



# SHIVAJI UNIVERSITY, KOLHAPUR

“A”

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**Revised Syllabus and Structure of  
(B.E. Computer Science & Engineering  
Sem – VII & VIII )**

**To be introduced from the academic year 2016-17**

**(i.e. from June 2016) Onwards**

(Subject to the modifications will be made from time to time)

## SEMESTER VII

Course Code	Course	Teaching Scheme			Examination Scheme				
		L	P	T	Theory	TW	POE	OE	Total
CS7C01	Advanced Computer Architecture	4	-	1	100	25	-		125
CS7L02	Distributed Systems	3	2	-	100	25	-		125
CS7L03	Advanced Database Systems	3	2	-	100	25	-	50	175
CS7E04	Elective – I	3	-	1	100	25	-		125
CS7L05	Web Technologies – I	3	4	-	-	50	50		100
CS7L06	Project – I	-	4	-	-	75	-	75	150
	<b>Total</b>	<b>16</b>	<b>12</b>	<b>2</b>	<b>400</b>	<b>225</b>	<b>50</b>	<b>125</b>	<b>800</b>

## SEMESTER VIII

Course Code	Course	Teaching Scheme			Examination Scheme				
		L	P	T	Theory	TW	POE	OE	Total
CS8C01	Data Analytics	4	2	-	100	25		50	175
CS8C02	Project Management	3	-	-	100	-		-	100
CS8C03	Real-time Operating System	4	-	1	100	25		-	125
CS8E04	Elective – II	3	-	1	100	25		-	125
CS8L05	Web Technologies – II	2	4	-	-	50	50	-	100
CS8L06	Project – II	-	4	-	-	75		75	150
CS8L07	Community Services	-	2	-	-	25		-	25
	<b>Total</b>	<b>16</b>	<b>12</b>	<b>2</b>	<b>400</b>	<b>225</b>	<b>50</b>	<b>125</b>	<b>800</b>

### **Elective –I**

- A. Soft Computing
- B. Mobile Applications
- C. Adhoc Wireless Networks

### **Elective –II**

- A. Internet of Things
- B. Software Testing and Quality Assurance
- C. Introduction to Mainframes

# B.E. (COMPUTER SCIENCE & ENGINEERING) Sem – VIII

## CSC801. DATA ANALYTICS

**Lecture** : 4 hrs / week

**Practical** : 2 hrs/ week

**Theory** : 100 Marks

**Termwork** : 25 Marks

**OE** : 50 Marks

### Objectives:

1. Understand Business Intelligence, decision support systems in Data warehouse
2. Study the Data analysis using data mining, data preparation and exploration
3. To foster the development of data mining capability in Hadoop and R and facilitate sharing of data mining codes/functions/algorithms among Hadoop and R users.

### Section-I

#### **Unit 1: Components of Decision-making process (8)**

Business intelligence, Decision Support Systems, Data ware-housing.

#### **Unit 2: Data analysis and exploration (8)**

Mathematical models for decision making, data mining, data preparation, data exploration.

#### **Unit 3: Introduction of Big data and Hadoop Echosystem (8)**

Big data definition, Elements of Big data, Big data analytics, Big Data Stack, Virtualization and Big data, virtualization approaches, Hadoop Ecosystem, Hadoop Distributed file system(HDFS, MapReduce, Hadoop YARN, Hbase, Hive, Pig and Pig latin, Sqoop, ZooKeeper, Flume, Oozie.

### Section-II

#### **Unit 4: Data mining tasks (8)**

Regression and association rules- structure of regression model, single linear regression, and multiple linear regression.

**Classification** - classification problems, Classification models, classification trees, Bayesian methods.

#### **Unit 5: Association rules and clustering (8)**

Structure of association rules, Single dimension association rules, Apriori algorithm, General association rules.

**Clustering** – clustering methods, partition methods, Hierarchical methods.

#### **Unit 6: Exploring R (8)**

Basic Features of R, Exploring RGui, Working with vectors, Handling data in R workspace. Reading datasets and exporting data from R, Manipulating and processing data in R.

