instruction sequencing – Micro instruction execution – Parallel processing – Multi Processing – Cache coherence and the MESI protocol – Vector computation – Parallel processors.

REFERENCE BOOKS
1. William Stallings, "Computer Organization and Architecture – Designing For Performance". Prentice – Hall, India
2. M. Morris Mano, "Digital Logic and Computer Design", PHI.
3. M. Morrris Mano, "Computer system architecture" Third Edition, PHI/ Pearson Education
4. Albert Paul Malvin o, D Donald P. Leach, "Digital Principles and Applications", Tata Mc GrawHill Pub. Company Ltd.
5. J.P.Hayes, "Computer Architecture and Organization" TataMcGraw Hill Pub. Company Ltd.
6. William Stallings, "Computer Organization & Architecture – Designing For performance", Pearson Education, Sixth Edition

Subject Title: INTERNET CONCEPTS AND WAP TECHNOLOGY

Number of Instruction Hours: 4

Subject Description:
This Course presents the networking concepts and wap technology like WML.

Goals:
To enable the students to learn the technologies for internet.

Objective
On successful completion of the course the students should have:
Understood what is internet and how it can be done.

Contents

UNIT I:
Introduction to computers and the internet -Cascading style sheets – Macromedia flash MX 2004: Building interactive animations.

UNIT II:
Macro media flash MX 2004: Building an interactive game – Macro media dream weaver MX 2004 –Web servers.

UNIT III:
Website creation concepts – Crating web pages by using web page editors – Creating web graphics – Creating web audio files – Uploading web pages – Building traffic to your website.

UNIT IV:
WAP: Introduction – Preliminaries – WML JS DK - WML Home page example.

UNIT V:
Real world application example: - The Grocery servlet - Push technology –WML script.

REFERENCE BOOKS
1. H.M.Deitel, P.J .Deitel ,A.B.Gold Berg , " INTER NET AND WORLD WIDE WEB HOW TO PROGRAME", 3rd Edition, Pearson,Prentice Hall
2. Margaret Levine young , " THE COMPLETE REFERENCE" TaTa McGraw Hill, Internet millennium edition
3. John L. Cook III, "WAP SERVLETS", Willey.

Subject Title: OBJECT ORIENTED MODELING AND DESIGN

Number of Instruction Hours: 4
Subject Description:
        This Course presents the object oriented modeling and design, methodologies in object oriented techniques.
Goals
To enable the students to learn the object oriented techniques to system analysis and design.
Objectives
On successful completion of the course the students should have:
☐Understood the trends and principles of object oriented methodoloies.
☐Gained problem solving skills using developing object based models.

Contents
UNIT I:
        Introduction – Modeling Concepts: Modeling as a design technique – Object modeling – Advanced object modeling

UNIT II:
        Dynamic modeling – Functional modeling – design methodology: Methodology preview - Analysis

UNIT III:
        System Design – Object design – Methodology summery

UNIT IV:
        Comparison of methodologies – Implementation: From design to implementation – Programming style – Object oriented languages

UNIT V:
        Non object oriented languages - Relational database – Applications: Object diagram compiler

 REFERENCE BOOKS

  1. James Rum Baugh, Michael Blaha, William Premerlani. Fredrick Eddy,
     William Lorensen, "OBJECT ORIENTED MODELING AND
     DESIGN", Prentice –Hall.
  2 Ali Brahmi, "Object Oriented System Development", McGraw-Hill
     International Edition
  3. Object-Oriented Analysis and Design by Grady Booch, Addison –
      Wesley
  4 .Object Oriented Modeling and Design by James Rum Baugh, Michael
    Blaha, Prentice Hall

Subject Title: ADVANCED JAVA PROGRAMMING

Number of Instruction Hours: 5
Subject Description:
This course presents the basic concepts of object oriented programming, methods data types, class and objects, packages; overview of applet, Overview of Swing technology**.**
Goal:
 To enable the students to learn the basic functions, principles and concepts of java programming**.**
Objectives:
On successful completion of the course the students should have:
. ⬜Understood the basics of java programming and Applet
. ⬜Learnt multithreading, string manipulation.

Contents
UNIT I:
       Introduction to classes & objects – control structures – If single selection statement – If –else double selection statement – while repetition statement – Primitive types – For & do-while repetition statement – Switch multiple selection statement – Break and continue statements – logical operators – program modules in java – static methods ,static fields and class math – Java API packages – Scope of declarations – method overloading.

UNIT II:
       Arrays – Declaring & creating arrays –Passing arrays to methods – Multidimensional arrays -Using command line arguments - Controlling access to members – Referring to the current objects members with the this reference – Overloaded constructors – Set & Get methods –Final size – Static class members – Static Import – Final instance variables – Data abstraction & encapsulation – Super classes & subclasses - Protected members – Constructors in subclass.

UNIT III:
        GUI components: Part I – Graphics and java 2D.

UNIT IV:
       Exception handling: Introduction – Exception handling overview – when to use exception handling – Java exception hierarchy – Finally block –Print stack trace , get stack trace & get message - Files & Streams: Sequential access text files – Random access files.

UNIT V:
        Multithreading: Introduction – Life cycle of a thread priorities & thread scheduling – Thread synchronization – multi threading with GUI – Introduction to java Applets – Applets & Applications – GUI components part 2.

REFERENCE BOOKS
1. H.M.Deitel, P.J.Deitel, "JAVA HOW TO PROGRAM", Sixth Edition, Prentice Hall India.
2. Keyur shab, "Java 2 programming", Tata McGraw-Hill Pub. Company Ltd.
3. C.Xavier, "Programming with Java 2", SciTech Publications (India) P. Ltd.
4. Cays S. Horstmann, Gary Cornell, "Core Java2 Volume I – Fundamentals", Pearson Edition, 2001
5. Cays S. Horstmann, Gary Cornell, "Core Java2 Volume II – Fundamentals", Pearson Edition, 2003

Subject Title: SOFTWARE ENGINEERING

Number of Instruction Hours: 4
Subject Description:
This course presents the role of software, system analysis, and design
Concepts, methods, testing methods and strategies
Goal:
To enable the students to learn the basic functions, principles and concepts of software engineering.
Objectives:
On successful completion of the course the students should have:

 ⬚Understood the role of software engineering
 ⬚Understood the design concepts, testing methods and strategies

Contents
UNIT I:

   Introduction to software engineering – The software process: A Generic view of process – Process models - Software engineering practice: - Modeling practices, Requirements engineering tasks – Building the analysis model.

UNIT II:

   Building the   analysis model – Design engineering – Creative an architectural design: Data design –Architectural design - Mapping flow into software architecture – Designing conventional components**.**

UNIT III:

   Performing User Interface Design - Testing strategies – software testing fundamentals – Basis path testing – Control structure testing - Block box testing - Testing for specialized environments , Architecture , & applications – Object oriented testing method – web engineering.

UNIT IV:

   Testing for web Appls - Managing software projects: Project management – Risk management – Quality management.

UINIT V:

    Change management –Clean room software engineering – Component based development.

REFERENCE BOOKS

   1. Roger S .Press Man,"SOFTWARE ENGINEERING A PRACTIONER'S
      APPROACH", Sixth Edition, McGraw Hill International Edition.
   2. Rajib Mall, "Fundamentals of Software Engineering", PHI, Second Edition.
   3. Sommerville, "Software Engineering", Pearson Education, Sixth Edition.
   4. Richard Fairly, "Software Engineering Concepts", Tata McGraw Hill, 1997
   5. Carlo Ghezzi, Mehdi Jazayeri, Dino Mandrioli, "Fundamentals of Software
      Engineering", Second Edition, PHI/Pearson Education Asia.

