16CS317	SOFTWARE DEVELOPMENT	3/0/0/3
Nature of Course	:G (Theory)	
Pre requisites	: Computer Science Essentials, Object Oriented Programming using Java	

Course Objectives:	
1	To discuss the essence of Agile development methods.
2	Carry out all stages of an Agile software process in a team, to produce working Software.
3	Provide practical knowledge of how to manage a project using Scrum framework.
4	Use test driven development (TDD) to ensure software quality.

Course Outcomes: **Upon completion of the course, students shall have ability to**		
CO1	Interpret the driving forces and adopting business value of Agile approaches to software development.	[U]
CO2	Develop the working model facilitated by unit tests using Test Driven Development.	[AP]
CO3	Apply design principles and refactoring to achieve Agility.	[AP]
CO4	Deploy automated build tools, version control and continuous integration	[AP]
CO5	Analyse Risk based testing activities within an Agile project.	[A]

Course Contents:

Traditional SDLC Models: Waterfall model, Incremental model, Iterative model, RAD model - **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.**Agile Scrum Framework:** Introduction to Scrum, Project phases, Agile Estimation, Planning game, Product backlog, Sprint backlog, Iteration planning, User story definition, Characteristics and content of user stories, Acceptance tests and Verifying stories, Project velocity, Burn down chart, Sprint planning and retrospective, Daily scrum, Scrum roles – Product Owner, Scrum Master, Scrum Team, Scrum case study, Tools for Agile project management. **Agile Testing:** The Agile lifecycle and its impact on testing, Test-Driven Development (TDD), xUnit framework and tools for TDD, Testing user stories - acceptance tests and scenarios, Planning and managing testing cycle, Exploratory testing, Risk based testing, Regression tests, Test Automation, Tools to support the Agile tester.**Agile Software Design and Development:** Agile design practices, Role of design Principles including Single Responsibility Principle, Open Closed Principle, Liskov Substitution Principle, Interface Segregation Principles, Dependency Inversion Principle in Agile Design, Need and significance of Refactoring, Refactoring Techniques, Continuous Integration, Automated build tools, Version control.**Industry Trends:** Market scenario and adoption of Agile, Agile ALM, Roles in an Agile project, Agile applicability, Agile in Distributed teams, Business benefits, Challenges in Agile, Risks and Mitigation, Agile projects on Cloud, Balancing Agility with Discipline, Agile rapid

development technologies.	
Total Hours:	**45**

Text Books:	
1	Ken Schwaber , Mike Beedle “Agile Software Development with Scrum “ , Pearson Education International, First Edition.
2	Lisa Crispin, Janet Gregory, Addison Wesley “Agile Testing: A Practical Guide for Testers and Agile Teams” , Pearson Education India, First Edition .

Reference Books:	
1	Robert C. Martin, “Agile Software Development, Principles, Patterns and Practices”, Pearson, 2013.
2	Alistair Cockburn, “Agile Software Development: The Cooperative Game”, Addison Wesley, Second Edition.
3	Mike Cohn , “User Stories Applied: For Agile Software”, Addison Wesley, 2004.

Web References:	
1	www.it-ebooks.info/tag/agile
2	http://martinfowler.com/agile.htmlwww.tutorialspoint.com/dbms/

Online Resources:	
1	www.umsl.edu/~sauterv/analysis/Fall2013Papers/Buric/-5-references.html
2	https://www.codeproject.com › Development Lifecycle › Design and Architecture
3	https://www .agilemethodology.org
4	https://www.versionone.com › Agile 101
5	https://www .scrummethodology.com

Assessment Methods & Levels (based on Blooms’Taxonomy)

Formative assessment based on Capstone Model (Max. Marks:20)

Course Outcome	Bloom’s Level	Assessment Component	Marks
CO1	Understand	Online Quiz	5
CO2	Apply	Group Assignment	5
CO3,CO4	Apply	Case study	5
CO5	Anaylse	Online Quiz	5

Summative assessment based on Continuous and End Semester Examination

Bloom’s Level	Continuous Assessment			End Semester Examination
	CIA1	CIA2	Term End Assessment	
Remember	-	-	-	-
Understand	80	40	40	40
Apply	20	60	40	40
Analyse	-	-	20	20
Evaluate	-	-	-	-
Create	-	-	-	-