INTXXX: AGILE-DRIVEN DEVELOPMENT AND PROJECT MANAGEMENT

L:2 T:0 P:2

Course Outcomes: Through this course, students should be able to

CO1 :: explain the key principles of Agile methodologies and the Scrum framework.

CO2 :: understand the differences between Agile and traditional project management approaches.

CO3 :: apply Agile practices to simulate an Agile working environment, demonstrating effective team collaboration and continuous improvement.

CO4 :: apply basic Agile engineering techniques to real-world coding exercises to improve code quality and teamwork.

CO5 :: analyze a product backlog to identify and prioritize tasks based on customer value.

CO6 :: analyze Agile team performance using Agile metrics for continuous improvement strategies.

Unit I (8 Hours)

Introduction to Agile Methodologies: Agile principles and values, Overview of Scrum framework: roles, ceremonies, and artifacts, Comparison between Agile and traditional project management, Setting up a Scrum board and backlog (using tools like Jira or Trello), Simulating Agile ceremonies: Daily standup and retrospective

Unit II (8 Hours)

Agile Team Dynamics and Collaboration: Building and managing cross-functional teams, Roles in an Agile team: Product Owner, Scrum Master, Development team, **Role of Product Manager in Agile Development**, Effective communication and conflict resolution within Agile teams, Team-based exercises to simulate cross-functional collaboration, Role-playing exercises for Product Owner, Scrum Master, and team roles

Unit III (8 Hours)

Introduction to Project Management in Agile: Role of the Product Manager in Agile, Project lifecycle and roadmap development, **Product Lifecycle and RoadMap Development, Customer-centric product development, Backlog management and prioritization techniques** (MoSCoW, WSJF), Creating a product roadmap and prioritizing the backlog, Case studies on customer-centric development in Agile

Unit IV (8 Hours)

Agile Engineering Practices: Test-Driven Development (TDD) and Behavior-Driven Development (BDD), Pair programming and continuous integration, Agile metrics: Velocity, burndown, and cycle time, Hands-on exercises in TDD and BDD using simple coding projects, Pair programming practice with peer evaluations, Using Agile metrics in project management tools to track progress

Unit V (8 Hours)

Scaling Agile in Large Projects: Introduction to Scaling Agile frameworks: SAFe, LeSS, and Scrum@Scale, Agile practices for distributed and large teams, Challenges and best practices for scaling Agile in enterprises, Creating and managing a scaled Agile setup using tools, Group projects simulating distributed Agile teams

Unit VI (8 Hours)

Advanced Product Management in Agile: Product strategy and market fit analysis, Data-driven product decisions and A/B testing, Managing technical debt in Agile projects, Conducting a market fit analysis using case studies, Running A/B testing simulations for product decisions, Analyzing technical debt in coding exercises and devising refactoring strategies

Textbooks

1. **"Agile Project Management with Scrum"** by Ken Schwaber

Reference Books

1. **"User Story Mapping: Discover the Whole Story, Build the Right Product"** by Jeff Patton
2. **"Essential Scrum: A Practical Guide to the Most Popular Agile Process"** by Kenneth
3. **"Scaling Agile: A Lean Jumpstart"** by Jochen Krebs