



**DEPARTMENT OF TECHNOLOGY**  
**FINAL YEAR B.TECH.**  
**COMPUTER SCIENCE AND TECHNOLOGY**

**Curriculum Structure**  
**Semester – VII**

Sr. No.	Subject Code	Subject Title	Contact hours			Credits
			L	T	P	
1	CS411	Advanced Computer Architecture	3	-	-	03
2	CS412	Advanced Database Management System	3	1	-	04
3	CS413	Distributed Systems	3	1	-	04
4	CS414	Network Engineering	3	-	-	03
5	CS415	Elective-1	3	-	-	03
6	CS416L	Web Technology Lab-1	2	-	4	04
7	CS412L	Network Engineering Lab	-	-	2	01
8	CS417L	Project Phase - I	-	-	2	02
9	HS 411	Audit Course VI Professional Ethics	2	-	-	-
		Total	19	2	8	24

**Total Credits: 24**

**Total Contact Hours/Week: 29**

- \* Students are expected to do self study for two hours as per the guidance given by the project guide hence contact hours to be taken as two for the calculation of contact hours.

**Note:** Tutorials and practical shall be conducted in batches with batch strength not exceeding 18 students.

<b>Elective-1 (CS415)</b>
1. Project Management
2. Cyber Laws
3. Modern Information Retrieval

CIE – Continuous Internal Evaluation

IPE – Internal Practical Evaluation

IOE– Internal Oral Evaluation

SEE – Semester End Examination

EPE–External Practical Examination,

EOE–External Oral Examination



**DEPARTMENT OF TECHNOLOGY**  
**FINAL YEAR B.TECH**  
**COMPUTER SCIENCE AND TECHNOLOGY**

**Curriculum Structure**  
**Semester – VIII**

Sr. No.	Subject Code	Subject Title	Contact hours			Credits
			L	T	P	
1	CS421	Mobile Technology	3	-	-	03
2	CS422	Information Security	3	-	-	03
3	CS423	Soft Computing	3	-	-	03
4	CS424	Elective-2	3	-	-	03
5	CS425	Elective- 3	3	-	-	03
6	CS426L	Web Technology Lab-2	2	-	4	04
7	CS422L	Soft Computing Lab	-	-	2	01
8	CS427L	Project Phase - II	-	-	4	4
9	HS 421	Audit Course VII Constitution of India	2	-	-	--
		Total	19	2	8	24

**Total Credits: 24**

**Total Contact Hours/Week: 29**

- \* Students are expected to do self study for two hours as per the guidance given by the project guide hence contact hours to be taken as two for the calculation of contact hours.

**Note:** Tutorials and practical shall be conducted in batches with batch strength not exceeding 18 students.

<b>Elective-2 (CS424)</b>	
1. Grid Computing	<b>Elective-3 Open Elective (CS425)</b>
2. Data Mining and Warehousing	1. Industrial Management
3. Service Oriented Architecture	2. Real Time Operating System
	3. Optimization Techniques

§: Minimum 40% marks required in CIE to become eligible for SEE.

**SHIVAJI UNIVERSITY, KOLHAPUR – Syllabus w.e.f. 2014 - 15**

- Tutorials and practical shall be conducted in batches with batch strength not exceeding 18 students.
- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| CIE – Continuous Internal Evaluation | SEE – Semester End Examination      |
| IPE – Internal Practical Evaluation  | EPE–External Practical Examination, |
| IOE– Internal Oral Evaluation        | EOE–External Oral Examination       |



**Shivaji University, Kolhapur**

## Department of Technology

### Final Year B. Tech (COMPUTER SCIENCE AND TECHNOLOGY) (Semester VII)

#### 1. ADVANCED COMPUTER ARCHITECTURE (CS411)

**Teaching Scheme: L: - 3 hr/week**

**Credits: 3**

**Evaluation Scheme: CIE  
(25 + 25)**

**SEE  
50**

**Minimum Passing Marks  
40**

#### **Unit 1**

##### **Introduction to Parallel Processing**

Architecture Development tracks towards parallel processing, Super Scalar and VLIW architecture, Vector processing concepts, pipelined vector processors, Compound Vector Processing, Multivector processor: Cray Y-MP design. (4)

#### **Unit 2**

##### **Different parallel processing architectures**

Multithreaded architectures—principles of multithreading, Latency hiding techniques, Scalable coherent multiprocessor model with distributed shared memory, Systolic arrays and their applications, Associative memory processors, Concepts of Dataflow computing, static and dynamic dataflow architectures. Dataflow operators, Dataflow language properties, advantages & potential problems. (10)

#### **Unit 3**

##### **Distributed Memory Architecture**

Loosely coupled and tightly coupled architectures, Cluster computing as an application of loosely coupled architecture. Examples – CM\* and Hadoop. (4)

#### **Unit 4**

##### **Programmability Issues**

Types and levels of parallelism, Operating systems for parallel processing, Models of parallel operating systems-Master-slave configuration, Separate supervisor configuration, Floating supervisor control, Data and Resource Dependences, Data dependency analysis-Bernstein's condition, Hardware and Software Parallelism. (4)

#### **Unit 5**

##### **Program and Network Properties**

Program Partitioning and Scheduling, Grain Sizes and Latency, Grain Packing and Scheduling, Static Multiprocessor Scheduling, System Interconnect Architectures-Network Properties and Routing, Static Connection Networks, Dynamic Connection Networks. (6)

#### **Unit 6**

##### **Parallel Programming Models, Languages and Compilers**

Parallel Programming Models-Shared-Variable Model, Message-Passing Model, Data-Parallel Model, Object Oriented Model, Functional and Logic Models, Study of Open MP, Parallel Languages and role of Compilers-Language Features for Parallelism, Parallel Language Constructs, Optimizing Compilers for Parallelism, Dependence Analysis of Data Arrays-Iteration Space and Dependence Analysis, Subscript Separability and Partitioning, Categorized Dependence Tests, Code Optimization and Scheduling- Scalar Optimization with Basic Blocks, Local and Global Optimizations, Vectorization and Parallelization, Methods, Code Generation and Scheduling, Trace Scheduling Compilation, Loop Parallelization and Pipelining (8)

**Reference Books:**

1. Advanced computer architecture – Kai Hwang (MGH).
2. Computer Architecture and Parallel Processing – Kai Hwang And Briggs (MGH).
3. Internet for Open MP, Hadoop.

