Enclosure – II

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous)
Affiliated to Saurashtra University, Rajkot

Department of Computer Science & Information Technology
B. Voc. Applied Computer Technology

For Students Admitted From A.Y. 2017-2018 & Onwards

SEMESTER - III

17VACGC07	Core 6 : Core Java	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Learn the Java programming language: its syntax, idioms, patterns, and styles
2. Understand Inheritance and Polymorphism using Java
3. Understand concept of Exception handling and multiple threading with Java
4. Understand event driven Graphical User Interface (GUI) programming using Java

Unit -1 Java Language Basics (10hrs)

- History and Features of Java
- Java Editions, Java Virtual Machine
- Language Building Blocks of Java
  - Comments, Keywords, Identifiers, Literals, Tokens, White spaces, Separator
- Data Types & Variables, Type Casting, Operators
- Decision Statements (if, switch), Looping Statements (for, while, do..While, foreach), Jumping Statements (break, continue, and return)
- Array, Command Line Argument Array
- Classes and Objects
  - Creating and using Class with members
  - Constructor, Constructor overloading
  - Use of finalize( ) method
  - Method Overloading
  - Static and Non-Static Members, VarArgs.

Unit -2 Packages and Inheritance (10 hrs)

- Normal import and Static Import
- Introduction to Java API Packages and imp. Classes, java.lang Package Classes (Math, Wrapper Classes, String, String Buffer), java.util Package Classes (Scanner, Random, Date, Gregorian Calendar, Vector)
- Creating and Using User Defined package and sub-packages, Universal Class (Object Class)
- Concept of Inheritance
  - Types of Inheritance

    - Access Specifiers (public, private, protected, default, private protected)
    - Constructors in inheritance with super keyword
- Method Overriding,
- Nested and Inner Class, Abstract and final keyword, Use of Interface.

Unit – 3 Exception Handling, Multithreading and Streams (10 hrs)

- Types of Errors, Introduction to exception handling, Keywords: try, catch, finally, throw, throws, Creating user defined Exception
- Multithreading: Thread and its Life Cycle (Thread, States), Thread Class and Runnable interface with its methods
- Stream and its types: Character, Byte, Reading and Writing through Byte Stream Classes, Character Stream Classes, Reading and Writing through java data types.

Unit – 4 Applet with Layouts Manager and AWT components: Applets (10 hrs)

- Introduction to Applet, Applet Life Cycle, Implement & Executing Applet with Parameters, Graphics class
- Layout Manager:FlowLayout, BorderLayout, CardLayout, GridLayout, GridBagLayout, BoxLayout, SprigLayout, GroupLayout, Using NO LAYOUT Manager
- AWT components (Button, Label, Checkbox, CheckboxGroup, Choice, List, TextField, TextArea, Scrollbar)
- AWT Containers: Frame and Panel

Unit – 5 Event Handling and GUI using Swing (10 hrs)

- Concept of Event Handling, Event Delegation Model, Event Packages, AWT Event Package, Event Classes, Listener Interfaces, Concept Adaptor Classes.
- Swing: Introduction to Swing, difference Between AWT and, Swing Components, Swing Container, Swing Event Package

Text Books:

1. *Balaguruswamy,* 1999, **Programming with JAVA A Primer**, McGraw Hill
2. *Naughton & Herbert Schildt,* **JAVA 2: The Complete Reference**, McGraw Hill

Reference Books:

1. *Steven Holzner, 2005,* **JAVA 2 Black Book**, Dreamtech Press
2. *Khalid A. Mughal* , 2009, **A Programmer Guide to JAVA Certification**, Pearson Education
3. *Mitesh P. Mandaliya, Ms.Rupal B. Parekh*, Programming with JAVA, C. Jamnadas & Co.

17VACGC08	Core 7 : Web Development using PHP/MYSQL	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Understand the basic concepts of scripting language and web programming
2. Understand how to implement, dry-run and debug programs.
3. Recognize the benefits of using server side scripting
4. Become equipped to make good choices about model design and use of open source scripting PHP
5. Learn how to build and maintain php websites
6. Understand how to write php scripts and use webserver
7. Understand the concept of client-server architecture

Unit -1 Introduction (10 hrs)

- Introduction of webpages and website
- Static and Dynamic Web
- Client side & Server Side Scripting
- Webserver (IIS & Apache-XAMPP)
- HTTP & HTTPS protocol
- FTP
- Web Hosting, Virtual Host, Multi-Homing
- Distributed Web Server Overview,
- Document Root
- Introduction to PHP
- PHP configuration in IIS & Apache Web server
- Understanding of PHP.INI file
- Understanding of PHP.ht access file
- PHP Variable
    - Static & global variable
- GET , POST & REQUEST method
- PHP Operator
- Conditional Structure & Looping Structure

Unit -2 Array and Function (10 hrs)

- Array
- User Defined Functions:
    - argument function
    - default argument
    - variable function
    - return function
- Variable Length Argument Function
    - func_num_args
    - func_get_arg,

- func_get_args
- Variable Function
  - Gettype, settype, isset, unset,empty, strval, floatval, intval, print_r
- String Function
  - Chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim trim, substr, strcmp, strops, strrpos, strstr, str_replace, strrev, echo, print, explode(), implode(), md5(), substr_compare(), substr_count(), ucfirst(), ucwords()
- Math Function
  - Abs, ceil, floor, round, fmod, min,
  - max, pow, sqrt, rand, cos(),
  - acos(), sin(), asin(), tan(), atan(),
  - dechex(), is_finite(), is_infinite(),
- Date Function
  - Date, getdate, setdate
  - Checkdate, time, mktime
  - date_add(), date_create()
  - date_format(), gmdate()
  - localtime(), strftime(), strptime(), strtotime()
- Miscellaneous Function
  - define, constant, include,
  - require, header, die, exit, GD Library

