Software Engineering (CSC-351)
Tribhuvan University
Institute of Science and Technology
Soch College of Information Technology

Course Title: Software Engineering
Course no: CSC-351 ---------- Full Marks: 60+20+20
Credit hours: 3 ---------- Pass Marks: 24+8+8
Nature of course: Theory (3 Hrs.) + Lab (3 Hrs.)
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.
1.2 System Engineering: Introduction to System, System properties, system and their environment, system modeling.
1.3 Software Process: Introduction, software process model, process iteration, software specification, software design and implementation, software validation, software evolution.
1.4 Project Management: Introduction, management activities, project planning, project scheduling, risk management.

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 and 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.

Text Books: Software Engineering, 7th Edition, Ian Sommerville, PEARSON EDUCATON ASIA

Reference: Software Engineering: A Practitioner's Approach, 6th Edition, Roger S. Pressman, McGraw Hill International Edition.