FAST National University of Computer and Emerging Sciences

Department of Computer Science, Peshawar Campus

Weekly Progress Report

(Spring 2023)

Course Name	Software Engineering	**Instructor**	Usama Musharaf

Lec.	Duration	Topics Covered	Evaluation Instruments used
1	1.5 hrs	Introduction to Software Engineering, Importance of Software Engineering, Software Engineering History,	
2	1.5 hrs	Agile Development, Principles of Agile Development, Agile Development Process Models. XP Planning by creating user stories, XP Design by CRC diagram. Test First Development. Discussion on Scrum Process Model, comparison between XP and scrum.	
3	1.5 hrs	Intro to Software Quality Engineering, Quality Models, Quality Engineering at SDLC phases.	
4	1.5 hrs	Requirement Engineering, RE Process, Quality Engineering at RE phase, SRS Document,	
SOFTWARE ARCHITECTURE			
5	1.5 hrs	Conceptual Model of Architecture Representation (ISO/IEC/IEEE 42010), Architectural Views, Views and View Point, 4+1 View Model (Scenario, Logical, Development, Process and Deployment View),	
6	1.5 hrs	Discussion on Uber Case Study (System Design). Views and Viewpoint discussion in the context of case study.	
7	1.5 hrs	Architectural Styles, Categories of Architectural Style, Hierarchical Software Architecture (Layered), Data Flow Software Architecture (Batch Sequential, Pipe & Filter).	
8	1.5 hrs	Data Centered/shared Software Architecture (Data-Centered, Shared Repository), Component based Software Architecture, Component based Development,	
9	1.5 hrs	Event Driven Architecture (Asynchronous vs Synchronous), Distributed Software Architecture (Client Server Architecture, Multi-tier client server architecture),	
10	1.5 hrs	Distributed Software Architecture (Cont..), Service Oriented Architecture, Components of SOA, Service Composition, Distributed Software Architecture (Cont…) Microservices Architecture, Communication in Microservices, Representational State Transfer (REST), REST Principles.	

11	1.5 hrs	Quality Engineering at Architecture phase Software Quality Attributes Performance and Scalability, Problems, Principles, Objectives, Metrics,	
12	1.5 hrs	Software Reliability, Fault Tolerant Design, Application Architecture to System Architecture.	

DEVOPS

13	1.5 hrs	Introduction to DevOps, Software Configuration Management, Version Controlling, Types of VCS, GIT Operations in GIT, GIT File Status life cycle, Installation and Setting,	
14	1.5 hrs	Basic Workflow Demo with GIT and Smart GIT, Basic commands, git init, git status, git add, git commit, git reset,	
15	1.5 hrs	Branches and Merging in GIT, Working with branches, Branches Command (git branch, git branch –v, git branch branch-name, git checkout branch-name, git merge branch-name) Merge Conflict. Demo with Smart GIT. Stashing,	
16	1.5 hrs	GIT hub, working with remote repositories, commands to interact remote repositories (push, pull, fetch, merge etc..). Git Workflow and Forking,	
17	1.5 hrs	Introduction to Microservices Architecture, Large scale software development and deployment, Virtualization vs Containerization, Intro to Dockers, Dockers Architecture,	
18	1.5 hrs	Dockers Installation and Basic commands, Docker Images, Docker Registries, Containerizing an app from scratch,	
19	1.5 hrs	Docker compose, Running Multi Containers application,	
20	1.5 hrs	Container Orchestration with Kubernetes-Introduction to Kubernetes, Kubernetes Architecture, Kubernetes installation with kubectl and minikube, Kubernetes Definition File (YAML), Pods in details,	
21	1.5 hrs	ReplicaSets, Jobs, and CronJobs,	
22	1.5 hrs	Services and Probes, Volumes, Configuring applications and Deployments,	
23	1.5 hrs	Continuous Integration and Continuous Delivery-CI/CD Pipeline with Jenkins,	
24	1.5 hrs	Continuous Integration and Continuous Delivery-CI/CD Pipeline with Jenkins,	

SOFTWARE TESTING

25	1.5 hrs	Software Testing, Testing Principles, Black Box Testing, Types of Black Box Testing.(Boundary Value Analysis, Decision Table based testing etc.	
26	1.5 hrs	White Box, Writing Test Cases, Control Flow Graph, Cyclomatic Complexity Metric,	

27	1.5 hrs	Performance Testing using Locust Tool	
28	1.5 hrs	Performance Testing using Locust Tool	
29	1.5 hrs	Performance Testing using Locust Tool	
30	1.5 hrs	Performance Testing using Locust Tool	