**NARAYANA ENGINEERING COLLEGE::NELLORE || GUDUR**

***Department of CSE***

**Lecture Plan**

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| **Course Details** |
| **Class: B. Tech Year-Semester:** II-II **Year:** 2024-25  **Course Title:** SOFTWARE ENGINEERING **Course Code: 23A05403 Credits:** 3  **Program/Dept.:** Computer Science and Engineering **Section:** CSE-A B & C **Batch:** 2023-27  **Regulation:** NECR-23 **Faculty:** Dr. Penchalaiah / Dr . V Sucharitha |

**Short Answer Question Bank**

**Module -1**

1. **What is the waterfall model**

The waterfall model is a linear, sequential approach to software development where each phase must be completed before the next begins.

**2. what are its limitations of water model**

Its limitations include inflexibility, difficulty in accommodating changes, and a lack of visibility into the final product until late in the development cycle.

**3.Define software engineering**

Software engineering is the systematic application of engineering principles to the design, development, operation, and maintenance of software.

**4.Write any two advantages and disadvantages of software development**

**Advantages:**

* + - * Faster development time
      * Increased flexibility
      * Potential for innovative solutions

**Disadvantages:**

* + - * Lack of structure and planning
      * Increased risk of errors and defects
      * Difficulty in maintaining and scaling the software

**5. Discuss the concept of "no table changes" in software development practices.**

The concept of "no table changes" in software development practices, particularly in the context of software engineering, refers to a principle or guideline where the structure of database tables remains unaltered after they are deployed to production or during ongoing development cycles. This approach aims to minimize disruption, enhance stability, and ensure backward compatibility in the system.

6. **What is the relationship between software engineering and computer system engineering?**

Computer system engineering involves the design, implementation, and maintenance of complex computer systems, including hardware, software, and networks. Software engineering focuses specifically on the software component of these systems.

**7. What is agile development models?**

The Agile Development Model is a flexible, iterative, and incremental approach to software development that emphasizes collaboration, customer feedback, and continuous delivery. It focuses on delivering small, functional parts of a project in cycles called iterations or sprints, which typically last 1-4 weeks. Agile promotes adaptability to change, enabling teams to respond quickly to evolving customer needs and market conditions**.**

**8. write about the rapid application development (RAD) model and its suitability.**

RAD is a time-boxed approach that emphasizes rapid prototyping and iterative development. It is suitable for projects with well-defined requirements and a high degree of user involvement.

1. **List any two key characteristics of the spiral model?**

The spiral model combines elements of the waterfall model and iterative development.

It involves a series of risk-driven development cycles, each consisting of planning, risk analysis, engineering, and evaluation phases.

**10. Write any two Characteristics of Software?**

**Functionality:** It refers to the software performance compared to the purpose it was created

**Reliability:** It is a characteristics of software that refers to its ability to perform what it was designed to do accurately and consistently over time.

**Module 2**

**1.What is the responsibilities of a software project manager?**

A Software Project Manager is responsible for planning, executing, and delivering software projects on time, within scope, and within budget. Below are the primary responsibilities:

* Project Planning and Scheduling
* Team Management
* Risk Management
* Communication
* Quality Assurance
* Resource Management
* Time Management
* Change Management

**2.Define the COCOMO model**

The Constructive Cost Model (COCOMO) is a software cost estimation model that predicts the effort and schedule required for a software project based on various factors like project size, complexity, and development environment.

**3.List the Parameters of COCOMO model**

Parameters include:

* + **Product attributes:** Product size, product complexity, and required reliability.
  + **Hardware attributes:** Execution time constraints, memory constraints, and platform volatility.
  + **Personnel attributes:** Analyst capability, programmer capability, and experience.
  + **Project attributes:** Required development schedule, use of modern programming practices, and team cohesion.

**4.What is the purpose of software requirements specification (SRS)?**

A **Software Requirements Specification (SRS)** is a comprehensive document that describes the functional and non-functional requirements of a software system. It serves as a guide for all stakeholders involved in the project, including developers, testers, project managers, and clients. The primary purposes of an SRS are as follows:

1. Defining Functional Requirements
2. Documenting Non-Functional Requirements
3. Providing a Basis for Design and Development
4. Facilitating Testing & Managing Changes
5. Maintenance and Future Enhancements.
6. **Explain the concept of formal system specification.**

Formal system specification is a rigorous mathematical approach to specifying software requirements. It uses formal languages and techniques to precisely define the system's behavior and constraints.

1. **List few techniques for requirements gathering and analysis?**
   * 1. Interviews
     2. Questionnaires
     3. Workshops
     4. Use case analysis
     5. Domain analysis
2. **What is meant by risk management ?**

**Risk management** is the process of identifying, analyzing, and taking steps to minimize or handle potential problems (risks) that might affect a project or activity. It involves:

1. **Identifying risks**: Figuring out what could go wrong.
2. **Assessing risks**: Evaluating how likely the risks are and how much impact they might have.
3. **Planning responses**: Deciding what to do to avoid or reduce the risks.
4. **Monitoring**: Keeping an eye on risks throughout the project to handle them effectively.
5. **Write any two challenges associated with software project estimation?**

**Uncertainty in Requirements**:  
Requirements may not be clearly defined or may change during the development process, making it challenging to estimate the project's scope and complexity accurately.

**Difficulty in Accurately Estimating Effort and Schedule**:  
Predicting the time and resources needed for tasks can be complex, especially when dealing with new technologies or team dynamics, leading to potential inaccuracies in planning.

1. **What is the role of Halstead's software science in software metrics?**

Halstead's software science is a set of software metrics that measure the complexity of software code. These metrics can be used to assess the maintainability, understandability, and testability of software.

1. **What are functional and Non-Functional requirements?**

**Functional Requirements**:  
These describe the specific behavior or functions of a system. They outline what the system should do, such as tasks, calculations, data processing, and interactions

**Non-Functional Requirements**:  
These describe the quality attributes, performance, or constraints of the system. They specify **how** the system should perform its functions, such as speed, scalability, reliability, or security.