

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2 Computer Engineering

Subject Name Software Engineering Methodologies

Sr.No	Course content
1.	Introduction: Motivation – Software Attributes – Complexity - Software Quality Issues
2.	Software Process Software Life cycle Process: A Sequential Methodology - A Cyclical Methodology - The Water Sluice – Established Methodologies - The Boehm-Waterfall Methodology - The Boehm-Spiral Methodology Versions - The Booch Methodology - Object Modeling Technique (OMT) Rational Objectory Methodology
3.	Formal Software Engineering: Formal specifications – Techniques – Verification and Validation – Theorem Provers - Model checking – modeling concurrent systems – Temporal logics – CTL & LTL and model checking – SAT Solvers – Testing Techniques – Test Case Generation
4.	Software Architecture: Software Engineering Tools and Environments - Software Metrics - COTS Integration - Distributed, Internet-scale and Web-based Software Engineering
5.	Empirical Study of Software Tools and Methods: Software Reengineering - Software Reuse - Software Safety - Enterprise Architectures, Zachman's Framework; Architectural Styles
6.	Software Design Patterns: Architecture description languages - Product-line architectures; Component based development

Reference Books:

1. Ghezzi, Jazayeri, Mandrioli, “ Fundamentals of Software Engineering”, 2/E, Pearson ducation, 2002
2. Sommerville, “ Software Engineering”, 6/E, Pearson Education, 2006
3. Roger S Pressman, “ Software Engineering – A Practitioner’s Approach” , 6/E, MGH, 2005
4. Schmidt, Stal, Rohnert, and Buschmann, “ Pattern-Oriented Software Architecture Volume 2: Patterns for Concurrent and Network ed Objects”, Wiley, 2000
5. Len Bass, Paul Clements, Rick Katzman, Ken Bass, “Software Architecture in Practice”, 2/E, Addiwon –Wesley Professional, 2003.