Government of Pakistan

**National Vocational and Technical Training Commission**

**Blended International IT Trainings –**

**BIITT 2025**



**Course Contents/ Lesson Plan**

**Course Title:** IBM Full-Stack JavaScript Developer Professional Certificate

**Duration: 3** Months

|  |  |
| --- | --- |
| **Trainer Name** |  |
| **Course Title** | **IBM Full-Stack JavaScript Developer Professional Certificate** |
| **Objective of Course** | A full-stack JavaScript developer is responsible for both the front-end (client-side) and back-end (server side) development of web applications.In this program, you’ll learn to build, deploy, test, run, and manage cloud-native full-stack applications. Technologies covered include **HTML, CSS, GitHub, JavaScript, Node.js, Express, React, DevOps, Containers, Docker, Kubernetes, NoSQL databases, Microservices, Serverless computing**, and more. You’ll also **develop several applications using front-end and back-end technologies** and deploy them using cloud-native methodologies. In the final course, you learn inside tips and steps to perform effectively at interviews and **unlock exclusive access to career support resources** to help you in your job search.Upon completing the full program, you will have a portfolio of projects that will not only boost your confidence but also prepare you to excel in interviews. Additionally, you will be awarded a Professional Certificate and a badge from IBM, serving as tangible proof of your skills and proficiency to potential employers. |
| **Course Execution Plan** | Total Duration of Course: **3 Months (12 Weeks)** |
| Class Hours: **3 Hours per day** |
| **Theory: 30% Practical: 70%** |
| Weekly Hours: **15 Hours Per week** |
| Total Contact Hours: **200 Hours** |

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| **Learning Outcome of the Course** | By the end of the course, students will have acquired a comprehensive skill set in:* Master the full-stack development languages, frameworks, tools, and technologies to develop job-ready skills valued by employers.
* Develop websites and front-end software using HTML, CSS, JavaScript, and React.
* Write, deploy, and scale cloud-native back-end applications using Node, NoSQL databases, containers, microservices, and serverless.
* Employ DevOps practices and Agile methodologies to continuously build and deploy software using CI/CD tools.
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| **Companies Offering Jobs in the respective trade** | * IBM
* Accenture
* Cognizant
* Infosys
* Capgemini
* Amazon
* Flipkart
* Turing
* Andela
* Deel
* Freelancing

These companies, Hands-on, project-based learning, end-to-end understanding of frontend, backend & deployment and proven skills in modern JavaScript tools & frameworks. |
| **Job Opportunities** | Over the past decade, JavaScript has evolved into the backbone of modern web development, powering everything from single-page applications to enterprise-level platforms. With the rapid shift toward cloud-based and responsive digital solutions, full-stack JavaScript developers are in high demand across industries. Graduates of this certification can pursue roles such as:* Full-Stack JavaScript Developer
* Frontend Developer (React.js)
* Backend Developer (Node.js, Express)
* Web Developer
* Junior Software Engineer
* MERN Stack Developer
* API Developer
* DevOps Support Engineer
* Technical Support Engineer (Web Stack)
* Freelance Web Developer
* Cloud Web Application Developer
* Deployment Engineer (CI/CD)
 |
| **No of Students** |  25-30 |

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| **Learning Place** | Labs |
| **Instructional Resources** | The following link will be accessible for students once they are enrolled in the program:https://www.coursera.org/professional-certificates/ibm-full-stack-javascript-developer |
| **Scheme of Study** |

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| **Sr. No**  | **Main Topics**  | **Theory Hrs.** | **Practical Hrs.** | **Total Hrs.** |
| **1.** | Introduction to Mobile App Development / Introduction to Software Engineering | **10** | **5** | **15** |
| **2.** | Get Started with Android App Development / Designing User Interfaces and Experiences (UI/UX) | **5** | **10** | **15** |
| **3.** | Continued - Designing User Interfaces and Experiences (UI/UX) / Getting Started with Git and GitHub | **4** | **11** | **15** |
| **4.** | Getting Started with Git and GitHub / Introduction to HTML, CSS, & JavaScript | **5** | **10** | **15** |
| **5.** | Continued - Introduction to HTML, CSS, & JavaScript / Get Started with iOS App Development | **5** | **10** | **15** |
| **6.** | Continued - Get Started with iOS App Development / Flutter and Dart: Developing iOS, Android, and Mobile Apps | **3** | **12** | **15** |
| **7.** | Continued - Flutter and Dart: Developing iOS, Android, and Mobile Apps / Developing Front-End Apps with React | **3** | **12** | **15** |
| **8.** | Continued - Developing Front-End Apps with React / React Native: Developing Android and iOS Apps | **3** | **12** | **15** |
| **9.** | Continued - React Native: Developing Android and iOS Apps / Mobile App Notifications, Databases, & Publishing | **3** | **12** | **15** |
| **10.** | Continued - Mobile App Notifications, Databases, & Publishing | **3** | **12** | **15** |
| **11.** | Mobile App Development Capstone Project | **0** | **15** | **15** |
| **12.** | Generative AI: Elevate your Software Development Career | **10** | **5** | **15** |
| **Total** | **54** | **126** | **180** |

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| **Scheduled Week** | **Module Title** | **Day** | **Learning Units** | **Tasks** |
| Week 1/12 | Introduction to Mobile App Development / Introduction to Software Engineering | Day 1 | Introduction to Mobile App Landscape  | Create a Conceptual Mobile App Business Plan with Wireframes |
| Day 2 | Mobile App Development Ecosystem |
| Day 3 | The software development lifecycle and Introduction to Software Development  |
| Day 4 | Basics of Programming & Software Architecture, Designs & Patterns |
| Day 5 | Job Opportunities and Skillsets in Software Engineering & Final Quiz and Project |
| Week 2/12 | Get Started with Android App Development / Designing User Interfaces and Experiences (UI/UX) | Day 1 | Introduction to Android Development & Developing Android Apps | Project: Create a Daily Fitness Tracker App |
| Day 2 | Project and Course Wrap Up |
| Day 3 | Designing Intuitive Front Ends and Mockup Design Principles |
| Day 4 | Web Design Methodologies |
| Day 5 | UI Design with Figma |
| Week 3/12 | Continued - Designing User Interfaces and Experiences (UI/UX) / Getting Started with Git and GitHub | Day 1 | Continued - UI Design with Figma | Building a Sales App with Figma's Interactive Design Tools & GitHub UI |
| Day 2 | Project Initiation |
| Day 3 | Completion of Project & Assessment |
| Day 4 | Git and GitHub Fundamentals |
| Day 5 | Git Commands |
| Week 4/12 | Getting Started with Git and GitHub / Introduction to HTML, CSS, & JavaScript | Day 1 | Managing GitHub Projects | Simple Interest Calculator |
| Day 2 | Working with GitHUB from your Windows Desktop & Project |
| Day 3 | Project Review and Assessment |
| Day 4 | HTML Overview |
| Day 5 | CSS Overview |
| Week 5/12 | Continued - Introduction to HTML, CSS, & JavaScript / Get Started with iOS App Development | Day 1 | HTML5 Elements | Single Page Portfolio Website  |
| Day 2 | List comprehension |
| Day 3 | JavaScript Programming for Web Applications |
| Day 4 | Final Project |
| Day 5 | Introduction to IOS Development |
| Week 6/12 | Continued - Get Started with iOS App Development / Flutter and Dart: Developing iOS, Android, and Mobile Apps | Day 1 | Introduction to Swift Programming | Create a Simple Recipe App in SwiftUI |
| Day 2 | Final Project and Course Wrap Up |
| Day 3 | Introduction to Flutter and Dart |
| Day 4 | Exploring Dart Language |
| Day 5 | Working with Flutter |
| Week 7/12 | Continued - Flutter and Dart: Developing iOS, Android, and Mobile Apps / Developing Front-End Apps with React | Day 1 | Advanced Flutter | Working with React DevTools, Handling Errors and Debugging, Building an Application for Android using APK Files |
| Day 2 | Final Project |
| Day 3 | Continued Final Project |
| Day 4 | Introduction to React and Class Components |
| Day 5 | Understanding Function Components with Array and DOM Manipulation |
| Week 8/12 | Continued - Developing Front-End Apps with React / React Native: Developing Android and iOS Apps | Day 1 | In-depth Understanding of Advanced React Functionality | Create an Event Registration App to Handle Form Data, Validating Form Data with Formik and Yup, Apartment Listings Display with FlatList, Note Taking App with AsyncStorage |
| Day 2 | Practice, Final Project, and Peer Review Assignment |
| Day 3 | Introduction to React Native |
| Day 4 | Working with React Native |
| Day 5 | Working with Style and State Management |
| Week 9/12 | Continued - React Native: Developing Android and iOS Apps / Mobile App Notifications, Databases, & Publishing | Day 1 | Handling User Interfaces and Lists | Media Manager App Using React Native |
| Day 2 | Debugging and Publishing Apps in React Native |
| Day 3 | Final Project and Assessment |
| Day 4 | Mobile Notifications and UI Design |
| Day 5 | Back-end Services & Databases in Mobile Apps |
| Week 10/12 | Continued - Mobile App Notifications, Databases, & Publishing | Day 1 | Continued - Back-end Services & Databases in Mobile Apps | Movie Watcher App Using Flutter |
| Day 2 | Mobile App Publishing, Marketing, and Support |
| Day 3 | Publishing Flutter and React Native Apps |
| Day 4 | Final Project |
| Day 5 | Completion of Final Project and Course Wrap-Up  |
| Week 11/12 | Mobile App Development Capstone Project | Day 1 | User Stories and UI/UX | Create a mobile app based on a project scenario using either Flutter or React Native frameworks. Each module features optional labs in Flutter or React Native to deepen the expertise |
| Day 2 | Implement Home and Detail Screens |
| Day 3 | Data Persistence and APIs & Setting Screens |
| Day 4 | Notifications, Publishing, and Marketing |
| Day 5 | Final Project Submission and Evaluation |