**2. ADVANCED DATABASE MANAGEMENT SYSTEMS (CS412)**

**Teaching Scheme: L: - 3 hr/week**

**Credits: 4**

**T: - 1 hr/week**

**Evaluation Scheme:**

**CIE**

**SEE**

**Minimum Passing Marks**

**(25 + 25)**

**50**

**40**

**Unit 1**

**Database Systems architectures**

Centralized & C/S architectures, server systems, distributed systems, networks types. (4)

**Object-Relational Databases**

Nested relations, complex types, inheritances, reference types, querying with complex types, functions and procedures, OO versus Object-Relational. (5)

**Unit 2**

**Distributed Databases**

Homogeneous & heterogeneous databases, distributed data storage, distributed transactions, commit protocols, concurrency control in distributed databases, availability, distributed query processing, heterogeneous distributed databases, directory systems. (6)

**Unit 3**

**Parallel Databases**

Integrated, I/O parallelism, inter-query parallelism, intra-query parallelism, intra-operation parallelism, inter-operation parallelism, design of parallel systems. (5)

**Unit 4**

**Application development & Administration**

Web interfaces to databases, performance tuning, performance benchmarks, standardization, E-commerce, Legacy systems (7)

**Unit 5**

**Advanced Querying & Information Retrieval**

Decision support systems, data analysis and OLAP, Data mining, data-warehousing, Information Retrieval systems. (7)

**Unit 6**

**Advanced transaction processing**

Transaction-processing monitors, transactional workflows, main-memory databases, real-time transaction systems, long-duration transactions, transaction management in multidatabases. (5)

**Text Book:**

1. Database system concepts – Silberschatz, Korth, Sudarshan – 4th Edition (MGH).

2. Database Management System – Raghu Ramkrishnan (MGH)

**Reference Books:**

1. Database Systems : A practical approach to design, implementation & Management by Thomas Connolly & Carolyn Begg (Pearson) Third Edition
2. Ramez Elmasri and Shamkant Navathe, Fundamentals of Database Systems 2nd Ed, Benjamin cummings, 1994.

**3. DISTRIBUTED SYSTEMS (CS413)**

**Teaching Scheme:** L: - 3 hr/week  
T: - 1 hr/week

**Credits: 4**

**Evaluation Scheme:** CIE  
(25 + 25)

**SEE**  
**50**

**Minimum Passing Marks**  
**40**

**Unit 1**

**Introduction**

Definition, Goals, Types of distributed systems: Distributed Computing System, Distributed Information System, Architecture: Architectural, Styles, System Architecture (5)

**Unit 2**

**Processes and Communication**

Virtualization, Servers, Code Migration, Software Agents, Remote Procedure Call, Message Oriented Transient Communication (5)

**Unit 3**

**Synchronization**

Distributed Shared Memory: General architecture, Design and Implementation Issues, Consistency Models, Implementing Sequential Consistency Model, Replacement Strategy, Thrashing, Heterogeneous DSM, Physical Clock Synchronization, Logical Clock, Mutual exclusion, Election Algorithms (8)

**Unit 4**

**Distributed File Systems**

Architecture, Processes, Communication, Naming, Synchronization, Consistency Replication (6)

**Unit 5**

**Fault Tolerance**

Introduction, Process Resilience, Distributed Commit, Recovery. (8)

**Unit 6**

**Distributed Operating Systems**

Amoeba: Design goals, architecture, process management, file management. Mach: Design goals, architecture, process management, memory management (5)

**Reference Books:**

1. Distributed Systems Principles and Paradigms- A. S. Tanenbaum (2<sup>nd</sup> Edition) , Pearson Education
2. Distributed Operating Systems - P. K. Sinha (PHI) (For Distributed shared memory and distributed operating systems)
3. Distributed Systems – Concepts & Design by George Coulouris, Jean Dollimore, Tim Kindberg (Pearson Education)

**4. NETWORK ENGINEERING (CS414)**

**Teaching Scheme: L: - 3 hr/week**

**Evaluation Scheme:**

**CIE  
(25 + 25)**

**SEE  
50**

**Credits: 3**

**Minimum Passing Marks  
40**

**Unit 1**

**Introduction to concepts and tools of Windows Operating System**

Introduction to Networking Components, Architectures, Windows Flavours of Network Operating Systems, Foundation Concepts And Terms, Windows API, Services, Functions, Routines, Processes, Threads, Jobs, Virtual Memory, Kernel Mode Vs. User Mode, Terminal Services And Multiple Sessions, Objects And Handles, Registry. (5)

**Unit 2**

**System Architecture**

Requirements and Design Goals, Operating System Model, Architecture Overview, Key System Components. (6)

**Unit 3**

**Security**

Security Ratings, Security System Components, Protecting Objects, Account Rights and Privileges, Security Auditing. (6)

**Unit 4**

**I / O system**

Device Drivers, Types of Device Drivers, Structure of a Driver, Types of I/O, The Plug and Play (pnp) Manager, Installation. Storage terminology, disk drivers, volume management, windows file system formats, File system driver architecture. (7)

**Unit 5**

**Windows networking architecture**

Windows networking architecture, the OSI reference model, windows networking Components, networking APIs, windows sockets, winsock kernel (wsk), remote procedure Call, web access APIs, named pipes and mailslots , netbios, other networking apis. (6)

**Unit 6**

**Linux:** - Introduction, Boot and system configuration services, Network Tools, selinux policy Rules and configuration files, Linux services and protocols – FTP, SMTP, Telnet, IP Sec. And VPN (Virtual Private Network), managing services, Superuser control, system runlevels, performance Analysis tools, GRUB and RAID. (9)

**Reference Books:**

1. Windows Internals, Including Windows Server 2008 and Windows Vista 5th Edition (2009) – Mark E. Russinovich and David A. Solomon with Alex Ionescu. (MS Press).
2. Introducing Server 2008 R2 by Charlie Russel and Craig Zacker (Microsoft Press).
3. Linux: The Complete Reference sixth edition by Richard Petersen (TMGH). SHIVAJI UNIVERSITY, KOLHAPUR – Syllabus w.e.f. 2011- 12
4. Network Programming for MS Windows 2<sup>nd</sup> Edition – Anthony Jones & Jim Ohlund (Microsoft Corporation).
5. Windows Server 2008: The Definitive Guide by Jonathan Hassell (SPD O'Reilly).
6. Windows Server 2008 – Jeffrey R. Shapiro (Wiley India Edition).

**5. ELECTIVE-1: 1. PROJECT MANAGEMENT (CS415)**

**Teaching Scheme: L: - 3 hr/week**

**Evaluation Scheme:** CIE  
(25 + 25)

SEE  
50

**Credits: 3**

**Minimum Passing Marks**  
40

**Unit 1**

**Introduction to Project Management**

Project, project management(PM), role of project manager, project management profession, system view of PM, organization ,stakeholders, project phases and lifecycle, context of IT projects, process groups, mapping groups to knowledge areas. (7)

**Unit 2**

**Project Integration Management**

Strategic planning and project selection, preliminary scope statements, project management plans, project execution, monitoring and controlling project work, integrated change control, closing project, software assistance. (6)

**Unit 3**

**Scope and Time Management**

Scope planning and scope management plan, scope definition and project scope statement, creating the work breakdown structure, scope verification and control, software assistance, Time management-Importance of project schedules, activity - definition, sequencing, resource estimating, duration estimating; schedule development and control, software assistance. (6)

**Unit 4**

**Cost and quality management**

Importance, basic principles, cost estimating, budgeting and control, software assistance, Quality management- Importance, quality - planning assurance control, tools and techniques, modern quality management and improving IT project quality, software assistance. (6)

**Unit 5**



### Human Resource management

Importance, keys to managing people, human resource planning, acquiring, developing and managing project team, software assistance, Communication management- Importance, communication planning, information distribution, performance reporting, managing stakeholders, suggestions for improving project communication, software assistance. (6)

### Unit 6

#### Risk and procurement management

Importance, risk management planning, sources of risk, risk identification, qualitative and quantitative risk analysis, risk response planning, risk monitoring and control, software assistance, Procurement management- Importance, planning purchases and acquisitions, planning contracting, requesting seller responses, selecting sellers, administering the contract, closing the contract, software assistance. (6)

#### Text Book:

1. Information Technology Project Management (4th Edition) – Kathy Schwalbe (Cengage learning – India Edition).

#### Reference Books:

1. Project Management Core Textbook – Mantel Jr., Meredith, Shafer, Sutton with Gopalan (Wiley India Edition)
2. Project Management- A systems Approach to planning, scheduling and controlling - Harold Kerzner (John Wiley & Sons, Inc)
3. A Guide to the Project Management Body of Knowledge (3rd Edition)- Newtown Square, PA, Project Management Institute, 2005.

