SQA MANUAL AND AUTOMATION QAT COURSE STRUCTURE* 2025

PROGRAMMING LANGUAGE FUNDAMENTALS: PYTHON & JAVA   88 hours

Basics · Hardware and Software Architecture · Computer and Networking Basics · Software Infrastructure and Applications · Numbering Systems Notation · Open Source and Open Standards · Development Platforms · Integrated Development Environment (IDE) Basics · Compiler and Builder · Programming Language Basics · Data Types · Operators · Statements · Functions · Symbol Presentation and Coding · Array · Basic Programming Patterns · Practicing · Sequential and Binary Search · Sorting · Reversing · Merging · Object-Oriented Programming (OOP Principles: Encapsulation, Inheritance) · Polymorphism · Classes and Objects · Practicing in Python and Java

CORE JAVA FUNDAMENTALS   100 hours

Introduction in Java and JVM · Data Types (Primitives and Classes) · Operators and Methods · Basic Algorithms · Arrays · Java Inheritance · Interfaces · Java Collections Framework (JCF) · Iterator Design Pattern · Exceptions · Input-Output Streams · Introduction to JUnit for Java Automation Testing · Wrapper Classes · String / StringBuilder

SOFTWARE TESTING, DATABASE   104 hours

Importance of Testing · Testing Objectives, Roles of Testing · ISO · Model QA-QC-Testing, V&V Fundamental test process · Test Documentation (STP, STD, STR) · The psychology of testing · Software development models (V-Model, RAD, Agile) · Test levels · Test types · Identifying test conditions and designing test cases · Choosing a test technique · Test organization · Black Box, White Box, Grey Box · Test plans, estimates, and strategies · Test progress monitoring and control · Configuration management · Risk and testing · Incident management · Types of test tool · Effective use of tools: Potential benefits and risks · Introducing a tool into an organization · Test and Incident management tools (Jira) · Linux basic principles · Load testing · TCP/IP · API testing - Postman · Testing of mobile applications – Android Studio (Android Emulator) / Genymotion

DATABASE AND SQL   SQL Basics · Relational Databases · Tables · Logical Structure · Keys · Indexes · SQL Development Platform · CRUD Operations: Create, Read, Update, and Delete Data

SOFTWARE TESTING AUTOMATION   100 hours

Basic autotests concept · HTML and DOM Overview · Setting Up Browser, Project, and IDE · Locating Page Elements with ID, Name, Class, CSS, and XPath · Selenium webdriver commands · SelectorsHub · Using projects patterns — PageObject and PageFactory · Creating test data generators · Assertions and Expectations in Test Scripts · Infrastructure for building and running tests — Maven, Gradle · Testing framework — TestNG · Running tests on grid, local network, and cloud service · Running tests in parallel · Continuous integration — Jenkins · Logging, Screenshots, and Video Reports · API autotesting – OkHttp Client, Rest Assured · Automation of testing of mobile applications - Appium

TOTAL THEORETICAL HOURS   **392 hours**
PRACTICAL WORK ON REAL PROJECTS   **80 hours**

TOTAL HOURS   **472 hours****

* — *Tel-Ran Educational Center may adjust program content based on technology updates while maintaining the total study hours. Changes may occur without prior notice to students.*
** — *Free Webinars: Additional free webinars are held regularly, covering topics discussed in class and providing homework analysis.*