



# Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India  
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
IT51	Software Engineering	3	1	-	3	1	--	4
		Examination Scheme						
		ISE			MSE		ESE	Total
		20			20		60	100

<b>Pre-requisite Course Codes</b>	IT43: Database Management Systems IT34: Object Oriented Programming		
At the end of the course students will be able to			
<b>Course Outcomes</b>	IT51.1	Analyze requirements and choose appropriate process model.	
	IT51.2	Design system models with respect to traditional and the object oriented approach.	
	IT51.3	Develop umbrella activities on system (RMMM, SQA, SCM).	
	IT51.4	Evaluate system design with test cases.	

Module No.	Module name	Unit No.	Topics	Ref.	Hrs.
1	Introduction	1.1	Software Engineering Process Paradigms, Process Models – Incremental and Evolutionary models	1,2,4	2
		1.2	Typical Application for each model, Agile methodology, Process and Project Metrics		2
2	System Analysis	2.1	System Requirement, Stakeholders, Techniques for information gathering, Validating the requirements	1,2,6	2
		2.2	Feasibility Analysis, Tests for feasibility, Cost Benefit Analysis, Feasibility report. The system Proposal		2
		2.3	Data flow diagram and UML analysis diagrams		9
3	Software Design	3.1	Software Design Specification– Abstraction, Modularity– Effective modular design, Cohesion and Coupling, Example of code for cohesion and coupling	1,2,7	3
		3.2	User Interface Design – Human Factors, Interface standards– User Interface Design Process		2
		3.3	Application Architecture for Information System, Deployment using UML diagrams, Component and deployment diagram for various architectures		2
		3.4	Design Patterns – Gang of four patterns		2



# Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India  
(Autonomous Institute Affiliated to University of Mumbai)

4	SQA	4.1	Software estimation – Empirical estimation models – Cost/Effort estimation Planning – Work breakdown Structure, Gantt Chart. Evaluate schedule and cost variance	1,3	5
		4.2	Risk Management Risk Identification, Risk Assessment, Risk Projection, RMMM		2
		4.3	Software Configuration Management, SCM process, version and change control		2
		4.4	Quality metrics		1
5	Software Testing	5.1	Software Testing Basic concept and terminology, Verification & validation, White Box Testing-, Black Box Testing, Integration, Validation and system testing	1,2,5	4
		5.2	OO testing methods-Class Testing, Interclass testing, testing architecture, Behavioral testing		2
Total					42

## Recommended Books:

1. Roger Pressman, “*Software Engineering: A Practitioners Approach*”, 6<sup>th</sup> Edition, McGraw Hill, 2010.
2. Ian Sommerville, “*Software Engineering*”, 9<sup>th</sup> Edition, Addison Wesley, 2011
3. James F. Peters and Witold Pedrycz, “*Software Engineering – An Engineering Approach*”, Wiley, 2000.
4. Rajib Mall, “*Fundamentals of Software Engineering*”, 4<sup>th</sup> Edition, PHI, 2014
5. Pankaj Jalote “*An Integrated Approach to Software Engineering*”, 3<sup>rd</sup> Edition, Narosa Publication, 2005.
6. James a. Senn, “*Analysis and Design of Information Systems*”, 2<sup>nd</sup> Edition, McGrawHill, 2009.
7. Craig Larman, “*Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development*”, 3<sup>rd</sup> Edition, Pearson Education, 2005