



## Sub Committee for Curriculum Development

**Course Name: Software Engineering (Agile Practices)**

**(UG/PG):** PG

**Number of Credits:** 4

**Level:** 4

**Learning Objective(s):** Over the last few years, the software industry has explored a number of lightweight development methodologies as alternative approaches for building software. These so-called agile methodologies emphasize the value of people -- programmers and clients -- over rigid processes. Agile methods are rapidly becoming the choice for software development where requirements are unpredictable or are expected to change over time. This course will gain knowledge on what is agile, why agile is better suited for these situations. It will also cover some of the most common agile frameworks like scrum and XP.

### **Pedagogy:**

Lectures  
Exercise  
Case Studies

### **Course Outline:**

Sr.No.	Topic	Hours
1	Software and System Concepts System and Software Characteristics	2
2	General Engineering Concepts Need for Engineering Approach to Software Development Evolution and adoption of software engineering	6
3	Review of Software Process Models	2
4	Why Agile?	1
5	Agile manifesto Values Principles	2
6	Overview Iterative, incremental and evolutionary Efficient and face-to-face communication Very short feedback loop and adaptation cycle Quality focus	3
7	Philosophy Adaptive vs. predictive Iterative vs. waterfall Code vs. documentation	2
8	Benefits and Challenges	2

9	Using Agile Methods The difference between agile methodologies, such as Scrum, Extreme Programming (XP), and Lean Software Development When to use agile methodologies (and when not to) and how to tailor agile processes for specific scenarios	10
10	Value Streams and Kanban Models The emergence of DevOps and continuous deployment strategies Scaling agile processes	5
11	Applying an Agile mindset to a Project Agile frame-works	5
12	Agile Testing Methodology Scrum Crystal Methodologies DSDM – Dynamic Software Development Method FDD -Feature Driven Development Lean Software Development Kanban – Scrum vs Kanban XP -Extreme Programming	12
13	Agile metrics Drag Factor Velocity No of Unit Tests added Time taken to complete daily build Bugs detected in an iteration or in previous iterations Production defect leakage	8
	<b>Total</b>	<b>60</b>

### Books Recommended:

1. Learning Agile: Understanding Scrum, XP, Lean, and Kanban by Andrew Stellman & Jennifer Greene. Published by O'Reilly Media Inc. USA year 2015
2. Head First Agile: A Brain-Friendly Guide by Andrew Stellman & Jennifer Greene. Published by O'Reilly Media Inc. USA year 2015

### Suggested Evaluation Methods:

Lab based Evaluations  
Assignments  
Presentation

### Parallel/Similar courses the existing curriculum:

S.No.	Name of the course	Institute where it was offered
1	Relational Database Management System	University of Pune
2	Advanced Database Management System	Sikkim Manipal University
3	Relational Database Management System	University of Berkeley

Name of Member	Prof. Harshad Gune	Vijay Shrotriya			
Designation	Associate Professor and Dy. Director	Visiting Faculty			
Org. / Inst.	SICSR				
Signature					

Name of the Expert:

Signature:

Date:

