Course code	Course title			L	T	P	J	C
SWE2029	**Agile Development Process**			3	0	0	0	3
Pre-requisite	**SWE1701**			**Syllabus version**				
				v. 1.0				

Course Objectives:

- To provide students with a theoretical as well as practical understanding of agile software development practices and how small teams can apply them to create high-quality software.
- To understand software design and a set of software technologies.
- To demonstrate Agile development and testing techniques.
- To explore the benefits and pitfalls of working in an Agile team.

Expected Course Outcome:

Upon Completion of the course, the students will be able to

- Understand the practices of software development in Agile environment.
- Understand the importance of interacting with business stakeholders in determining the requirements for a software system.
- Apply the Iterative software development processes in software projects.
- Demonstrate the Tools and Techniques in Agile approaches.

Student Learning Outcomes (SLO): | **2,6,17**

Module:1	**INTRODUCTION TO AGILE**	**6 hours**	**SLO: 2**

Introduction to Agile Software Process Model - Agile Methodology & Principles – Types – Benefits - Life Cycle, Agile Project Management – Design and Construction - Agile Testing-Agile Tools.

Module:2	**AGILE PROCESSES**	**6 hours**	**SLO: 6**

Key Process Areas in CMM – Quality Improvement – Six Sigma : Six Sigma Overview, DMAIC - Define, Measure, Analyze, Improve, Control; DMADV -Define, Measure, Analyze, Design, Verify; Lean : Lean Overview, Lean Principles, Lean Rules, Lean Implementation - The 8 Forms of Waste; Lean Tools - 5 Why's, Pareto.

Module:3	**AGILE REQUIREMENTS**	**6 hours**	**SLO: 17**

Meeting the requirements challenge iteratively-Requirements for Agile approach – Gathering & analysis –Behavior Driven Development (BDD) and Acceptance Test Driven Development (ATDD)- Designing storyboards and scrums in Agile approach.

Module:4	**AGILE METHODOLOGIES**	**8 hours**	**SLO: 17**

Pair Programming – Refactoring – Dynamic Systems Development (DSD) – Feature Driven Development (FDD) – Test Driven Development (TDD), Agile Unified Process – Agile Failure Models - Various reasons why agile fails?

Module:5	SCRUM	7 hours	SLO: 6

Scrum Foundations - Scrum Roles - Scrum Master - Product Owner – Team - Scrum Meetings - Scrum Artifacts - Product Backlog - Sprint Backlog - Burn-down Charts - Scaling Scrum – Manager in Scrum and Product Backlog.

Module:6	AGILE PLANNING and ESTIMATION	5 hours	SLO: 6

Principles of Agile Metrics – Release, Planning and Estimation in Scrum.

Module:7	ADVANCED CONCEPTS & CASE STUDIES	5 hours	SLO: 17

Scrum and Large Projects – Distributed Scrum – Agile Adoption - A case study of a scrum project, Scrum Success Stories.

Module:8	**Contemporary issues:** Applications of Agile software development in industry.	2 hours	-

		Total Lecture hours:	45 hours	

Text Book(s)

1. K.S. Rubin, Essential Scrum: A Practical Guide to the Most Popular Agile Process, Addison-Wesley, 2012.

Reference Books

1. M. Cohn, Succeeding with Agile: Software Development Using Scrum, Addison-Wesley, 2009
2. S.W. Ambler, M. Lines, Disciplined Agile Delivery: A Practitioner's Guide to Agile Software Delivery in the Enterprise, IBM Press, 2012.
3. Chetankumar Patel, Muthu Ramachandran, Story Card Maturity Model (SMM): A Process Improvement Framework for Agile Requirements Engineering Practices, Journal of Software,Academy Publishers, Vol 4, No 5 (2009), 422-435, Jul 2009.
4. Kevin C. Desouza, Agile information systems: conceptualization, construction, and management,Butterworth-Heinemann, 2007
5. K. Beck, C. Andres, Extreme Programming Explained: Embrace Change, 2nd Edition, Addison-Wesley, 2004.

Recommended by Board of Studies		5-3-2016	
Approved by Academic Council	No. 40	Date	18-3-2016