Unit – 3 Handling Form and Files & Session tracking (10 hrs)

- Handling form with GET, POST & REQUEST
- Array Function
  - Count, list, in_array, current,
  - next, previous, end, each, sort,
  - rsort, assort, arsort, array_merge,
  - array_reverse, array_diff(),
  - array_merge_recursive(),
  - array_shift(), array_slice(),
  - array_unique(), array_unshift(),
  - array_keys(), array_key_exists(),
  - array_push(), array_pop(),array_multisort(),array_search()
- Cookies
- Session
- Server variables
- PHP Regular expression.
- PHP file Uploading
- File handling Function
  - fopen, fread, fwrite, fclose,
  - file_exists, is_readable,
  - is_writable, fgets, fgetc, file,
  - file_get_contents, fputcsv, fputs,
  - file_putcontents, ftell, fseek,

    - rewind, copy, unlink, rename,
- Sending mail using mail() using php mailer

Unit – 4 Interacting with MySQLi **(10 hrs)**

- Working with MySQLi using PhpMyAdmin
- PHP-MySQLi Connectivity and Debug functions
    - mysqli_connect(), mysqli_set_charset()
    - mysqli_character_set_name(), mysqli_select_db()
    - mysqli_close(), mysqli_errno()
    - mysqli_error_list(), mysqli_error()
    - mysqli_connect_errno(), mysqli_connect_error()
    - mysqli_get_charset(), mysqli_get_client_info()
    - mysqli_get_client_version(), mysqli_get_host_info()
    - mysqli_get_server_info(), mysqli_get_server_version() ,
    - mysqli_debug()

Unit – 5 PHP-MySQLi Functions **(10 hrs)**

- mysqli_affected_rows(), mysqli_autocommit()
- mysqli_commit(), mysqli_data_seek()
- mysqli_fetch_all(), mysqli_fetch_array()
- mysqli_fetch_assoc(), mysqli_fetch_fields()
- mysqli_fetch_object(), mysqli_fetch_row()
- mysqli_field_count(), mysqli_field_seek()
- mysqli_free_result(), mysqli_insert_id()
- mysqli_kill(), mysqli_multi_query()
- mysqli_num_fields(), mysqli_num_rows()
- mysqli_query(), mysqli_real_escape_string(),mysqli_rollback()

Text Books

1. *Ivan Bayross,* **SQL, PL/SQL the programming Language of Oracle**, BPB Publications
2. *Michael Lee, Gentry Bieker*, **Mastering SQL Server 2008**, Sybex

Reference Books

1. *Israel*, **Sql Server 2000 Design Study Guide**, BPB Publication

17VACGC09	Core 8: RDBMS using Oracle	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Understand the basic concept of database
2. Building Entity Relationship Diagrams (ERDs) and mapping ERDs
3. Manipulate data in tables and create database objects
4. Analyze complex business scenarios, design and create databases using SQL
5. Create PL/SQL blocks of application code that can be shared by multiple forms, reports and data management applications
6. Describe stored procedures and functions
7. Explore the differences between SQL and PL/SQL and explore how PL/SQL is used to extend and automate SQL in administering the Oracle database

Unit -1 Overview of DBMS, RDBMS and Understanding SQL (10 hrs)

- Introduction to DBMS, RDBMS Concept
- Importance of E.R Diagram in Relational DBMS
- Normalization
- Introduction to SQL
- SQL Datatypes
- Introduction to SQL*PLUS and its formatting commands
- Creating , Altering & Dropping Table Structures

Unit -2 Managing Table and Accessing Data (10 hrs)

- Data Manipulation Commands like Insert, Update, Delete
- SELECT statement with WHERE, GROUP BY and HAVING, ORDER BY, DISTINCT,
- Special operator like IN, ANY, ALL, BETWEEN, LIKE, IS NULL
- JOINS (Inner join ,outer join, self join)
- Subquery (Single row subquery, multiple row subquery)
- Built in Functions
    - Numeric Function
      Abs, ceil, decode, floor, round, mod, sqrt
    - Character Function
      chr, concat, initcap, lower, upper, lpad, rpad, ltrim, replace, rtrim, substr, instr, trim
    - Date Function
      last_day, months_between, next_day, sysdate, systimestamp, to_date, to_char, to_number
    - Aggregate functions
      SUM, COUNT, AVG, MAX, MIN

Unit – 3 Understanding other SQL Objects, Data & Transactional Control Commands, and Concurrency Control using LOCKs (10 hrs)

- Other Database Objects:
    - View, Sequence, Synonym, Database Link, Index
- Grant, Revoke command
- Understanding Transaction and its commands: Commit, Rollback, Savepoint
- Understanding Locking Mechanism

Unit – 4 PL/SQL (10 hrs)

- PL/SQL Block Structure
- Control Structures:
    - Conditional Statement
    - Looping Statement
    - Sequential Statement
- %TYPE and %ROWTYPE
- Using Cursor(Implicit, Explicit)
- Exception Handling
- Creating and Using Procedure, Function
- Package
- Triggers
- Composite Data Types:
    - PL/SQL Tables, Nested Tables, Varrays

Unit – 5 Oracle Architecture, Backup & Recovery (10 hrs)

- Oracle Architecture
    - Physical Database Structure
    - Instance/Memory Architecture
    - Background Database Processes
- Creating & Altering Database
- Opening & shutdown Database
- Overview of Tablespace
- Oracle Blocks, Extent, Segments
- Import, Export
- SQL*Loader, NET8
- Overview of Backup & Recovery