## 5. ELECTIVE-1: 2. CYBER LAWS (CS415)

Teaching Scheme: L: - 3 hr/week

Evaluation Scheme:

CIE  
(25 + 25)

SEE  
50

Credits: 3

Minimum Passing Marks  
40

### Unit 1

#### Object and Scope of the IT Act

Genesis, Object, Scope of the Act, Amendments.

(3)

### Unit 2

#### E-Governance and IT Act 2000

Legal recognition of electronic records, Legal recognition of digital signature, Use of electronic records and digital signatures in Government and its agencies.

(7)

### Unit 3

#### Certifying Authorities

Need of Certifying Authority and Power, Appointment, function of Controller, Who can be a Certifying Authority, Digital Signature Certifications, Generation, Suspension and Revocation of Digital Signature Certificate.

(7)

#### Unit 4

##### Domain Name Disputes and Trademark Law

Concept of Domain Names, New Concepts in Trademark Jurisprudence, Cyber squatting, Reverse Hijacking, Meta tags, Framing, Spamming, Jurisdiction in Trademark Dispute. (6)

#### Unit 5

##### The Cyber Crimes (S-65 to S-74)

Tampering with Computer Source Documents(S-65), Hacking with Computer System(S-66), Publishing of Information Which is Obscene in Electronic Form(s-67), Offences : Branch of Confidentiality & Privacy (S-72), Offences : Related to Digital Signature Certificate (S-73 & S-74) (7)

#### Unit 6

##### E-banking and legal issues

Regulating e-transactions, Role of RBI and legal issues, International transactions of e-cash, Credit card and internet, Laws relating to internet credit cards. (6)

#### References:

1. Cyber Law in India by Farooq Ahmad – Pioneer Books
2. Information Technology Law and Practice by Vakul Sharma – Universal Law Publishing Co. Pvt. Ltd.
3. The Indian Cyber Law by Suresh T Vishwanathan – Bharat Law house New Delhi.
4. Hand book of Cyber & E-commerce Laws by P.M. Bakshi & R.K.Suri – Bharat Law house, New Delhi.
5. Guide to Cyber Laws by Rodney D. Ryder – Wadhwa and Company Nagpur.  
The Information Technology Act,2000 – Bare Act – Professional Book Publishers – New Delhi

### 5. ELECTIVE-1: 3. MODERN INFORMATION RETRIEVAL (CS415)

Teaching Scheme: L: - 3 hr/week

Evaluation Scheme:

CIE  
(25 + 25)

SEE  
50

Credits: 3

Minimum Passing Marks  
40

#### Unit 1

Information versus Data Retrieval, Logical View of document, The Retrieval process, Taxonomy of IR modules, Boolean models, Vector Model, Probabilistic Model, Structured text retrieval models, Models for browsing (6)

#### Unit 2

Retrieval performance evaluation, Keyword based querying, Pattern matching, Structural queries. (6)

#### Unit 3

Text and multimedia, formats, information theory, modeling natural language, markup languages, multimedia, text operations, lexical analysis of text, document clustering, text compression. (7)

#### Unit 4

Indexing and searching, inverted files, suffix trees and suffix arrays, signature files, pattern matching, dynamic programming. (6)

### Unit 5

Multimedia IR MULTOS data model, MULTOS query language, spatial access method, GEMINI approach and Digital Libraries (6)

### Unit 6

Search Engines, Architectures, Ranking, Crawling, Indices, definition of DL, Architectural issues of DL (5)

#### Text Books:

1. “*Operating System Concepts*”, Silberschatz Galvin, John Wiley, 5th Edition.

#### Reference Books:

1. “*Operating System A Design Oriented Approach*”, Charles Crowley, TMGH.
2. “*Operating System with Case Studies in Unix, Netware and Windows NT*”, Achyut S. Godbole, TMGH.

## 6. WEB TECHNOLOGY LAB-1 (CS416L)

**Teaching Scheme: L: - 2 hr/week**

**P: - 4 hrs/week**

**Credits: 4**

**Evaluation Scheme: IPE: 50**

**Minimum Passing Marks: 20**

**EPE: 50**

### Unit 1 Introduction to XML

What is XML, XML verses HTML, XML terminology, XML standards, XML syntax checking, The idea of markup, XML Structure, Organizing information in XML, Creating Well-formed XML, XML Namespaces. DTD- Introduction to DTD, Document Type Declaration, Element Type Declaration, Attribute Declaration, Conditional Section, Limitations of DTD Parsing XML: Introduction to Parser, Parsing approaches, JAXP, JAXP and SAX, JAXP and DOM. (5)

### Unit 2 Extensible Stylesheet Language (XSL), XML Schema

Introduction to XSL, overview, XPATH, XSLT– templates, creating elements and attributes, looping and sorting, conditional processing, defining variables.

**XML Schema:** Introduction, basic and complex schema, specifying frequency, element contents, content model reuse, anonymous types, mixed content, grouping of data, mandating all elements, choices, sequences, simple types- numeric, time, xml, string, binary data types, deriving types- facets, attributes. (4)

### Unit 3

**Introduction to Servlet:** History of web applications, support for web application, power of servlet, a Servlet’s job, basic servlet code, configuration of apache tomcat server, setup Development Environment, Compiling and Deploying Servlet, Web Application -directory structure, Deployment descriptor, Assigning custom URLs to servlet.

**Structure of Servlet:** HTTP basic, The servlet API, Page Generation, The Servlet Life Cycle – The Service method, doGet and doPost methods, Init method, destroy method, The Single Thread Model Interface. (5)

### Unit 4

**Retrieving Information:** Servlet Init Parameters and Parameter Names, Information about server, Context Init Parameters, The Client Information – information about client machine, Restricting Access,

Information about user, The Request – Request Parameter, path information, Serving files, Serving Resources, Request Headers, Handling Post Request.

**Creating Response in Servlet:** The Structure of response, sending normal response, using persistent connection, response buffering, controlling response buffer, status codes, setting status code, HTTP headers, setting HTTP headers, Redirecting request, client pull, configuring error pages, logging, Exceptions.

