FULL STACK WEB DEVELOPER

COURSE SYLLABUS

WSA | Forward looking IT finishing school

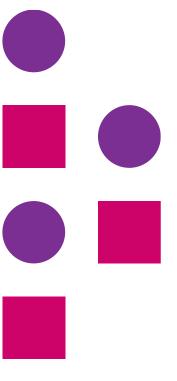## COURSE OBJECTIVES

- Enable participants to develop a complete web application from the scratch that includes Front-end, Back-end and Data-exchange technologies
- Build strong foundations (ex: OOPS) in entry level engineers thereby making them job ready as per industry requirements. Enable them to learn new technologies by applying foundation paradigms
- By the end of the program participants will be become an industry-ready engineer who can be readily deployed in a project

COURSE FLOW

WSA Full Stack Web developer course starts with introducing participants with front-end technologies (ex: HTM5) and makes them develop responsive one page web application. Followed by that it deep dives into MEAN stack components and brings hands-on perspective to building scalable web applications by leveraging "JavaScript everywhere" phenomenon. Throughout the course foundation paradigms are stressed to ensure participants clearly understand software engineering fundamentals and apply them.

The course further covers various data-exchange mechanisms (ex: HTTP) to get complete perspective of Full Stack. DISHA sessions are interleaved throughout the program for resume and interview preparation aspects for placements.

DURATION

4 months

PLATFORM

- Linux (Fedora / Mandriva /Ubuntu) or Windows Host system
- Firefox, Chrome Browsers

PREREQUISITES

B.E / B.Tech / M.E / M.Tech / MCA

DELIVERY METHOD

Instructor-lead, Assignments with hands-on exercises backed with assignments and mini projects

MODULE TOPICS

- Front-end (HTML5 | CSS3 | Bootstrap | JavaScript | jQuery | jQuery mobile)
- Foundation paradigms (OOPS | Design Patterns | Object Modelling | JSON | AJAX)
- MEAN Stack (MongoDB | Express Framework | AngularJS | Node.js)
- Data Exchange (HTTP | Websockets)
- Development Environment & Tools
- DISHA (Resume & Interview prep package)

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Front-end Course Modules

Hyper Text Mark-up Language (HTML5)

Module Objectives:
- Building Strong expertise to develop front end application using HTML5
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

Overview:
This course provides you hands-on experience and exposure to developing HTML5 based single page application for browsers. This course builds strong foundation on HTML5 which will help developer to use HTML5 concepts for building responsive web application.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed Course Contents:
- Introduction HTML
- HTML Basics
- HTML Elements
- HTML5 Semantic
- HTML Attributes
- HTML Headings
- HTML Paragraph
- HTML Styles
- HTML Formatting
- HTML Quotations
- HTML Computer Code
- HTML Comments & Colours
- HTML CSS, Links and Images
- HTML Lists
- HTML Blocks
- HTML Classes
- HTML Layout
- HTML Responsive
- HTML iframes
- HTML JavaScript
- HTML Head
- HTML Entities and URI Code
- HTML Symbols and XHTML
- HTML Charset and Forms

Cascading Style Sheets (CSS3)

Module Objectives:
- Building Strong expertise to develop front end application using CSS3
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

Overview:
This course provides you hands-on experience and exposure to developing CSS3 based web application. This course builds strong foundation on CS33 which will help developer to use CSS3 concepts for building responsive web application.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:

- Introduction CSS3
- CSS3 Syntax
- CSS3 How To
- CSS3 Colours
- CSS3 Backgrounds
- CSS3 Boarders
- CSS Padding
- CSS Height/Width
- CSS3 Gradients
- CSS3 Shadows
- CSS3 Text
- CSS3 Fonts
- CSS3 2D Transforms
- CSS3 3D Transforms
- CSS Links
- CSS Lists
- CSS Tables
- CSS Box Model
- CSS Outline
- CSS Display
- CSS Max-width
- CSS Position

- CSS Float
- CSS Inline-block
- CSS Align
- CSS Combinators
- CSS Pseudo-class
- CSS Pseudo-element
- CSS Navigation Bar
- CSS Dropdowns
- CSS Tooltips
- CSS3 Images
- CSS Attr Selectors
- CSS Forms
- CSS Counters
- CSS3 Animations
- CSS3 Buttons
- CSS3 Pagination
- CSS3 Multiple Columns
- CSS3 User Interface
- CSS3 Box Sizing
- CSS3 Filters
- CSS3 Media Queries
- CSS3 Responsive

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Bootstrap

Module Objectives:
- To become proficient in Bootstrap concepts
- To develop a web pages based on Bootstrap

Overview:
This course is targeted for fresh engineers or professional who want to build competency in the Bootstrap Based web development.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to Bootstrap
- Bootstrap Basics
- Bootstrap Grids
- Bootstrap Themes
- Bootstrap CSS
- Bootstrap JS

JavaScript

Module Objectives:
- Building Strong expertise to develop front end application using HTML5, CSS3 and JavaScript along with jQuery and AngularJS framework
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

Overview:
This course provides you hands-on experience and exposure to develop JavaScript based web application. This course builds strong foundation of JavaScript which will help developer to apply JavaScript concepts for responsive web frontend and backend development.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to JavaScript
- Java Script Language Basics
- JavaScript Objects

- JavaScript Scope
- JavaScript Events
- JavaScript Strings
- JavaScript Numbers
- JavaScript Math
- JavaScript Arrays
- JavaScript Boolean
- JavaScript Comparisons
- JavaScript Conditions
- JavaScript Switch
- JavaScript Loops
- JavaScript Type Conversion
- JavaScript RegExp
- JavaScript Errors
- JavaScript Debugging
- JavaScript Hoisting
- JavaScript Strict Mode
- JavaScript Functions
- JavaScript Objects
- JavaScript Forms
- JavaScript HTML DOM
- JavaScript BOM

jQuery

Module Objectives:
- Building Strong expertise to develop front end application using HTML5, CSS3 and JavaScript along with jQuery and AngularJS framework
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

Overview:
This course provides you hands-on experience and exposure to develop jQuery Mobile based responsive web application. It builds strong foundation of jQuery which will help developer to apply concepts for responsive web frontend development.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to jQuery
- jQuery Syntax
- jQuery Selectors
- jQuery Events
- jQuery Effects
- jQuery HTML
- jQuery Traversing
- jQuery AJAX & Misc

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jQuery-Mobile

Module Objectives:
- Building Strong expertise to develop front end application using HTML5, CSS3 and JavaScript along with jQuery and AngularJS framework
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

Overview:
This course provides you hands-on experience and exposure to develop jQuery Mobile based responsive web application. This course builds strong foundation of jQuery which will help developer to apply concepts for responsive web frontend development.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to jQuery Mobile
- jQuery Mobile Pages
- jQuery Mobile Transitions
- jQuery Mobile Buttons
- jQuery Mobile Icons
- jQuery Mobile Popups
- jQuery Mobile Toolbars
- jQuery Mobile Navbars
- jQuery Mobile Panels
- jQuery Mobile Collapsibles
- jQuery Mobile Tables
- jQuery Mobile Grids
- jQuery Mobile Lists
- jQuery Mobile Forms
- jQuery Mobile Themes
- jQuery Mobile Events

Foundation Paradigms

Module Objectives:
- To become proficient in OOPS, Design Patterns and Data Modelling concepts
- At the end of the course candidates will learn the concepts and their practical applications

Overview:
This course is targeted for fresh engineers or professional who want to build competency in the Object-Oriented Programming. We focus on understanding OOPs concepts and its applications.

