# BHAKTA KAVI NARSINH MEHTA UNIVERSITY – JUNAGADH

(Gujarat) INDIA

CURRICULAM FOR

## Post Graduate Diploma in Computer Science & Application (PGDCA)

[ Semester – 2 ]

**Effective From November – 2018**

# BHAKTA KAVI NARSINH MEHTA UNIVERSITY

## Post Graduate Diploma in Computer Science & Application

[1 Years - Two Semester Full Time Program]

### Semester – 2

| Code | Course Name | No. Of Lectures/ Lab (Per Week) | Credit |
|---|---|---|---|
| CS - 07 | RDBMS Using Oracle | 5 | **5** |
| CS - 08 | Web Programming Using PHP | 5 | **5** |
| CS - 09 | SAD, Software Quality Assurance & Testing | 5 | **5** |
| CS - 10 | Practical – 1 ( Based On CS - 07 ) | 5 | **5** |
| CS - 11 | Practical – 2 ( Based On CS – 08 & CS – 09 ) | 5 | **5** |
| CS - 12 | Project | 5 | **5** |
| | | **Total Credits of Semester - 2** | **30** |

# CS - 07 RDBMS Using Oracle

**Objective:**

- To learn database management system using Oracle

## Unit: 1

### DBMS Overview

- Introduction to DBMS
- Introduction to RDBMS
- Dr. E. F. Codd Rules
- Normalization

### SQL and SQL*Plus

- Introduction to SQL
- SQL Commands and Datatypes
- Introduction to SQL*Plus
- SQL*Plus formatting commands
- Operator and Expression
- SQL v/s SQL*Plus

## Unit: 2

### Managing Tables and Data

- Creating and Altering tables (Including constraints)
- Data Manipulation Command like Insert, update, delete
- SELECT statement with WHERE, GROUP BY and HAVING, ORDER BY, DISTINCT, Special operator like IN, ANY, ALL, BETWEEN,EXISTS, LIKE
- Join(Inner Join, outer Join, self Join)
- Subquery, minus, intersect, union
- Built in functions
    - Numerice Function : abs, ceil, exp, floor, greatest, least, log, max, min, rem, round, sign sqrt
    - Character Function : chr, concat, initcap, lower, ltrim, replace, rtrim, substr, treat, trim, upper
    - Date Function : add_monts, last_cay, monts_between, next_dat, round(date), sysdate, systimestamp, trunc(date), to_date, to_char
    - Aggregate function : sum, count, avg, max, min
    - General functions : coalesce, case, when decode

### Data Control and Transaction Control Command

- Creating user and role
- Grant
- Revoke
- What is Transaction?
- Starting and Ending Transaction
- Commit, rollback and SavePoint

# Unit: 3

## Other Oracle Database objects

- View
- Sequence
- Synonyms, Database Links
- Index
- Cluster , Snapshot

## Backup & Recovery

- Backup & Recovery
  - Types of Backups (Control File Backups, Redo Log File Backups, Cold Backups, Hot Backups)
- Net 8
  - What is Net 8?
  - Why use Net 8?
  - Net 8 Features
  - Listener
  - Dispatcher

---

# Unit: 4

## Introduction to PL/SQL

- SQL v/s PL/SQL
- PL/SQL Block Structure
- Language construct of PL/SQL(Variables, Basic and Composite Data type, Conditions looping etc.)
- %TYPE and %ROWTYPE
- Using Cursor(Implicit, Explicit)
- Exception Handling

## Advanced PL/SQL

- Creating and Using Procedure,Functions,
- Package,
- Triggers
- Creating Objects,
- Object in Database-Table
- PL/SQL Tables, Nested Tables, Varrays

---

# Unit: 5

## Oracle Database Structure

- Instance Architecture
  - Database Processes
  - Memory Structure.
  - Data files
- Creating & Altering Database
- Opening & shutdown Database

