

Devi Ahilya University, Indore, India Institute of Engineering & Technology			III Year B.E. (Computer Engg.) (Full Time)				
Subject Code & Name	Instructions Hours per Week			Credits			
	L	T	P	L	T	P	Total
CER5E3 METHODS OF SOFTWARE DEVELOPMENT	3	1	2	3	1	1	5
Duration of Theory Paper: 3 Hours							

Objective: To familiarize with the different approaches of software development, the suitability for various types of software domains.

Prerequisite: Knowledge of a programming language, software design principles, software testing principles and concepts preferably object oriented and amid-size project work.

COURSE CONTENTS

UNIT I

Role and function of the software development lifecycle (SDLC), Generic stages of the software development lifecycle (SDLC), Main activities in each stage of the software development lifecycle, Demonstrate the high-level deliverables from each stage of the software development lifecycle, view points of technical development and project management, Rapid prototyping, Incremental development, Spiral models, Aspect Software Development, Feature-Driven Development.

UNIT II

Agile mindset, Various Core agile methods, Comparison between agile methods and traditional methods, application of agile methods, agile mindset, reviewing different frameworks of agile, strengths and weaknesses of each of the waterfall and agile software development methods, Scrum and Kanban practices, eXtreme Programming (XP), Practices, Feature-Driven Development, Open Unified Process (OpenUP)-Roles, Disciplines, Tasks, Artifacts, Process

UNIT III

Rational unified process, Key features and structure of RUP, Phases, Disciplines, Effective deployment of six best practices, Inception, Elaboration, Construction, and Transition phases, RUP building blocks-Roles, Work products and Tasks & Activities, Business modeling, Requirements, Analysis and design, Implementation, Test and Deployment. Configuration and change management, Project management, Environment.

UNIT IV

DevOps (development and operations), Balancing SLO With Fast Application Delivery, Setting appropriate SLIs and SLOs, Creating a Fair and Effective On-Call Policy - best practices to improve your on-call practice, Responding to Incidents Effectively, Creating an effective incident management process, Overcoming Microservices Complexity, Good communication practices

for a microservices environment, Using data to better understand how microservices are working. Using Data to Speed Software Development, Eliminate data silos, Understand the impact of changes, Understand the impact of changes. DevOps Lifecycle- Development, Testing, Integration, Deployment, Monitoring. DevOps Principles, Roles, Responsibilities, and Skills of a DevOps Engineer. Benefits of DevOps. Agile Vs DevOps.

UNIT V

Recent Software Development Methods for-Artificial Intelligence, Cross-Platform Development Tools, Blockchain, The internet of things (IoT), Continuous Delivery and Deployment, Progressive Web Apps, Low-Code Development, Data Science, Cybersecurity, Language Trends, The Mixed Reality-the combination of twin technologies of virtual reality (VR) and augmented reality (AR)

BOOKS RECOMMENDED:

- [1] C. Gezzi, M. Jazayeri and D. Mandriohi *Fundament of software Engineering*, PHI 1996.
- [2] R.S. Pressman, *software Engineering A Practitioner Approach*, 4/e McGraw-Hill International Edition 1997.
- [3] P. Jalote, *An Integrated Approach to Software Engineering*, Naresa Publishing, Latest Edition.
- [4] Ian Sommerville, *Software Engineering*, Pearson education, 7th edition
- [5] Agile Software Development: Principles, Patterns and Practices, by Robert C. Martin Pearson; 1st edition
- [6] Agility and Discipline Made Easy: Practices from OpenUP and RUP 1st Edition, Per Kroll, Addison Wesley
- [7] The Unified Process Explained 1st Edition, Kindel Scott, Addison Wesley
- [8] The Rational Unified Process: An Introduction (3rd Edition), Philippe Kruchten, Addison Wesley.
- [9] The DevOps Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations, Gene Kim, Patrick Debois, et al, IT Revolution