### **Books:**

1. Business Intelligence - Data Mining and optimization for Decision Making- Carlo Vercellis-Wiley Publications. (For Units 1, 2, 4, 5)
2. Big Data and Analytics- Seema Acharya and Subhashini Chellappan- Wiley Publications.
3. Big Data (Black Book)- DT Editorial Services- Dreamtech Press (For Units 3, 6)
4. Data mining Introductory and Advanced topics- Margaret H. Dunham-Pearson (For Units 4, 5)
5. Data Mining: Concepts and Techniques Second Edition- Jiawei Han and Micheline Kamber-Morgan Kaufman Publisher.
6. Data mining and Analysis Fundamental Concepts and Algorithms - Mohammed J. Zaki and Wagner Meira Jr. - Cambridge University Press.

### **List of Experiments:**

1. Installation of Hadoop and R.
2. Building Hadoop MapReduce application for counting frequency of word/phrase in simple text file.
3. Study of Hadoop YARN Administration command and User commands.
4. Study of Hadoop Hive DDL commands, like create database, Viewing database, Dropping database, Altering database, creating tables, Dropping and altering tables.
5. Study of Hadoop Hive DML commands like Insert, delete, update, data retrieval queries and Join-inner and outer.
6. Working with operators in Pig- FOREACH, ASSERT, FILTER, GROUP, ORDER BY, DISTINCT, JOIN, LIMIT, SAMPE, SPLIT, FLATIEN.
7. Study of R-declaring variables, expressions, functions and executing R script.
8. Working with R with data sets- create, read, write and R Tables- create, read, write.
9. Manipulating and processing data in R- merging datasets, sorting data, putting data into shape, managing data using matrices managing data using data frames.

## CS8C02. PROJECT MANAGEMENT

**Lecture** : 3 hrs / week

**Theory** : 100 Marks

### **Objectives:**

1. Provide students with a basic understanding of project management principles and practices.
2. Demonstrate competency in the creation and management of a project plan
3. Understanding impact of Scope, Time and Cost management.
4. Understanding the software quality metrics and quality assurance.
5. Develop strategies to calculate risk factors involved in IT projects

### **Section - I**

#### **Unit 1. Introduction to Project Management: (5)**

Project and Project Management (PM), Role of project Manager, System view of PM, Organization, Stakeholders, Project phases and lifecycle, Context of IT projects, process groups, mapping groups to Knowledge areas

#### **Unit 2. Project Integration Management: (5)**

Strategic planning and project selection, Developing a Project Management Plan, Directing and Managing Project Work, Monitoring and Controlling Project Work, Performing Integrated Change Control, Closing Projects or Phases

#### **Unit 3. Project Scope, Time and Cost management: (9)**

Planning Scope Management, Collecting Requirements, Defining Scope, Creating the Work Breakdown Structure, Validating Scope, Controlling Scope

Planning Schedule Management, Defining Activities, Sequencing and Estimating Activity, Resources & Duration, Developing & Controlling Schedule

Basic Principles of Cost Management, Planning Cost Management, Estimating Costs, Determining the Budget, Controlling Costs

### **Section - II**

#### **Unit 4. Quality Management: (5)**

Importance, Planning Quality Management, Performing Quality Assurance, Controlling Quality, Tools and Techniques for Quality Control, Modern Quality Management, Improving IT Project Quality

#### **Unit 5. Human Resource management: (5)**

Importance, keys to managing people, human resource planning, acquiring, developing and managing project team, software assistance.

#### **Unit 6. Risk management: (5)**

Importance, risk management planning, sources of risk, risk identification, qualitative and quantitative risk analysis, risk response planning, risk monitoring and control.

### **Text Book:**

1. Information Technology Project Management, 7E, Kathy Schwalbe, Cengage Learning (India Edition)

**Reference Books:**

1. IT Project Management, 3 E, Joseph Phillips, McGraw Hill Edu. (India) Pvt. Ltd.
2. Software Project Management, Bob Huges, Mike Cotterell, Rajib Mall, 5/E, Tata McGraw Hill Edu. (India) Pvt. Ltd.
3. Project Management Core Textbook – Mantel Jr., Meredith, Shafer, Sutton, Gopalan (Wiley India Edition).
4. A Guide to the Project Management Body of Knowledge (PMBOK) (5th –Edition) – Newtown Square, PA, Project Management Institute (PMI).

