OBJECT ORIENTED PROGRAMMING USING JAVA

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:
1. Introduction to Java and its Basic Concepts
   - The Java programming language: history, evolution, features
   - Introduction to the Java programming environment, JDK, JRE
   - An anatomy of a Java program
   - Data types, wrapper classes, automatic boxing and unboxing
   - Encapsulation, Inheritance, polymorphism, Interfaces
   - Packages
   - Decision making and Loop Control
2. Programming Concepts
   - Input-output in Java
   - File handling
   - Exception handling
   - String handling
   - Multithreading
   - Introduction to java.util package and important members from it
3. Graphical Programming
   - Introduction to the Abstract Window Toolkit (AWT)
   - Writing graphical programs using Swing library
   - Using various Swing components
   - Managing layout using Swing
   - Event handling using Swing
4. JDBC Concepts
   - Introduction to JDBC
   - Different types of JDBC drivers
   - Programming database applications using JDBC
   - GUI Swing Programming database applications using JDBC

REFERENCE BOOKS:
2. Daniel Joshi and Paul Vorobeiu: The Java 1.1 Programmer – Comdex Times
3. C. Thomas: Introduction to Object Oriented Programming with Java - TMH
4. Naughton: The Java Hand Book - TMH
SARDAR PATEL UNIVERSITY

COURSE NO: PS01CINT32 w.e.f. June 2020

PYTHON PROGRAMMING

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Introduction to Python
   - Brief history, key characteristics, advantages, major application areas
   - Syntax overview, comments, naming conventions
   - Primitive data types, data type constructors
   - Console input and output
   - Control structures
   - Programming exercises

2. Aggregate and Composite Data Types and Functions
   - Sequence types: Lists, tuple, range
   - Text sequence type: str
   - Mapping type : dict
   - Set type: set
   - Programming exercises

3. Some More Features of Python
   - Exception handling
   - Functions
   - Object-oriented programming in Python – classes, the constructor, members, methods, inheritance
   - Installing, updating and using modules
   - Programming exercises

4. Developing Applications using Python
   - File handling
   - Developing GUI applications
   - Database access from Python
   - Programming exercises

REFERENCE BOOKS:

SARDAR PATEL UNIVERSITY

COURSE NO: PS01CINT33

COMPUTER NETWORKS & CYBER SECURITY

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Introduction and Data Communication Fundamentals
   - Introduction and classification of computer networks
   - Properties of Transmission media
     - Guided Media: Twisted Pair, Co-axial Cable, Fiber Optics
     - Unguided Media: Radio waves, Microwaves, Infrared
   - Function of network devices: Amplifier, Repeater, Hub, Switch, Bridge, Router, Gateway
   - The OSI reference model & TCP/IP reference model
   - IEEE 802.3 Ethernet Cabling Scheme

2. High Speed LANs, Satellite Communication & Routing and Congestion Control
   - Gigabit Ethernet
   - Communication Satellites: Geosynchronous Satellites, Medium-Earth Orbit Satellites, Low-Earth Orbit Satellites, Satellites versus Fiber
   - Routing Techniques
     - Static Vs Dynamic Routing Algorithm
     - Shortest Path Routing
     - Flooding
     - Distance Vector Routing
   - Congestion Control
     - The concept of congestion
     - Congestion Prevention Policies

3. Internetworking, VPN and Mobile Phone System
   - Introduction and Issues that arise in Internetworking
   - Different ways in which networks differ
   - Fragmentation
   - Tunneling & Virtual Private Networks
   - The mobile telephone system: Advanced Mobile Phone System
     - D-AMPS: The Digital Advanced Mobile Phone System

4. Cyber Security
   - Introduction, Traditional Cryptography, Fundamental Cryptographic
   - Principles, Secret-Key Algorithms, Public-Key Algorithms
   - Firewalls: Introduction and Packet Filter Firewall
   - Cybercrime: Definition and Origins of the World
   - Classification of Cybercrimes
   - Cybercrime and Indian ITA 2000.
- Introduction to phishing, password cracking, key loggers, spywares, Trojan Horses, DoS/DDoS
REFERENCE BOOKS:

2. Nina Godbole, Sunit Belapure, Cyber Security, WILEY

ADDITIONAL REFERENCE BOOKS:

SARDAR PATEL UNIVERSITY

COURSE NO: PS01CINT34  

w.e.f June 2020

RELATIONAL DATABASE MANAGEMENT SYSTEMS

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Introduction to Database Systems and Data Models
   - Database systems: needs, definitions, advantages
   - Users associated with database systems and their roles
   - Categories of data models (internal level models, conceptual level models and external level models)
   - System catalog, Data independence, Data sharing, Data integrity, Data protection (security, backup and recovery)

2. Normalization & E-R Diagram
   - Codd rules
   - Normalization (1 NF to 3 NF)
   - Entity-Relationship Diagram: Entities, Attributes (simple v/s composite, single-valued v/s multi-valued, complex, stored v/s derived), entity keys, relationships, their degree, cardinality ratios for binary relationships (1:1, 1:N, N:1, M:N), attributes of relationships, strong v/s weak entities, recursive relationships and role names, notations

3. SQL (Structured Query Language)
   - Introduction to SQL
   - Data Types
   - DDL, DML and DCL Commands with syntax
   - Database objects like views, indexes, sequence, & synonyms
   - Built-in functions – mathematical functions, string functions, date & time functions, formatting functions, data type conversion functions
   - Types of Joins
   - Subquery

4. PL/SQL (Procedural Language for SQL)
   - Introduction to PL/SQL
   - Control structures
   - Cursor
   - Exception Handling
   - Stored Procedures and Functions
   - Database triggers
   - Packages

REFERENCE BOOKS:

3. Ivan Bayross, SQL, PL/SQL, BPB Publications
SARDAR PATEL UNIVERSITY

COURSE NO: PS01CINT35

OPERATING SYSTEM CONCEPTS

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Introduction
   - Understanding the role of operating systems
   - Operating system services
   - Interrupt handling
   - Operating system interfaces: GUI, Command Line Interface, system calls
   - Types of Operating Systems
   - Structure of operating system

2. Process Management
   - Process Concept
   - Queueing Diagram Representation of Process Scheduling
   - Schedulers: long term, middle term, short term
   - CPU Scheduling Algorithms
   - Introduction to process synchronization
   - Critical Section Problem
   - Semaphores, Monitors
   - Introduction to the Concept of a Deadlock, Necessary Conditions for Deadlock

3. Memory Management
   - Basic concepts of memory management
   - Swapping
   - Contiguous Memory Allocation
   - Paging
   - Segmentation
   - Virtual Memory: demand paging, Page Replacement Algorithms

4. Disk & File System Management
   - File Systems
   - File attributes, operations, types, access methods
   - Directory structure
   - Disk structure, Disk attachment
   - Disk Scheduling Algorithms – FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK
   - RAID structures

REFERENCE BOOKS:

WEB PROGRAMMING

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. **Introduction to Front-end Development Tools**
   - HTML Forms
   - Introduction to HTML5 and XHTML
   - CSS: Introduction, Applications, types, properties and attributes, class
   - Introduction to JavaScript: Features, Advantages, DOM, Methods to implement JavaScript, Arrays, Functions, Dialogue Boxes
   - Events, Methods and Validations in JavaScript

2. **Server Side Scripting Using PHP - I**
   - Introduction to Open Source
   - Advantages and Capabilities of Open Source
   - Introduction to PHP: Features, Adding PHP to HTML
   - Common PHP script elements – data types, Variables, Constants, operators,
   - Flow Control and looping,
   - strings, arrays, associative arrays, functions
   - Working with Forms – Form validation, Input validation, regular expression functions

3. **Server Side Scripting Using PHP – II**
   - Introduction to MySQL: Features, Merits and Demerits,
   - Data Types
   - MySQL Functions
   - Database Connectivity
   - Error handling
   - Introduction to Sessions and Cookies

4. **Server Side Scripting Using PHP - III**
   - Security – Authentication (user logins), Authorization (Permissions)
   - Object Oriented Programming with PHP: Classes, Objects, Inheritance, Polymorphism
   - File Handling – Introduction, access, uploading, handling
   - Introduction to Content Management Systems

