

**UE17CS402:**  
**SOFTWARE ENGINEERING (4-0-0-0-4)**

**UNIT 2**

**Software Project and Product Management Overview:** Planning a Software Development Project with Overview of Different aspects of Software Engineering Management and Process Maturities. Software Estimation. Exposure to a PM tool like MS Project **Software Architecture:** Software Architecture, Architecture Design, Architectural Views, Architectural Styles. **Software Design:** Classical Design Methods, Object Oriented Analysis and Design Methods, Design Patterns, Service Orientation, Service Oriented Architecture.

**12hrs**

1. Discuss the different phases involved with Project Management.
2. Illustrate upstream and downstream dependencies in a project with at least two examples each
3. Discuss the project management triangle and the need for it to be in equilibrium for Quality product outcome.
4. Discuss an approach for choosing a project development lifecycle as part of project planning
5. Discuss what is a project organization and different types of project organizations
6. Discuss with examples the different eco-system partners who are involved in a software project
7. Discuss WBS, in terms of what it is, why is it necessary, some of the techniques which are used to do this.
8. Discuss what is estimation of effort? Discuss a experience based mechanism and a formal mechanism for estimating effort
9. Discuss Delphi and modified delphi estimation methods for software effort estimation
10. Discuss CoCoMo estimation methods for software effort estimation
11. Discuss what is risk management and the different steps involved in risk management
12. Discuss the activities involved wrt planning from a quality management process
13. Discuss activities involved with project monitoring and how do we control a project with that
14. Discuss the activities involved in Project Closure
15. What is Software Architecture? Discuss its importance
16. Explain the characteristics of Software architecture?
17. Discuss some of the characteristics which an Architecture has to support
18. Discuss the factors that influence the architecture
19. Discuss the role of an architect
20. Illustrate with two examples of architectural conflicts which you would find while making choices in the architecture
21. Discuss the generalized model for architecting and the activities involved with it
22. Discuss different ways which can be used to decompose a problem to independent developable modules
23. Contrast Architectural Views, Style and Patterns and give an example for each

24. Discuss the Component and connector Architectural view with examples for each of the components
25. Discuss Kruchten's (4+1 View) Architectural View Model
26. Discuss an Architectural Style using what the style is about, what kind of problems can use the style, context of the style and the solution for the same
27. Discuss what are architectural patterns and discuss a single layered architectural pattern
28. Discuss with illustration a two-layer architectural pattern
29. Discuss with illustration a three-layer architectural pattern
30. Differentiate between Architecture and Design
31. Describe say 4 different considerations which influence the design characteristics like simplicity, maintenance.
32. Discuss modules and the criteria to be looked from a cohesion and coupling perspective
33. Discuss the Key issues which need to be handled in Design
34. Discuss the DFD Design method in detail
35. Discuss what are design patterns and different ways of categorizing patterns
36. Discuss with examples procedural patterns
37. Discuss with examples creational object-oriented patterns
38. Discuss with examples structural object-oriented patterns
39. Discuss with examples the Behavioral object-oriented patterns
40. Discuss with examples the Distribution object-oriented patterns
41. Discuss what are antipatterns
42. Discuss what is a Service and the characteristics of a Service
43. Discuss a SoA architecture