SEMESTER II

Subject Title: SOFTWARE PROJECT MANAGEMENT

Number of Instruction Hours: 5
Subject Description:
This Course presents the elements of software project management
Goals:
To enable the students to learn the concepts of software project management
Objectives
On successful completion of the course the students should have:
⬚Understood the trends and principles of software project management

Contents
 UNIT I:
    Setting the scene: Introduction - Product life cycle - Project life cycle – Process models.

UNIT II:
    Umbrella Activities: Metrics – Software Configuration management – Software Quality Assurance - Risk management.

UNIT III:
    Project management processes and activities: Project life cycle: "In Stream" Activities - Project initiation -Project planning and tracking – Project closure.

UNIT IV:
    Engineering Activities: Engineering activities in project life cycle – software requirements gathering - Estimation – Design and development phase – Project management in the testing phase – Project management in the maintenance phase.

UNIT V:
    Emerging Trends: Globalization issues in project management - Impact of the internet on project management - People focused process models.

REFERENCE BOOKS

1. Gopal Swamy Rameah,"MANAGING GLOBAL SOFTWARE PROJECTS", TaTa McGraw Hill
2. Bob Hughes & Mike Cotterell, "SOFTWARE PROJECT MANAGEMENT", 4th Edition, TaTa McGrawHill.

Subject Title: DATABASE TECHNOLOGY

Number of Instruction Hours: 5
Subject Description:
This course presents the introduction of database management systems, explains ER model, structure of relational database, and advance data base concepts**.**
Goal:
To enable the students to learn the basic functions, principals and concepts of Database management systems**.**

Objectives:
On successful completion of the course the students should have:
Understood the basic principles of database management systems..
Gained knowledge over various database models, schemas and SQL statements

Contents
 UNIT I:
    Introduction – Database system application – Purpose of database system – Database languages – Relational databases – Databases design – Relational databases: Relational models.

UNIT II:
    SQL – Advanced SQL**.**

UNIT III:
    Database design: Database design & the E-R model – Relational database design.

UNIT IV:
    Data storage and querying: Query processing – Query optimization.

UNIT V:
    Distributed databases: Homogeneous and Heterogeneous databases – Distributed data storage – Distributed transaction – Distributed query processing – Oracle**.**

REFERENCE BOOKS

 1. Abraham SilbertSchatz , Henry F. korth ,S.Sudarshan , " DATABASE SYSTEM CONCEPTS" ,Fifth Edition , McGraw Hill
 2. Raghu Ramakrishnan, Johannes Gehrke –"Database Management Systems", Third Edition, McGraw-Hill Higher Education.
 3. Elmasri, Navathe, "Fundamentals of Database Systems", Third Edition, Pearson Education Asia.
 4. S.S. Khandare, "Database Management and Oracle Programming", First Edition, 2004, S.Chand and Company Ltd.
 5. Nilesh Shah, "Database Systems using Oracle", 2002, Prentice Hall of India.

Subject Title: OPERATING SYSTEM

Number of Instruction Hours: 6
Subject Description:
This course presents the Introduction & Evolution of Operating Systems, Interprocess Communication, distributed systems and UNIX OS.
Goals:
 To enable the students to learn the basics of operating systems, distributed operating systems and UNIX OS.
Objectives:
On Successful completion of the course the students should have:
 Understood the IPC problems and File caching schemes.
 Gained knowledge in Distributed OS and UNIX OS

Contents
UNIT I:
   Introduction to distributed systems – Goals - Hardware concepts – Software concepts – Design issues – Clock synchronization - Mutual exclusion – Deadlocks in distributed system – Client server model

UNIT II:
 What is parallel processing – Different between distributed and parallel processing- Advantages of parallel processing – Classifications of computers – Machine architecture supporting parallel processing – Operating systems for parallel processors - Issues in operating system in parallel processing – Distributed Processing**.**

UNIT III:
Remote procedure call – Distributed process – Distributed file management –Networking protocols – multimedia operating system: Introduction – Multimedia files – File placement – Caching.

UNIT IV:
Windows NT/2000: Introduction – Window NT process management – Windows NT - Windows 2000 – UNIX: Introduction – History of UNIX – Overview of UNIX – UNIX file system.