**REFERENCE BOOKS:**

1. Ivan Baryons: “Web Enabled Commercial Applications Development using HTML, DHTML, Javascript, PHP”
2. Steve Suehring Tim Converse Joyce Park:PHP6 and MySQL Bible - Wiley Publication
3. Internet reference for the relevant topics
COURSE NO: PS02CINT32

SOFTWARE ENGINEERING

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Introduction
   - General Architecture of Systems with basic components
   - Open and Close Systems
   - TPS, MIS, DSS and ES Types of Systems
   - Software – meaning and applications
   - Software Engineering – meaning, goal, challenges and approach
   - Software Process
   - Software Development Process Models – waterfall, prototyping, iterative, time boxing and spiral
   - Introduction to Agile Computing

2. Software Requirement Analysis and Project Management
   - Software Development Life Cycle (SDLC)
   - Software Project Management : Project Planning, various issues addressed in Project Planning
   - Work Breakdown Structure (WBS)

3. Software Design
   - Design – meaning, types
   - Design approaches - function-oriented design (introduction), object-oriented design
   - Design Concepts for Object-oriented design - information hiding, functional independence, refinement, refactoring and design classes
   - Object Modeling using UML – Overview, Diagrams – class, sequence, collaboration, use-case, activity, state chart

4. Coding and Testing
   - Coding – meaning, process, programming standards and guidelines, refactoring, verification, metrics
   - Testing – meaning, importance and process
   - Testing fundamentals – error, fault, bug, failure, test oracles, test cases and test criteria
   - Introduction to Black-box (functional) testing and White-box (structural) testing
   - Comparison of Black-box and White-box testing
   - Alpha testing and Beta testing
   - Testing tools
REFERENCE BOOKS:


ADDITIONAL REFERENCE BOOKS:

COURSE NO:  PS02CINT33  w.e.f. June 2020

ARTIFICIAL INTELLIGENCE

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Artificial Intelligence (AI) and Knowledge Based Systems (KBS)
   - Natural and Artificial Intelligence
   - Testing Intelligence with Turing Test, and Chinese Room Experiment, Application Areas of Artificial Intelligence, Data pyramid
   - Production systems and AI Based Searches like Hill Climbing and Heuristic Search
   - KBS Structure, Components of KBS, Categories of KBS, Knowledge-Based Shell, Advantages, Limitations and Applications of KBS
   - Knowledge Acquisition, Knowledge Update
   - Factual and Procedural Knowledge Representations
   - Knowledge Based Systems Development Model

2. Fuzzy Logic
   - Fuzzy Logic and Fuzzy Sets, Membership Functions,
   - Fuzzification and Defuzzification
   - Operations on Fuzzy Sets
   - Fuzzy Functions and Linguistic Variables
   - Fuzzy Relations, Propositions and Connectives
   - Fuzzy Inference
   - Fuzzy Rules, Fuzzy Control System and Fuzzy Rule Based Systems

3. Connectionist Models
   - Introduction to ANN, Biological Neuron and Artificial Neuron
   - Hopfield model of ANN, Parallel relaxation
   - Linearly Separable Problems, Single perceptron
   - Non Linearly Separable problems, Fixed increment perceptron learning
   - Multi Layer Perceptron, Applications of ANN and Cases

4. Genetic Algorithms
   - Introduction to Genetic Algorithm (GA),
   - Fundamental Concepts of GA :Gene, Population, Fitness Functions, Generations
   - Encoding Strategies, Genetic Operators, Fitness Functions
   - Typical Genetic Algorithm Cycle
   - Function Optimization, Designing Special Operators and Edge Recombination, Travelling Salesman Problem
   - Schema, Genetic programming
REFERENCE BOOKS:

4. Web Resources

ADDITIONAL REFERENCE BOOKS:

VISUAL PROGRAMMING

COURSE NO: PS02CINT34

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. The .NET Technology
   - Introduction to .NET Framework
   - Architecture of .NET framework – BCL (Base Class Library), CLR (Common Language
     Runtime), etc.
   - .NET Languages – introduction, Types of applications supported by .NET Technology
   - Managed code, compilation to intermediate language, Just-In-Time compilation, garbage
     collection, assemblies and the GAC