**Session Management in servlet:** Session tracking, Session tracking Mechanisms – Hidden Form Fields, URL Rewriting, cookies, Session Tracking APIs, session life cycle, Setting session timeout, life cycle methods, manually invalidating session, Session ID, non cookie Fallbacks. (6)

#### Unit 5

Java Server Pages: Need for JSP, Benefits of JSP, Advantages of JSP over other technologies, Installation of JSP pages, Creating Template Text, Invoking Java Code From JSP, Limiting the JAVA code in JSP, Using JSP Expression, Example of JSP Expression, Comparing Servlet to JSP, Writing Scriptlets, Scriptlet examples, Scriptlet for conditional execution, Using Declaration, Declaration Example, Using Predefined Variables, JSP page Directive – import, contentType, pageEncoding, session, buffer, autoFlush, errorPage. (3)

#### Unit 6

Web Services : Introduction to Web Services, Comparison of Web Services with traditional technologies, Buzzwords in Web Services, Java Web Services, RESTful Web Services (3)

#### Text Books:

1. XML and Related Technologies – Atul Kahate [Pearson Education]
2. Java Servlet Programming – Jason Hunter [SPD O'REILLY]
3. Core-Servlet and JavaServer Pages Volume -1 , 2nd Edition [Marty Hall, Larry Brown, Pearson Education]

#### Reference Books:

1. The XML Handbook – Charls Goldfarb.
2. Learning XeamtML – Erik Ray [SPD O'REILLY 2nd Edition]
3. Web Technologies - Black Book [Drech Press]
4. Head First – Servlet and JSP - Bryan Basham [SPD O'REILLY, 2nd Edition]

**Lab:** It should consist of 10-12 experiments based on the following topics.

1. Create different types of XML documents.
2. Search information from XML document using SAX parser.
3. Navigating the Document Object Model tree for given XML Document.
4. Editing, Updating XML document using DOM.
5. Write XSLT styles-sheet to convert XML document to HTML.
6. XML Validation using Xschema.
7. Remote Procedure call using XML.
8. Storing XML contents to database.
9. Installation, Configuration of Tomcat Server and Deployment of servlet based application.
10. Write a servlet to store form data to database – use Type 4 JDBC driver and Database connectivity support from server.
11. Session Management using Servlet.
12. Write a JSP application to display database contents.
13. Write an JSP application to search particular information in database
14. Session Management using JSP.

## 7. NETWORK ENGINEERING LAB (CS412L)

**Teaching Scheme: P: - 2 hrs/week**

**Evaluation Scheme: IPE: 50**

**EPE: 50**

**Credits: 01**

**Minimum Passing Marks: 20**

### **Lab:**

It should consist of the following –

I) Minimum 8-10 network programming assignments on different network services and protocols using socket programming, Named pipes, Mailslots, NetBIOS, RPC, etc.

II) Installing, configuring, managing and troubleshooting any one or more network operating systems and services – Win 2008 / 2003, Linux / Unix, Mac, etc and use their services like – FTP, Telnet, DHCP, HTTP, Clustering, Terminal services, Remote Desktop Enabling, DNS, Active Directory Services, User management , etc.

## 8. PROJECT PHASE-I (CS417L)

**Teaching Scheme: P: - 2 hrs/week**

**Evaluation Scheme: IPE: 50**

**EPE: 50**

**Credits: 02**

**Minimum Passing Marks: 20**

The project work is to be carried out in two semesters of Final Year B.Tech. The project should be undertaken preferably by group of 4-5 students who will jointly work and implement the project in the two semesters.

In Semester VII, The group will select a project with the approval of the Guide (teaching staff) and submit the name of the project with a synopsis of the proposed work of not more than 02 to 08 pages before second week of August in the academic year. The group is expected to complete detailed system design, analysis, data flow design, procurement of hardware and/or software, implementation of a few modules of the proposed work at the end of semester –VII as a part of the term work submission in the form of a joint report.

The term work assessment will be done jointly by teachers appointed by Head of the Department.

The oral examination will be conducted by an internal and external examiner as appointed by the University.

### **Note: \_**

1. Project work should be continually evaluated based on the contributions of the group members, originality of the work, innovations brought in, research and developmental efforts, depth and applicability, etc.
2. Two mid-term evaluations should be done, which includes presentations and demos of the work done.
3. Care should be taken to avoid copying and outsourcing of the project work.

**9. AUDIT COURSE VI  
PROFESSIONAL ETHICS (HS411)**

**Teaching Scheme**

**Lectures: 2 hours/week**

**No Credits**

**Unit 1**

Engineering Ethics – Moral Issues, Ethical theories and their uses (3)

**Unit 2**

Engineering as Experimentation – Code of Ethics (3)

**Unit 3**

Engineer’s Responsibility for Safety (3)

**Unit 4**

Responsibilities in Rights (3)

**Unit 5**

Global issues of engineering ethics (3)

**Unit 6**

Introduction to Entrepreneurship awareness and Development: Functions -why men become economic innovators –Various Assistance Programmes for Small Scale and large Scale Industries through agencies, like IDBI, IFC, ICICI, NSIC, SFC, SIDCO and DIC. (3)

**REFERENCE BOOKS:**

1. Charles D.Fleddermann, “Engineering Ethics”, Prentice Hall, New Mexico, 1999.
2. Seth, M. L., “Principles of Economics”, Lakshmi Narain Agarwal, Agra.
3. Agarwal, A. N., “Indian Economy”, Vikas Publishing House Pvt. Ltd., New Delhi.
4. Datta R. and Sundharam, “Indian Economy”, K. P. M., S. Chand & Co. Ltd., New Delhi



Shivaji University, Kolhapur

## Department of Technology

Final Year B. Tech (COMPUTER SCIENCE AND TECHNOLOGY) (Semester VIII)

### 1. MOBILE TECHNOLOGY (CS421)

Teaching Scheme: L: - 3 hr/week

Credits: 3

Evaluation Scheme:

CIE  
(25 + 25)

SEE  
50

Minimum Passing Marks  
40

#### UNIT 1

##### Introduction to wireless communication:

Need and Applications of wireless communication, Wireless Data Technologies, Market for mobile communication, Mobile and wireless devices. (3)

#### UNIT 2

##### Wireless transmission:

Frequencies for radio transmission, signals, antennas, signal propagation, Multiplexing, Modulation, Spread spectrum and Cellular systems. (5)

#### UNIT 3

##### Medium Access Control:

Specialized MAC, SDMA, FDMA, TDMA and CDMA. (6)

#### UNIT 4

##### Telecommunication Systems :

GSM, DECT systems – Architecture and protocols, Tetra frame structure, UMTS basic architecture and UTRA modes. (4)

##### Wireless LAN :

Introduction, Infrared v/s Radio transmission, Infrastructure and ad-hoc networks, IEEE 802.11, HIPERLAN, Blue Tooth. (6)

#### UNIT 5

Wireless ATM : WATM services, Reference model, functions, radio access layer, handover, Location management, Addressing, Mobile QoS, Access point control protocol. (6)

#### UNIT 6

Mobile Network Layer : Mobile IP, DHCP. Transport Layer : Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast and selective retransmission & recovery. (7)

#### Books :

1. Mobile Communications – Jachen Schiller (Addison-Wesley).
2. Wireless LAN – Peter T. Davis, Craig R. Mc Guffin (MGH International Edn).
3. The Wireless Application Protocol – Sandeep Singhal, Jari Alvinen and group. (Addison-Wesley).
4. Professional WAP – Charles Arehart and group (SPD).

