



FULL STACK DEVELOPMENT + AI ENGINEER COURSE STRUCTURE 2026

PROGRAMMING LANGUAGE FUNDAMENTALS: PYTHON

60 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 • Classes and Objects • Practicing in Python • Using AI tools for programming and training

FRONTEND JAVASCRIPT, REACT FRAMEWORK

160 hours

HTML Basics • CSS Styles • CSS Flex-box • Responsive Design Principles • CSS Animation • JavaScript Basics • DOM Interactions • JS Language Features (ES6+) • JS Functions and Closures • JS Asynchronous Programming (Promises, Async/Await) • JS OOP Principles • JS REST API Integration • TypeScript Basics • TypeScript Types and Interfaces • Advanced TypeScript Features (Generics, Utility Types) • React Intro • Virtual DOM • Main React Hooks • React Vite • SPA Navigating • React - Query Library • ReactJS: Props, Components, States, Forms, Events, Routers • Redux Basics • Advanced Redux Patterns (Thunk, Saga) • Redux Toolkit • UI Library • Testing React Applications (Jest) • Using AI tools for frontend development

BACKEND JAVASCRIPT, NODE.JS

80 hours

Node.js Intro • Modules Model • Event-Driven Principles • Streams • HTTP Server • Express Framework • REST API with Express • Routing and Parameters • Error Handling in Express • Authentication and Authorization • Logging Principles • Security Best Practices • MongoDB Basics • SQL Basics • WebSocket • Node.js Debugging • Async Programming • Dependency Management with npm/yarn • Testing Node.js Applications • Using AI tools for backend development

TOTAL THEORETICAL HOURS

300 hours

REAL PROJECT DEVELOPMENT (frontend and backend application)

80 hours

Full development process with application design and coding using the most popular version control system and deploying on cloud.

TOTAL HOURS

380 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 Weekly Webinars. We run additional free webinars every week, reinforcing class topics and reviewing homework. These sessions are not included in the core syllabus and are provided at no cost.