CAP509:SOFTWARE ENGINEERING

L:3 T:0 P:0 Credits:3

Course Outcomes: Through this course students should be able to

- apply theoretical foundation of software engineering in practical software development
- visualize the importance of the software development process
- associate effectively in a team to analyse the requirements of a complex software system and solve problems by creating appropriate designs that satisfies these requirements
- translate a requirements specification into an implementable design, following a structured and organised process
- formulate a testing strategy for a software system, employing test case design techniques such as functional and structural testing

Unit I

Introduction to software engineering : problem domain, software engineering challenges, software engineering approach

Software process models : desired characteristics of software process, waterfall model, prototyping model, iterative development

Unit II

Software requirements analysis and specification : need for SRS, requirement process, requirement gathering, problem analysis, characteristics of an SRS, components of an SRS, structure of a requirements document

Unit III

Function-oriented design : modularity, top-down and bottom-up strategies, coupling, cohesion

Design notation and specification : structure charts, specification, data flow diagram

Unit IV

Coding : programming principles and guidelines, common coding errors, structured programming, information hiding, some programming practices, coding standards, coding process

Unit V

Testing : difference among error fault and failure, test oracles, test cases, test criteria, black box testing, white box testing, levels of testing

Unit VI

Software testing process : test plan, test case specifications, test case execution and analysis, defect logging and tracking

Software maintenance and metrics : types of maintenance, function points, COCOMO model

Text Books:

1. AN INTEGRATED APPROACH TO SOFTWARE ENGINEERING by PANKAJ JALOTE, NAROSA PUBLISHING HOUSE

References:

1. SOFTWARE ENGINEERING: A PRACTITIONER'S APPROACH by ROGER S. PRESSMAN, MCGRAW HILL EDUCATION

2. FUNDAMENTALS OF SOFTWARE ENGINEERING by RAJIB MALL, PRENTICE HALL