[NOTE: PM Software Platforms such as Microsoft Project Management, JIRA can be introduced to students]

## CS8C03. REAL TIME OPERATING SYSTEM

**Lecture** : 4 hrs / week

**Tutorial** : 1 hr/ week

**Theory** : 100 Marks

**Termwork** : 25 Marks

### Objectives:

1. To understand basic real time operating system concepts.
2. To understand software engineering process for real time system design.
3. To learn programming languages for programming real time systems.
4. To understand different performance measures for real time O.S.
5. To understand different features of commercial real time operating systems.

### Section - I

#### **Unit 1. Basic Real Time Concepts & Hardware Considerations (3)**

Terminology, Real Time System Design issues, Examples of Real-Time Systems

#### **Unit 2. Hardware Considerations (7)**

Basic Architecture, Hardware Interfacing, Central Processing Unit, Memory, Input / Output, Other special devices

#### **Unit 3. Real-Time Operating System (7)**

Real-Time Kernels, Theoretical Foundation of Real-Time Operating System, Inter Task Communication and synchronization, Memory Management, Case study : POSIX

### Section - II

#### **Unit 4. Software Requirements Engineering (5)**

Requirements - Engineering process, Types of Requirements, Requirements Specification for Real-Time Systems, Formal Methods in Software Specification, Structured Analysis and Design, Object-Oriented Analysis and the Unified Modeling, Organizing the Requirements Document, Organizing and Writing Requirements, Requirements Validation and Review, Appendix: Case Study in Software Requirements Specification for Four-Way Traffic Intersection Traffic Light Controller System

#### **Unit 5. Various RTOS Architectures (10)**

##### **a. QNX Architecture**

The Philosophy of the QNX Neutrino RTOS , An embeddable POSIX OS?, Product scaling, Why POSIX for embedded systems?, Why QNX Neutrino for embedded systems?, Microkernel architecture, The OS as a team of processes, A true kernel, System processes, Interprocess communication, QNX Neutrino as a message-passing operating system, Network distribution of kernels, Single-computer model, Flexible networking.

##### **b. MQX Architecture**

MQX at a Glance, Organization of MQX, Initialization, Task Management, Scheduling, Memory Management, Task Synchronization, Inter-Processor Communication, Timing, Interrupt and Exception Handling, I/O Drivers, Instrumentation, Error Handling, Queue Manipulation, Name Component, Embedded Debugging, Using MQX, Initializing and Starting MQX.

### c. VxWorks

Kernel, Introduction, Kernel Architecture, System Startup, Boot Loader, Kernel Images, Components and configuration.

## Unit 6. Study of Commercial RTOS

(4)

Architecture of RT Linux, Initialization Task Management in RT Linux, Scheduling, Memory Management, Task Synchronization.

### **Text Books:**

1. Real- Time Systems Design and Analysis.. Tools for the Practitioner by Phillip A Laplante, Wiley - 4th Edition (For Units 1, 2, 3, 4)
2. Embedded Real Time Systems: Concepts, Design and Programming - Dr. K.V.K. Prasad - Black Book, Edition: 2014 (Unit 6)

### **References :**

1. QNX® Neutrino® RTOS System Architecture, Electronic edition published: Thursday, February 20, 2014 (Unit 5)
2. Freescale(Now NXP) MQXTM Real-Time Operating System User's Guide, Document Number: MQXUG Rev. 3 04/2011 (Unit 5)
3. VxWorks KERNEL PROGRAMMER'S GUIDE ®6.2 - 11 Oct 05 - Part #: DOC- 15672-ZD-00 (Unit 5)
4. RTOS Evaluation Report by Dedicated System Experts, Doc: EVA-2.9-CMP - ARM , Issue: V 3.00 Date : March 3, 2012.

### **Term work :**

It should consist of minimum 8 – 10 assignments based on the above topics, out of which 2-3 practical assignments should be on RTLinux / QNX / VxWorks / MQX / other RTOS.

