



Mehran University of Engineering and Technology, Jamshoro
Department of Software Engineering

Title of Subject	:	<u>Agile Software Development (SE705)</u>	
Discipline	:	Software Engineering (3 rd Semester)	
Effective	:	24MESE & onwards	
Pre-requisite	:	--	
Assessment	:	Theory: 10% Sessional, 30% Mid, 60% Final	
Credit Hours	:	2 + 0	Marks: 50
Minimum Contact Hours:		42	

Objectives of course:

- To understand the principles and values of Agile Software Development.
- To learn the various Agile methodologies and frameworks used in the industry.
- To develop proficiency in implementing Agile practices and techniques.
- To cultivate effective teamwork, communication, and collaboration skills in an Agile environment.
- To acquire practical experience in Agile project management and iterative development.
- To embrace adaptability and responsiveness to changing requirements and customer feedback.
- To foster a culture of continuous improvement and learning within Agile teams.
- To address challenges and best practices in Agile software development.

Course outline:

Introduction to Agile Software Development

Overview of the Agile Manifesto and its core values and principles.

Evolution of Agile methodologies and their impact on modern software development.

Comparison of Agile with traditional waterfall approaches.

Agile Methodologies and Frameworks

Scrum: Roles, ceremonies, and artifacts in Scrum.

Kanban: Visualizing workflow and continuous delivery principles.

Extreme Programming (XP): Pair programming, test-driven development (TDD), and continuous integration.

Lean Software Development: Reducing waste and optimizing flow.

Agile Requirements and User Stories

Techniques for gathering, refining, and managing Agile requirements.

Writing effective user stories and acceptance criteria.

Prioritizing and managing the product backlog.

Agile Planning and Estimation

Iterative planning and release planning in Agile projects.

Agile estimation techniques, including story points and planning poker.

Tracking progress and adapting plans in response to changing circumstances.

Agile Development Practices

Test-driven development (TDD) and behavior-driven development (BDD).

Continuous integration and automated testing.

Pair programming and code reviews for improved code quality.

Agile Project Management and Metrics

Setting up and managing Agile projects with Agile project management tools.

Measuring and tracking team performance with Agile metrics.

Addressing project risks and challenges in Agile projects.

Agile Team Collaboration and Communication

Facilitating effective Agile team meetings and stand-ups.

Enhancing collaboration and communication within cross-functional Agile teams.

Adopting Agile project management tools for seamless collaboration.

Agile Delivery and Continuous Improvement

Incremental delivery and continuous deployment in Agile projects.

The role of retrospectives in fostering continuous improvement.

Identifying and implementing improvements in Agile processes.

Scaling Agile for Large Projects and Organizations

Strategies for scaling Agile practices in large and distributed teams.

Agile frameworks for enterprise-level projects (e.g., SAFe, LeSS).

Managing dependencies and aligning multiple Agile teams.

Agile Adoption and Transformation

Strategies for successfully adopting Agile within organizations.

Overcoming resistance to Agile transformation and driving cultural change.

Evaluating the impact of Agile adoption on software development.

BOOKS RECOMMENDED

1. Robert C. Martin, Agile Software Development, Principles, Patterns, and Practices, Pearson, Latest Edition.
2. Kent Back & Cynthia Andres, Extreme Programming Explained, Addison-Wesley Professional, Latest Edition.
3. Andrew Stallman and Jennifer Greene, Learning Agile: Understanding Scrum, XP, Lean, and Kanban, O'Reilly Media, Latest Edition.

Approval:

Board of Studies:

Board of Faculty:

AS&RB

Academic Council:

Resolution No. 2.3

Resolution No. 21.9

Resolution No.

Resolution No.

Dated: 21-07-2023

Dated: 07-12-2023