React (Full Stack Web) Specialization

Syllabus At A Glance

Unit 1: Front End

- Core Javascript skills
- Collaboration using git and Github
- Creating HTML forms
- Core CSS skills
- Visual Studio Code Editor

Unit 2: Javascript & React

- Functions
- Object orientation
- Component Lifecycle
- Javascript Modules
- Async Programming
- Debugging with Chrome Devtools
- Single Page Apps with React

Unit 3: React Deep Dive

- Managing State with React
- Component Hierarchy and Design
- Styling React Components
- Server Rendering
- Testing React Components
- Implementing Forms
- Optimizing React sites

Unit 4: Back End

- Core SQL Skills
- PostgreSQL Database
- Node.js Fundamentals
- Building Web Apps with Express
- Sequelize ORM
- Javascript REST APIs
- CRUD Actions with Javascript

Unit 5: Advanced React

- Building with React and Redux
- Using React Hooks
- Responsive pages with Flexbox
- Special effects using CSS
- Deployment on Heroku

Unit 6-8: Capstone Projects

- Independent project work
- Interview preparation
- Demo preparation
- Final assessments

Data Solutions Specialization

Syllabus At A Glance

Unit 1: SQL Basics

- Tables, columns, and rows
- Primary, foreign, candidate, & surrogate keys
- Schemas
- Basic Operations: Select, Insert, Update, Delete
- Filtering with Where Clauses
- Distinct, Ordering, and Limiting
- Formatting and Data Conversions

Unit 2: Advanced SQL

- Joins: Inner, Left, Union, Self-Join, Cross-Join
- Case
- Coalesce
- Grouping & Aggregates
- Table Constraints
- Partitions
- Rownum, Rank, and Dense Rank
- Except/Minus

Unit 3: Expert SQL

- Star schema
- Relationships
- Normalization
- ELT and ETL
- SCD Types

Unit 4: Data Engineering

- Data Mappings
- Pandas
- SQLAlchemy
- Bash/Batch
- Cron & Windows Scheduler
- SFTP
- APIs
- Apache Airflow

Unit 5: Data Visualization & Storytelling

- Matplotlib and Plotly
- Jupyter Notebooks
- Visual Design Principles
- Data Presentations

Unit 6-8: Capstone Projects

- Independent project work
- Interview preparation
- Demo preparation
- Final assessments

Quality Assurance Specialization

Syllabus At A Glance

Unit 1: QA Theory & Process

- Increasing Confidence
- Championing the User
- Purpose and Process of QA
- Planning & Reporting Results
- Pilot Support
- Communication and Delivering bad news
- Risk analysis
- Traceability & Root Cause Analysis
- Decision Tables

Unit 2: QA Testing

- Test planning
- Maintaining tests
- Layers of testing
- Uncovering defects
- Validating requirements
- Confirmation Testing
- Usability Testing
- Functional Testing
- Exploratory Testing
- Non-functional Testing
- Session based Testing

Unit 3: Agile and Teamwork

- Software Development Lifecycle
- Documentation
- Using Requirements & Acceptance Criteria
- Effective Co-worker Communication & Getting Buy-In
- Meetings: Planning and Retrospectives
- Following Up & Customer Communication
- Delivering Bad News, Imposter Syndrome, & Learning From Mistakes

Unit 4: Test Automation

- Basic Programming Skills & Tools
- Data driven testing
- Writing and executing Unit Tests
- Parts of a web application
- Automating manual tests
- User Interface Automation
- Selenium WebDriver for UI Automation
- Designing solutions with automation
- Version Control with Git/Github
- Collaborating with Git/Github

Unit 5: Other Testing

- API Testing
- Network Layer Testing
- Database Testing
- Additional Testing Tools

Unit 6-8: Capstone Projects

- Independent project work
- Interview preparation
- Demo preparation
- Final assessments

Java Specialization

Syllabus At A Glance

Unit 1: Java Fundamentals & Tools

- Java Development Environment
- Core Java programming
- Primitives and Arrays
- Basic Methods
- IntelliJ IDE

Unit 2: Intermediate Java

- Object Orientation fundamentals
- Fluent interface design
- Modeling complex business logic
- Rules design pattern
- Collections, Lists, Sets, & Maps
- Lambda Expressions

Unit 3: Back End Web

- Maven fundamentals
- Gradle
- Spring Framework
- Creating first Spring app
- Code quality
- SpringBoot fundamentals
- Java Log system

Unit 4: Databases & Testing

- SQL Basics
- Advanced Querying: Joins, Constraints, Subqueries and more
- Creating, Updating, and Deleting using SQL
- Unit testing
- Integration testing
- Functional testing
- JDBC Library

Unit 5: Computer Science & Deployment

- Core computer science algorithms
- Using advanced data structures in modern applications
- Deploying SpringBoot

Unit 6-8: Capstone Projects

- Independent project work
- Interview preparation
- Demo preparation
- Final assessments