*Following are the compulsory assignments:*

1. Study of VxWorks RTOS working
2. Study of QNX Resource Manager
3. Study of comparison between QNX RTOS V6.1, VxWorks AE 1.1 and WINDOWS CE .NET
4. Implement RT linux / QNX and other RTOSs Target Image Creation and porting it on Raspberry Pi / Freescale (Now NXP) Boards/ TI Boards / NVIDIA Boards/etc.
5. Case Study of in Software Requirements Specifications ( Laplante's Book)
6. Case Study in Designing Real- Time Software



## CS8E04. ELECTIVE II – A) Internet of Things

**Lecture** : 3 hrs / week

**Tutorial** : 1 hr/ week

**Theory** : 100 Marks

**Termwork** : 25 Marks

### Prerequisites:

1. Fundamentals of Computer Networks
2. Basics of Data Communication

### Course Objectives:

1. To learn Internet of Things Technology
2. To know the basics of RFID, sensor and GPS technologies
3. To aware students about wireless technologies and IoT applications

### Section - I

#### **UNIT 1. Introduction (6)**

What is the Internet of Things? : History of IoT, About objects/things in the IoT, Overview and motivations, Examples of applications, IoT definitions, IoT Frame work, General observations, ITU-T views, working definitions, Basic nodal capabilities.

#### **UNIT 2. Fundamental IoT Mechanisms & Key Technologies : (6)**

Identification of IoT objects and services, Structural aspects of the IoT, Environment characteristics, Traffic characteristics ,scalability, Interoperability, Security and Privacy, Open architecture, Key IoT Technologies ,Device Intelligence, Communication capabilities, Mobility support, Device Power, Sensor Technology, RFID technology, Satellite Technology.

#### **UNIT 3. Radio Frequency Identification Technology: (6)**

Introduction, Principles of RFID, Components of an RFID system, Reader, RFID tags, RFID middleware, Issue.

Wireless Sensor Networks: History and context, node, connecting nodes, networking nodes, securing communication.

### Section - II

#### **UNIT 4. Wireless Technologies For IoT : Layer ½ Connectivity : (6)**

WPAN Technologies for IoT/M2M, Zigbee /IEEE 802.15.4, Radio Frequency for consumer Electronics ( RF4CE), Bluetooth and its low-energy profile , IEEE 802.15.6 WBANS, IEEE 802.15 WPAN TG4j,MBANS,NFC,dedicated short range communication( DSRC) & related protocols. Comparison of WPAN technologies cellular & mobile network technologies for IoT/M2M.

#### **UNIT 5. Governance of The Internet Of Things: (8)**

Introduction, Notion of governance, aspects of governance, Aspects of governance Bodies subject to governing principles, private organizations, International regulation and supervisor, substantive principles for IoT governance, Legitimacy and inclusion of stakeholders, transparency, accountability. IoT infrastructure governance, robustness, availability, reliability, interoperability, access. Future governance issues, practical implications, legal implications.

## **UNIT 6. Internet Of Things Application Examples:**

**(8)**

Smart Metering, advanced metering infrastructure, e-Health/Body area network, City automation, automotive applications. Home automation, smart cards, Tracking, Over-The-Air passive surveillance/Ring of steel, Control application examples.

### **Text Books :**

1. Hakima Chaouchi, The Internet of Things, Connecting Objects to the Web, Wiley Publications (for Units 1, 3, 5, 6)
2. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6 The Evolving World of M2M Communications", Wiley Publications ( for Units 2,4)

### **Reference Books :**

1. Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet of Things", ISBN 978-3842-19156-5, Springer.
2. Olivier Hersent, David Boswarthick, Omar Elloumi, "The Internet of Things" Key Applications and Protocols, ISBN 978-1-119-99435-0, Wiley Publications.

## CS8E04. ELECTIVE II – B) Software Testing Quality and Assurance

**Lecture** : 3 hrs / week

**Tutorial** : 1 hr/ week

**Theory** : 100 Marks

**Termwork** : 25 Marks

**Prerequisites:** Basic knowledge of Software Engineering

### Course Objectives:

- 1) To provide knowledge about fundamentals of software testing and software quality
- 2) To understand the fundamentals of software verification
- 3) To understand and evaluate metrics and models used in software testing
- 4) To understand and compare testing web applications and desktop applications
- 5) To understand, compare and Choose from various software project assessment methods

### Section - I

#### Unit 1. Introduction (4)

Some Software Failures, Testing Process, Some Terminologies, Limitations of Testing, The V Shaped software life cycle model

