# SOFTWARE ENGINEERING

**Credits: 4** **Semester: V**
**Subject code:DS21502A** **No. of lecture hours: 60**

**Objective:** To enable students learn software engineering principles and to lay emphasis towards the theoretical foundation.

**Outcomes:** The student will be able to
**CO1:** Explain engineering through various process models.
**CO2:** Identify analyse Requirements, Object Oriented and various modeling's.
**CO3:** Categorize design and architecture
**CO4:** Classify Components, golden rules and design evaluation.
**CO5:** To understand testing techniques to evaluate quality metrics

**UNIT – I**
**12hrs**

1. The evolving role of software, software, changing nature of software
2

2. Legacy Software, Software Myths
2

3. Software engineering-layered technology, Process Framework
2

4. CMMI, Process patterns, Personal and Team Process models
2

5. Process technology, Product and Process
1

6. Process Models
3

**UNIT – II**
**12hrs**

1. System Engineering- Computer Based Systems, Hierarchy
2

2. Business Process Engineering, Product Engineering
1

3. System Modelling
1

4. Requirements Engineering tasks, Initiating Requirements Engineering Process
1

5. Eliciting Requirements, Developing Use Cases, Building Analysis Model
2

6. Negotiating and Validating Requirements
1

7. Requirements Analysis, Analysis Modelling Approaches, Data Modelling Concepts
2

8. Object Oriented Analysis, Scenario Based Modelling, Flow Oriented Modelling
1

9. Class Based Modelling, Creating Behavioral Model
1

**UNIT – III**
**12hrs**

1. Design Process and Quality
2

2. Design Concepts and Design Model
2

3. Pattern Based Software Design
2

4. Software architecture, Data design Architectural styles and Patterns
2

5. Architectural design, Assessing alternative architectural design
2

6. Managing Data flow into Software architecture
2

**UNIT-IV**
**12hrs**

1. Introduction to Component, Designing Class Based Components
2

2. Conducting Component Level Design, Object Constraint Language
2

3. Design Conventional Components
2

4. Golden Rules, User Interface Analysis and Design
2

5. Interface Analysis, Interface Design Steps
2

6. Design Evaluation
2

**UNIT – V**
**12hrs**

1. A Single Approach to Software Testing
1

2. Strategic Issues, Test Strategies for Conventional Software
1

3. Validation Testing, System Testing
1

4. Testing Fundamentals, Black Box and White Box Testing
2

5. Basis Path Testing, Control Structure Testing
2

6. Software Quality
1

7. Metrics for Analysis Model
2

8. Metrics for Design Model, Metrics for Source Code
1

9. Metrics for Testing, Metrics for Maintenance
1