2. Language basics
   - C#.NET – Introduction and features
   - General structure of C#.NET program
   - C#.NET – basic data types, variable, constant, type conversion - Boxing and Unboxing
   - C#.NET – statements (conditional and looping)
   - Console Applications, Windows Applications - Windows Forms and Life Cycle
   - User interface controls - Basic Controls, Dialog controls, Menu control

3. Advance features
   - OOPS concepts, Class and Object
   - Class types and interface
   - Working with Strings, Arrays, Lists and Collections
   - Exception handling

4. Database Programming and Reports
   - Database programming – concepts
   - The ADO.NET architecture (connected and disconnected mode)
   - ADO.NET Data providers, Dataset, DataAdapter, DataReader
   - Data Controls
   - Generating reports

REFERENCE BOOKS:

2. Bill Evjen, Scott Hanselman, Devin Rader: Professional ASP.NET 4 in C# and VB,
   Wiley India Pvt. Ltd., 2010

ADDITIONAL REFERENCE BOOKS:

2. Joseph Albabari, Ben Albabari: C# 4.0 in a Nutshell, O’Reilly.
3. Web Resources
COURSE NO: PS02EINT31  
ADVANCED JAVA  

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Java Servlet and Java Sever Page (JSP)  
   - Introduction to Java Servlet, Life cycle of Servlet  
   - Introduction to JSP, Architecture of JSP  
   - Developing simple JSP page  
   - JSP directives, JSP scripting elements, JSP action elements  
   - JSP implicit objects

2. The Spring Framework  
   - Introduction to the spring framework and architecture  
   - Beans (definition, scope, lifecycle)  
   - Aspect-Oriented Spring  
   - Spring MVC, Security  
   - JDBC Framework

3. Hibernate  
   - Understanding object relational persistence  
   - Hibernate mapping  
   - Managing entity identity  
   - Mapping class inheritance

4. Enterprise Java Beans (EJB)  
   - Introduction to Java EE architecture  
   - EJB Overview  
   - Entity Beans, Session Beans, Message Driven Beans

REFERENCE BOOKS:

4. Panda, Rahman and Lane: EJB 3 in Action, Dreamtech Press, 2010
6. Web sources

ADDITIONAL REFERENCE BOOKS:

COURSE NO: PS02EINT32

w.e.f. June 2020

DATA SCIENCE

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. **Introduction to Data Science Data Analytics**
   - Data Science Definition
   - Need and features
   - Importance of Data Science in Modern Business
   - Current Trends in Data Science
   - Analytical Techniques

2. **Introduction to Big Data**
   - Types of Digital Data: Unstructured, Semi-structured and Structured
   - Working with Unstructured Data
   - Evolution and Definition of Big Data
   - Characteristics and Need of Big Data

3. **Introduction to Big Data Analytics**
   - Meaning and Characteristics of Big Data Analytics
   - Need of Big Data Analytics
   - Classification of Analytics
   - Importance of Big Data Analytics

4. **Data Analytics using Python and R**
   - Introduction to NumPy, SciPy
   - Introduction to pandas
   - Introduction to Matplotlib
   - Introduction to R
   - Introduction to R Studio
   - Developing data science applications using Python and R

REFERENCE BOOKS:

2. Seema Acharya, Subhashini Chellappan, Big Data and Analytics, Wiley
3. Vignesh Prajapati, Big Data Analytics with R and Hadoop – Packrt
7. e-Book

ADDITIONAL REFERENCE BOOKS:
1. Minelli, Chambers, Dhiray, Big Data Big Analytics, Wiley
2. Bart Baesens, Analytics in a Big Data World, Wiley
6. Alex Holmes Hadoop in Practice – Dreamtech
7. Documentation of relevant software packages
8. Other web references
SARDAR PATEL UNIVERSITY
COURSE NO: PS03CINT31

MOBILE APPLICATION DEVELOPMENT USING ANDROID

w.e.f. June 2020

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Introduction to Android
   - Introduction to Android
   - Standard development environment for Android applications
   - Installing Android
   - Creating Hello World and running application on Emulator
   - Android Architectural Overview and Android Development Framework
   - Introduction to Android Studio
   - Structure of Android application
   - Components of Android

2. Introduction to Activities and User Interface Design
   - Introduction to activity
   - Activity lifecycle phases
   - Introducing Toast
   - Introduction to Views and layouts and Common UI components
   - Input and Selection components
   - Adapters
   - Menus and Dialogs
   - Working with Intents
   - Types of Resources