#### Unit 2. Software Verification (8)

Verification Methods, SRS document verification, SDD document verification, Source code reviews, User documentation verification, Software project audit

**Creating test cases from SRS and Use cases:** Use Case Diagram and Use Cases, Generation of test cases from use cases, Guidelines for generating validity checks, strategies for data validity, Database testing

#### Unit 3. Regression Testing (7)

What is regression testing?, Regression Test cases selection, Reducing the number of test cases, Risk analysis, Code coverage prioritization techniques

**Object oriented testing:** What is Object orientation?, What is object oriented testing?, Path testing, State based testing, Class testing

### Section - II

#### Unit 4. Measurement - what is it and why do it? (6)

Measurement in everyday life, Measurement in software engineering, scope of software metrics

**Metrics and Models in Software testing:** Software Metrics, Categories of Metrics, Object oriented Metrics used in testing, what should we measure during testing, Software Quality attributes prediction models

#### Unit 5. Measuring Internal Product Attribute Size (7)

Aspects of software size, Length, Reuse, Functionality

**Measuring External product Attributes:** Modeling software quality, measuring aspects of software quality

#### Unit 6. Testing Web applications (8)

What is web testing?, functional testing, UI testing, Usability testing, configurations and

compatibility testing, security testing, performance testing, database testing, post deployment testing, web metrics.

**Automated Test data generation:** Automated Test Data generation, Approaches to test data generation, Test data generation tools

**Text Books:**

- 1) Software testing: Yogesh Singh, Cambridge University Press, First Edition
- 2) Software Metrics – A Rigorous & Practical approach: Norman Fenton, Shari Lawrence Pfleeger, 2<sup>nd</sup> Edition (Thomson Press) (for unit 4 Measurement-what is it and why do it? and unit 5)
- 3) Software Quality Engineering , Jeff Tian , Wiley India Ltd.

**Reference Books:**

- 1) Foundations of Software testing: Aditya P. Mathur, Pearson, Second Edition
- 2) Software Testing: Ron Patton, Pearson (SAMS), Second Edition
- 3) Software Quality, Mordechai Ben Menachem, Garry S. Marliss, BS Publications

**Guidelines for tutorials:**

It should consist of 8-10 assignments based on the following topics:

1. Software Testing Process, its need and limitations
2. Verification at different phases of SDLC for particular case study (SRS document verification, SDD document verification, Source code reviews, User documentation verification, Software project audit etc.)
3. Creating test cases from SRS and Use cases for particular case study
4. Generation of validity checks for particular case study
5. Regression testing with Test cases selection / Regression testing with reducing the number of test cases / Regression testing with code coverage prioritization techniques
6. Generation of test cases using Path testing/ State based testing/Class testing for particular case Study
7. Measurement in Software Engineering
8. Software Metrics: Object oriented Metrics used in testing
9. Calculation of Software Quality attributes using different prediction models
10. Measurement of Internal / External Product Attributes
11. Generation of test cases in different key areas of Web application testing
12. Automated test data generation

## CS8E04. ELECTIVE II – C) Introduction to Mainframes

**Lecture** : 3 hrs / week

**Tutorial** : 1 hr/ week

**Theory** : 100 Marks

**Termwork** : 25 Marks

### Objectives:

1. Students will understand the fundamentals of Mainframes
2. Students will be able to know basics of JCL, COBOL & DB2
3. Students will simulate COBOL and JCL programs using SPFLite and Hercules and experience the Mainframes developer role

### Section – I

#### **Unit 1. Introduction to IBM Mainframe (4)**

Hardware configurations, Processors, Multiprocessing, Input/Output Devices, Applications, Characteristic Features of Mainframe Operating System, Mainframe Configurations, Roles in the Mainframe World, Typical Mainframe Workloads.

#### **Unit 2. Z/OS, MVS and VSAM : (6)**

z/Os and other Mainframe operating systems, What is z/OS, Overview of z/OS facilities, virtual Storage and other Mainframe Concepts, Workload management, MVS Concepts , Address Spaces ,Addressing Mode and Residence Mode , Multiple Virtual Storage, Multiprogramming, MVS/370 Address Space Organizations, How data sets are stored?, Catalogs, Data Set Organization, VSAM Basics.