- Initialization Parameter
- Control Files, Redo Logs files
- Tablespace(Create, Alter, Drop)
- Rollback Segment (Create, Alter ), (System & Transaction RBS)
- Oracle Blocks
- Import
- Export
- SQL*Loader
-

| | Class Room | Seminar | Expert Talk | Test | Total |
|---|---|---|---|---|---|
| **No. Of Lecture** | **60** | **05** | **05** | **05** | **75** |

**Reference Books:**

| No. | Name | Author / Publication |
|---|---|---|
| **1** | SQL,PL/SQL The programming | Lang.Of Oracle Ivan Bayross - BPB |
| **2** | Oracle Database 12c The Complete Reference | Bob Bryla, Kevin Loney – Oracle Press |
| **3** | Oracle Database 12c SQL | Jason Price – Oracle Press |
| **4** | Oracle Database 12c PL/SQL Programming | McLaughlin – Oracle Press |

**Web site References:**

- https://www.oreilly.com/library/view/oracle-sqlplus-the/0596007469/ch01s01.html
- https://docs.oracle.com/cd/B19306_01/server.102/b14357/qstart.htm
- http://www.sql-plus.com/differences-between-sql-plus-and-sql.php
- http://www.oracle.com/us/corporate/features/database-12c/index.html

# CS – 08 : Web programming using PHP

**Objective:**

- To learn web programming & Learn to develop website using PHP

## Unit: 1

### Web Programming

- Static and Dynamic Web
- Client side & Server side Scripting
- Introduction to other Server side languages
- Webserver (IIS & Apache)
- Web Hosting, Virtual Host, Multi-Homing
- Distributed Web Server Overview,

### PHP Basic

- Introduction to PHP
- PHP configuration in IIS & Apache Web server
- Understanding of PHP.INI file
- Understanding of PHP .htaccess file
- PHP variable
- Static & Global variables
- GET & POST method
- PHP Operators
- Conditional Structure & Looping Structure
- Array

## Unit: 2

### PHP Function

- **User Defined Functions:**
  - argument function
  - default argument function
  - variable function
  - return function
- **Variable Length Argument Functions:**
  func_num_args, func_get_arg, func_get_args
- **Variable Functions:**
  gettype, settype, isset, unset, strval, floatval, intval, print_r
- **String Functions:**
  chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim trim, substr, strcmp, strcasecmp, strpos, strrpos, strstr, stristr, str_replace, strrev, echo, print, explode, implode, join, md5, str_split, str_shuffle, ucfirst, ucwords.
- **Math Functions:**
  abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand, bindec, decbin, hexdec, dechex, is_finite, is_infinite

- **Date Functions:**
  date, getdate, setdate, checkdate, time, mktime, date_add, date_create, date_format, gmdate, localtime, strftime
- **Array Functions:**
  count, list, in_array, current, next, previous, end, each, sort, rsort, assort, arsort, array_merge, array_reverse, array_diff, array_unique, array_key_exists, array_push, array_pop, array_search
- **Miscellaneous Functions:**
  define, constant, include, require, header, die, exit
- **File Handling Functions:**
  fopen, fread, fwrite, fclose, file_exists, is_readable, is_writable, fgets, fgetc, file, file_get_contents, fputs, file_put_contents, ftell, fseek, rewind, copy, unlink, rename, move_uploaded_file.

---

## Unit: 3

## Handling Form, Session Tracking & PHP Components

- Handling form with GET & POST
- Cookie
- Session
- Server Variable
- PHP Components:
  - PHP GD Library
  - PHP Regular expression
  - Uploading file
  - Sending mail using mail()
  - Sending mail using smtp()

## AJAX

- What is AJAX
- PHP with AJAX
- How AJAX works with PHP
- Working with AJAX as background process
- Using JQuery with PHP
- JQuery AJAX with PHP

---

## Unit : 4

## Introduction of SQL, MySQL Functions

- Working with MySQL using PhpMyAdmin
- SQL DML Statement (Insert, Update, Select, Delete) Command
- MySQLi Functions:
  mysqli_connect, mysqli_select_db, mysqli_query, mysqli_affected_rows, mysqli_num_rows, mysqli_autocommit, mysqli_commit, mysqli_fetch_array, mysqli_fetch_assoc, mysqli_fetch_object, mysqli_fetch_row, mysqli_prepare