UNIT V:
Data structures for process/memory management – Process states & State transitions – Executing & terminating a program in UNIX – Using the system – Process scheduling – Memory management – Solaris process - LINUX: Introduction – UNIX &LINUX – Process management – Process Scheduling - Memory management – File management – Device drivers - Security

REFERENCE BOOKS
1. ANDREW S .TANENBAUM, " DISTRIBUTED OPERATING
     SYSTEM" Pearson Education. (I Unit)
2. ACHYUT S. GODBOLE, " OPERATING SYSTEM" , Second EditionTATA
     McGraw Hill (II, III ,IV, V Units)
3. Pradeep K. Sinha, "Distributed operating systems concepts and
     Design" Prentice -Hall of India, 2002

SEMESTER III

Subject Title: PROGRAMMING IN C# .NET

Number of Instruction Hours: 6
Subject Description:
This Course presents the programming in C# and .Net framework Emphasizing problem solving using C#.
Goals
To enable the students to learn the concepts of. Net framework and C# language.

Objectives
On successful completion of the course the students should have:
☐Understood the trends and principles of .Net framework
☐Gained problem solving skills using C#.

Contents

UNIT I:
   Introduction: Event driven programming – Computing with c# - Visual studio.NET - Creating an application: Creating a windows application – Adding controls – Positioning and sizing control - Controls for windows forms.

UNIT II:
   Variables & Types: - Variables and the assignment operator – Types – Operators and expressions – Selection and Repetition: The if and if else statements – Nested ifs and the switch statements – Repetition.

UNIT III:
   Reference types – Using a data base – Web applications.

UNIT IV:
   Validation controls : Checking required fields – Range checking – Comparing values – Validating expression & summarizing – XML.

UNIT V:
   Web service – Mobile applications – Crystal reports.

REFERENCE BOOKS

1. Art Gittleman,"C#.NET ILLUMINATED", Viva, Indian edition
2. David S. Platt, "Introducing Microsoft .NET", Microsoft Press, SAARC Edition, 2001
3. Microsoft, "C# Language Specifications", Microsoft Press, 2001

Subject Title: MULTIMEDIA TECHNOLOGIES

Number of Instruction Hours: 5
Subject Description:
This Course presents the elements of multimedia systems.
Goals
To enable the students to learn the concepts of multimedia systems
Objectives
On successful completion of the course the students should have:
❑Understood the trends and principles of multimedia systems

Contents

UNIT I:
Introduction - Multimedia: media and data streams - Sound / Audio – Images and Graphics.

UNIT II:
Computer based animation – Data compression – Optical storage media – Real time – Resource management – Process management – File system.

UNIT III:
Application subsystem – Transport subsystem – Quality of service and resource management – Data structure – Integration in a database model – Documents - Hypertext and hyper media – Document architecture SGML – MHEG.

UNIT IV:
Introduction of Synchronization – Notation of Synchronization   - A reference model for multimedia synchronization –Synchronization specification - Higher programming languages – Object oriented approaches**.**

UNIT V:
Introduction of multimedia application – Media preparation – Media Composition – Media integration – Media communication – media consumption – media entertainment**.**

REFERENCE BOOKS

1. Ralf Steinmetz and Klara Nahrstedt, "MULTIMEDIA: COMPUTING, COMMUNICATIONS & APPLICATIONS", Pearson Education
2. Tay Vaughnan, "Multimedia: Making it work" 5th Edition, Tata McGraw-Hill 2001
3. Jeffcoat, "Multimedia in Practice- Technology and applications", PHI 1995

Subject Title: DATA COMMUNICATIONS AND NETWORKING

Number of Instruction Hours: 5
Subject Description:
This Course presents the Introduction to Data communication Principles and Networking
Goals:
 To enable the students to learn the Data Communication Concepts
 Objective:
 On successful completion of the course the students should have:
 ❑**Understood the trends and principles of Data Communication &**
 Network Protocols.