Text Books

3. *Ivan Bayross,* **SQL, PL/SQL the programming Language of Oracle**, BPB Publications
4. *George Koch, Kevin Loney,* **Oracle 10g the Complete Reference**, Oracle Press and Tata MacGraw-Hill

Reference Books

2. *P.S. Deshpande*, 2006, **SQL and PL/SQL for Oracle 10g Black Book**, Dreamtech Press
1. *Ms. Falguni I. Parsana*, **RDBMS Using Oracle,** Bharat & Company, [ISBN : 978-93-81786-38-3]

17VACSC07	Core Skill 7 : Core Java Practical	6 hrs/wk	6 Credits

- Practical based on JAVA

17VACSC08	Core Skill 8: Web Development using PHP/MYSQL Practical	4 hrs/wk	4 Credits

- Practical based on PHP

17VACSC09	Core Skill 9: RDBMS using Oracle Practical	4 hrs/wk	4 Credits

- Practical based on Oracle

17VACSC10	Core Skill 10 : Basic Animation using Flash Practical	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Understand the Flash development environment
2. Open, Create, Play, and Save a movie
3. Work with Flash drawing tools, objects and layers
4. Create symbols, instances for the symbols, and apply simple action scripts
5. Create animations.

Unit -1 Flash Environment **(10 hrs)**

- Flash Interface
- Menu Bar
- Timeline
- Layers
- Work Area
- Views or Zooms
- Panels

Unit -2 Text, Sound, Symbols, Graphics & Vector **(10 hrs)**

- Properties of the Texts
- Text Effects
- Importing Sounds
- Sound Properties
- Inserting a Sound
- The Libraries
- Graphics types
- What are the Symbols

- How to create symbols
- Symbol Effects : Filters & Blends
- Creating graphics and its properties
- Exporting a Flash object as bitmap

Unit – 3 Working Layers with Objects **(10 hrs)**

- Working with Layers
- Layer Type
- The Objects Initiation
- Object Property and Selection
- Info Panel Groups

Unit – 4 Animation and File Types **(10 hrs)**

- What is Animation?
- Type of Animation
    - Frame by Frame Animation
    - Motion Tween Animation
    - Shape Tween
- How to run Animation File?
    - Scrubbing
    - Playing
    - Test Movie
- Animated Masks and Filters
- Effect of Animation
    - Brightness
    - Tint
    - Alpha
- Advanced Animation Techniques
- Publishing Animation
- Animation File Types
    - Bitmaps in Flash
    - Video
    - Web Page in Flash
- Movie Clip properties
- Creating a new Movie Clip
- Importing and Exporting Movie Clips

Unit – 5 Action Script **(10 hrs)**

- What is Action Script?
    - Button
- Creating a Buttons Shapes
- Text Buttons
- Including Clip in a Button
- Bitmaps and buttons
- Actions in Buttons

- Including a sound in a Button
  - Actions Panel
  - Operators
  - Actions Objects
  - Properties

Text Books

1. Anderson, A., & Johnson, S. (2005). *Macromedia Flash 8 on demand*. Que Corp..
2. Phillip Kerman. (2007), *Sams Teach Yourself Macromedia Flash 8 in 24 Hours*, Sams Publishing

Reference Books

1. Finkelstein, E., & Leete, G. (2005). *Macromedia Flash 8 for Dummies*. John Wiley & Sons.

Web References

1. http://www.teacherclick.com/flash8

SEMESTER – IV

17VACGC10	Core 9 : MVC Design Pattern in PHP	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Demonstrate the use of the CodeIgniter MVC Framework.
2. Design & develop MVC based application.
3. Be able to design, write, compile, execute and test Web Application in MVC framework.
4. Understand current trends of application development using php platform

Unit -1 PHP with OOP and Introduction to CodeIgniter (10 hrs)

- Object, classes, Creating classes and Instantiation, Setting Properties and methods
- Understanding public, private, protected properties and methods
- Magic Methods in OOP and Inheritance.
- Introduction of MVC.
- CodeIgniter URLs.
- CodeIgniter specific files and structure.
- Initial Setup and Configuration.
- First CI Application.

Unit -2 Working With Libraries (10 hrs)

- What is library in codeignter? Why library?
- Benchmarking Class
- Input(form validation) and Security Class
- Email Class
- File Uploading Class
- Image Manipulation Library
- Session Class

Unit – 3 Working with Helper Functions (10 hrs)

- Date Helper, Email Helper
- Directory helper, Form Helper
- Security helper, Url Helper
- HTML helper

Unit – 4 Form Validation and Database Interaction (10 hrs)

- Reasons for validating a form
- Using the Form Validation Library
- Saving sets of validation rules to config file
- Using callbacks
- Database interaction
- Performing simple queries
- Returning values
- Result helper functions
- Active Record and Active Record caching
- Method chaining
- Manipulating databases

Unit – 5 User Authentication and Modular Extensions - HMVC (10 hrs)

- An application to implement authentication with database connectivity.
- HMVC introduction
- Key advantages to implementing the HMVC pattern
- Setting up HMVC in CodeIgniter

Text Books

1. *Adam Griffiths*, **CodeIgniter 3.1 Professional Development**, Packt Publications
2. *Rob Foster*, **CodeIgniter 3 Cookbook**, Packt Publishing

