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First Year M.C.A. Semester I (CBCS) Core MCA RTMNU

Paper 5 - 1T5 Software Engineering Credits: 4

Unit 1 :

Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths.
A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models : The waterfall model, Incremental process models, Evolutionary process models, The Unified process. Requirement Engineering :Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Unit 2 :

Requirements engineering process : Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models : Context Models, Behavioral models, Data models, Object models, structured methods. Modeling with UML . **Design Engineering** : Design process and Design quality, Design concepts, the design model. **Creating an architectural design** : Software architecture, Data design, Architectural styles and patterns, Architectural Design.

Unit 3 :

Object-Oriented Design : Objects and object classes, An Object-Oriented design process, Design evolution. **Performing User interface design** : Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.
Testing Strategies : A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics :Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Unit 4 :
Metrics for Process and Projects :Software Measurement, Metrics for software quality.
Risk management :Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.
Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

Books : 1.Software Engineering, A practitioner’s Approach, Roger S. Pressman,McGrawHill International Edition.
2. Software Engineering,Sommerville, Pearson education.
3. Software Engineering principles and practice, Waman S Jawadekar, McGraw-Hill.