CA4CRT11 - System Analysis & Software Engineering (Core)

Theory:4 hrs. per week

Credits:4

Unit 1: (12 hrs.)

Information systems concepts, Business information systems; Describing the business organization – organization chart , organization function list ; information system levels - operational, lower, middle, top management; SDLC Life cycle activities- life cycle flow chart, task, management review, baseline specifications, role of system analyst.

Unit 2: (14 hrs.)

Introduction to Software Engineering - Definition, Program Vs Software, and Software process, Software Characteristics, Brief introduction about product and process, Software process and product matrices. Software life cycle models , Definition, Waterfall model, Increment process models- Iterative , RAD , Evolutionary process models-Prototyping ,Spiral. Selection of a life cycle model.

Unit 3: (18 hrs.)

Software Requirement Analysis and Specification Requirements Engineering type of requirements, Feasibility Studies, Requirement Elicitation – Use Case, DFD, Data Dictionaries , Various steps for requirement analysis, Requirement documentation, Requirement validation, an example to illustrate the various stages in Requirement analysis. Project planning-Size estimation, cost estimation, the constructive cost model (COCOMO).

Unit 4: (14 hrs.)

Software Design - Definition, Various types, Objectives and importance of Design phase, Modularity, Strategy of design, Function oriented design, IEEE recommended practice for software design descriptions. Steps to Analyze and Design Objected Oriented System. Software Reliability Definition, McCall software quality model, Capability Maturity Model.

Unit 5: (14 hrs.)

Software Testing : What is testing?, Test, Test case and Test Suit, Verification and Validation, Alpha, beta and acceptance testing, functional testing, techniques to design test cases, boundary value analysis, Equivalence class testing, decision table based testing, cause effect graphing technique, Structural testing path testing, Graph matrices, Data flow testing; Levels of testing Unit testing, integration testing, system testing, validation testing,

Book of Study:

1. Marvin Gore & John Stubbe -Elements Of System Analysis, Fourth Edition, Galgotia Book Source.
2. K K Aggarwal, Yogesh Singh - Software Engineering,Third Edition, New Age International Publications.

References :

1. Roger S Pressman - Software Engineering: A Practitioner's Approach, Sixth Edition, McGraw-Hill Higher Education.
2. Ian Sommerville - Software Engineering , Seventh Edition, Pearson Education.
3. Pankaj Jalote - An Integrated approach to Software Engineering, Second Edition, Narosa Publishing Company.