P.G.D.C.A. (Semester – 2)

SR. NO.	COURSE	No. OF LECT./Lab. PER WEEK	CREDIT
1.	**CS – 07** SAD, SOFTWARE QUALITY ASSURANCE AND TESTING	5	5
2.	**CS – 08** RDBMS USING ORACLE	5	5
3.	**CS – 09** PROGRAMMING WITH C#	5	5
4.	**CS – 10** PRACTICALS -1 (BASED ON CS-08)	5	5
5.	**CS – 11** PRACTICALS-2 (BASED ON CS-09)	5	5
6.	**CS – 12** PROJECT DEVELOPMENT (IN HOUSE)	5	5
Total Credits of Semester – 2			**30**

CS – 07 : SAD, Software Quality Assurance and Testing		
Unit No.	Topics	Details
1.	**System Analysis & Design AND Software Engineering**	▪ Definitions: System, Subsystem, Business System, Information System ▪ Systems Analyst (Role: Information Analyst, Systems Designer & Programmer Analyst) ▪ 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 DFD (context and zero level) and Data Dictionary ▪ Software Engineering (Brief introduction)
2	**Basics Of Software Tesing**	▪ Introduction to software Testing ▪ Software faults and failures (Bug/Error/Defect/Faults/Failures) ▪ Testing Artifacts (Test case, Test Script, Test Plan, Test Harness, Test Suite)

	Types of Software Testing, Verification and Validation	▪ Static Testing (Informal Review, Walthrough, Technical Review, Inspection)
		▪ Dynamic Testing
		▪ Test levels (Unit Testing, Integration Testing, System Testing, Acceptance Testing)
		Techniques of software Testing
		▪ Black Box Testing
		    • Equivalence Partitioning
		    • Boundary Data Analysis
		    • Decision Table Testing
		    • State Transition Testing
		▪ White Box Testing
		    • Statement testing and coverage
		    • Decision testing and coverage
		▪ Grey Box Testing
		▪ Nonfunctional Testing
		    • Performance Testing
		    • Stress Testing
		    • Load Testing
		    • Usability Testing

		• Security Testing
3	**Software Development Life Cycle Models**	▪ 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

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
5	**Concepts of Quality Assurance**	▪ Introduction to QA ▪ Quality Control (QC) ▪ Difference between QA and Q ▪ Quality Assurance activities
	CAD Project Management Tool	▪ MS – VISIO for designing & Documentation ▪ MS – Project for controlling and Project Management

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

Seminar	- 5 Lectures
Expert Talk	- 5 Lectures
Test	- 5 Lectures

TOTAL LECTURES 60+15=75

Reference Books:

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
5. Roger Pressman , "Software Engineering"
6. http://en.wikipedia.org/wiki/Software_testing
7. http://www.onestoptesting.com/
8. http://www.opensourcetesting.org/functional.php

CS – 08: RDBMS Using Oracle

Unit No.	Topics	Details
1	SQL, 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
	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, subquery, Built in functions
2	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
3	Data Control and Transaction Control Command	- Grant, Revoke, Role, Creating Users - What is transaction? - Starting and Ending of Transaction - Commit, Rollback, Savepoint
	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)
4	Advanced PL/SQL	- Creating and Using Procedure, Functions, Package, Triggers - Creating Objects, Object in Database-Table - PL/SQL Tables, Nested Tables, Varrays
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

Seminar   - 5 Lectures
Expert Talk   - 5 Lectures
Test   - 5 Lectures

Reference Books:
1. SQL,PL/SQL The programming - Lang.Of Oracle Ivan Bayross - BPB
2. Using Oracle 8i - Page, Hughes -   QUE & PHI Publications
3. Oracle 8I The Complete Reference - George Koch, Kevin Loney - Oracle Press and Tata MacGraw-Hill

Unit No.	Topics	Details
	CS – 09: PROGRAMMING WITH C#	
1	**Introduction**	Introduction to visual studio 2008 Visual studio editions Visual studio IDE
	C# Basics	▪ Variables, Constants, Strings ▪ Data types ▪ Arrays ▪ Decision statements ▪ Loop statements ▪ Exception using try-catch-finally ▪ NameSpace ▪ Class ▪ Object ▪ Struct
2	**Inheritance**	▪ Inheriting a class ▪ Sealed class ▪ Overloading an operator ▪ Overloading a method ▪ Overloading an Indexer ▪ Creating an Interface ▪ Implementing an Interface ▪ Inheriting an Interface
	Pointers and Delegates	▪ Pointers ▪ Pointers to Arrays ▪ Pointers to Structures ▪ Delegate ▪ Declaring and Instantiating Delegate ▪ Multicast delegate ▪ Creating events ▪ Chaining events ▪ Firing an event
3	**Threading in C#**	▪ Introduction ▪ Difference between process and thread ▪ The thread class ▪ Multithreading ▪ Thread Priorities ▪ Thread Synchronization
	Collection and Generics	**Understanding Collections:** ArrayList, BitArray, HashTable, Queue, SortedList, Stack, Generics, Generic List, Generic Stack, Generic Queue, Generic HashSet
4	**Reflection in C#**	Reflection, Why we need Reflection?, Using Reflection, Dynamic loading and reflection

	Windows Forms and Control Programming	**Windows Forms:** MsgBox, DialogBox, Handling Mouse, Events, Handling Key Events Basic Control Programming For Following: Controls, Button, Label, TextBox, RichTextBox, RadioButton, CheckBox ListBox, CheckedListBox, ComboBox, ListView, TreeView, ImageList, PictureBox Panel, GroupBox, TabControl, ScrollBar ToolTip, NotifyIcon, Timer, ProgressBar

5	**ADO.NET Programming**	**Architecture of ADO. NET**
		Data providers in ADO.NET:
		   Connection
		   Command
		   DataReader
		   DataAdapter
		DataSet:
		   DataTable
		   DataView
		   DataColumn
		   DataRow
		   DataRelation
		DataReader
		DataGridView Control
		Introduction to LINQ
		Using LINQ to Dataset Example

Seminar   - 5 Lectures
Expert Talk   - 5 Lectures
Test   - 5 Lectures

Reference Books:

1. C#.NET Programming Black Book - steven holzner –dreamtech publications
2. Introduction to .NET framework - Wrox publication
3. Microsoft ADO. Net - Rebecca M. Riordan, Microsoft Press

CS-10 : PRACTICALS-1 (Based On CS – 08)	
Topics	**Marks**
RDBMS USING ORACLE	**100**

CS – 11: PRACTICALS-2(BASED ON CS-09)	
Topics	**Marks**
PROGRAMMING WITH C#	**100**

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

CS – 12: PROJECT DEVELOPMENT (In House)	Marks: 100
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.