 Contents
 UNIT I:
    Data communications – Networks – The internet - Protocols and standards - Network models - Performance – Digital Transmission.

UNIT II:
    Analog transmission - Switching – Error detection and correction - Protocols – Noiseless channels – Noisy channels – Point to Point control.

UNIT III:
    Multiple access – Wired LANs: Ethernet – wireless LANs – Connecting devices   - Backbone networks – SONET /SDH: Architecture –SONET Layers.

UNIT IV:
    IPv4 Addresses – Internet Protocol – Process-To-Process Delivery: UDP, TCp.and SCTP – Remote logging -Electronic mail - File transfer.

UNIT V:
    WWW and HTTP - Network management: SNMP multimedia – Network security.

REFERENCE BOOKS

1. Behrouz A Forouzan, "DATA COMMUNICATION AND NETWORKING ", 4th Edition, TaTa McGraw Hill.
2. William Stallings,"Data and Computer Communications", Prentice Hall of India Pvt.Ltd, 4th Edition.

ELECTIVES FOR SECOND SEMESTER
ELECTIVE I
Subject Title: E.1.1   DATA MINING

Number of Instruction Hours: 5
Subject Description:
This Course presents the elements of data mining an emphasis building data mining applications.
Goals:
To enable the students to learn the concepts of data mining and warehousing
Objectives:
On successful completion of the course the students should have:
 ⬚Understood the trends and principles of data mining

Contents
UNIT I:

Introduction – Data mining functionalities – Classification of data mining systems – Major issues in data mining – Why preprocess the data – Data cleaning – Data integration and transformation – Data reduction.

UNITII:

Data warehouse and OLAP Technology: What is data warehouse – A multidimensional data model – Data warehouse architecture – Mining various kinds of association rules – What is classification? What is prediction – Issues regarding classification and prediction - classification by Decision Tree Induction.

UNIT III:

Classification by Back propagation – other classification methods – what is cluster analysis – Types of data in cluster analysis – A categorization of major clustering methods – Partitioning methods - Hierarchical methods – Outlier analysis.

UNIT IV:

Methodologies for steam data processing and stream data system – Classification of dynamic data streams – Clustering evolving data streams – Mining sequence pattern in transaction databases.

UNIT V:

Multimedia data mining – Text mining – Mining the World Wide Web – Data mining applications – Data mining system products and research proto types – Social impacts of data mining.

REFERENCE BOOKS
1. Jiawei Han and Micheline kamber, "DATA MINING CONCEPTS AND TECHNIQUES", Second Edition, Elsevier

2. Usama M.Fayyad, Gregory Piatesky – "Advances in Knowledge discovery
And data mining "M.I.T Press
3. Ralph Kimball, "The Data warehouse life cycle tool kit" John Wiley & Sons
4. Sean Lelly, "Data mining in action" John Wiley & Sons

Subject Title: E.1.2   EMBEDDED SYSTEM

Number of Instruction Hours: 5
Subject Description:
This course presents the introduction to embedded systems, Devices and Buses for Device Networks, Program modeling concepts, Inter – process communication & Synchronization of processes, Tasks and threads.
Goal:
To enable the students learns the embedded systems concepts and fundamentals.
Objectives:
On Successful completion of the course the students should have:
Understood the RTOS concepts.
Understood the embedded software Development

Contents
UNIT I:

An Embedded system – Processor in the system – Other Hardware units – Software embedded into a system – Structural units in a processor – Processor selection for an embedded system – allocation of memory to program segments and blocks and memory map of a system.

UNIT II:

Program modeling concepts in single and multiprocessor system software development process – software development process life cycle & its models – Software testing , Validating and Debugging – UML.

UNIT III:

Multiple processes in an application - Problem of sharing data by multiple tasks and routine – Inter process communication – Programming models for event controlled or response time constrained real time program.

UNIT IV:

Device drivers - Parallel port device drivers in a system – Serial port device drivers in a system - Times of the tasks as performance metrics – Real time operating system.

