Module 1 : Introduction to Software Engineering

Essential attributes of professional software engg

Software validation

Software process activities

SDLC models

Pair programming, Refactoring

SCRUM

Agile manifesto & principles

Traditional software development

Role of software prototype

Boehm spiral model, Incremental, Waterfall, Prototyping model

Module 2 : Requirement Analysis and Design

Functional & non Functional req

Req Engg process

Persona, Scenario, userstories

Feature design

Usecase diagram

SRS

Coupling , Cohesion

Design quality attributes

Design concepts

Modular & Functional independence

Architectural views, styles

Component level views, design, component level design for WebApps

Module 3 : Implementation and Testing

GPL, LGPL, BSD

Post mortem evaluation

UML

Formal & Informal Revie Techniques

White box, Black box testing

Equivalence partitioning & Boundary Value Analysis

Structural Testing stratergies, types, Debugging

Test automation, documentation

Test driven development

CI/CD/CD in DevOps

Software Evolution process & management stratergies

Module 4 : Software Project Management

Risk, types

Fundamental project management activities

Risk management process

SCM

Software cost estimation , technique

Plan driven development

COCOMO

Calculating effort, development time, team size, productivity

Principles & practices of Kanban & lean

Module 5 : Software Quality, Process Improvement and Technology trends

Software quality dilemma

Metrics & measures for evaluating quality of requirements & source code

Cost of quality, components

SQA task

Cloud software characteristics

Cloud based software, cloud service model

Virtualization & containerisation in cloud server

EaaS, PaaS, SaaS, IaaS

SPI framework, process

Software quality factors

CMM

Microservices