Reference Books

1. *Thomas Myer*, **Professional Codeigniter**, Wrox Publication

17VACGC11	Core 10 : Advanced Web Designing (JQuery, CSS framework, AJAX, Responsive Layout)	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Read and write HTML5 and CSS3 pages
2. Understand the basics of computer programming languages using JavaScript and JQuery
3. Understand current trends of application development using PHP platform
4. Apply jQuery, HTML5, and Bootstrap CSS effectively to create interactive and dynamic websites

Unit -1 introduction to jQuery and jQuery Basic (10 hrs)

- Overview of jQuery, purpose of JQuery , install and syntax
- Identifying DOM elements, Constructing jQuery Selectors The element Selector, The #id Selector, The .class Selector.
- Binding event handlers, Removing event handlers, User Interface/ Mouse events, Event Manipulation, Methods, $(document).ready(),click(), blclick(), mouseenter(), mouseleave(), mousedown(), mouseup(), hover(), focus(), blur()

Unit -2 Working with jQuery (10 hrs)

- jQuery Hide/Show, jQuery Fade, jQuery Slide, jQuery Animate, jQuery stop(), j Query Callback, jQuery Chaining. jQuery HTML
- jQuery Get, jQuery Set, jQuery Add, jQuery Remove, jQuery CSS Classes, jQuery css().jQuery and AJAX calls Using the ajax() API, Ajax events, Loading data with GET & POST, Working with JSON data

Unit -3 jQuery with AJAX and PHP (10 hrs)

- What is AJAX. PHP with AJAX
- How AJAX Works with PHP, $.ajax(), $.get(), $.post() functions
- Working With Ajax as Background Process
- jQuery AJAX Methods.

Unit – 4 Bootstrap Overview and Bootstrap css component (10 hrs)

- What is Twitter Bootstrap? Why use Bootstrap?
- What Bootstrap Package Includes? Bootstrap Environment Setup Download Bootstrap
- File structure
- PRECOMPILED BOOTSTRAP
- HTML Template and HTML5 doctype Mobile First Responsive images
- Typography and links, Normalize Containers
- Bootstrap Typography Headings and Lead Body Copy Emphasis
- Abbreviations, Abbreviations, Abbreviations, Lists
- Button Tags, Button Size, Button State Basic Button Group, Button Toolbar, Button Size, Nesting.
- Default navbar, Responsive navbar

Unit – 5 Bootstrap Grid System and Bootstrap Tables (10 hrs)

- What is a Grid? What is Bootstrap Grid System? Mobile first strategy Working of Bootstrap Grid System Media Queries Grid options Bootstrap Grid System Example: Stacked-to- horizontal, Medium and Large Device, Mobile, Tablet, Desktops
- Basic table, striped table Bordered table, hover table, condensed table Form Layout Vertical and basic forms, Form Control Sizing Supported Form Controls like inputs, textarea, checkboxes and radios Static control, Form Control States, input focus, disabled inputs, validation state

Text Books

1. J*ake Spurlock*, **Bootstrap - Responsive Web Development**, O'Reilly Media
2. *Jonathan Chaffer, Karl Swedberg***, jQuery Reference Guide**, Packt Publishing

17VACGC12	Core 11: System Analysis & Design	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Understand Importance of each phase in System Development Life Cycle.
2. Understand Importance of Software development Paradigm (Models).
3. Understand Techniques of Software Testing.

Unit -1 System Study and System Development Life Cycle (10 hrs)

- System, System Types, System Characteristics, System Study, System Approach, Elements of System Analysis, Role and Attribute of System Analyst, Program Analyst, Designer, Information Analyst, Computer Based Information System. Why System Projects?
- System Development Life Cycle
    - Understanding Activities of Each Phase
    - Outcome and Deliverable with Document name of each phase
- Object Oriented Concepts, Identifying elements for Object Model and understanding needs of UML and Designing charts (Class, User Case and Activity) based on it.

Unit -2 Introduction of Software Engineering and Software Development Models (10 hrs)

- Software Engineering: A Layered Technology.
- Software Process and Software Process Models.
    - Waterfall Model
    - Iterative Model
    - V-Model
    - Spiral Model
    - Big Bang Model
    - Prototyping Model
    - Object Oriented Paradigm & Process sequence for an OO project

Unit -3 Software Quality Assurance and Computers Aided Software Engineering Tools in Project Management.(CASE tools) (10 hrs)

- Drawing Data Flow Diagram using MS Visio.
- User Interface Flow Diagram.
- Concept of Project Estimation using Function Point and LOC based Metrics, Project Economics.
- Project Scheduling and Tracking by Timeline chart and PERT chart in MS Project. CPM.
- Role of ISO and Six Sigma for Quality Assurance.

Unit – 4 Software Testing and Test Automation (10 hrs)

- Introduction to Software Testing. Software fault and failure.
- Testing artifacts, static and dynamic testing, testing levels and techniques.

- Introduction to Automated Testing using software testing tools: Win Runner, Load Runner, Quick Test Professional or any open source software testing tool. Concept of Freeware, Shareware, License tool and open source.

Unit – 5 Case Study according to SDLC (10 hrs)

- Student has to prepare synopsis according to information engineering section of water fall model (Phase: 1, 2, and 3 of SDLC).
- Get approval of your Subject Teacher for your work.

Text Books

1. Doshi, P. D., *SAD, Software Quality Assurance and Testing*, Bharat & Co. [ISBN No. :978-93-81786-36-9]
2. Pressman, R. S. (2005). *Software engineering: a practitioner's approach*, Palgrave Macmillan

Reference books:

1. Senn, J. A. (1990). *Analysis and design of information systems*. McGraw-Hill, Inc..
2. Mall, R. (2014). *Fundamentals of software engineering*. PHI Learning Pvt. Ltd..
3. Roff, J. T., Illustrator-Mueller, M., & Illustrator-Lytle, M. (2002). *UML: A beginner's guide.* McGraw-Hill, Inc..