UNIT V:

Real time operating system tools – Hardware software co-design in an embedded system.

REFERENCE BOOKS

1. Raj Kamal, "EMBEDDED SYSTEMS, Architecture Programming and Design", TaTaMcGraw –Hill
2. David E. Simon, "An Embedded Software primer" Pearson Education Asia, 2003

Subject Title: E.1.3   ARTIFICIAL INTELLIGENCE

Number of Instruction Hours: 5
Subject Description:
 This course presents the introduction to Problem solving and AI, state space search methods, problem reduction, predicate calculus in problem solving, expert systems**.**
Goal:
 To enable the students to learn the basic functions, principles and concepts of Artificial intelligence and expert systems
Objectives:
On successful completion of the course the students should have:
 Understood the Artificial intelligence and expert systems
 Learnt the Heuristic techniques and reasoning

Contents
UNIT I:

   Definition – Over view of AI application Areas – The problem solving as search – The propositional calculus – Using Interface rules to produce predicate calculus expressions**.**

UNIT II:

   Structures and strategies for state space search: introduction – Graph theory – Strategies for state space search – Using the state space to represent reasoning with the predicate calculus – Heuristics search – An algorithm for Heuristic search – Admissibility , monotonicity and informed ness – Complex issues.

UNIT III:

   Requirement for AI Languages – The primary AI Languages: LISP and PROLOG – Syntax for predicate calculus programming – LISP a brief overview**.**

 UNIT IV:

    Over view of expert systems technology – A frame Work for organizing and applying Human knowledge – Managing uncertainty in expert system – Knowledge representation Languages - Issues in knowledge representation.

UNIT V:

   Conceptual Graphs – Structured representation – Role of knowledge in language understanding – The natural language problem – Natural language applications – The general problem solver and difference tables – Resolution theorem proving – Genetic algorithms.

REFERENCE BOOKS

   1. George F. Luger, William A. Stubblefield, "ARTIFICIAL INTELLIGENCE, Structures and Strategies For Complex Problem solving", Second Edition, Addison Wesley

 2. Elaine Rich and Kevin Knight," Artificial Intelligence", Tata McGraw Hill Publishers company
Pvt Ltd, Second Edition, 1991. (Chapters 1-6 only).
 3. George F Luger, "Artificial Intelligence", 4th Edition, Pearson Education Publ, 2002

ELECTIVES FOR THIRD SEMESTER
ELECTIVE II
Subject Title: E.2.1   PROGRAMMING LANGUAGES

Number of Instruction Hours: 5
Subject Description:
  This course presents the principles of programming language,

Explaining the concepts of structured object oriented & concurrent programming.

Goals:
To enable the students to learn the elements of programming language and the principles to be followed during the development of programming.

Objectives:

 Understood the basic principles of programming languages learnt the problem solving techniques.

Contents
UNIT I:

       The role of programming languages – Expression notation – Context free grammars – Variants of grammars -The need for structured programming – Syntax directed control flow – Handling special cases in loops – Types: Data representation**.**

UNIT II:
      Object-Oriented programming: Groupings of data and operations – Object oriented programming.

UNIT III:
      Functional programming: A littlie language of expressions – Types – Function declaration – approaches to expressions evaluation – Function declaration by cases – Functions as first class values – Data types – Exception handling in ML –The structures of lists – List manipulation.

UNIT IV:
      Other Paradigms: Logic programming – An introduction to concurrent programming**.**

UNIT V:
       Language Description: Semantic methods – Static types and the lambda calculus– A look at some languages.

