CS-505: SOFTWARE ENGINEERING

Teaching and Examination Scheme:

Teaching Scheme			Credits	Marks			Duration of End Semester Examination
L	T	P/D	C	Sessional	End Semester Exams	Total	
3	1	0	4	40	60	100	3Hrs

COURSE OBJECTIVE:

The course should enable the students to understand the software life cycle models, to design and develop correct and robust software products and to understand business requirements pertaining to software development.

COURSE CONTENT:

UNIT	CONTENT	No. of Hrs.
I	**Software Evolution:** Need for software engineering, software crisis, generic v/s customer made software product, distinctive characteristics of software product, software development process models (SDLC), waterfall model, prototype model, spiral model. **Software requirement analysis and specification**: Requirement specification, crucial process step, classification of requirements, structured requirement definition, structured analysis & design technique, software prototyping, software requirements specification, nature of the SRS, characteristics of a good SRS, organization of the SRS.	10
II	**Software Project Management:** Software project, project feasible study, project planning, project organization, estimate of project effort (COCOMO), staffing level estimation, staffing, risk management, project scheduling, project monitoring and control.	10
III	**Software Quality Management:** Quality dimension, process quality and product quality, quality assurance planning, quality measurement, software configuration management, software process improvement, ISO 9000 quality standards, ISO approach to quality assurance systems, SEI capability maturity model (CMM), PSP. **Coding and unit Testing:** Unit testing, non execution based testing, code inspection, testing process, black box testing, white box testing, metric, debugging, program analysis tool, integration testing, system testing, testing distributed implementation, testing of real time system, accepting testing some general issue associated with testing, , recovery testing, security testing, stress testing, performance testing.	10
IV	**Software maintenance:** Planning for maintenance, maintenance activities, reengineering, characteristics, potential solution to maintenance problems, s/w maintenance process models. **Software Reuse & Emerging Trends:** S/w reverse engineering, s/w reuse concepts, basic issues in reuse program, reuse approach, client server software, SOA.	9

	Fundamentals of Agile: The Genesis of Agile, Introduction and background, Agile Manifesto and Principles, Overview of Scrum, Extreme Programming, Feature Driven development, Lean Software, Development, Agile project management, Design and development practices in Agile projects, Test Driven, Development, Continuous Integration, Refactoring, Pair Programming, Simple Design, User Stories, Agile, Testing, Agile Tools	

Text Books:

1. Pankaj Jalote, ***"Software Engineering: A Precise Approach"***, Wiley India Publications.
2. S.Thangasamy, ***"Essentials of Software Engineering"***, Wiley India Publications.
3. Agile Software Development with Scrum By Ken Schawber, Mike Beedle Publisher: Pearson
4. Agile Software Development, Principles, Patterns and Practices By Robert C. Martin Publisher: Prentice Hall

Reference Books :

1. Rajib Mall, ***"Fundamental of Software Engineering"***, PHI Publication.
2. K.K. Aggarwal &Yogesh, ***"Software Engineering""***, New Age International Publishers.