17VACSC11	**Core Skill 11 : MVC Design Pattern in PHP**	**6 hrs/wk**	**6 Credits**

- Practical based on Advanced PHP and CodeIgniter

17VACSC12	**Core Skill 12 : Advanced Web Designing (JQuery, CSS framework, AJAX, Responsive Layout) Practical**	**6 hrs/wk**	**6 Credits**

- Practical based on JQuery, CSS framework, AJAX and Responsive Layout

17VACSC13	**Core Skill 13: Skill Training / IDP- Industry/Institute Defined Project**	**6 hrs/wk**	**6 Credits**

SEMESTER – V

17VACGC13	Core 12 : Programming with C#.NET	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Understand the .NET Framework
2. Understand the foundation of C# programming
3. Understand of OOP in C#.NET
4. Understand different application of ADO.NET
5. Design Crystal Reports and Create Setup of C# Application

Unit -1 .NET Framework **(10 hrs)**

- Introduction to .NET Framework Features / Advantages
- MS .NET Architecture
- Types of Projects in IDE (Console, Windows, Web, Setup, etc.)
- Components of the .NET Architecture:
    - Common Language Runtime
    - Common Type System
    - Common Language Specification
    - Base Class Library
    - CTS and CLS BCL / FCL CLR,JIT Compiler
    - Microsoft Intermediate Language
    - Managed/Unmanaged Code
    - Garbage Collection
    - Assembly
    - Namespaces

Unit -2 C# Basics **(10 hrs)**

- Basic Variables, Declaring Variables
- Data types in C#
- Creation of C#
- First simple Program
- Compilation and Execution
- Type Conversion and casting, Boxing and Unboxing
- Operators in C#
- Decision Making Statements (If-else, Switch)
- Looping (For, While, Do-while, For-each)
- Jumping statement(Break, Continue, Goto)
- Structure, Enumeration
- Arrays(One Dimensional, Rectangular, Jagged)
- Exception Handling

Unit – 3 Basic OOP concepts using C# (10 hrs)

- Classes and Objects, Encapsulation and Polymorphism
- Access modifiers
- Methods and it's parameters (with "ref" and "out" parameters)
- Method Overloading, Overriding Methods
- Inheritance
- Sealed Class, Abstract Class and Interface
- Properties and Indexer

Unit – 4 Working With GUI (10 hrs)

- Different components (windows) of IDE
- Working with Forms Class
    - Loading, showing and hiding forms, Controlling One form within another, MDI Form.
- Message Box class with all types of Show () method
- Windows Form Controls.
- Standard Controls:
    - Textbox, Label, Button, List box
    - Combo box, Checkbox, Picture Box
    - Radio Button, Panel, Scroll-bar
    - Timer, Datetimepicker, Notify Icon
    - Image List, Link Label, List View
    - Tree View, Toolbar, Status Bar
    - OpenFileDialog, SaveFileDialog
    - Font Dialog, Color Dialog, Print Dialog
- Designing Menu's: Context Menu, Menu Strip, Status Strip, Tool Strip
- Adding Third Party Control in Toolbox

Unit – 5 Database Programming with ADO.NET (10 hrs)

- ADO.NET Architecture
- Connected and Disconnected Architecture
- Connected Architecture
    - Command
    - Data Reader
- Disconnected Architecture
    - Data Adapter
    - Dataset
    - Data Table
    - Data Row
    - Data Column
    - Data Relation
    - Data View
- Data Binding
- Grid View Programming
- Creating Crystal Reports

Text Books

3. *Steven Holzner*, **C#.NET Programming Black Book**, Dreamtech publications
4. *Rebecca M. Riordan,* **Microsoft ADO. Net**, Microsoft Press

Reference Books

1. **Introduction to .NET framework**, Wrox publication
2. **Programming with C#.net**, C. Jamnadas & Co. [ISBN : 978-93-81072-64-6]

17VACGC14	Core 13: Administration of SQL Server	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Build and manage SQL Server databases
2. Retrieve and manipulate data with SQL queries
3. Back up and recover data
4. Secure and monitor databases
5. Replicate data over multiple servers with merge replication

Unit -1 1 Introduction of SQL Server **(10 hrs)**

- Introduction to DBMS
- Introduction to RDBMS
- Normalization and database designing
- Introduction to SQL
- Features of SQL server
- SQL Server Edition
- Shrinking and growing Database
- Active & Passive Cluster configuration

Unit -2 Managing Table and Accessing Data **(10 hrs)**

- SQL Commands and Datatypes
- Database
    - Create Database
- Table
    - Create, Alter & Dropping tables
- Data Manipulation Commands
    - Insert, Update, Delete
- Different type of constraints
    - Primary key, Foreign key, Check
- SELECT statement with
    - WHERE, Special operator like IN, BETWEEN, LIKE
- Join (join of two tables)
- Functions
- Triggers
- Index
- Backup and Restore

Unit – 3 Roles of DBA & Database Developers **(10 hrs)**

- Production DBA
- Development DBA
- Architect DBA
- ETL DBA
- OLAP DBA

- Basic Duties of DBA
    - Creating & Manage Users
- Basic knowledge of DBCC Commands
- What is Index?
- Types of Index

Unit – 4 Fundamentals of Backup and Restore (10 hrs)

- Backup Fundamentals
- Requirement of Backup
- Types of Backup
- Recovery Models
- What is Restore?
- What is Recovery?
- Restoring Database from Backup
- RAID
- SAN

Unit – 5 Transaction, Locking mechanism and High Availability of Server (10 hrs)

