

Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim- Goa

Name of Faculty: Mr. Amar R. Naik

Subject: Computer Science

Paper code: CSC107 Software Engineering

Program: T.Y.B.Sc.

Division: -

Academic year: 2024 - 2025

Semester: V

Total Lectures: 60

Course Objectives: To study various methods used for software development with a stress on Agile Software Development.

Course Learning Outcome:

Upon completion of the course students should be able to :

- Explain Evolution, fundamentals of Software Engineering methods and Source control tools.
- Apply Agile software development method – Scrum.
- Apply Refactoring techniques.
- Perform software testing using various quality assurance methods.

Student Learning Outcome:

Upon completion of the course students should be able to :

- Explain Evolution, fundamentals of Software Engineering methods and Source control tools.
- Apply Agile software development method – Scrum.
- Apply Refactoring techniques.
- Perform software testing using various quality assurance methods.

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	28/06/2024	29/06/2024	1	- Syllabus Overview, Marks Distribution, Introduction to Software Engineering		Laptop, LCD Projector, PPT	Pankaj Jalote , Integrated Approach to Software Engineering
July	01/07/2024	06/07/24	4	- Software Development phases, Requirements Analysis - SD: Design - SD: Implementation - Testing and Maintenance	Requirement analysis	Laptop, LCD Projector, PPT	Pankaj Jalote , Integrated Approach to Software Engineering
July	08/07/2024	13/07/24	4	- SDLC, Waterfall methodology - Prototyping and Iterative - Reverseengineering, reengineering - Revision and QA	Comparison of s/w models	Laptop, LCD Projector, PPT	Pankaj Jalote , Integrated Approach to Software Engineering
July	15/07/2024	20/07/24	4	- Introduction to Source Control tools - versioning, - Types of VCS - Check-in/checkout, commit - Branching	Git implementation	Laptop, LCD Projector, PPT	Progit
July	22/07/2024	27/07/24	4	- Merging, synchronization - Revision - Agile Approach: Agile Framework, Agile Manifesto, - Agile Values, Agile Processes		Laptop, LCD Projector, PPT	<ul style="list-style-type: none"> • Progit • Chris Sims - Elements of Scrum
July/ August	29/07/2024	03/08/24	4	- Agile Principles (06) - Agile Principles (06) - Agile Project Planning and Management		Laptop, LCD Projector, PPT	Chris Sims - Elements of Scrum

				- Scrum			
August	05/08/2024	10/08/24	4	- XP Overview - XP practices - Unit III Revision - Software Project Management using scrum		Laptop, LCD Projector, PPT	Chris Sims - Elements of Scrum
August	12/08/2024	17/08/24	4	- User stories 3Cs - User stories examples - Estimation - Revision	- Writing User Stories - Estimating user stories	Laptop, LCD Projector, PPT	S. Kenneth Rubin, - Essential Scrum
August	19/08/2024	24/08/24	4	- Sprint, Sprint, backlog - Product backlog - PBI - Estimation, Velocity, capacity		Laptop, LCD Projector, PPT	S. Kenneth Rubin, - Essential Scrum
August	26/08/2024	31/08/24	4	- Estimation techniques: Planning poker, story points - Bucket System for Estimating - Scrum roles - Scrum artifacts: PB		Laptop, LCD Projector, PPT	S. Kenneth Rubin, - Essential Scrum
September	02/09/2024	07/09/24	3	- Sprint backlog, burndown chart - Planning Onion, Agile Approach to planning, Scrum ceremonies - Design and implementation using XP: Overview, Planning/ Feedback loops		Laptop, LCD Projector, PPT	<ul style="list-style-type: none"> • S. Kenneth Rubin, - Essential Scrum • Martin Fowler - Code Complete
September	09/09/2024	14/09/24	1	- XP Values		Laptop, LCD Projector, PPT	Martin Fowler - Code Complete
September	16/09/2024	21/09/24	4	- XP Practices - TDD - Continuous Integration, Software Review - Refactoring (code smells)	Refactoring Demo	Laptop, LCD Projector, PPT	Martin Fowler - Code Complete
September	23/09/2024	28/09/24	4	- Refactoring techniques,		Laptop, LCD Projector, PPT	<ul style="list-style-type: none"> • Martin Fowler - Code Complete

