



## QA AUTOMATION MODULE AT COURSE STRUCTURE\* 2023

### PROGRAMMING LANGUAGE FUNDAMENTALS

80 hours

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

### 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 · JUnit — Java Automation Testing · Wrapper Classes · String / String Builder

### SOFTWARE TESTING

80 hours

Why is testing necessary · Testing Objectives, Roles of Testing · Model QA-QC-Testing, V&V Fundamental test process, Test Plan · 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 · 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 (Bugzilla/Testopia or Jira) · Linux basic principles · Load testing

### SOFTWARE TESTING AUTOMATION

132 hours

Basic autotests concept, HTML, DOM · Setting up Browser, Project, IDE · Recording tests with Selenium IDE · Locating page elements with ID, Name, Class, using CSS and Xpath · Using FireBug and FirePath plugins · Selenium webdriver commands · Using projects patterns — PageObject and PageFactory · Creating test data generators · Assertions and Expectations Infrastructure for building and running tests — Maven · Testing frameworks — JUNIT or TestNG · Spring and Selenium · Running tests on grid, local network and cloud service · Running tests in parallel · Continuous integration — Jenkins and TeamCity · Logging, screenshotting and video reports

**Database and SQL Basics** · Relational Databases · Tables · Logical Structure · Keys · Indexes · SQL Development Platform · MongoDB · MongoDB in Cloud · CRUD Operations: Create, Read, Update, and Delete Data · Mongo Aggregation

### TOTAL THEORETICAL HOURS

132 hours

### PRACTICAL WORK ON REAL PROJECTS

80 hours

### TOTAL HOURS

212 hours\*\*

\* — Tel-Ran educational center can make changes and adjustments to this program due to the relevance of the studied technologies without losing the total number of study hours without notifying students. The online QA English course is free and optional.

\*\* — doesn't include FREE webinars that are held regularly on topics covered in class and on homework analysis