- What is Transaction?
- ACID Properties
- Isolation Levels
- Fundamentals of Locks
    - Row, Page & Table level Locks
- Disaster Recovery
- Failover Clustering
- Log Shipping
- What is replication
- Types of Replication

Text Books

5. *Ivan Bayross,* **SQL, PL/SQL the programming Language of Oracle**, BPB Publications
6. *Michael Lee, Gentry Bieker*, **Mastering SQL Server 2008**, Sybex

Reference Books

3. *Israel*, **Sql Server 2000 Design Study Guide**, BPB Publication

17VACGC15	Core 14: Mobile Computing with Android	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Understand fundamental of Android Operating System
2. Design and Develop Android Mobile Application.
3. Understand of SQLite and Connectivity with it.
4. Understand Location Based Service & Notifications in android.
5. Developing web service and retrieving data using JSON
6. Packaging and distributing android application

Unit -1 Introduction to Android & Android Application Design (10 hrs)

- The Open Handset Alliance
- The Android Platform
- Overview of Android IDE
- Android SDK
- Building a sample Android application
- Anatomy of an Android applications
- Android terminologies
- Application Context, Activities, Services, Intents, Broadcast Receiver
- Android Manifest File, Permissions and its common settings
- Working with different types of resources

Unit -2 Android User Interface Design (10 hrs)

- Overview of User Interface in Android
- Widget of Android (TextView, EditText, AutoCompleteTextView, Button, ImageButton, CheckBox, ToggleButton, RadioButton, RadioGroup, ProgressBar, Spinner, TimePicker, DatePicker)
- Android Layouts (Relative Layout, Linear Layout, Table Layout, Frame Layout, Absolute Layout)

Unit – 3 Data Storage & SQLite Connectivity (10 hrs)

- Types of Storage in Android
- Using Android Data and Storage APIs
- Managing data using SQLite
- Sharing Data Between Applications with Content Providers

Unit – 4 API, Location Based Services (LBS) & Notifications (10 hrs)

- Networking API, Web API, Telephony API
- Using Global Positioning Services (GPS)
- Geo-coding Locations
- Mapping Locations
- Many more with location based services
- Notifying the user

- Notifying with the status bar
- Vibrating the phone
- Blinking the lights
- Customizing the notifications

Unit – 5 Web Service And Deployment of applications (10 hrs)

- Overview of Web Services
- Restful web service using PHP & MySQL
- JSON Parsing
- Publish android application

Text Books

1. Advanced Android Application Development – *Joseph Annuzzi, Lauren darcey, Shane Conder – by Addision – Wesley.*
2. Android cookbook - *Ian F. Darwin Oreilly*
3. *Jay A Kreibich,* 2010,**Using SQLite** , O'Reilly

Reference Books

1. *Reto Meier,*2010,**Professional Android 2 Application Development**, Wiley
2. The Android Developer's CookBook – Building Application with Android SDK – **2nd Edition**, *by Addision – Wesley.*
3. **Mobile Computing using Android,** Bharat & Company

17VACSC14	**Core Skill 14: Programming with C#.NET Practical**	**4 hrs/wk**	**4 Credits**

- Practical based on C#.NET

17VACSC15	**Core Skill 15: Administration of SQL Server Practical**	**4 hrs/wk**	**4 Credits**

- Practical based on Administration of SQL Server

17VACSC16	**Core Skill 16: Mobile Computing with Android Practical**	**4 hrs/wk**	**4 Credits**

- Practical based on Mobile Computing with Android

17VACSC17	**Core Skill 17: Skill Training / IDP (Industry/Institute Defined Project)**	**6 hrs/wk**	**6 Credits**

SEMESTER – IV

17VACGC16	Core 15 : Web Programming with ASP.NET	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Design & develop web based applications.
2. Understand .NET framework.
3. Understand ASP.NET Controls

Unit -1 Overview of the ASP.NET, Framework & Coding Standards (10 hrs)

- Introduction of different Web Technology
- What is Asp.Net
- How Asp.Net Works
- Use of visual studio
- Different Languages used in Asp.Net.
- NET Framework Class Library.
- Overview of coding standards follows during programming
- Creating master pages
- Creating default contents
- Nesting master pages
- Registering master pages in web configuration

Unit -2 ASP.NET Standard Controls, Rich Controls & Navigation Controls (10 hrs)

- Label Controls
- Literal Controls
- Bulleted List
- Textbox controls
- RadioButton and RadioButtonList Controls
- CheckBox and CheckBoxList Controls
- Button controls
- LinkButton Control
- ImageButton Control
- Using Hyperlink Control
- DropDownList
- ListBox
- Image Control
- Image Map Control
- Using Panel Control
- Using Hyperlink Control
- Understanding Site Maps
- Using the Sitemap Path Control

- Formatting the Sitemap Path Control
- Using the Menu Control
- Using Tree View Control
- FileUpload Control
- Calendar Control
- Adrotator Control

Unit -3 ASP.NET Validation Controls & State Management (10 hrs)

- Required Field Validator Control
- Regular Expression Validator Control
- Compare Field Validator Control
- Range Validator Control
- Validation Summary Control
- Custom Validator Control
- State Management

Unit - 4 ADO.NET & Database (10 hrs)

- Creating database connections
- Ado.NET Architecture
- Grid View Control
- Repeater Control
- Data List Controls
- Details View Controls
- Form View Controls

Unit -5 Web service, Configuration & Deployment (10 hrs)

- Overview of XML
- Creating /Reading/Deleting XML Files
- Web Services
- Introduction to Web.config & Global.asax
- Tracing
- Authentication
- Authorization
- Custom Error handling
- Deploying Application on Web Server

