PARUL UNIVERSITY - Faculty of IT & Computer Science

Department of Computer Application

SYLLABUS FOR 4th Sem B.Sc. (IT), BCA, IMCA, IMCA (A.Y.-IV) PROGRAMME

Basic Software Engineering (05101253)

Type of Course: B.Sc. (IT), BCA, IMCA, IMCA (A.Y.-IV)

Prerequisite: Understanding of Object Oriented Design, UML

Rationale: To provide basic knowledge on Software Quality and Software Testing.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/ Week		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**: System , Subsystem, Types of system (business system , information system), Classification of system(DSS, MIS,TPS, OAS), Role of :System analyst, Role of :System designer, Role of : Programmer Analyst, Software Development Life cycle, Software Engineering brief	19%	9
2	**Software Quality Assurance**: Quality assurance and activities, Quality Control, Difference between QA and QC **Fact Gathering techniques System Analysis** Introduction, Importance, Activities	12%	6
3	**Software Design**: Introduction, Importance, DFD, Data dictionary **UML:** Introduction, History and importance, UML diagrams	19%	9
4	**System Administration and Training**: User manual, Implementation Documentation, Operation plan and maintenance	11%	5
5	**System Analysis Models**: Waterfall Model, Iterative Model, V-Model, Spiral Model, Big Bang Model, Prototyping Model	15%	7

6	**Coding approaches**: Programming Practice, Top-Down and Bottom-Up, Structured Programming, Information Hiding, Programming Style, Internal Documentation, Code Inspections or Reviews	12%	6
7	**Software Verification and Validation**: **Software Testing types & Techniques** Static and dynamic, Black box, White box, Grey box, Non functional. **Software Testing Strategies.**	12%	6

***Continuous Evaluation:**

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

Reference Books:

1. Software Engineering
   Ian Sommerville; Pearson Education Ltd.; Ninth Edition
2. Software Engineering : A Practitioner's Approach
   Pressman R.S; TMH
3. Analysis & Design of Information System
   James A. Senn; Second Edition
4. UML –A Beginner's Guide
   Jasson Roff; TMH; Twelfth Edition

Course Outcome:

After Learning the course the students shall be able to:

1. Understand software development life cycle
2. Understand software development process in association with its fundamental principles and methodologies
3. Analyze and represent end user requirements and model requirements analysis using unified modeling language
4. Prepare and represent software design and design software model using unified modeling language
5. Understand significance of project planning effort estimation and risk management
6. Design test cases and identify testing strategies

List of Practical:

1. **To Identify Project scope, Objectives and Infrastructure**
2. **To Develop SRS document**
3. **To Develop Data Dictionary and Use case Diagram**
4. **To Develop Activity diagram and Class diagram**
5. **To Develop Sequence diagrams and Collaboration Diagram**
6. **DFDS creation**
7. **UML Study**

8. **Cost estimation model study**

9. **To Add interface to class diagram**

10. **Implement the design by coding**

11. **To Prepare test plan**

12. **Creation of test cases**

13. **To perform validation testing**

14. **Software Quality Metrices**