REFERENCE BOOKS

1. Ravi Sethi, "PROGRAMMING LANGUAGES CONCEPTS & CONSTRUCTS" 2nd Edition, Addison Wesley.
2. Doris Apply, Programming Languages'', paradigm and practice, McGraw Hill, 1991

Subject Title: E.2.2   REAL TIME SYSTEMS

Number of Instruction Hours: 5
Subject Description:
This Course presents the fundamentals of Real Time Systems
Goals:
To enable the students to learn about Task, scheduling of Tasks& Processor scheduling for Real time systems
Objectives:
On successful completion of the course the students should have:
☐Understood the concept of Real Time Systems, Programming Languages and tools for the development of Real Time Systems and Real Time Databases

Contents
UNIT I:
     Typical Real Time Applications – Hard versus soft real time systems – A reference model of real time system – Commonly used approaches to real time scheduling**.**

UNIT II:
    Clock driven scheduling: Notations and assumptions – Static ,Timer-Driven scheduler – General structure of cycle schedules – Cyclic executives – Improving the averages response time of aperiodic jobs -   Scheduling sporadic jobs – Practical considerations and generalizations – Algorithms for constructing static schedule – Priority driven scheduling of periodic tasks.

UNIT III:
    Assumptions and approaches – Deferrable servers – Sporadic server – Constant utilization, Total bandwidth and weighted fair queering servers –
Stack steeling in deadline – Driven system – Stack stealing in fixed priority systems – Scheduling of sporadic jobs – Real time performance for the jobs with soft timing constraints – A two level scheme for integrates scheduling.

 UNIT IV:
     Resources and resource access control – Model of multi processor and distributed systems – Task assignment – Elements of scheduling algorithms for End-To-End periodic tasks – Schedulability of fixed priority End-To-End periodic task.

UNIT V:
     Flexible applications – Tasks with temporal distance constraints – Model real time communication – Priority based service disciplines for switched networks –Internet and resource reservation protocols – Real time protocol – Open system architecture – Capabilities of commercial real time OS

REFERENCE BOOKS
1. Jane W.S.Liu,"REAL TIME SYSTEMS", Pearson education
2. C.M.Krishna, Kang G. Shin,"Real-Time Systems", McGRAW Hill International Editions.

Subject Title: E.23   DATA WAREHOUSING

Number of Instruction Hours: 5
Subject Description:
This Course presents the Data warehousing Fundamentals
Goals:
To enable the students to learn about System and data warehouse process
Objectives:
On successful completion of the course the students should have:
Understood what is Data ware house and how it is done

Contents
 UNIT I:
      Introduction – Delivery process – Data ware house architecture: System Processes – Process architecture.

UNIT II:
      Design: Database schema – Partitioning strategy – Aggregations – Data marting – Meta data**.**

UNIT III:
      System and data warehouse process managers – Hardware and operational design: Hardware architecture – Physical layout.

UNIT IV:
      Security – Back up and recovery – Service level agreement – Operating the data warehouse**.**

UNIT V:
      Capacity planning, Tuning and Testing: Capacity planning – Tuning the data warehouse – Testing the data warehouse - Data warehouse futures.

REFERENCE BOOK

Sam Anahory, Dennis Murray, "DATA WAREHOUSING IN THE REAL WORLD", Pearson education

DIPLO MA IN WEB APPLICATIONS (DWA)
DIPLO MA PAPER I: Web DESIGNING

Number of Instruction Hours: 3
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 ASP and XML.

Contents
UNIT I:
   Basics of Web Technology: Web page creation- Scripting Language - HTML Tags – VBScript- JavaScript- Looping -Array handling -Functions and Procedures - Object creation - Validating Form Elements**.**

UNIT II:
   ASP: Active Server Pages- Server Side Scripting- Servers: IIS, PWS _ ASP Objects – Request- Response- Session- Server- Application objects- globel.asa file - Cookies - External & Internal cookies.

UNIT III:
   ASP Components - Ad Rotator- Context Rotator- Browser Capability- Page counter - Server objects- Database connectivity - DSN -Retrieving information from table – Manipulating records in tables. Implementation of ASP concepts in .NET environment.

UNIT IV:
   XML: XML essentials - XML Documents - Valid Documents- Entities and attributes - Cascade Style Sheets - XML Scheme - Handling XML Documents and Data Binding.