---

# Unit : 5

## Web Services

- XML and JSON
- Introduction to JSON
- Installation & Configuration
- Resource Types
- JsonSerializable
- JSON Functions: json_decode, json_encode

## jQuery

- What is jQuery?
- jQuery Syntax
- jQuery Selector:
  - Element Selector
  - Class Selector
  - ID Selector
- jQuery Events:
  click, dbclick, keypress, keydown, keyup, submit, change, focus, blur, load, resize, scroll, unload
- jQuery Effects:
  hide show, fade, slide

| | Class Room | Seminar | Expert Talk | Test | Total |
|---|---|---|---|---|---|
| **No. Of Lecture** | **60** | **05** | **05** | **05** | **75** |

**Reference Books:**

| No. | Name | Author / Publication |
|---|---|---|
| **1** | Modern PHP: New Features and Good Practices | Josh Lockhart (ORELLY) |
| **2** | PHP Cookbook: Solutions & Examples for PHP Programmers | David Skylar and Adam Trachtenberg (ORELLY) |
| **3** | Programming PHP | Kevin Tatroe and Peter MacIntyre ORELLY) |
| **4** | PHP for the Web: Visual QuickStart Guide (4th Edition) | Larry Ullman (Peachpit Press) |

**Web site References:**

- http://php.net/manual/en/book.mysqli.php
- https://www.w3schools.com/php/php_ref_mysqli.asp
- https://www.tutorialspoint.com/index.htm

# CS – 09 : SAD, SOFTWARE QUALITY & ASSURANCE TESTING

**Objective:**

- To learn web programming & Learn to develop website using PHP

## Unit: 1

### System Analysis & Design AND Software Engineering

- Definitions:
  - What is system
  - Subsyetem,
  - business system
  - Information system
- System Analyst Role:
  - Information Analyst
  - Systems Designer & Programmer
- SDLC
  - Fact - finding techniques(Interview, Questionnaire, Record review and observation)
- Tools for Documenting Procedures and Decisions
  - Decision Trees and Decision Tables
- Data Flow analysis Tool
  - Types of DFD
  - DFD(context and zero level) and Data Dictionary
- Software Engineering (Brief introduction)

## Unit: 2

### Basic of Software Testing

- Introduction to software Testing
- Software faults and failures
  - Bug
  - Error
  - Defect
  - Faults
  - Failures
- Testing Artifacts
  - Test case
  - Test Script
  - Test Plan
  - Test Suite

### Types of software Testing, Verification and Validation

- Static Testing
- Dynamic Testing
- Test Levels
  - Unit testing
  - Integration Testing
  - System Testing

- Techniques of software Testing
- Black Box Testing
    - Equivalence Partitioning
    - Boundary Data Analysing
    - Decision Table Testing
    - State Transition Testing
- White Box Testing
    - Statement testing and coverage
    - Decision testing and coverage
- Grey Box Testing
- Non-functional Testing
    - Performance Testing
    - Stress Testing
    - Load Testing
    - Usability Testing
    - Security Testing

---

## Unit: 3

## Software Development Life Cycle

- Waterfall Model
- Iterative Model
- V-Model
- Spiral Model
- Big Bang Model
- Prototyping Model

## Automated Testing

- Introduction
    - Concept of Freeware, Shareware, licensed tools
- Theory and Practical Case-Study of Testing Tools
    - Win runner
    - Load runner
    - QTP
    - Rational Suite

---

## Unit : 4

## Project Economics

- Concepts of Project Management
- Project Costing based on metrics
- Empirical Project Estimation Techniques
- Decomposition Techniques
- Algorithmic methods
- Automated Estimation Tools

## Project Scheduling and Tracking

- Concepts of project scheduling and tracking
- Effort estimation techniques
- Task network and scheduling methods
- Timeline chart
- Pert Chart
- Monitoring and control progress
- Graphical Reporting Tools

---

# Unit : 5

## Concept of Quality Assurance

- Introduction to QA
- Quality Control (QC)
- Difference between QA and QC
- Quality Assurance activities