				<ul style="list-style-type: none"> examples, guidelines , Unit testing, Pair Programming - Quality assurance: Verification & Validation, Testing approaches, Code Inspections - Static analysis, Error, fault, failure 			<ul style="list-style-type: none"> • Pankaj Jalote - Integrated Approach to Software Engineering
September/ October	30/09/2024	05/10/24	3	<ul style="list-style-type: none"> - Test plan, Test Oracle, Test case design - Black box testing, Equivalence Class partitioning - Boundary value analysis, White Box testing, Structural testing 	Writing Testcases	Laptop, LCD Projector, PPT	Pankaj Jalote - Integrated Approach to Software Engineering
October	07/10/2024	12/10/24	4	<ul style="list-style-type: none"> - Types of testing, testing tools- JUnit - Testing, Levels of Testing - Fail Fast Systems, Test plan, Test case specifications - Defect logging and tracking Testing tools: Selenium, Build tools 		Laptop, LCD Projector, PPT	Pankaj Jalote - Integrated Approach to Software Engineering
October	14/10/2024	19/10/24	4	<ul style="list-style-type: none"> - Iteration and Release planning - Continuous Integration - Revision 		Laptop, LCD Projector, PPT	Pankaj Jalote - Integrated Approach to Software Engineering
October	21/10/2024	22/10/2024	2	<ul style="list-style-type: none"> - Revision - Solving past question papers 		Laptop, LCD Projector, PPT	

PRACTICAL

June	28/06/2024	29/06/2024	-	-	-	-	-
July	01/07/2024	06/07/24	4	Git	Git Excercises	Laptop, Github, Git bash, LCD Projector	<ul style="list-style-type: none"> • Progit • https://git-scm.com/doc
July	08/07/2024	13/07/24	4	Git	Git Excercises	Laptop, Github, Git bash, LCD Projector	<ul style="list-style-type: none"> • Progit • https://git-scm.com/doc
July	15/07/2024	20/07/24	4	Git	Git Excercises	Laptop, Github, Git bash, LCD Projector	<ul style="list-style-type: none"> • Progit • https://git-scm.com/doc
July	22/07/2024	27/07/24	4	User stories	Writing User stories		S. Kenneth Rubin, - Essential Scrum
July/ August	29/07/2024	03/08/24	4	User stories, Estimation	Refining User stories, estimation		S. Kenneth Rubin, - Essential Scrum
August	05/08/2024	10/08/24	4	Burndown charts, Scrum board	Draw Burndown chart, Scrum board preparation		https://www.atlassian.com/agile/tutorials/burndown-charts
August	12/08/2024	17/08/24	4	Scrum board using Trello	Scrum board preparation		https://trello.com/
August	19/08/2024	24/08/24	4	JUnit Testing	Perform Unit testing		https://junit.org/junit5/
August	26/08/2024	31/08/24	4	JUnit Testing			https://junit.org/junit5/
September	02/09/2024	07/09/24	4	Automated Testing using Selenium	Perform automated testing		https://www.selenium.dev/
September	09/09/2024	14/09/24	4	Refactoring exercises	Perform refactoring		Martin Fowler - Code Complete
September	16/09/2024	21/09/24	4	Refactoring			Martin Fowler - Code Complete
September	23/09/2024	28/09/24	4	Pair programming			Martin Fowler - Code Complete

September/ October	30/09/2024	05/10/24	4	Debugging and defect tracking	Perform debugging		https://www.bugzilla.org/
October	07/10/2024	12/10/24	4	Maven Build, Javadoc	Using build tool		https://www.digitalocean.com/community/tutorials/maven-eclipse-ide
October	14/10/2024	19/10/24	4	Practice, Revision			
October	21/10/2024	22/10/2024	4	Revision			

***Assessment Rubrics**

Component	Max Marks
ISA 1	10
ISA 2	10
Practical	50
Project	-
Semester End Exam	80