UNIT V:
   XML DOM - XSL Transformations - XSL Formatting Objects - XML and ASP- XML and Servlets - XML and Perl- WML

REFERENCE BOOKS:

1. Steven Holzner – "Inside XML ", 2000 Edition, Techmedia Publishers.
2. "Unleashed ASP"- Techmedia Publisher.
3. "Interactive VBScript" – Techmedia Publishers.

DIPLO MA PAPER II: WEB SERVICES

Number of Instruction Hours: 3
Subject Description:
This Course presents the Web Services Provided.
Goal:
To enable the students to learn what is web service and Protocols used for Web services
Objective:
On successful completion of the course the students should have:
Understood how to build the real world applications using Web Services.

Contents
UNIT I:
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 backend 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 bandwith 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, Customisation, maintenance, Transactional requirements, seamless porting to multiple devices and platforms.

UNIT – V:
Development of Web Services and applications onto Tomcat application Server and Axis SOAP server (both are freewares) – Web Services Platform as a set of Enabling technologies for XML based distributed Computing.

REFERENCE BOOKS:
1. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services: An Architects Guide", Prentice Hall, Nov 2003
2. Keith Ballinger, "NET Web services: Architecture and Implementation with .Net", Pearson Education, First Education Feb 2003.
3. Ramesh Nagappan, Developing Java Web Services: Architecting and developing secure Web Services Using Java", John Wiley and Sons, first Edition Feb 2003
4. Eric a Marks and Mark J Werrell, "Executive Guide to Web services", John Wiley and sons, March 2003
5. Anne Thomas Manes, "Web Services: A managers Guide" Addison Wesley, June 2003

DIPLO MA PAPER III : ASP. NET

Number of Instruction Hours: 3
Subject Description:
This Course presents the Introduction to ASP.NET programming.
Goals:
To enable the students to learn what is ASP.NET fundamentals, Components & Web forms
Objective:
On successful completion of the course the students should have:
⬚Understood how to build the applications using ASP.NET.

Contents
UNIT I:
   Getting Setup - what is ASP.NET- Setting up for ASP.NET- The development environment –ASP & ASP.NET. An overview – ASP.NET Programming Languages. Programming Basics: Basics of Programming - Program Flow – Effective Coding Techniques –Designing Applications.

UNIT II:
   How Dynamic Website Applications work- Processing ASP.NET with Visual basic.NET:VB.NET Programming Language Structures –Built in ASP.NET objects & Interactivity- The response object –The ASP Server object.

UNIT III:
   Web forms & ASP.NET: Web forms- ASP.NET Configuration, Scope and State: ASP.NET and configuration-ASP.NET and state –The application object –ASP sessions – The session object.

UNIT IV:
   ASP.NET objects and components: The Scripting Object Model- Active Server Components and Controls –More Active Server Components**.**

UNIT V:
   Web services & ASP. NET –WSDL & SOAP- Web services Background – ASP.NET &SQL server- using SQL server –using databases in ASP.NET applications- ActiveX data objects- the ADO.NET objective model –coding structured query language.

REFERENCE BOOKS:

1. Dave Mercer, "ASP. NET a Beginner's Guide", Tata McGraw –Hill Pub. Company Ltd, 2002
2. Matt J. Couch, "ASP. NET and VB. NET Web programming ", Pearson Education, 2002.
3...Kirk Allen Evans, Ashwin Kamanna, Joel Mueller, "XML and ASP.NET", Pearson Education, 2002.

DIPLO MA PAPER IV: ASP.NET PROGRAMMING LAB

Subject Description
This course provides the introduction to .NET programming.
Goal:
To enable the students to learn about the development of web based applications using ASP.NET.
Objectives:
On successful completion of the course the students must have
 understood the basics of .NET programming
 got the skill of developing Web Applications
 knowledge to develop database applications in .NET Environment.

REFERENCE BOOKS:

1. Dave Mercer, "ASP. NET a Beginner's Guide", Tata McGraw –Hill Pub. Company Ltd, 2002
2...'Beginning ASP.NET 2.0' by Chris Hart.