## CAD Project Management Tool

- MS - VISIO for designing & Documentation
  - Flow Chart Design Using MS-VISIO
- MS - Project for controlling and Project Management

## UML

- UML designing and skill based tools
- Overview of
  - Class Diagram
  - Use Case Diagram
  - Activity Diagram

| | Class Room | Seminar | Expert Talk | Test | Total |
|---|---|---|---|---|---|
| **No. Of Lecture** | **60** | **05** | **05** | **05** | **75** |

**Reference Books:**

| No. | Name | Author / Publication |
|---|---|---|
| 1 | Analysis & design of Information system | James A. Senn |
| 2 | Fundamentals of Software Engineering | RajibMall (PHP) |
| 3 | Software Engineering - A Practitioner's Approach | Pressman |
| 4 | UML - A Beginner's Guide | Jasson Roff - TMH |

**Web site Reference**

- **http://en.wikipedia.org/wiki/Software_testing**
- **http://www.onestoptesting.com/**
- **http://www.opensourcetesting.org/functional.php**

**CS – 10** **100 Marks**

## PRACTICAL – 1 (Based on CS – 07 & CS - 09)

CS – 07 – RDBMS Using Oracle

CS – 09 – SAD, Software Quality Assurance & Testing

- Each session is of 3 hours for the purpose of practical Examination.
- Practical examination may be arranged before or after theory exam

---

**CS – 11** **100 Marks**

## PRACTICAL – 2 (Based on CS – 08)

CS – 08 – Web Programming Using PHP

- Each session is of 3 hours for the purpose of practical Examination.
- Practical examination may be arranged before or after theory exam

---

**CS – 12** **100 Marks**

## PROJECT DEVELOPMENT (IN HOUSE)

(Project must be developed in the computer laboratory of concern institute under the supervision of faculties of concern institute on any subject of previous semester or current semester. **(At the time of Project-Viva examination student must show Project Report (in hard copy) along with all the Workouts in workbook, implementation of project in SDLC Documentation, Program codes and project in running mode**

**Note :**

- Project must be submitted before two week of commencement of theory exam.
- Project viva examination may be arranged before or after theory exam.
- During the project viva examination project must be run.

# BHAKTA KAVI NARSINH MEHTA UNIVERSITY

## Post Graduate Diploma in Computer Science & Application

[1 Years - Two Semester Full Time Program]

## Semester – 2

## Paper Style

**Unit : 01**

| | | | |
|---|---|---|---|
| Question : 1 (A) | Answer The Following Question | (Only Three) | 03 |
| Question : 1 (B) | Answer The Following Question | (Any Two out of Three) | 06 |
| Question : 1 (C) | Answer The Following Question | (Any One out of Two) | 05 |

**Unit : 02**

| | | | |
|---|---|---|---|
| Question : 2 (A) | Answer The Following Question | (Only Three) | 03 |
| Question : 2 (B) | Answer The Following Question | (Any Two out of Three) | 06 |
| Question : 2 (C) | Answer The Following Question | (Any One out of Two) | 05 |

**Unit : 03**

| | | | |
|---|---|---|---|
| Question : 3 (A) | Answer The Following Question | (Only Three) | 03 |
| Question : 3 (B) | Answer The Following Question | (Any Two out of Three) | 06 |
| Question : 3 (C) | Answer The Following Question | (Any One out of Two) | 05 |

**Unit : 04**

| | | | |
|---|---|---|---|
| Question : 4 (A) | Answer The Following Question | (Only Three) | 03 |
| Question : 4 (B) | Answer The Following Question | (Any Two out of Three) | 06 |
| Question : 4 (C) | Answer The Following Question | (Any One out of Two) | 05 |

**Unit : 05**

| | | | |
|---|---|---|---|
| Question : 5 (A) | Answer The Following Question | (Only Three) | 03 |
| Question : 5 (B) | Answer The Following Question | (Any Two out of Three) | 06 |
| Question : 5 (C) | Answer The Following Question | (Any One out of Two) | 05 |