**Birla Institute of Technology & Science, Pilani**

**Work Integrated Learning Programmes Division**

**Second Semester- 2024-25**

## **Digital Learning** **Handout**

Part A: Content Design

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| --- | --- |
| Course Title | Agile Software Process |
| Course No(s) | SE ZG544 |
| Credit Units | 4 |
| Credit Model | 4 (1 + 1 + 2)  (Class Hour + Assignment Hour + Student Preparation Hours) / week (Avg.) |
| Instructors | K. ANANTHARAMAN |
| Version No: | 1.1 |
| Date: | 15 Jan. 25 |

**Course Description:**

**Course Objectives**

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| --- | --- |
| **No** | **Course Objective** |
| **CO1** | To make software engineers trained in legacy software development practices adopt Agile Methodologies for rapid development and deployment of products and services |
| **CO2** | To expose various Agile Methods currently in practice and their applicability in various scenarios of software development and testing |
| **CO3** | To enable software engineers and project managers decide on the right tools and techniques considering the implementation challenges, pros and cons of each. |

**Text Book(s):**

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| --- | --- |
| **T1** | Agile and Iterative Development A Manager’s Guide - Craig Larman / Pearson Education - 2004. |
| **T2** | Agile Project Management for Dummies - [Mark C. Layton](http://library.books24x7.com/SearchResults.aspx?qdom=author&scol=%7ball%7d&qstr=Mark%20C.%20Layton), [John Wiley & Sons](http://library.books24x7.com/books.aspx?imprintid=35) - 2012 |

**Reference Book(s) & other resources:**

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| --- | --- |
| **R1** | Agile Practice Guide (ENGLISH) by Project Management Institute Published by Project Management Institute, 2017(Agile methodologies) |
| **R2** | Introduction to Agile Methods by Sondra Ashmore Ph.D.; Kristin Runyan Published by Addison-Wesley Professional, 2014 |

**Learning Outcomes: Students will be able to**

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| LO1 | Students to understand and adopt Agile Methods in their projects by understanding the benefits and challenges involved |
| LO2 | Project Managers to be able to better estimate software projects using Agile Methods and manage changing requirements |
| LO3 | Engineers involved in Testing and Maintenance projects to be able to implement Agile Test-Driven Development (TDD) |

**Part B: Learning Plan**

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| **Module #** | **List of Topic Title** | **LS #** | **Sub-Topics** | **Reference** |
| 1 | Agile Methods - An Introduction | 1.1 | Traditional Software Development Practices | T2-Chap1 |
|  |  | 1.2 | Need for Agile Methods |
|  |  | 1.3 | Benefits of Agile Methods |
| 2 | Agile Software Development | 2.1 | Iterative & Incremental Approaches | T1-Chap5  T2-Chap4 |
|  |  | 2.2 | Popular Agile Methods |
| 3 | Agile Principles and Manifesto | 3.1 | Vision and Principles and Manifesto | T1-Chap3 |
| 4 | Agile Methodologies | 4.1 | Overview of SCRUM Methodology | T1-Chap7,8 |
|  |  | 4.2 | Extreme Programming (XP) |
|  |  | 4.3 | Test-Driven Development (TDD) |
|  |  | 4.4 | Lean Software Development | Class Notes |
|  |  | 4.5 | Kanban | Class Notes |
| 5 | Agile Requirements | 5.1 | Requirements Management | T1-Chap5,  T2-Chap7,11 |
|  |  | 5.2 | Effort Estimation |
| 6 | Release Planning in Agile | 6.1 | Characteristics of Agile Planning | T1-Chap7,  T2-Chap7,8 |
|  |  | 6.2 | Agile Release Planning |
| 7 | Iteration Planning | 7.1 | Sprint as an Iteration | T2-Chap8 |
|  |  | 7.2 | Velocity and Capacity based Planning |
|  |  | 7.3 | Release Sprint Planning |
| 8 | Executing a Sprint | 8.1 | Sprint Ceremonies | T2-Chap9,10 |
|  |  | 8.2 | Sprint Reviews and Retrospectives |
| 9 | Agile Metrics and Tools | 9.1 | Overview of Agile Metrics | T2-Chap19,  T1-Chap14 |
|  |  | 9.2 | Tools for Agile Project Management |
| 10 | Quality Management in Agile | 10.1 | Managing Quality in Agile Project | T2-Chap14 |
|  |  | 10.2 | Managing Risks in Agile |
| 11 | Agile Myths and Pitfalls | 11.1 | Common Mistakes and Myths in Agile | T1-Chap2,7,8,11 |
|  |  | 11.2 | Predictive Planning vs Adaptive Planning |
|  |  | 11.3 | Distributed Agile |
| 12 | Ensuring Agile Success | 12.1 | Managing Change | T2-Chap16,17 |
|  |  | 12.2 | Evolution of Agile with Times |

**Evaluation Scheme:**

**Legend:** EC = Evaluation Component; AN = After Noon Session; FN = Fore Noon Session

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| Evaluation Component | Name  (Quiz, Lab, Project, Mid-term exam, End semester exam, etc.) | Type (Open book, Closed book, Online, etc.) | Weight | Duration | Day, Date, Session, Time |
| EC – 1 | Quiz-1 | Online | 5% | 10 days | February 17-27, 2025 |
|  | Quiz-2 | Online | 5% | 10 days | April 1-10, 2025 |
|  | Assignment | Online | 20 % | 10 days | May 1-10, 2025 |
| EC - 2 | Mid-Semester Test | Closed Book | 30% | 2 hours | 22/03/2025 (AN) |
| EC - 3 | Comprehensive Exam | Open Book | 40% | 2 ½ Hours | 24/05/2025 (AN) |

EC1\* (20% - 30%): Quiz (optional): 5-10 %, Lab Assignment/Assignment: 20% - 30%

Syllabus for Mid-Semester Test (Closed Book): Topics in Contact session: 1 to 8

Syllabus for Comprehensive Exam (Open Book): All topics

**Important Links and Information:**

**eLearn Portal:** [https://elearn.bits-pilani.ac.in](https://elearn.bits-pilani.ac.in/)

Students must visit the eLearn portal regularly and stay updated with the latest announcements and deadlines.

**Contact Sessions:** Students should attend the online lectures as per the schedule provided on the eLearn portal.

**Evaluation Guidelines:**

1. EC-1 consists of either two Assignments or three Quizzes. Students will attempt them through the course pages on the eLearn portal. Announcements will be made on the portal in a timely manner.
2. For Closed Book tests: No books or reference material of any kind will be permitted.
3. For Open Book exams: “open book” means text/ reference books (publisher copy only) and does not include any other learning material. No other learning material will be permitted during the open book examinations. For Detailed Guidelines refer to the attached document.

[EC3 Guidelines](https://docs.google.com/document/d/1DJvlhVzOaIw4njc9g30MlBuu0DqTzeIL/edit?usp=drive_link&ouid=104481483083011111295&rtpof=true&sd=true)

1. If a student is unable to appear for the Regular Test/Exam due to genuine exigencies, the student should follow the procedure to apply for the Make-Up Test/Exam, which will be made available on the eLearn portal. The Make-Up Test/Exam will be conducted only at selected exam centres on the dates to be announced later.

It shall be the responsibility of the individual student to be regular in maintaining the self-study schedule as given in the course handout, attend the online lectures, and take all the prescribed evaluation components such as Assignments/Quizzes, Mid-Semester Tests and Comprehensive Exams according to the evaluation scheme provided in the handout.

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