

## Model Template for Scheme of Course Work

to be submitted by the Faculty of B.Tech VI , VI & VIII semesters/M.Tech(II semester) on or before 31.01.2014

### SCHEME OF COURSE WORK

#### Course Details:

<b>Course Title</b>	: SOFTWARE ARCHITECTURE AND DESIGN PATTERNS		
<b>Course Code</b>	: 13IT2112	<b>L T P C</b>	: 4 1 0 3
<b>Program:</b>	: M.Tech.		
<b>Specialization:</b>	: Software Engineering		
<b>Semester</b>	: II		
<b>Prerequisites</b>	: Software Engineering		
<b>Courses to which it is a prerequisite</b>	: NIL		

#### Course Outcomes (COs):

1	Understand the architecture, creating it and moving from one to any, different structural patterns
2	Analyze the architecture and build the system from the components
3	Design creational and structural patterns
4	Learn about behavioral patterns
5	Do a case study in utilizing architectural structures

#### Program Outcomes (POs):

A post graduate of Software Engineering(Information Technology) will be able to

1	Ability to demonstrate in-depth knowledge of Software Engineering with analytical and synthesizing skills
2	Ability to analyze complex problems critically and provide viable solutions
3	Ability to evaluate potential solutions to a problem and arrive at optimal solutions
4	Ability to apply research methodologies and tools and develop innovative techniques for solving complex software engineering problems
5	Ability to apply techniques and tools to solve complex problems
6	Ability to work as a effective team member in a collaborative and multidisciplinary project to achieve common goals
7	Ability to manage a software team and to maintain financial records as per standards
8	Ability to effectively communicate with clients, peers and society at large
9	Ability to take up lifelong learning to be in tune with the fast-changing software related technologies
10	Ability to follow ethical practices in the software industry and accept social responsibility
11	Ability to learn independently from mistakes and surge forward with positive attitude and enthusiasm

#### Course Outcome Versus Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO-1	S	M	S			S					
CO-2	S	M		M		M					
CO-3	S		M	M							
CO-4	S		M	M							
CO-5	S	S	S	M			M	M	M		M

*S - Strongly correlated, M - Moderately correlated, Blank - No correlation*

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<b>Assessment Methods:</b>	Seminar / Mid-Test / End Exam
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### Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Envisioning Architecture: The Architecture Business Cycle, What is Software Architecture, Architectural patterns	CO-1	What is Software Architecture	▫ Lecture	Seminar (Week 6-8)
2	Reference models ,Reference architectures, Architectural structures and views Creating an Architecture: Quality Attributes, Achieving qualities, Architectural styles and patterns	CO-1	Describe the Architectural styles and patterns	▫ Lecture / Discussion	
3	Designing the Architecture ,Documenting software architectures Reconstructing Software Architecture	CO-1	Describe Documenting software architectures	▫ Lecture	
4	Analyzing Architectures: Architecture Evaluation, Architecture design decision making, ATAM, CBAM	CO-1 & CO-2	Analyze the Architectures	▫ Lecture	Mid-Test 1 (Week 9)
5	Moving from one system to many: Software Product Lines, Building systems from off the shelf components, Software architecture in future	CO-1 & CO-2	Write about Building systems from off the shelf components	▫ Lecture / Discussion	
6	Software architecture in future, Patterns: Pattern Description, Organizing catalogs, Role in solving design problems, Selection and usage	CO-3	How is the Software architecture in future	▫ Lecture	
7	Creational and Structural patterns: Abstract factory, Builder	CO-3	What are Creational and Structural patterns	▫ Lecture / Discussion	
8	factory method, Prototype, Singleton	CO-3	Write about singleton	▫ Lecture / Discussion	
<b>9</b>	<b>Mid-Test 1</b>				
10	Adapter, Bridge, Composite, Façade, Flyweight	CO-3	What is adapter	▫ Lecture ▫ Discussion	Seminar (Week 14-16)
11	Proxy, Behavioral patterns: Chain of responsibility, Command, Interpreter	CO-4	Describe the design pattern interpreter	▫ Lecture	
12	Iterator, mediator, memento, observer	CO-4	Write about observer design pattern	▫ Lecture / Discussion	
13	State, strategy, template method, visitor	CO-4	Describe the design pattern visitor	▫ Lecture ▫ Discussion	
14	A-7E – A case study in utilizing architectural structures	CO-5	Analyze the case study in utilizing architectural structures	▫ Lecture / Discussion	Mid-Test 2 (Week 18)
15	The World Wide Web - a case study in interoperability	CO-5	Determine a case study in interoperability in the world wide web	▫ Lecture / Discussion	
16	Air Traffic Control – a case study in designing for high availability	CO-5	Describe the patterns in Air Traffic Control	▫ Lecture / Discussion	
17	Celsius Tech – a case study in product line development	CO-5	Discuss about the patterns in Celsius Tech – a case study in product line development	▫ Lecture / Discussion	
<b>18</b>	<b>Mid-Test 2</b>				
<b>19/20</b>	<b>END EXAM</b>				