#### **Unit 3. Introduction to JCL: (8)**

Introduction to Job Control language-Mainframe information representation and storage, sequential and partitioned datasets, Indexed files, structure of JCL, JOB statement, EXEC statement, JOB and EXEC statements, DD statement, JCL procedures and symbolic parameters, IBM utility programs.

### Section – II

#### **Unit 4. COBOL Programming I : (8)**

Introduction, History, coding format for COBOL programs, structure of COBOL program, character set, COBOL words, data names and identifiers, literals, figurative constants, continuation of lines, language description notation, IDENTIFICATION DIVISION, ENVIRONMENT DIVISION, DATA DIVISION-Level structure, data description entries, USAGE Clause, REDEFINES Clause, RENAMES Clause, SIGN Clause, FILE SECTION, WORKING-STORAGE SECTION, Editing, PROCEDURE DIVISION and basic verbs - Structure, MOVE, Arithmetic and Sequence Control Verbs, Input and Output Verbs, Conditional Verb

#### **Unit 5. COBOL Programming II: (4)**

Table Handling - OCCURS Clause and Subscripting, Assigning values to table elements, Multidimensional Tables, PERFORM verb and Table Handling, Indexed Tables and Indexing, SET verb, SEARCH verb. Statements for Sequential Files- OPEN, CLOSE, WRITE, REWRITE. Miscellaneous verbs- SORT, MERGE, STRING, UNSTRING.

**Unit 6. Overview of DB2 :**

**(6)**

Introduction to DB2 , Major components of DB2- System Service component, Locking Service component, Database Service component, DB2 Application program preparation and Execution, DB2 Objects-Databases, Tablespaces, Stored tables, Indexes, Indexspaces, Storage groups, View, Bufferpool. DB2 SQL programming – Types of SQL statements, DCL, DDL, DML, Advanced SQL topics, UPDATE operations, Aggregate functions

**References:**

1. IBM Mainframe Handbook – Alexis Leon. ( For Unit 1, 2, 3, 6)
2. M.K. Roy and D. Ghosh Dastidar, “Cobol Programming”, Tata McGraw Hill, Second Edition. (For Unit 4, 5)
3. Introduction to the New Mainframe z/OS Basics- Mike Ebbers, John Kettner, Wayne O’Brien, Bill Ogden - Redbooks <http://www.redbooks.ibm.com/redbooks/pdfs/sg246366.pdf> (Unit 1, 2)

## CS8L05. WEB TECHNOLOGIES-II

**Lecture** : 2 hrs / week

**Practical** : 4 hr/ week

**Termwork** : 50 Marks

**POE** : 50 Marks

### **Prerequisites:**

1. Programming Lab - IV

### **Course Objectives:**

1. To introduce emerging Web technologies concepts and tools.
2. To introduce client side and server side scripting languages and validation techniques.
3. To learn database access technologies and state management techniques.
4. To develop real life Web applications using ASP.NET and PHP

### **Section - I**

#### **Unit 1:Introduction to ASP.NET 4.5**

**(3)**

**ONE ASP.NET:** Introducing One ASP.NET, Simplifying a Complex Ecosystem, How Do You Benefit?

**ASP.NET WEB FORMS STRUCTURE:** Application Location Options, The ASP.NET Page Structure Options, ASP.NET 4.5 Page Directives, ASP.NET Page Events, Dealing with Postbacks, Cross-Page Posting ,ASP.NET Application Folders, Compilation, Build Providers, Global.asax,

#### **Unit 2: Servlet Controls**

**(6)**

**ASP.NET SERVER CONTROLS AND CLIENT-SIDE SCRIPTS:** ASP.NET Server Controls, HTML Server Controls, Identifying ASP.NET Server Controls, Manipulating Pages and Server Controls with JavaScript.

**ASP.NET WEB SERVER CONTROLS:** An Overview of Web Server Controls, The Label Server Control, The Literal Server Control, The TextBox Server Control, The Button Server Control, The LinkButton Server Control, The ImageButton Server Control, The HyperLink Server Control, The DropDownList Server Control, The Visually Removing Items from a Collection, The ListBox Server Control, The CheckBox Server Control, The CheckBoxList Server Control, The RadioButton Server Control, The RadioButtonList Server Control, The Image Server Control, The Table Server Control, The Calendar Server Control, The AdRotator Server Control, The Xml Server Control, The Panel Server Control, The Placeholder Server Control, The BulletedList Server Control, The HiddenField Server Control, The FileUpload Server Control, The MultiView Server Control and The View Server Controls, The Wizard Server Control, The ImageMap Server Control.

**VALIDATION SERVER CONTROLS:** - Understanding Validation, Client-Side versus Server-Side Validation, ASP.NET Validation Server Controls, Turning Off Client Side Validation ,Using Images and Sounds for Error Notifications ,Working with Validation Groups

#### **Unit 3: Data Binding and State Management**

**(5)**

**DATA BINDING:** Data Source Controls, Data Source Control Caching, Data-Bound Controls, Other Data-Bound Controls, Inline Data-Binding Syntax, Using Expressions and Expression Builders

**STATE MANAGEMENT:** Your Session State Choices, Understanding the Session Object in ASP.NET, The Application Object, QueryStrings, Cookies, Postbacks and Cross-Page Postbacks, Hidden Fields, ViewState, and ControlState, UsingHttpContext.Current.Items for Very Short-Term Storage

## Section - II

### Unit 4 : Client Side Development (4)

**AJAX:** Understanding the need of AJAX, ASP.NET AJAX and Visual Studio 2012, Binding ASP.NET AJAX Applications, ASP.NET AJAX's Server Side Controls, Using Multiple Update Panel Control, Working with page history, Script Combining.

**JQuery:** Introduction to JQuery, Selecting Elements, Modifying Elements, Event Handling, Ajax, JQuery UI

### Unit 5: //Basics of PHP (2)

**Introducing PHP:** History, General Language Feature

**PHP Basics:** Embedding PHP code in Your Web Pages, Commenting Your Code, Outputting Data to the Browser, PHP supported Data Types, Identifiers, Variables, Constants, Expressions, String Interpolation, and Control Structures

**Functions:** Invoking a Function, Creating a Function, Function Libraries

**Array:** What is Array?, Creating an array, outputting an Array, Merging, slicing, splicing and Dissecting Arrays, Other useful Array Functions

### Unit 6: Advanced Topics in PHP (6)

**Object-Oriented PHP:** The benefits of OOP, Key OOP Concepts, Constructor and Destructors, Static Class Members, The instanceof Keyword, Helper Functions.

**Advanced OOP Features:** Object Cloning, Inheritance, Interfaces, Abstract classes, Introducing namespaces.

**Strings and Regular Expressions:** Regular Expressions, Other String-Specific Functions, Alternatives for Regular Expression Functions

**Working with HTML Forms:** PHP and Web Forms, Validating Form Data

**Handling File Uploads:** Uploading Files with PHP

**Using PHP with MySQL:** Installation Prerequisites, Using the MySqli Extension, Interacting with the Database, Executing Database Transactions

**Session Handlers:** What Is Session Handling, Configuration Directives, Working with Sessions, Practical Session-Handling Examples, Creating Custom Session Handlers

### Text Books:

1. Professional ASP.NET 4.5 in C# and VB-Published by John Wiley & Sons, Inc. (WROX)



2. Beginning PHP and MySQL: From Novice to Professional, Fourth Edition - W. Jason Gilmore

**Reference Books:**

1. ASP.NET 4.5- Black book – Kogent Dreamtech Publication

**Open Source Resources**

<http://www.php.net>

**Sample Experiment List:**

It should consist of 17-20 experiments based on the following topics.

1. Create registration form using different server controls
2. Accepting and validating user entered data in registration form using ASP.NET
3. Write a program to manage session in ASP.Net
4. Reading and writing HTML contents with JQuery
5. Write a sample application to demonstrate AJAX
6. Display database contents from SQL server or Oracle database using SQL Command class from ASP.NET
7. Display parameterized data using SqlDataReader and GridView in ASP.NET
8. Database access using DataSet in ASP.NET
9. Installing Apache and PHP on Linux, Configuring PHP at Build Time on Linux. Or Installation of XAMPP
10. Hello world Program-Embedded HTML with PHP
11. Program based on PHP variables, Expression, arrays, control structure
12. Experiment Based on OOP and Advance OOP PHP
13. Form validation using PHP using regular expressions
14. Upload various types of file from client side to server with validation
15. Write a program to send Mail using PHP
16. Insert user entered data in form to MySQL database using PHP
17. Update user's data stored in MySQL database using PHP
18. Write a program to manage session in PHP having login facility in any web application

## CS8L06. PROJECT - II

**Practical** : 4 hrs / week

**Termwork** : 75 Marks

**OE** : 75 Marks

### **Objective:**

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.

