

Software Engineering

BEG 472CO

Year VI

Semester: I

Teaching Schedule			Examination Scheme				
Hours per Week			Internal Assessment		Final		Total
Theory	Tutorial	Practical	Theory	Practical	Theory	Practical	
3	2	-	20	-	80	-	100

COURSE OBJECTIVES:

This course is intended to provide an introduction to SE concepts and practices focusing on industrial software development characteristics and processes, development models, and the software life cycle for mid-scale system.

- Provide students a comprehensive introduction to software engineering.
- provide the students the kinds of activities that are necessary for developing a software system
- Study the important phases of software development

UNIT I:

Introduction to Software Engineering:

- Definition of Software engineering
- The evolving role of software
- Changing Nature of Software
- Characteristics of Software
- A Generic view of software Engineering
- Software engineering- layered technology. (4 hrs)

UNIT II:

Process models:

- The waterfall model
- Prototyping Model

- RAD Model
- Spiral Model. (5 hrs)

UNIT III:

Software Project Management

- Meaning of **People,Product,Process,Project** in Software Project Management
- Activities of Project Planning
- Project Estimation techniques
- COCOMO
- Risk Management
- Project Scheduling
- Staffing
- Software Configuration Management (SCM) (8 hrs)

UNIT IV:

Software Requirements and Specification

- Functional and non-functional requirements,
- Requirements engineering process (Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management)
- Data Modeling and flow diagram
- Software Prototyping Techniques
- Requirement definition and specification. (7 hrs)

UNIT V:

Software Design

- Introduction to Software Design
- Characteristics of a good Software Design
- Design Principles
- Design concepts
- Design Strategy
- Design process and Design quality
- Software Architecture and its types (7 hrs)

UNIT VI:

Software Testing

- Software testing Process
- Principal of Testing
- Test Case design
- Black-Box Testing(Boundary Value Analysis,Equivalence class Partitioning)
- White-Box testing(Statement Coverage,Path coverage,Cyclomatic complexity)
- Software Verification and Validation. (7 hrs)

UNIT VII:

Metrics for Process and Products

- Software Measurement
- Metrics for software quality
- Software Quality Assurance
- Software reliability
- The ISO 9000 quality standards. (5 hrs)

UNIT VIII:

Introduction to Engineering Software Trends and Technology

- Agile Development
- Extreme Programming
- Cloud Computing and Grid Computing
- Enterprise Mobility
- Business Intelligent and Approaches
 - ERP, Supply Chain Management, Service Oriented Architecture and web services
 - Enterprise Portals and Content Management
- Introduction to OOSE

Case Studies

Students are encouraged to perform the case study to implement concepts of above-mentioned topics.

References:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition. McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education. 2004
3. Software Engineering (*Latest Edition*), Udit Agrawal
4. Fundamentals of Software Engineering (*Latest Edition*), Rajib Malla
5. Software Engineering – A precise Approach (*Latest Edition*), Pankaj Jalote

Question Pattern

Type	Number of Questions	Total Marks	Chapters
Long Questions	2 Questions out of 3	2X12=24	All Chapters
Short Questions	7 Questions out of 9	7X 8 =56	All Chapters