

P.G.D.C.A. (Semester – 1 and Semester -2)
 SAURASHTRA UNIVERSITY
 Effective From June – 2016
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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Static Testing (Informal Review, Walthrough, Technical Review, Inspection) ▪ Dynamic Testing ▪ Test levels (Unit Testing, Integration Testing, System Testing, Acceptance Testing) <p>Techniques of software Testing</p> <ul style="list-style-type: none"> ▪ Black Box Testing <ul style="list-style-type: none"> • Equivalence Partitioning • Boundary Data Analysis • Decision Table Testing • State Transition Testing ▪ White Box Testing <ul style="list-style-type: none"> • Statement testing and coverage • Decision testing and coverage ▪ Grey Box Testing ▪ Nonfunctional Testing <ul style="list-style-type: none"> • Performance Testing • Stress Testing • Load Testing • Usability Testing

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		<ul style="list-style-type: none"> • Security Testing
3	Software Development Life Cycle Models	<ul style="list-style-type: none"> ▪ Waterfall Model ▪ Iterative Model ▪ V-Model ▪ Spiral Model ▪ Big Bang Model ▪ Prototyping Model
	Automated Testing	<ul style="list-style-type: none"> ▪ Introduction <ul style="list-style-type: none"> • Concept of Freeware, Shareware, licensed tools ▪ Theory and Practical Case-Study of Testing Tools <ul style="list-style-type: none"> • Win runner • Load runner • QTP • Rational Suite
4	Project Economics	<ul style="list-style-type: none"> ▪ Concepts of Project Management ▪ Project Costing based on metrics ▪ Empirical Project Estimation Techniques. ▪ Decomposition Techniques. ▪ Algorithmic methods. ▪ Automated Estimation Tools
	Project scheduling and Tracking	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Introduction to QA ▪ Quality Control (QC) ▪ Difference between QA and Q ▪ Quality Assurance activities
	CAD Project Management Tool	<ul style="list-style-type: none"> ▪ MS – VISIO for designing & Documentation ▪ MS – Project for controlling and Project Management
	UML	<ul style="list-style-type: none"> ▪ UML designing and skill based tools ▪ Overview of <ul style="list-style-type: none"> • 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>

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CS – 08: RDBMS Using Oracle		
Unit No.	Topics	Details
1	SQL, SQL*Plus	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ View ▪ Sequence ▪ Synonyms, Database Links ▪ Index ▪ Cluster , Snapshot
	Backup & Recovery	<ul style="list-style-type: none"> ▪ ♦ Backup & Recovery ▪ ♦ Types of Backups (Control File Backups, Redo Log File Backups, Cold Backups, Hot Backups) ▪ Net 8 <ul style="list-style-type: none"> • What is Net 8? • Why use Net 8? • Net 8 Features • Listener • Dispatcher
3	Data Control and Transaction Control Command	<ul style="list-style-type: none"> ▪ Grant, Revoke, Role, Creating Users ▪ What is transaction? ▪ Starting and Ending of Transaction ▪ Commit, Rollback, Savepoint
	Introduction to PL/SQL	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Creating and Using Procedure, Functions, Package, Triggers ▪ Creating Objects, Object in Database-Table ▪ PL/SQL Tables, Nested Tables, Varrays
5	Oracle Database Structure	<ul style="list-style-type: none"> ▪ Instance Architecture (Database Processes, Memory Structure, Data files) ▪ Creating & Altering Database

	<ul style="list-style-type: none">▪ 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
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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

CS – 09: PROGRAMMING WITH C#		
Unit No.	Topics	Details
1	Introduction	Introduction to visual studio 2008 Visual studio editions Visual studio IDE
	C# Basics	<ul style="list-style-type: none"> ▪ Variables, Constants, Strings ▪ Data types ▪ Arrays ▪ Decision statements ▪ Loop statements ▪ Exception using try-catch-finally ▪ NameSpace ▪ Class ▪ Object ▪ Struct
2	Inheritance	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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#	<ul style="list-style-type: none"> ▪ 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. <u>(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)</u>	

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.