3. Introduction to Content Provider and Sqlite Database
   - File systems
   - Persistent storage in Android
   - Android databases
   - Storing and retrieving data
   - Content provider Classes

4. Multimedia and System Services
   - Notifications
   - Using images, audio, video
   - Accessing the camera using intent
   - Using text messages (SMS)
   - Performing tasks in background
   - Accessing files and data from a server
   - Introduction to geolocation and location aware applications
REFERENCE BOOKS:

4. Documentation of relevant software packages.

ADDITIONAL REFERENCE BOOKS:

SARDAR PATEL UNIVERSITY

COURSE NO: PS03CINT32  

WEB APPLICATION DEVELOPMENT TECHNOLOGY

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:
1  Basics of ASP.NET
   - Introduction to ASP.NET, ASP.NET architecture
   - Introduction to Website and WebApplication
   - ASP.NET Web Application Project – introduction, creation
   - The ASP.NET Page structure, ASP.NET Page Directives
   - ASP.NET Web form - introduction, creating web forms
   - ASP.NET Page – layout, lifecycle
   - State Management in ASP.NET : Client-side and Server-side
2  User Interface Design
   - ASP.NET standard controls, navigation controls, validation controls
   - Adding server controls to a Web Form, adding event procedures to Web Server Controls,
     Implementing code-behind pages
   - Creating Master Pages
   - Working with Themes and skins
3  Database Programming and Web Services
   - Accessing Data with ADO.NET
   - Dataview Controls
   - Authentication and Authorization
   - Web Application Security
   - ASP.NET Configuration
4  MVC Framework
   - MVC Framework – introduction and architecture
   - Creating sample web application with MVC
   - Web Services – overview, creation and calling
   - Web Services

REFERENCE BOOKS:
3. Mathew MacDonald & Maria Szpuszta, “Pro ASP.NET 3.5 in C# 2008”, Second Edition,

ADDITIONAL REFERENCE BOOKS:
1. G. Andrew Duthie, “ASP.NET programming with Microsoft Visual C#.NET Step by Step”,
   version 2003, Prentice-Hall of India.
2. Internet references for the relevant topics.

SARDAR PATEL UNIVERSITY

COURSE NO:  PS03CINT33

COMPUTER GRAPHICS AND MULTIMEDIA

w.e.f. June 2020

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Introduction, Output Primitives, 2-D transformation & Clipping
   - Introduction of Computer Graphics & Graphics functions
   - Algorithms for output primitives (Line, Circle, Character Generation)
   - Attributes of output primitives
   - Basic transformations: Translation, Rotation (about origin and about pivot point), Scaling (related to a fixed point), Reflection and Shear with examples
   - Viewing pipeline
   - Windowing & Clipping
   - Window to view port transformation, Point, Line, polygon and text clipping algorithms

2. 3D Concepts
   - 3D coordinate systems
   - 3-D display methods: Parallel projection, perspective projection
   - Introduction of 3D Object representations.
   - 3D transformations (translation, rotation and scaling)
   - 3D viewing: Viewing pipeline
   - Visible Surface detection methods: Back face detection methods and the Z-Buffer algorithm
   - Introduction and need of Illumination models and surface-rendering methods

3. Image Operations
   - Image Representation: Graphics Formats (GIF (Graphics Interchange Format), Microsoft Windows Bitmap (BMP), JPEG File Interchange Format, TIFF (Tag Image File Format), PNG (Portable Network Graphic Format))
   - Introduction, applications and components of Image processing system, Human vision system,
   - Digitization: Sampling & Quantization
   - Image Enhancement: Contrast Intensification (with examples) and smoothing (with examples), Sharpening and noise reduction
   - Introduction of: Image restoration and Image compression (Lossy & Loss-less compression),
   - Multi-Valued Image processing (Multi-spectral & Multi-modal) with applications
- Introduction of Image analysis (Segmentation, Edge & Line detection, Feature extraction, Image description & Recognition)
- Color models (RGB, CMY, YIQ, YCbCr and HSI) and conversion between different models