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| Week 12/12 | Generative AI: Elevate your Software Development Career |  Day 1 | Generative AI and Software Development | Comprehensive project that challenges you to build a personalized learning platform for developers using generative AI. |
| Day 2 | Continued - Generative AI and Software Development |
| Day 3 | Generative AI for Software Development Workflows and its Considerations |
| Day 4 | Final Project |
| Day 5 | Final Exam |

List of Machinery / Equipment

1. **Software List**

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| --- | --- |
| **Sr. No** | **Software Name** |
| 1. | MS Office(Installed on each PC) |
| 2. | Operating System (Windows, Linux or other Operating Systems) |
| 3. | Programming Languages including PyCharm, Notebook |

1. **Minimum Qualification of Teachers / Instructor**

The qualification of teachers / instructor of this course should be a minimum of bachelor’s in computer science / software engineering with minimum 3 years of development experience in relevant trade.

1. **Eligibility for the trainees:**

As defined by NAVTTC

1. **Supportive Notes Teaching Learning Material**

<https://www.coursera.org/professional-certificates/ibm-ios-android-mobile-app-developer-pc>?

1. **List of Machinery/Equipments**

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| --- | --- | --- |
| **Sr. No** | **Name of item as per curriculum** | **Quantity physically available at the training location** |
| 1 | Computers Minimum Core-i5 8th Generation* LCD Display 17” with built in speakers
 | 25 |
| 2 | DSL Internet Connection (Minimum 5 MB) | Available on every PC |
| 3 | **Accessories/Devices*** Connectors
* Multimedia
* Audio/visual aid
* White Board
* Flip Chart Board
 | 25 each |
| 4 | **Wires, data cables, power plugs, power supply** | For every PC |
| 5 | **UPS** | Available |
| 6 | **Generator / Solar Backup** | Available |
| 7 | **Air Conditioner (2 Tons)** | Available |

Annexure # 01

Tasks for IBM iOS and Android Mobile App Developer Professional Certificate

| **Task No.** | **Description** | **Week** |
| --- | --- | --- |
|  | Create a Conceptual Mobile App Business Plan with Wireframes | Week 1 |
|  | Project: Create a Daily Fitness Tracker App | Week 2 |
|  | Building a Sales App with Figma's Interactive Design Tools & GitHub UI | Week 3 |
|  | Simple Interest Calculator | Week 4 |
|  | Single Page Portfolio Website  | Week 5 |
|  | Create a Simple Recipe App in SwiftUI | Week 6 |
|  | Working with React DevTools, Handling Errors and Debugging, Building an Application for Android using APK Files | Week 7 |
|  | Create an Event Registration App to Handle Form Data, Validating Form Data with Formik and Yup, Apartment Listings Display with FlatList, Note Taking App with AsyncStorage | Week 8 |
|  | Media Manager App Using React Native | Week 9 |
|  | Movie Watcher App Using Flutter | Week 10 |
|  | Create a mobile app based on a project scenario using either Flutter or React Native frameworks. Each module features optional labs in Flutter or React Native to deepen the expertise | Week 11 |
|  | Comprehensive project that challenges you to build a personalized learning platform for developers using generative AI. | Week 12 |