### **Termwork:**

Term work will be jointly assessed by a panel of teachers appointed by Head of the Department

### **External Exam:**

Oral examination will be conducted by internal and external examiners as appointed by the Shivaji 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**

## CS8L07. COMMUNITY SERVICES

**Practical** : 2 hrs / week

**Termwork** : 25 Marks

### **Objectives:**

1. To create an awareness among the common man of Western Maharashtra region and area coming under jurisdiction of the Shivaji University regarding the e-services provided by various public sector organization
2. To promote the use of technological services in day-to-day activities.
3. To understand the problems of the locality.
4. To make the student aware of the various engineering tools and techniques used in eservices.
5. Creating awareness of RTI (Right To Information) among general public for procuring public documents and it's appropriate use.

### **Details:**

The students project group is expected to do the following:

1. With the prior written permission from the Head of the Institute the project group should visit any Public Sector / Government/ Semi government organization like – Zilha Parishad, Collector Office, Municipal Corporation, Tahasildar Office, RTO, MSEB, Court, Railway station , Tourism Services, agricultural service sector, Banks where the facilities of e-governance and e-services available for public purposes.
2. The project group should understand the public related services and identify the required services for the common man.
3. Two/Three groups should plan awareness programs/camps to be carried out in the nearby villages / Taluka places / residential colonies / localities and visit the suitable areas along with the staff to create awareness among the common man about various eservices available in public domain.
4. They should prepare a presentation simulating the services that are being exposed to common man and give a demonstration during their visit to the concerned area.
5. Further group should take the feedback from the concerned locality on a pre-designed format that may be provided by the Head of the Institute.
6. Group should prepare a report detailing:
  - a. The kind of services chosen.
  - b. The office / organization visited mentioning the authorities meet.
  - c. The facilities provided by the chosen service.
  - d. Preparations for the visit.
  - e. Presentation Techniques & Tools used
  - f. Analysis of the Feedback Form filled during visit
  - g. Observations and conclusions during the entire work
7. Submission of the above report duly signed by the concerned staff and Head of the department is to be done to the department at the end of semester.

**Equivalences of B. E. (CSE) for repeater / backlog students  
BE (CSE) Sem.-VII**

<b>Sr. No.</b>	<b>B.E.(CSE) – I Pre-Revised</b>	<b>Equivalent / Replacement Subject ( Revised)</b>
1.	Advanced Computer Architecture	Advanced Computer Architecture Sem VII
2.	Distributed Systems	Distributed Systems Sem VII
3.	AdvancedDatabase Systems	AdvancedDatabase Systems Sem VII
4.	Elective – I A) Soft Computing B) Project Management C) Cyber Laws	Elective – I A) Soft Computing Sem VII B) Project Management Sem VIII C) Cyber Laws ( <b>Pre-revised Sem VII</b> )
5.	Network Engineering	Network Engineering ( <b>Pre-revised Sem VII</b> )

**BE (CSE) Sem.-VIII**

<b>Sr. No.</b>	<b>B.E.(CSE) – II pre-Revised</b>	<b>Equivalent / Replacement Subject ( Revised)</b>
1.	Grid Technology	Grid Technology ( <b>Pre-revised Sem VIII. Two more chances</b> )
2.	Storage Networks	Storage Networks (Sem VI)
3.	Real-time Operating System	Real-time Operating System (Sem VII)
4.	Elective – II A) Data Mining B) Business Intelligence System C) Adhoc Networks	Elective –II A) Data Mining ( <b>Pre-revised Sem VIII</b> ) B) Business Intelligence System ( <b>Pre-revised Sem VIII</b> ) C) Adhoc Wireless Networks ( <b>Sem VII</b> )
5.	Web Technology	Web Technology ( <b>Pre-revised Sem VIII</b> )