Text Books

1. *ASP.NET 4 Unleashed,* 2010, **ASP.NET 4 Unleashed,** Sams Publishing
2. *Ramesh Bangia,* 2012, **Learning ASP.Net and C#.Net,** Khanna Book Publishing

Reference Books

1. *Matthew Macdonald,* 2017, **ASP.NET-The Complete Reference,** McGraw Hill Education

17VACGC17	Core 16 : Search Engine Optimization	4 hrs/wk	4 Credits

Objectives:

To enable the students to understand

1. Basics of search engine
2. How to determine SEO objectives?
3. What kind of problems SEO faces?
4. Which elements affect SEO planning?
5. Keyword research
6. Points to be kept in mind while developing a website to make it - SEO friendly
7. How to optimize vertical search

Unit - 1 Search Engine Basics: Reflecting Consciousness and connecting Commerce (10 hrs)

- The Mission of Search Engines
- The Market Share of Search Engines
- The Human Goals of Searching
- Determining Searcher Intent: A Challenge for Both
- Marketers and Search Engines
- How People Search?
- How Search Engines Drive Commerce on the Web?
- Eye Tracking: How Users Scan Results Pages?
- Click Tracking: How Users Click on Results? Natural
- Versus Paid
- Understanding Search Engine Results
- Algorithm-Based Ranking Systems: Crawling, Indexing,
- and Ranking
- Determining Searcher Intent and Delivering Relevant
- Fresh Content
- Analyzing Ranking Factors
- Using Advanced Search Techniques
- Vertical Search Engines
- Country-Specific Search Engines

Unit - 2 Determining SEO Objectives and Defining Site's Audience (10 hrs)

- Setting SEO Goals and Objectives
- Developing an SEO Plan Prior to Site Development
- Understanding Audience and Finding Niche
- SEO for Raw Traffic
- SEO for E-Commerce Sales
- SEO for Mindshare/Branding
- SEO for Lead Generation and Direct Marketing
- SEO for Reputation Management
- SEO for Ideological Influence

Unit - 3 First Stages of SEO and Keyword Research **(10 hrs)**

- The Major Elements of Planning
- Identifying the Site Development Process and Players
- Defining Site's Information Architecture
- Auditing an Existing Site to Identify SEO Problems
- Identifying Current Server Statistics Software and
- Gaining Access
- Determining Top Competitors
- Assessing Historical Progress
- Benchmarking Current Indexing Status
- Benchmarking Current Rankings
- Benchmarking Current Traffic Sources and Volume
- Leveraging Business Assets for SEO
- Combining Business Assets and Historical Data to
- Conduct SEO/Website SWOT Analysis
- The Theory Behind Keyword Research
- Traditional Approaches: Domain Expertise
- Site Content Analysis
- Keyword Research Tools
- Determining Keyword Value/Potential ROI, Leveraging
- the Long Tail of Keyword Demand, Trending,
- Seasonality, and Seasonal Fluctuations in Keyword demand

Unit - 4 Developing an SEO-Friendly Website **(10 hrs)**

- Making Site Accessible to Search Engines
- Creating an Optimal Information Architecture
- Root Domains, Subdomains, and Microsites
- Optimization of Domain Names/URLs
- Keyword Targeting
- Content Optimization
- Duplicate Content Issues Controlling Content with
- Cookies and Session IDs
- Content Delivery and Search Spider Control
- Redirects, Content Management System (CMS) Issues
- Optimizing Flash
- Best Practices for Multilanguage/Country Targeting

Unit - 5 Optimizing for Vertical Search **(10 hrs)**

- The Opportunities in Vertical Search
- Optimizing for Local Search
- Optimizing for Image Search
- Optimizing for Product Search
- Optimizing for News, Blog, and Feed Search
- Others: Mobile, Video/Multimedia Search

Text Books

1. *Eric Enge, Stephan Spencer, Rand Fishkin, Jessie C Stricchiola,* 2009 **, The Art of SEO : Mastering Search Engine Optimization,** O'Reilly Media
2. *Jerri L. Ledford,* 2009, **SEO: Search Engine Optimization Bible [2nd Edition],** Wiley India

Reference Books

1. *John I Jerkovic,* 2009, **SEO Warrior: Essential Techniques for Increasing Web Visibility**, O'Reilly Media

17VACGC18	Core 17: Mobile Computing with IOS	4 hrs/wk	4 Credits

Objectives:

To enable the students to

1. Understand the language and syntax of Objective-C as well as some basic programming concepts
2. Understand Object Oriented Programming using Objective C and learn the concept of iOS mobile development
3. Learn iOS architecture frame work and IDE XCode
4. Design Android UI Layout and Develop event driven programs in iOS
5. Develop an Application using View Controller, Data Persistence, GPS, Notification, Localization, SQLite Database and it's operations
6. Demonstrate to deployment of applications and Publish iOS application in AppStore

Unit -1 Introduction and Application Development Fundamentals (10 hrs)

- Overview of Mobile Computing (iOS)
- Specifics of mobile devices
- Programming fundamentals including computer programs, languages, compilers
- iOS Software Development Kit (SDK) and Cocoa Touch Architecture.
- Using the iOS tools -Xcode and Interface Builder to create apps
- Testing apps in the iOS Simulator
- What is Objective-C?
- What is Swift?
- What is new in iOS 9?
- Creating a great user interface
- Designing the user interface with wireframes, and in Interface
- Building System provided buttons and icons
- Model-View-Controller (MVC) paradigm

Unit -2 Handling Basic Interaction & Objective-C for Experienced Programmers (10 hrs)