## 2. INFORMATION SECURITY (CS422)

**Teaching Scheme: L: 3hrs/week**

**Credits: 3**

**Evaluation Scheme: CIE  
(25 + 25)**

**SEE  
50**

**Minimum Passing Marks  
40**

### **Unit 1 Symmetric Ciphers (5)**

Overview - Services, Mechanism and Attacks, The OSI security Architecture, A model for Network security, Classical Encryption techniques – Symmetric Cipher model, Substitution techniques, Transposition techniques, Rotor Machines, Steganography.

### **Unit 2 Block Cipher and Data Encryption Standard (5)**

Block Cipher and Data Encryption Standard - Simplified DES, Block cipher principles, The Data Encryption Standard, The strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles, block cipher modes of operations.

### **Unit 3 Asymmetric Ciphers (6)**

Public Key Cryptography and RSA - Principles of Public Key Cryptosystems, The RSA Algorithm, Key Management, Diffie-Hellman Key Exchange,

### **Unit 4 Message Authentication, HASH Functions and Digital Signature (8)**

Authentication requirements, Authentication Functions, Hash Functions, MD5 algorithm, Digital Signatures, Digital Signature Standard.

### **Unit 5 Network Security Practice (9)**

Authentication Applications - Kerberos, X.509 Authentication Service, Electronic Mail Security- Pretty Good Privacy- Notation, operational description, S/MIME- overview, functionality, IP Security – IP Security Overview, IP Security Architecture, WEB Security - Web Security Considerations, Secure Electronic Transaction overview.

### **Unit 6 System Security (6)**

Intruders - Intruders, Intruder detection, Password Management, Malicious Software - Viruses and Related Threats, Virus Countermeasures, Firewall - Firewall Design principles, Trusted systems.

### **TEXT BOOK**

1. Williams Stallings “Cryptography and Network security Principles and Practices” (Pearson Education).

### **REFERENCE BOOKS**

1. Atul Kahate, “Cryptography and network security” – (TMGH).
2. Randy Weaver, Dawn Weaver, “Network Infrastructure Security” – Cengage Learning.
3. Menezes, A. J., P. C. Van Oorschot, and S. A. Vanstone, “Handbook of Applied Cryptography”
4. Schneier, Bruce, “Applied Cryptography: Protocols & Algorithms”



### 3. SOFT COMPUTING (CS423)

<b>Teaching Scheme: L: - 3 hr/week</b>			<b>Credits: 3</b>
<b>Evaluation Scheme:</b>	<b>CIE</b>	<b>SEE</b>	<b>Minimum Passing Marks</b>
	<b>(25 + 25)</b>	<b>50</b>	<b>40</b>

#### Unit 1

##### Introduction

Artificial Neural Network ,Advantages of Neural Network , Fuzzy Logic , Genetic Algorithms , Hybrid Systems : Neuro Fuzzy Hybrid System, Neuro Genetic Hybrid System, Fuzzy Genetic Hybrid System. (4)

#### Unit 2

##### Artificial Neural Networks

Fundamental Concept, Evolution Of Neural Networks, Basic Models of Artificial Neural Network, Terminologies of ANNs, McCulloch-Pitts Neuron, Linear Reparability, Hebb Network. (7)

#### Unit 3

##### Supervised Learning Network

Perceptron Networks, Adaptive Linear Neuron (Adaline), Mutiple Adaptive Linear Neuron, Back Propagation Network, Radial Basis Function Network. (7)

#### Unit 4

##### Introduction to Fuzzy Sets

Introduction , Classical Sets , Fuzzy Sets, Fuzzy relations ,Membership Function , Defuzzification , Fuzzy Arithmetic and Fuzzy Measures, Fuzzy Rule base and Approximate Reasoning , Fuzzy Decision Making, Fuzzy Logic Control System. (7)

#### Unit 5

##### Genetic Algorithms

Introduction , Basic Operators and Terminologies in Gas , Traditional Algorithm vs Genetic Algorithms, Simple GA, General Genetic Algorithm, The Schema Theorem, Classification of Genetic Algorithm, Holland Classifier System, Genetic Programming, Applications of GA. (7)

#### Unit 6

##### Applications of Soft Computing

GA Based Internet Search Technique; Soft Computing Based Hybrid Fuzzy Controllers. (4)

#### Text Books :

- 1) Principles of Soft Computing - S.N. Sivanandam , S.N. Deepa. (Wiley India Edition).
- 2) Elements of Artificial Neural Networks - K. Mehrotra, C.K. Mohan, and S. Ranka  
Published by MIT Press, 1997 (<http://mitpress.mit.edu/book-home.tcl?isbn=0262133288>)

#### Reference Books:

1. Soft Computing and Intelligent Systems Design – theory, tools and applications – F.O. Karray & C.D. Silva (Pearson Education).
2. Neuro-Fuzzy and Soft Computing – A computational approach to learning and machine intelligence – J.S.R. Jang, C.T. Sun & E. Mizutani (Pearson Education).

**4. ELECTIVE 2: 1. GRID COMPUTING (CS424)**

<b>Teaching Scheme: L: - 3 hr/week</b>			<b>Credits: 3</b>
<b>Evaluation Scheme:</b>	<b>CIE</b>	<b>SEE</b>	<b>Minimum Passing Marks</b>
	<b>(25 + 25)</b>	<b>50</b>	<b>40</b>

**Unit 1**

**Grid Computing and Worldwide Initiatives**

Introduction, Grid Computing Organizations and Their Roles, The Grid Computing Anatomy, The Grid Computing Road Map. (7)

**Unit 2**

**Grid Computing Applications**

Merging the Grid Services Architecture with the Web Services Architecture (6)

**Unit 3**

**Grid Computing Architecture**

Open Grid Services Architecture (OGSA), Sample Use Cases that Drive the OGSA, OSGA Platform Components (6)

**Unit 4**

**Grid Computing Services**

Open Grid Services Infrastructure (OGSI), OGSA Basic Services (7)

**Unit 5**

**Grid Computing Toolkits : Java Platform**

GLOBUS GT3 Toolkit Architecture, Programming Model, High Level Services (7)

**Unit 6**

**Grid Computing Toolkits : .NET Platform**

OGSI.NET Middleware : OGSI.NET Framework Implementation (6)

**Text Book:**

1. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson/PHI

**Reference Books:**

- 1 Ahmar Abbas, "Grid Computing: A Practical Guide to technology and Applications", Charles River media
- 2 "Perspectives in Computer Architecture", P.V.S. Rao, Prentice Hall of India Pvt. Ltd., NEW Delhi, 1994.
- 3 "Digital Computer Design Principles", M.R. Bhujade, Pitamber Publishing Co., 3<sup>rd</sup> Edition.

