UNIT 1 – SOFTWARE ENGINEERING

1. Software Engineering as a layered technology.
2. Software process and its importance.
3. Software process models.
4. Prototyping model – advantages and disadvantages.
5. Requirement engineering process.
6. Software prototyping techniques.
7. Elements of analysis model.
8. Data modeling.
9. Functional modeling.
10. Information flow modeling.

UNIT 2 – SOFTWARE DESIGN

1. Software design and its role in software engineering.
2. Design process.
3. Design principles.
4. Design concepts.
5. Effective modular design.
6. Software architecture.
7. Architectural styles.

UNIT 3 – SOFTWARE TESTING

1. Fundamentals of software testing.
2. Test case design techniques.
3. White box testing.
4. Basis path testing.
5. Control structure testing.
6. Black box testing.
7. Unit testing.
8. Validation testing.
9. System testing.

UNIT 4 – SCM, SQA & RISK MANAGEMENT

1. Software configuration management – definition and terminology.
2. SCM processes and activities.
3. Software quality assurance.

4. Quality control vs quality assurance.

5. Organization structures for SQA.

6. Risk management process.

7. Risk identification.

8. Risk quantification.

9. Risk monitoring and mitigation.

10. Software requirements gathering steps.

11. Outputs and quality records.

12. Skills required and challenges.

UNIT 5 – ESTIMATION & PROJECT MANAGEMENT

1. What is estimation? When and why estimation is needed.

2. Three phases of estimation.

3. Estimation methodologies.

4. Formal models of size estimation.

5. Reusability in software design.

6. Technology choices.

7. Standards and portability.

8. User interface issues.

9. Testability.

10. Effect of Internet on project management.