

**PIT3G001 SOFTWARE ENGINEERING**

**Software Process Models:**

Software Product, Software crisis, Handling complexity through Abstraction and Decomposition, Overview of software development activities, Process Models, Classical waterfall model, iterative waterfall model, prototyping mode, evolutionary model, spiral model, RAD model, Agile models: Extreme Programming, and Scrum.

**Software Requirements Engineering:**

Requirement Gathering and Analysis, Functional and Non-functional requirements, Software Requirement Specification(SRS), IEEE 830 guidelines, Decision tables and trees.

**Structured Analysis & Design: (10Hrs)**

Overview of design process: High-level and detailed design, Cohesion and coupling, Modularity and layering, Function-Oriented software design: Structured Analysis using DFD Structured Design using Structure Chart, Basic concepts of Object Oriented Analysis & Design. User interface design, Command language, menu and iconic interfaces.,

**Coding and Software Testing Techniques:**

Coding, Code Review, documentation. Testing: - Unit testing, Black-box Testing, White-box testing, Cyclomatic complexity measure, coverage analysis, mutation testing, Debugging techniques, Integration testing, System testing, Regression testing.

**Software Reliability and Software Maintenance:**

Basic concepts in software reliability, reliability measures, reliability growth modeling, Quality SEI CMM, Characteristics of software maintenance, software reverse engineering, software reengineering, software reuse.

**Emerging Topics:**

Client-Server Software Engineering, Service-oriented Architecture (SOA), Software as a Service (SaaS),

**Text Book:**

1. Fundamentals of Software Engineering, Rajib Mall , PHI, 2014.

**Reference Books:**

1. Software Engineering, A Practitioner's Approach, Roger S. Pressman ,TMG Hill.
2. Software Engineering, I. Sommerville, 9<sup>th</sup> Ed. , Pearson Education.