**4. ELECTIVE 2: 2. DATA MINING AND WAREHOUSING (CS424)****Teaching Scheme: L: - 3 hr/week****Credits: 3****Evaluation Scheme:****CIE  
(25 + 25)****SEE  
50****Minimum Passing Marks  
40****UNIT 1**

Machine learning and data mining-data flood, data mining and knowledge discovery, data Mining tasks data preparation for knowledge discovery, data understanding, data cleaning, Data transformation, False "predictors", Feature reduction, Randomization, Learning with unbalanced data. (4)

**UNIT 2**

Knowledge representation -decision tables, decision trees, decision rules, rules involving Relations, instance-based representation ,classification -statistical based algorithms, decision Trees based algorithms, neural networks based algorithms, rules, regression, instance-based (nearest neighbour), case study (6)

**UNIT 3**

Clustering: introduction, clustering methods, ways of scaling clustering algorithms, case study (4)

**UNIT 4**

Associations: transactions, frequent item sets, association rules, applications. (6)

**UNIT 5**

Data warehousing, OLAP and data mining, web warehousing, schema integration and data Cleaning, deduplication, data marts: multidimensional databases (OLAP) Advanced topics ETL, integrating OLAP and mining, online aggregation, recap, future and visions. (8)

**UNIT 6**

Advanced topics: mining multimedia databases, text mining, web mining, spatial mining, Temporal mining applications and trends in data mining- data mining applications, data mining System products and research prototypes, additional themes on data mining, social impacts of Data mining, trends in data mining (8)

**Reference books :**

- 1 Jiawei Han, Micheline Kamber. Data Mining: Concepts and Techniques
2. Heikki Mannila, Padhraic Smyth, David Hand. Principles Of Data Mining
3. Margaret H. Dunham. Data Mining: Introductory And Advanced Topics
4. Soumen Chakrabarti Mining The Web- Discovering Knowledge From Hypertext Data
5. Pang-Ning Tan, Michael Steinbach, Vipin Kumar. Introduction To Data Mining
6. Ian H. Witten & Eibe Frank. Data Mining: Practical Machine Learning Tools And Techniques
7. T Hastie, R Tibshirani, J H Friedman. The Elements Of Statistical Learning: Data Mining, Inference, And Prediction

#### 4. ELECTIVE 2: 3. SERVICE ORIENTED ARCHITECTURE (CS424)

**Teaching Scheme: L: - 3 hr/week**

**Credits: 3**

**Evaluation Scheme: CIE  
(25 + 25)**

**SEE  
50**

**Minimum Passing Marks  
40**

##### **Unit 1**

###### **SOA Fundamentals**

Defining SOA, Business Value of SOA, Principles of SOA, Evolution of SOA, SOA characteristics, concept of a service in SOA, Stages of the SOA lifecycle. Enterprise Service Bus, SOA runtime pattern family. (6)

##### **Unit 2**

###### **SOA Design and implementation**

Design patterns, SOA governance, need for SOA governance, SOA Governance Lifecycle, SOA governance compared with IT governance, Security Considerations for SOA. (5)

##### **Unit 3**

SOA programming model, Service Component Architecture (SCA), Service component overview, Service component definition, Service module, support for QoS within SCA (6)

##### **Unit 4**

Introduction and evolution of Portals, Portal concepts, Portal Application Development, Overview of JSR 168 API, Developing sample JSR 168 portlet, Pervasive and Workplace Mobility, Design & Develop Applications (Composite, Portal, Web Services, Rich Client, Synchronization) & Application Management. (8)

##### **Unit 5**

###### **Web Applications**

Introduction to Web Applications, Various Tiers in Web Apps: Presentation, Business Tier, Persistence Tier, Web Technologies: J2EE: Servlets, JSP, EJBs, HTML, XML, MVC architecture. (6)

##### **Unit 6**

###### **Web Services**

Introduction to Web Services, WSDL, UDDI, SOAP, JAX-RPC, Web 2.0, Creating and Deploying web services on AXIS, Introduction to Ajax, Ajax Design Basics. (6)

##### **Text Books:**

1. Thomas Erl, "Service-Oriented Architecture: Concepts, Technology, and Design", Prentice Hall Publication, 2005
2. Eric Newcomer, Greg Lomow, "Understanding SOA with Web Services", Addison Wesley Publication, 2004

##### **Reference Books:**

1. Norbert Bieberstein, Sanjay Bose, Marc Fiammante, Keith Jones, Rawn Shah, "Service-Oriented Architecture Compass: Business Value, Planning, and Enterprise Roadmap", IBM Press Publication, 2005.
2. Sandy Carter, "The New Language of Business: SOA & Web 2.0", IBM Press, 2007.
3. Thomas Erl, "Service-Oriented Architecture: A Field Guide to Integrating XML and Web Services", Prentice Hall Publication, 2004

4. Dave Chappell, “Enterprise Service Bus”, O'Reilly Publications, 2004
5. Sanjiva Weerawarana, Francisco Curbera, Frank Leymann, Tony Storey, Donald F. Ferguson, “Web Services Platform Architecture: SOAP, WSDL, WS-Policy, WS- Addressing, WS-BPEL, WS-Reliable Messaging, and More”, Prentice Hall Publication, 2005
6. IBM Redbooks on SOA
7. IBM Redbooks on Portal
8. IBM Redbooks on WED / Expeditor / WCTME

### 5. ELECTIVE 3: 1. INDUSTRIAL MANAGEMENT (CS425)

<b>Teaching Scheme:</b>	<b>L: - 3 hr/week</b>		<b>Credits: 3</b>
<b>Evaluation Scheme:</b>	<b>CIE</b>	<b>SEE</b>	<b>Minimum Passing Marks</b>
	<b>(25 + 25)</b>	<b>50</b>	<b>40</b>

#### Unit 1

##### **Business Environment**

Introduction, factor affecting business, external environment, business ethics, social responsibility of business.

**Management:** Definition, nature, level, management environment. (3)

#### Unit 2

##### **Functions of Management**

**Planning:** Need, Nature, Types, Steps, Decision making, Forecasting methods. (3)

**Organizing:** Importance, process, principles, types: Functional product matrix network, organizational culture. (2)

#### Unit 3

**Staffing:** Nature and purpose, recruitment polices and selection procedure. Induction and performance appraisal. (3)

##### **Directing:**

a) **Business Communication:** Importance, process, types, barriers and remedies, key communication skills.

b) **Motivation:** Components, Applications of motivation, Participative management.

c) **Leadership:** Meaning, leadership style, working with teams. (4)

**Controlling:** Requirement of controlling, basic process, control technique, Budgetary control. (2)

#### Unit 4

##### **Introduction to functional areas as**

**Marketing Management:** Concept, Objectives, market segmentation, marketing mix, market research, Advertising: need, objective advantages and types. (3)

**Financial Management:** Sources of finance, capital types, financial institution, financial statements balance sheet, Profit & Loss A/C (contents only). (3)

**Production Management:** Selection of site, plant layout, objectives principles, merit and demerit of each type, function of P.P.C., maintenance management. (3)

**Human Resource Management:** Functions of H.R.M., Industrial relation, training and development, wage administration and incentives plans. (3)

**Unit 5****Materials Management**

Scope, function, purchasing objectives, 5-R principles, purchasing policies and procedure, vendor development, Inventory management. EOQ, ABC and related analysis. (5)

**Unit 6**

**Entrepreneurship Development Program:** Concept of entrepreneur, Qualities required, factors promoting entrepreneurship, Reasons for entrepreneurship failure, Entrepreneurship development.