- Data Types NSInteger NSNumber Operators Loop
- Intro to .H and .M Files
- Inheritance, Method Overloading Mutable and Immutable Strings, Mutable and Immutable Arrays
- Collections to hold data such as NSArray and NSMutableArray
- Objective-C
    - Classes, Objects, and Methods
    - Declared Properties, Memory Management, Automatic Reference Counting (ARC)
    - Categories and Extensions
    - Formal and Informal Protocols
    - Blocks

Unit – 3 User interface, Control & Single/Multi-touch Gesture (10 hrs)

- The View Hierarchy
- Containers
- Controls
- Gestures Controllers
- Text and Web Views
- View Autosizing
- Views (Alertview, Table Views, Picker, Date and Time, Image)
- Navigation Based Application Development
- Static and Dynamic Table Views
- Delegates and DataSources
- Table View Styles
- Custom Cells
- The Responder Chain
- Touch Notification Methods
- Enabling Multi-touch on the View
- Gesture Motions
- Gesture Recognizers

Unit – 4 Application Settings and Data Persistence (10 hrs)

- Exploring your file system
- Reading Data from file
- Creating and deleting files and directories
- Writing data to files
- iCloud
- Key-Value Data
- Archiving
- Working with Data
    - SQLite Integration
    - Using SQLite Directly
    - Overview of Core Data
    - Managed Objects
    - Persistent Store Coordinator Entity Descriptions
    - Retrieving and Modifying Data

Unit – 5 Core Location, Notifications, Localization & Application Deployment (10 hrs)

- CORE LOCATION
    - Using the Location Manager
    - Setting the desired accuracy Setting the distance filter
- NOTIFICATION
    - Local Notifications
    - Push Notifications
- LOCALIZATION
    - Resources
    - Language and Region
    - NSLocale
    - Text
    - Dates

    - Numbers
- APPLICATION DEPLOYMENT
    - What is Certificate?
    - How to make certificate?
    - How to implement certificate in our app?
    - How to Upload App in AppStore?

Text Books

1. *David Mark, Jack Nutting, Jeff LaMarche*, **Beginning iOS 5 Development: Exploring the iOS SDK**, APress
2. *Stephen G. Kochan*, Programming in Objective-C [5th Edition] (Developer's Library)
3. *David Mark, Jack Nutting, Jeff LaMarche*, **Beginning iOS 6 Development: Exploring the iOS SDK**, APress

Reference Books

1. iPhone OS Technology Overview, Apple Computer
2. The Objective-C 2.0 Programming Language, Apple Computer
3. Web reference : http://developer.apple.com

17VACSC18	Core Skill 18 : Web Programming with ASP.NET Practical	4 hrs/wk	04 Credits

- Practical based on ASP.NET

17VACSC19	Core Skill 19 : Graphics and Multimedia Practical	4 hrs/wk	04 Credits

Objectives:

To enable the students to

1. Apply foundation concepts in non-linear video modification, film direction, and digital sound editing.
2. Develop a basic proficiency with the tools and techniques available in standard digital video editing programs.
3. Understand video formats and principles
4. Understand the fundamental concepts of digital video
5. Perform video editing on a basic level and be able to do professional style color correction.
6. Apply basic techniques for mixing a soundtrack incorporating the human voice, ambient noise, sound effects, and music

Unit -1 Introduction and Basic Media Manipulation in Sony Vegas (05 hrs)

- Video File Formats
- Different video file formats
- Video frame size, video frame per second, video quality

- Video merge, split, zoom, crop, croma key,
- Picture in picture, video transparency, slide show,
- Time duration, video speed, slow motion, split by scene
- Multiple video layers and audio layers.

Unit -2 Adding Special Effects & Audio (15 hrs)

- Effects in video
    - Video transition, video filters, white balance, watermark, Special effects, Adding Text
- Adding Audio
    - Multiple audio layers, audio disable/enable, audio composition, audio effect, crop, merge, split
- Video Rendering

Unit - 3 Introduction with Basic Animation in After Effect (05 hrs)

- Understanding the Default Workspace
- Importing Media
- Creating a New Composition
- Parenting Layers
- Adding Motion Blur

Unit - 4 Working with Objects & Effects (15 hrs)

- Working with Masks
    - Basic Masks, Animating Masks,
    - Creating Free Form Masks,
    - Animating Mask Vertices,
    - Creating Track Mattes
    - Creating Chroma Keys
- Working with Text
    - Creating Text Layers, Animating Text Properties, Saving Custom Text Animation Presets
    - Working with the Existing Text Animation Presets
    - Creating Text on a Path
- Working with Audio
    - Adding Audio Files to the Timeline, Animating Audio Levels

Unit -5 Advanced Animation Techniques (10 hrs)

- Saving Animation Presets
- Using Motion Sketch to Capture Motion,
- Adding Easing to Key Frames,
- Using the Graph Editor
- After Effects Projects
    - Rendering Video Files
    - Adjusting Render Setting

Reference Books

1. Duncan Wood, **Sony Vegas Pro 11 Beginner's Guide**, Paperback
2. Adobe Creative Team,, **Adobe After Effects CS6 Classroom in a Book**, Paperback
3. Christiansen, **Adobe After Effects CS6 Visual Effects and Compositing**, Paperback

17VACSC20	**Core Skill 20 : Mobile Computing with IOS Practical**	**4 hrs/wk**	**4 Credits**

- Practical based on Mobile Computing with IOS Practical

17VACSC21	**Core Skill 21 : Skill Training / IDP- Industry/Institute Defined Project**	**6 hrs/wk**	**6 Credits**