**Nature of course:** Theory (3 Hrs) + Lab (3 Hrs)

* Text Books:Software Engineering, 7th Edition, Jan Sommerville, PEARSON EDUCATION ASIA

**Course Synopsis:** Discussion on types of software, developing process and maintaining the software.  
  
**Goal:** This course introduces concept of software development paradigm and implementing these in real world.  
  
**Course Contents:**  
  
**Unit 1: (11 Hrs)**  
1.1 Introduction to Software Engineering: Definition of software ,software engineering. Comparing between other engineering and software engineering.1.5  
1.2 System Engineering: Introduction to System, System properties, system and their environment, system modeling.1.5  
1.3 Software Process: Introduction, software process model, process iteration, software specification, software design and implementation, software validation, software evolution.1.5  
1.4 Project Management: Introduction, management activities, project planning, project scheduling, risk management.1.5  
  
**Unit 2: (12 Hrs)**  
2.1 Software Requirements: Introduction, Types of requirements, requirements engineering process: Feasibility study, requirements elicitation and analysis, requirement validation, requirement management.  
2.2 Software Prototyping: Introduction, prototyping in the software process, rapid prototyping techniques, user interface prototyping.  
2.3 Formal Specification: Introduction, formal specification in software process, interface specification, behavioral specification.  
  
**Unit 3: (6 Hrs)**  
3.1 Architectural Design: Introduction, system structuring, control models, modular decomposition, domain specific architecture.  
3.2 Object Oriented Design: Introduction, Features of object oriented design, object oriented software engineering.  
  
**Unit 4: (16 Hrs)**  
4.1 Verification & Validation: Introduction, verification & validation planning, software inspection, cleanroom software development.  
4.2 Software Testing: Introduction. types of testing, testing work benches.  
4.3 Critical system validation: Introduction, formal methods and critical systems, reliability validation, safety assurance, security assessment.  
4.4 Software Cost Estimation: Introduction, productivity, estimation techniques.  
4.5 Software Reengineering: Introduction, source code translation, reverse engineering.  
  
**Laboratory works:**Developing the software techniques explained in the course.  
  
**Reference:** Software Engineering: A Practitioner’s Approach, 6th Edition, Roger S. Pressman, McGraw hill International Edition.  
  
**Assignments:** Assignments should be given from the above units in throughout the semester.  
  
**Computer Usage:** No Specific  
  
**Prerequisites:** C, C++, data structure, Automata Theory, System analysis & Design  
  
**Category Content:**  
Science Aspect: 60%  
Design Aspect: 40%