**S.S.I.:** Definition of SSI, Procedure to start SS unit. Institution offering assistance to SSI, problems of SSI. **Legal Aspects:** Factory act, consumer protection act, industrial safety act, cyber law. Intellectual property right: patent need advantage, procedure. (6)

**Text Books:**

1. "Essentials of Management", Koontz O'Donell, Tata McGraw Hill Publication.
2. "Industrial Engineering and Management", O.P. Khanna, Prentice Hall of India Pvt. Ltd.
3. "Organizational Management", Bunga Sharma.
4. "Finance for Non-Financial Managers", B. K. Chatterjee.
5. "Business Management", Bose Talukdar.

**Reference Books:**

1. "Management", Stoner, Prentice Hall of India Pvt. Ltd.
2. "Marketing Management", Philip Kotler, Prentice Hall of India Pvt. Ltd.
3. "Industrial Management", Telsung, S. Chand Publication.
4. "Human Resource Management", Ashwathappa, Tata McGraw Gill Publishing Co.
5. "Essentials of Human Resources Management and Industrial Relation", P. Subbarao, Himalaya publication.

**5. ELECTIVE 3: 2. REAL TIME OPERATING SYSTEM (CS425)**

**Teaching Scheme: L: - 3 hr/week**

**Evaluation Scheme: CIE**  
**Marks (25 + 25)**

**SEE**  
**50**

**Credits: 3**  
**Minimum Passing**  
**40**

**Unit 1**

**Basic Real- Time Concepts & Hardware Consideration:** Terminology, Real time design Issues, Example, Real –Time Systems, Brief History, basic Architecture, H/W Interfacing, Cpu, Memory & I/O. (6)

**Unit 2**

**Real Time specification and design Techniques:** Natural Languages, Mathematical specification, flowcharts, structure charts, Pseudocode and programming design languages, finite state Automata, Data flow diagram petrinets, Warnier –Orr Notation, State charts Sanity in using graphical Techniques. (7)

**Unit 3**

**Real Time Kernals:** Pseudokernels, Interrupt –Driven system, Preemptive Priority System, Hybrid System, Task control block model, Process Scheduling, RR scheduling, Cyclic Executives, Fixed Priority & Dynamic Priority scheduling. (4)

**Unit 4**

**Inter-task communication and synchronization :** Buffering data, mailboxes, critical Regions, Semaphores, Event Flags And Signals, Deadlock. (4)

**Unit 5**

**Real-Time Memory Management:** Process Stack Management, Run time ring buffer, Maximum stack size, Multiple-stack Arrangement, Memory management in task-control Block Model, Swapping, Overlays, Block Or Page Management, Replacement Algorithm, Memory Locking, Working Set, Real Time Garbage Collection, Contiguous File System, Selecting Real-Time Kernels. (6)

**Unit 6**

**System Performance Analysis And Optimization :** Response-time calculation, interrupt Latency, Time-Loading And Its Measurement, Scheduling Is Np-Complete, Reducing Response Times And Time-Loading, Analysis Of memory Requirements, Reducing Memory loading, I/O Performance.

**Real Time Applications:** Real Time Systems On Complex Systems, Real Time Data Bases, Real time image processing, Real time process control. (9)

**TEXT BOOKS:**

1. Real Time Systems Design & Analysis – An Engineer’s Handbook , Second Edition - P.A. LAPLANTE [PHI] (FOR CHAPTER NO. 2,4,6,7,8)
2. Real Time Systems Design And Analysis – Phillip A. Laplante, Third Edition (Wiley Publication) (for chapter no. 1,3,5)

**REFERENCE BOOKS :**

1. Real Time Systems – C. M. Krishna, K. G. Shin[Mcgraw Hill]
2. Real-Time Systems And Their Programming Languages - Burns, Alan And Andy Wellings ( New York : Addison-Wesley)
3. The design of real-time applications - m. Blackman (newyork: john wiley & sons).
4. Embedded And Real Time System-Concepts, Design & Programming (Black Book By Dr. K.V.K.K. Prasad.

**5. ELECTIVE 3: 3. OPTIMIZATION TECHNIQUES (CS425)**

<b>Teaching Scheme: L: - 3 hr/week</b>			<b>Credits: 3</b>
<b>Evaluation Scheme:</b>	<b>CIE</b>	<b>SEE</b>	<b>Minimum Passing</b>
<b>Marks</b>	<b>(25 + 25)</b>	<b>50</b>	<b>40</b>

**Unit 1**

Optimization problem statement, classification of optimization problems. Classical Optimization Theory : Unconstrained Optimization, Constrained optimization with Equality and Inequality, method of lagrange multipliers, Kuhn- Tucker conditions. (7)

**Unit 2**

Linear programming: Construction of LP model, Simplex method, Big M and two phase methods, Special Cases, Duality And Sensitivity Analysis, Economic Interpretation of Duality. (6)

**Unit 3**

Non-Linear Programming: Unconstrained Optimization Techniques, Classification Of Methods, Dichotomous Optimization Method, Steepes Ascent, Newton Method, Constrained Optimization, Separable And Quadratic Programming. (7)

**Unit 4**

Dynamic Programming : Multistage Decision Process, Recursive Relationships, Principle of optimality, Computational procedure in DP, DP applications, Problem of dimensionality. (6)

**Unit 5**

Genetic algorithm : Introduction, representation of decision variables , objective function and constraints, GA operators. Introduction to simulated annealing, neural network based Optimization and optimization of fuzzy systems. (8)

**Unit 6**

Scope of computer application in environmental science and engineering, Applications of optimization techniques to environmental systems. (6)

**References**

1. Engineering Optimization – S. S. Rao
2. Operation Research – Taha.
3. Genetic Algorithm – Goldberg.

**6. WEB TECHNOLOGY LAB-2 (CS426L)**

**Teaching Scheme: L: - 2 hr/week**

**P: - 4 hrs/week**

**Credits: 4**

**Evaluation Scheme: IPE: 25**

**EPE: 50**

**Minimum Passing Marks: 10**

**Minimum Passing Marks: 20**

**Unit 1**

**Introduction to ASP.NET**

The Evolution of Web Development, Important facts about Web Development, ASP.NET, The Code Model, Web Project. Web Forms: Page Processing, Web Form Processing Stages, The Page as Control Container, The Page Class. (4)

**Unit 2**

**ASP.NET**

Server Controls: Types of Server Controls, HTML Server Controls, Web Controls, List Controls, Input Validation Controls, Rich Controls

State Management: ASP.NET State Management, View State, Transferring Information between pages, Cookies, Session State, Application State

ASP.NET Application: Anatomy of ASP.NET application, global.asax Application file, ASP.NET Configuration, .NET Components, Extending the HTTP Pipeline (6)



