Course : IT 703 : Software Engineering

Course Code	703
Course Title	Software Engineering
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	To develop skills of software engineering in students
Course Objective	To provide insights about software engineering project planning, scheduling, SCM fundamentals, pattern based design and advanced UML concepts. Students would be able to do plan, design, analyze risk and manage a software development process efficiently after learning this course.
Pre-requisite	Basic concepts of software analysis and design
Course Out come	This would help students to analyze risk , perform scheduling and design any kind of system.
Course Content	**Unit 1 : Project Management** 1.1 Software Matrices 1.1.1 Project Management 1.1.2 Software Measurements 1.1.3 Metrics for Software Quality 1.1.4 Cost and Efforts Estimation Model 1.2. Project Scheduling 1.2.1 Relationship between People & Effort 1.2.2 Defining a Task set for the Software Project 1.2.3 Selecting & Refining Software Engineering Tasks 1.2.4 Scheduling and tracking techniques 1.2.5 Earned Value Analysis 1.3. Risk Management 1.3.1 Software Risk 1.3.2 Risk Identification and Categories of Risk 1.3.3 Projection 1.3.4 Refinement 1.3.5 RMMM Plan 1.4. Change Management 1.4.1 Software Configuration Management 1.4.2 SCM Repository 1.4.3 SCM Process 1.4.4 Version Control and Change Control 1.5. Project, task and agile development tool 1.5.1 Introduction to project and agile management tool 1.5.2 Use of tool like trello / axiom / workspace or similar **Unit 2 : Advance UML** 2.1 Introduction to UML 2.2 Structural Modeling and Use Cases 2.3 Behavioral Modeling with UML 2.4 Advanced Modeling with UML 2.5 Metadata Integration with UML, MOF and XMI **Unit 3 : Web Engineering** 3.1 Attributes of web based application 3.2 Framework of Web engineering 3.3 Analyzing Web-Based system 3.4 Design of Web-Based Application 3.5 Testing of Web Application 3.6 Management Issues **Unit 4 : Software Design patterns** 4.1 Design Pattern Principles and Techniques 4.2 Software Architecture 4.3 Types of Design patterns 4.3.1 Creational pattern 4.3.2 Structural pattern 4.3.3 Behavioral pattern

	Unit 5 : Software Quality Assurance 5.1 Software Quality Assurance 5.2 Cost of Quality 5.3 Framework and Standards SQA Framework 5.4 SQA Plan 5.5 Components of Software Quality Assurance 5.6 Quality Standards: ISO and companion Standards, CMM, CMMI, Six- Sigma
Reference Book	1. Software Engineering A practitioner's approach – Roger S Pressman - Seventh Edition- McGraw Hill 2. Object Oriented Modeling Design - James Rumbaugh, Michael Blaha – PHI 3. An Integrated Approach to Software Engineering – Pankaj Jalote – Narosa 4. Object-Oriented Software Engineering- Timothy C. Lethbridge, Robert Laganiere- TMH, 2008 5. Software quality assurance – from theory to implementation- Daniel Galin- Pearson education 6. Software Engineering- A programming approach- D. Bell, I. Morrey-PHI 7. UML 2.0 in a Nutshell: A Desktop Quick Reference (In a Nutshell (O'Reilly))-Day Pilone,Neil Pitman-2nd edition-OiReilly 8. UML Distilled: A Brief Guide to the Standard Object Modeling Language, M. Fowler,,3rd edition, Addison-Wesley 9. Meta Object Facility (MOF) 2.0 Query/View/Transformation Specification, V1.1, Object Management Group Std 10. UML™ Bible, Tom Pender, John Wiley & Sons 11. Design Patterns: Elements of Reusable Object-Oriented Software**,** John Vlissides, Ralph Johnson, Richard Helm, Erich Gamma**,** , Addison-Wesley
Teaching Methodology	Class Room Teaching, Discussion and Assignment
Evaluation Method	30% Internal assessment 70% External assessment