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
ITC7052	Software Architecture	04	-	-	04	-	-	04
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60%Weightage)		

Pre-requisite Course Codes		TEITC601 (Software Engineering)
After successful completion of the course, student will be able to:		
Course Outcomes	CO1	Recognize major software architectural styles, design patterns and frameworks.
	CO2	Design software architecture for large scale software systems.
	CO3	Describe various documentation approaches and architectural description languages.
	CO4	Apply architectural patterns to quickly generate architectural alternatives and choose between them.

Module No.	Topics	Ref.	Hrs.
1	**Basic Concepts** 1.1 Concepts of Software Architecture 1.2 Models. 1.3 Processes. 1.4 Stakeholders.	1,2,3	03
2	**Designing Architectures** 2.1 The Design Process. 2.2 Architectural Conception. 2.3 Refined Experience in Action: Styles and Architectural Patterns. 2.4 Architectural Conception in Absence of Experience. 2.5 Putting it all Together: Design Processes Revisited.	1,2,3	05
3	**Connectors** 3.1 Connectors in Action: A Motivating Example. 3.2 Connector Foundations. 3.3 Connector Roles. 3.4 Connector Types and Their Variation Dimensions. 3.5 Example Connectors. 3.6 Using the connect or Frame work	1,2,3	06

4	**Modeling** 4.1 Modeling Concepts. 4.2 Ambiguity, Accuracy, and Precision. 4.3 Complex Modeling: Mixed Content and Multiple Views. 4.4 Evaluating Modeling Techniques. 4.5 Specific Modeling Techniques: Generic Techniques, Domain and Style specific ADLs, Extendable ADLs.	1,2,3	04
5	**Visualization** 5.1 Visualization Concepts. 5.2 Common issues in Visualization. Visualization Techniques: Textual Visualization, UML, xADL.	1,2,3	04
6	**Analysis** 6.1 Analysis Goals. 6.2 Scope of Analysis. 6.3 Architectural Concern being Analyzed. 6.4 Level of Formality of Architectural Models. 6.5 Type of Analysis. 6.6 Analysis Techniques.	1,2,3	06
7	**Implementation and Deployment** 6.1 Concepts. 6.2 Existing Frameworks. 6.3 Software Architecture and Deployment. 6.4 Software Architecture and Mobility	1,2,3	04
8	**Applied Architectures and Styles** 8.1 Distributed and Networked Architectures. 8.2 Architectures for Network-Based Applications. 8.3 Decentralized Architectures. 8.4 Service-Oriented Architectures and Web Services.	1,2,3	08
9	**Designing for Non-Functional Properties** 9.1 Efficiency. 9.2 Complexity. 9.3 Scalability and Heterogeneity. 9.4 Adaptability. 9.5 Dependability.	1,2,3	04
10	**Documentation** 10.1 Uses of Architectural Documentation. 10.2 Views 10.3 Choosing the Relevant Views 10.4 Documenting a View 10.5 Documentation across Views	1,2,3	04
	Total hours of instructions		48

References:

1. Richard N. Taylor, Nenad Medvidovic, Eric M. Dashofy, "*Software Architecture: Foundations, Theory and Practice*",Wiley Publications.
2. LenBass, Paul Clements, Rick Kazman, "*Software Architecture in Practice* ",Pearson
3. M. Shaw ,"*Software Architecture Perspectives on an Emerging Discipline*", Prentice Hall.