

Information Booklet cum Syllabus Of Full Stack Development Using MERN



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National Institute of Electronics and Information Technology

An Autonomous Scientific Society under
Ministry of Electronics and Information Technology, Government of India

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CONTENTS

Sl. No.	Title	Page No.
1.	About the course	3
2.	NIELIT	3
3.	Objective of Course	3
4.	Job Role of Course	3-4
5.	Eligibility	4
6.	Total duration of the Course	4
7.	Course Details	4-5
8.	Reference Books	5-6

1. About Course

In this course, students will learn about the most advanced web-app development environments with immense exposure on practicality. The course is designed for an aspiring developer to enrich the knowledge of different JavaScript libraries and frameworks. Today and ever since the JavaScript has been developed as a language, it has deeply impacted the web app development process. In this curriculum, we have covered Objective Express JS, React JS and Node.js which are all very advanced JavaScript libraries used extensively across the world to handle both the Front-end and Back-end development processes. MongoDB is also covered which is a revolutionary NoSQL kind of database package.

2. NIELIT

National Institute of Electronics and Information Technology, NIELIT, (Erstwhile DOEACC Society) is an autonomous scientific society of the Ministry of Electronics & Information Technology, Government of India. The Society is registered under the Societies Registration Act, 1860. NIELIT was set up to carry out Human Resource Development and related activities in the area of Information, Electronics & Communications Technology (IECT). NIELIT is engaged both in Formal & Non-Formal Education in the areas of IECT besides development of industry-oriented quality education and training programmer in the state-of-the-art areas. NIELIT has endeavored to establish standards to be the country's premier institution for Examination and Certification in the field of IECT. It is also one of the National Examination Body, which accredits institutes/organizations for conducting courses in IT and Electronics in the non-formal sector.

3. Objective of Course

The objective of a MERN Stack course is to equip learners with the skills needed to develop full-stack web applications using MongoDB, Express.js, React, and Node.js.

Key Objectives:

1. Understand MERN Stack Architecture – Learn how frontend, backend, and database interact.
2. Develop Frontend with React.js – Build dynamic, responsive, and interactive UI components.
3. Build Backend with Node.js & Express.js – Create RESTful APIs and handle server-side logic.
4. Manage Databases with MongoDB – Store, retrieve, and manipulate data using NoSQL concepts.
5. Integrate Frontend & Backend – Connect React with Node.js APIs using HTTP requests.
6. Work on Real-World Projects – Gain hands-on experience by building scalable applications.

4. Job Roles of Course

After successful completion of this course, students will be well-equipped for a range of impactful job roles in the Web Developer fields. This course prepares graduates to excel as:

- Full-Stack Developer
- Frontend Developer
- Backend Developer

5. Eligibility

10+2/ Graduate (Passed/Appearing) with basic knowledge of Computer programming or NIELIT O/A Level Courses

6. Total duration of the Course : 6 weeks / 90 Hours

7. Course Details

Day	Course content
1-7	<ul style="list-style-type: none">○ Fundamentals of Web Design, Webpage and Website, Web application HTML Typography, Images, Tables, Lists, Hyperlinks etc. CSS Syntax and usage, CSS Selectors, CSS on body, CSS on Text, CSS on Links, CSS on Tables, CSS on Lists, CSS on Forms, CSS on Images, CSS on DIV, W3.CSS Framework: Template
8	Bootstrap <ul style="list-style-type: none">○ Bootstrap Files and CDN○ Bootstrap Typography○ Bootstrap Container and Grid○ Bootstrap Navbar○ Bootstrap Carousel○ Bootstrap Images○ Bootstrap Button
9-16	JAVA Script <ul style="list-style-type: none">○ Introduction to Java Script, operator, Decision making, Functions, Different type of Boxes, form validation, events, JS Objects, Browes Object Model (BOM), Document Object Model (DOM), ES6(ECMA SCRIPT6), Arrow function, Async/await Function, OOPS Concept
17-20	Node.js <ul style="list-style-type: none">○ Introduction to Node.js, Node.js Setup, Node.js console, Parts of NodeJS, NPM, NPM Contd, REPL, File System, Creating Server
21-23	MongoDB <ul style="list-style-type: none">○ Introduction to NoSQL Database○ More About MongoDB○ Queries in MongoDB: Create, Insert, Read, update, find, delete queries with various criteria
24-30	Express.js <ul style="list-style-type: none">○ What is ExpressJS, Advantages of Express.js○ Install ExpressJs Methods○ Routing○ Cookies○ Session○ Scaffolding○ Serving static files in ExpressJs○ Middleware, Serving static files, REST API○ ExpressJS Templates React.js <ul style="list-style-type: none">○ ReactJS introduction, React Advantages, React Limitations, React Features, Working of React, ReactJS requirements.○ Introduction to events, Creating and handling a simple event Event handlers, Updating state using an Event, Arguments in events Accessing events in event handlers○ Lifecycle in React, Mounting methods, Updating methods, Unmounting methods

8. Reference Books/Study Material

- "MERN Quick Start Guide" – by Ed Freitas, A beginner-friendly book covering full-stack MERN development with practical projects.
- "Full-Stack React Projects" – by Shama Hoque, A hands-on guide to building web applications using the MERN stack.