



Course Name : Software Architecture

(UG/PG) : PG

Number of Credits : 4

Level : 4

Learning Objective(s):

Objective: - This course explains the important role of Software Architecture. It discusses different types of architecture styles and how these styles are implemented in real life applications. It also explains the concepts, principles and method in software architecture design. At the end of the course, students should be able to:

Understand the importance and role of software architecture.

Students can easily develop software architecture.

Recognize major software architectural styles and Enterprise Architecture Patterns, and frameworks.

Pedagogy:

Lectures

Case Study

Assignment

Group Activity

Pre-requisites:

Sr. No.	Topic	Hours
	Part-1 Software Architecture Fundamentals	
1	Overview of Software Architecture This chapter briefly discusses about the importance of software architecture. It also discusses the basic building components of software architecture and how these components are used in architecture development. It also explains software quality parameters with reference to software architecture – What is Software Architecture? How the Architecture as a Vehicle for Communication among Stockholder? Why Architecture is important? How Software Architecture helps in bridging Requirements and implementation Software Architecture Vs Software Design Methodologies The Architecture Business Cycle: Where do architectures come from?	3

	<p>Elements of Software Architecture : Component , Connector s and Modules Modules for Software Architecture</p> <p>Software Qualities attributes Software Connectors</p>	
2	<p>The Architecture Design Process</p> <p>The Architecture Design Processes is decomposition of system into components and how these components are interact together to satisfy the functional and nonfunctional requirement of the system.</p> <p>Architecture Design Guideline Understanding the Problem Identify Designing Elements and their Relationship Modeling Concepts.- Ambiguity, Accuracy, and Precision Connectors Evaluating Architecture Transforming Architecture</p>	3
3	<p>Software Architecture Style –</p> <p>This chapter explain the different style of architectures Software Architectural Patterns :Layers of abstraction Architectural Pattern, Call/Return Pattern , Asynchronous Message Communication Pattern, Synchronous Message Communication Pattern Different case studies for implementation of these style</p>	6
4	<p>Architecture Design Principle</p> <p>This chapter explains general design operators of software architecture. By applying these operators the system is transforms the architectural design into system. Com man design operators are decomposition , replication, compression , abstraction etc.</p> <p>Architectural level of Design It explains components and connector and their representation Architecture with Design Operators Explicitly transforms into design using different operators Functional Design Strategies</p>	3
5	<p>Architecture Representation</p> <p>Architecture Descriptive Language. Capturing Architectural Information in an ADL How do ADL help in System Development? An example of an ADL</p>	2
6	<p>Software Architecture Evaluation</p> <p>Why Evaluate Architecture? Introduction to method of architecture evaluation - ATAM , SAAM</p>	3
7	<p>Designing of different types of architecture With help of case study explain the different types of architecture.</p> <p>Designing of Object Oriented Software Architecture Designing of Client /Server Software Architecture Designing of Service-Oriented Architecture Designing of Component-based Architecture Designing of Concurrent and Real Time Software</p>	20

	Architecture	
Part-II -Patterns		
8	Introduction to Enterprise Application Patterns, Layering- PoEAA - Domain Logic Patterns PoEAA – Data Source Architectural Patterns PoEAA – Object-Relational Structural Patterns PoEAA – Object-Relational Metadata Mapping Pattern PoEAA – Web Presentation Pattern	20
	Total	60

- Software System development Knowledge
- Basic Knowledge of Software Engineering
- Basic knowledge of Object -Oriented terminology.

Reference Books:

Hassan Gomaa "Software Modeling and Design " Cambridge University Press

Stephen T Albin " The Art of Software Architecture" Design Methods and Techniques" WILEY

Jones & Bartlett Learning, 2010 Software Architecture and Design Illuminated

Martin Fowler, David Rice, Matthew Foemmel, Edward Heatt, Robert Mee "Patterns of Enterprise Application Architecture" Addison Wesley

Suggested Evaluation Methods:

Parallel/Similar courses the existing curriculum:

Sr.No.	Name of the course	Institute where it was offered

Name of Member					
Designation					
Org. / Inst.					
Signature					

Name of the Expert:

Signature:

Date:

