PARUL UNIVERSITY - Faculty of IT & Computer Science

Department of Computer Application

SYLLABUS FOR 1st Sem MCA, M.Sc. (IT) PROGRAMME

Software Engineering (05201106)

Type of Course: MCA, M.Sc. (IT)

Prerequisite: Understanding of Object Oriented Design, UML

Rationale: To analyze the requirements of end users, Understands the software development life cycle (SDLC) along with many other process models, gain understanding of test strategies and different types of testing, gain understanding of different agile processes

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		External		Internal			
				T	P	T	CE	P	
3	0	2	4	60	30	20	20	20	150

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction to System and Software Development**: Concept of system, Basic components of system, Information systems categories, Need of information system development. Study of different models, Software characteristics, Components, Applications, Layered technologies, Processes, Methods and tools, Generic view of software engineering, Classical Systems Development Life Cycle (SDLC) method.	15%	6
2	**Requirements Analysis & Engineering**: **Requirement Analysis:** Classical Systems Development Life Cycle (SDLC) method, Requirement determination, System Requirement Specification (SRS), Fact finding techniques. Process models - waterfall model, incremental, Evolutionary process models - prototype, spiral and concurrent development model. **Requirement Engineering:** Problem recognition, Requirement engineering tasks, , Use cases and functional specification, Requirements validation	20%	10

3	**Structured System Analysis & Design**: **System Analysis:** Introduction to Structured System Analysis Development Methodology (SSADM), Tools for analysis - decision trees, decision tables, structured english, Data flow diagram, Entity Relationship (ER) diagram, Data dictionary. System Design: Design concepts, Design modeling, Software architecture, Data design, Architectural styles and patterns, Procedural design, Object oriented design.	20%	10
4	**Agile Methodology**: Agile process, Extreme Programming (XP), Brief overview of other agile process models - adaptive software development, Scrum.	20%	7
5	**User Interface Design**: Concepts of UI, Interface design model, Internal and external design, Evaluation, Interaction and information display software.	5%	3
6	**Planning a Software Project**: Management spectrum, People, Product, Process, Project, W5HHPrinciple, Importance of team management, Scope and feasibility, Effort estimation, Schedule and staffing, Quality planning, Risk management- identification, assessment, control,	15%	6
7	**Case Tools and Study**: Introduction to CASE, Building blocks of CASE, Integrated CASE environment.	5%	3

*Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Software Engineering : A Practitioner's Approach (TextBook)
   Pressman R.S; TMH
2. Software Engineering
   Sommerville
3. Software Engineering
   Rajiv Mall; PHI
4. Software Engineering
   Pankaj Jalote; Wiley India
5. Software Engineering, An Engineering Approach
   Peters & Pedrycz; Wile-India
6. Software Engineering, Principles and Practice
   Jawadekar; TMH

Course Outcome:

After Learning the course the students shall be able to:

1. describe Software Development Life Cycle.
2. explain software development process in association with its fundamental principles and methodologies.
3. analyze & represent end user requirements and model requirement analysis using Unified Modeling Language.
4. prepare & represent software design and design software model using Unified Modeling Language.
5. define significance of project planning, effort estimation and risk management.
6. design test cases and identify testing strategies.