4. Virtual Reality using Multimedia
- Introduction to Multimedia with its applications
- Multimedia hardware & software
- Introduction of digital medium and various facets of multimedia: digital audio, multimedia texts, hypermedia, Graphics
- Animation: two-dimensional and three-dimensional animation techniques and digital video and basic concept for color display
- Multimedia project design / development concepts
- Multimedia authoring and multimedia programming,
- characteristics of authoring tools, authoring methodologies

REFERENCE BOOKS:


ADDITIONAL REFERENCE BOOKS:

COURSE NO: PS03CINT34  

TRENDS IN ICT

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Internet of Things
   - Introduction to IoT
   - Applications of IoT
   - IoT Microcontrollers and boards
   - Introduction to using Arduino and Raspberry Pi
   - Different types of sensors used in IoT
   - Controlling other devices
   - Communication using different protocols
   - Security issues in IoT

2. Cloud Computing
   - Cloud Computing Methodologies
     Service Oriented Architecture
     Virtualization
   - The Cloud Architecture and Cloud Deployment Techniques
   - Cloud Services
   - Cloud Applications
   - Issues with Cloud Computing
   - Public, Private and Hybrid Clouds
   - Cloud Ecosystem and Enabling Technologies
     Infrastructure-as-a-Service (IaaS),
     Platform-as-a-Service (PaaS) and
     Software-as-a-Service (SaaS)

3. e-Commerce
   - Introduction to e-Commerce and e-Business
   - 5C model of e-Commerce: Commerce, Collaboration, Communication, Connection, Computation
   - Electronic Payment procedures: Cash on Delivery, e-Cash, Credit Card, Debit Card, e-Wallet, etc.
   - Technical and Economical Challenges

4. Machine Learning
   - Supervised Machine Learning, Example of Supervised Learning, Classification Model using Back Propagation
- Introduction to Deep Learning

REFERENCE BOOKS:


ADDITIONAL REFERENCE BOOKS:

SOFTWARE TESTING
(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:
1. Basics of Software Testing
   - Introduction and Need of Testing
   - Basic Concepts in Testing
   - Levels of Testing
   - Testing Process
   - Software Testing Life Cycle Model
2. Functional Testing and Structural Testing
   - Introduction
   - Functional (Black Box) Testing: Meaning, Techniques - Boundary Value Analysis, Equivalence Class Partitioning, Decision Table Based Testing, Cause-Effect Graphing
   - Structural (White Box) Testing: Meaning, Techniques - Control Flow Testing, Data Flow Testing, Slice Based Testing, Mutation Testing
   - Black-box Testing Vs. White-box Testing
3. Test Cases
   - Test Cases – Meaning, Typical Test Case Parameters, Examples
   - Test Case Selection Criteria
   - Test Case Design Techniques, Test Suite
   - Generating Test Cases
   - Automated Test Data Generation
4. Testing Tools
   - Introduction to Testing Tools, Examples
   - Advantages and disadvantages of using Testing Tools
   - Types of Testing Tools
   - Open Source Software Testing Tools

REFERENCE BOOKS:

ADDITIONAL REFERENCE BOOKS:
COURSE NO: PS03EINT32

WEB APPLICATION FRAMEWORKS

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Client-side Web Application Framework - I
   - Introduction to Angular framework
   - Setting up Project, project organization and management
   - Directives, Expressions, Controllers, Filters
   - Templates

2. Client-side Web Application Framework - II
   - MVVM Architecture
   - Data binding
   - Dependency injection
   - Routing
   - Modules, Forms, Includes, Views
   - Angular Applications

3. CodeIgniter Framework-I
   - Introduction to MVC
   - Introduction to CodeIgniter, Features and Objectives
   - Applications Flowcharts
   - Models, Views and Controller
   - Overview of Libraries
   - Helpers

4. CodeIgniter Framework-II
   - Database Handling
   - URL Routing
   - Error Handling
   - Form validation
   - Session management
   - Active record

REFERENCE BOOKS:

4. Brad Green and Syham Seshadri, “AngularJS”, O’Reilly
5. Beginning AngularJS - Andrew Grant,Apress
6. CodeIgniter for Rapid PHP Application Development - David Upton, packtpub
8. Internet reference for the relevant topics
SARDAR PATEL UNIVERSITY
M.Sc. (IT) Semester – IV

PS04CINT31 : Project Work