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Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- OOPs
- Design Patterns
- Object Oriented Design
- JSON
- DOM
- AJAX

MEAN Stack – Course modules

MongoDB

Module Objectives:
- Building strong expertise in Document Oriented Non-Relational Database Management System
- Implement frontend and backend scenarios to read, write and update data stored in MongoDB

Overview:
This course provides you hands-on experience and exposure to implement frontend and backend scenarios to read, write and update data using MongoDB. This course builds strong foundation for web application development based on client-server architecture.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to MongoDB
- MongoDB Environment
- MongoDB Create Database
- MongoDB Drop Database
- MongoDB Create Collection
- MongoDB Drop Collection
- MongoDB Read Operations
- MongoDB Write Operations
- MongoDB Data Modelling
- MongoDB Administration

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- MongoDB Security
- MongoDB Aggregation
- MongoDB Indexes
- MongoDB Storage
- MongoDB Replication

Express Framework

Module Objectives:
- Building Strong expertise on Express framework to develop responsive web application
- Implement MVC and responsive design to provide unified and intuitive user experience across PC, tablet and Mobile Phone

Overview:
This course provides you strong foundation on Express framework driven by hands-on experience and exposure to develop responsive web application using MVC design pattern. During the course, you should be able to builds strong background about Express and Node.js architecture, usage of services and applying Node.js concept to develop frontend application supported by backend web servers.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to Express Framework
- Introduction to Nodejs
- What is Nodejs
- Getting Started with Express
- Your first Express App
- Express Routing
- Implementing MVC in Express
- Middleware
- Using Template Engines
- Error Handling
- API Handling
- Debugging
- Developing Template Engines
- Using Process Managers
- Security & Deployment

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Angular JS

Module Objectives:
- Building Strong expertise to develop front end application using Angular JS
- Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

Overview:
This course provides you strong foundation on AngularJS driven by hands-on experience and exposure to develop responsive web application using MVC design pattern. During the course, you should be able to builds strong background about AngularJS architecture, usage of services and applying AngularJS concept to develop frontend application.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome Browsers

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to AngularJS
- AngularJS Expressions
- AngularJS Modules
- AngularJS Data Binding
- AngularJS Scopes
- AngularJS Directives & Events
- AngularJS Controllers
- AngularJS Filters
- AngularJS Services
- AngularJS HTTP
- AngularJS Tables
- AngularJS Select
- Fetching Data from MySQL
- AngularJS Validation
- AngularJS API
- AngularJS Animations
- AngularJS i18n and i10n

Node.js

Module Objectives:
- Building Strong expertise on Node.js core to develop web application
- Implement web application and deployment

Overview:
This course provides you strong foundation on Node.js driven by hands-on experience and exposure to develop NodeJS based application and deployment. During the course you should be able to builds strong background about Node.js architecture, usage of services and applying Node.js concept to develop frontend application supported by backend web servers.

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Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites
Academic level web application knowledge

Delivery method:
Instructed lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Getting started
- Node Core
- Node Modules
- File System
- Debugger
- Automation and Deployment

Data Exchange – Course modules

Hyper Text Transfer Protocol (HTTP)

Module Objectives:
- Developing single page application using Express Framework

Overview:
This course provides you hands-on experience and exposure to developing web application using HTTP. This course builds strong foundation of HTTP based request and response scenarios which will help developer to build efficient web applications.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to HTTP
- HTTP Parameters
- HTTP Messages
- HTTP Request
- HTTP Response
- HTTP Methods
- HTTP Status Code
- HTTP Header Fields
- Registration
- HTTP Authentication

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- HTTP Caching
- HTTP URL Encoding
- HTTP Security

WebSockets

Objectives:
- Building strong expertise in WebSockets
- Implement frontend and backend scenarios using WebSockets

Overview:
This course provides you hands-on experience and exposure to use WebSockets in frontend and backend scenarios. This course builds strong foundation for web application development based on client-server architecture.

Platform:
- Linux (Fedora / Mandriva / Ubuntu) or Windows Host system
- Firefox, Chrome

Prerequisites:
Academic level web application knowledge

Delivery method:
Instructor lead, hands-on exercises backed with assignments and mini project

Detailed course contents:
- Introduction to Web sockets
- Web socket URIs
- Web socket APIs
- Opening Handshake
- Data Framing
- Sending and Receiving Data
- Closing the Connections
- Error Handling
- Web socket Security
- Deployment Considerations
- Project