### Unit 3

#### ADO.NET Fundamentals:

ADO.NET Architecture, The Connection Class, The Command and Data Reader Classes, Data Binding :  
Basic Data binding, Data source Control, The Sql Data Source (4)

### Unit 4

#### AJAX

JavaScript and Ajax Techniques : JavaScript Essentials, Basic JavaScript Example, Understanding Ajax,  
Using Ajax with client callbacks

ASP.NET Ajax : Introduction, Sever Callbacks, ASP.NET Ajax Server Controls, Deeper into the Client  
Libraries, Control Extenders (4)

### Unit 5

#### PHP

Introduction to PHP scripting language: Basics of PHP script, combining HTML and PHP, variables,  
data types, static and predefined (super-global) variables, operators, expressions, flow & looping control

Functions and Arrays : Structure of function, defining & calling function, returning values, arguments,  
scope of variables, static functions, include & require statements, Arrays, Associative arrays,  
multidimensional arrays, array related functions

Advanced topics in PHP: Object oriented programming in PHP, File & Directory handling in PHP,  
Database handling in PHP. (6)

### Unit 6

#### Managing State Information & Security

Working with forms, cookies, sessions and security related issues (2)

### Lab:

It should consist of 12-15 experiments based on the following topics.

1. Accepting and validating user entered data using ASP.NET.
2. Create a Web Application which detect capabilities of Browser and handle Page and Application level error.
3. Accepting and validating book catalog information using validating controls.
4. Create a Web Application which implement authentication and authorization features (Membership class).
5. Display database contents from SQL server or Oracle database using SQL Command class from ASP.NET.
6. Display parameterized data using SqlDataReader and GridView in ASP.NET.
7. Database access using DataSet in ASP.NET.
8. Displaying data using DataView in ASP.NET.
9. Create a setup web application for deployment of ASP.NET application.
10. Develop sample form with validation code using PHP.
11. Develop file up-loader form to upload a file using PHP.
12. Develop sample application for session management using PHP.
13. Develop sample application with database connectivity using PHP.
14. Create a form to send mail using PHP.
15. Use of Foss documentation tools – Latex
16. Introduction to packaging – Debian  
Content Management Systems – Drupal

**Text Books:**

1. Professional ASP.NET 3.5 in C# 2008, Matthew MacDonald [Wiley-APRESS Publication]
2. Teach Yourself PHP, MYSQL, Apache - Julie C Meloni [SAMS Publication]
3. PHP5 and MySQL Bible Tim Converse, Joyce Park, Clark Morgan

**Reference Books:**

1. Beginning PHP5 [WROX]
2. PHP Bible-John [Wiley]
3. Professional ASP.NET 2.0 by Bill Evjen, Scott Hanselman [Wiley Wrox publication].
4. Debian New maintainers guide - <http://www.debian.org/doc/maint-guide/>
5. LaTeX: A document preparation system, User's guide and reference manual by Leslie
6. Getting started with Drupal - <http://drupal.org/getting-started/>

**7. SOFT COMPUTING LAB (CS422L)**

**Teaching Scheme: P: - 2 hrs/week**

**Evaluation Scheme: IPE: 25**

**EPE: 50**

**Credits: 1**

**Minimum Passing Marks: 10**

**Minimum Passing Marks: 20**

**Lab:**

It should consist of 8-10 experiments based on the following topics.

1. Write a program to implement logical XOR
2. Write a program to implement logical AND using McCulloch Pitts neuron model
3. Write a program to implement logical XOR using McCulloch Pitts neuron model
4. Write a program to implement logical AND using Perceptron network
5. Write a program to implement Adaline network
6. Write a program to implement Madaline network for XOR function
7. Write a program to implement Back propagation network
8. Write a program to implement the various primitive operations of classical sets
9. Write a program to implement various primitive operations on fuzzy sets with dynamic components
10. Write a program to maximize  $f(x_1+x_2)=4x_1+3x_2$  using genetic algorithm
11. Write a program to minimize  $f(x)=x^2$  using genetic algorithm

## 8. PROJECT PHASE-II (CS427L)

**Teaching Scheme: P: - 4 hrs/week**

**Evaluation Scheme: IPE: 50**

**EPE: 100**

**Credits: 4**

**Minimum Passing Marks: 20**

**Minimum Passing Marks: 40**

The group will continue to work on the project selected during the semester VII and submit the completed project work to the department at the end of semester VIII as mentioned below-

1. The workable project.
2. The project report in the bound journal complete in all respect with the following: -
  - i) Problem specifications.
  - ii) System definition – requirement analysis.
  - iii) System design – dataflow diagrams, database design
  - iv) System implementation – algorithm, code documentation
  - v) Test results and test report.
  - vi) In case of object oriented approach – appropriate process be followed.

Oral examination will be conducted by internal and external examiners as appointed by the University.

### **Note:**

1. Project work should be continually evaluated based on the contributions of the group members, originality of the work, innovations brought in, research and developmental efforts, depth and applicability, etc.
2. Two mid-term evaluations should be done, which includes presentations and demos of the work done.
3. **Care should be taken to avoid copying and outsourcing of the project work.**

## 9. AUDIT COURSE VII

### CONSTITUTION OF INDIA (HS421)

**Teaching Scheme: P: 2hrs/week**

**No Credits**

#### **Unit 1**

(4)

Preamble to the constitution of India. Fundamental rights under Part – III – details of Exercise of rights, Limitations & Important cases.

#### **Unit 2**

(3)

Relevance of Directive principles of State Policy under Part – IV. Fundamental duties & their significance.

#### **Unit 3**

(3)

Union Executive – President, Prime Minister, Parliament & the Supreme Court of India.

#### **Unit 4**

(3)

State executive – Governors, Chief Minister, State Legislator and High Courts.

**Unit 5**

(4)

Constitutional Provisions for Scheduled Castes & Tribes, Women & Children & Backward classes. Emergency Provisions.

**Unit 6**

(3)

Electoral process, Amendment procedure, 42nd, 44th, 74th, 76th, 86th and 91st Constitutional amendments.

**Reference Books:**

1. Agarwal R.C., “Indian Political System”, (1997) S.Chand and Company, New Delhi.  
Maciver and Page, “Society: An Introduction Analysis”, Mac Milan India Ltd., New Delhi.
2. Durga Das Basu, “Introduction to the Constitution of India”(Students Edn.), Prentice – Hall  
EEE, 19th/20th Edn., 2001.
3. Gahai U.R., “(1998) Indian Political System”, New Academic Publishing House, Jalaendhar.
4. Pylee M.V., “An Introduction to Constitution of India”, Vikas Publishing, 2002.
5. Sharma K.L., “Social Stratification in India: Issues and Themes”,(1997), Jawaharlal Nehru Uni-  
versity, New Delhi.
6. Sharma R.N., “Indian Social Problems”, Media Promoters and Publishers Pvt. Ltd.
7. Sharma and Brij Kishore, “Introduction to the Constitution of India”, Prentice Hall of India,  
New Delhi.
8. Singh Yogendra and Manohar,“(1997) Social Stratification and Charge in India”, New Delhi.