

ABES ENGINEERING COLLEGE, GHAZIABAD			
Advance MERN STACK [Current 3rd Year]   Duration:70 + Project			
Semester-5 (30 Hrs)			
Duration	Topic	SubTopic	Assessment
12 Hours	Recap	HTML5	Sample Mini Project
		CSS3	
		Basic JS	
		Advance JS(ES6,ES7,ES8,ES9)	
		Git and Git Hub	
Part 1: Front end (React)			
18 Hours	Understanding and Working with React JS	Introduction to React	Assigned Project Front-end
		Introduction of React JS Library	
		why React JS	
		Downloading and Installing React	
		Installing Node JS	
		Project Structure	
	React Component, using JSX and Hooks	Starting Development Server	
		React Components:	
		Understanding the basics of React component structure	
		How to create reusable UI components.	
		JSX:	
		Exploring JSX syntax and how it combines HTML-like syntax with JavaScript to define React components., Advance JSX	
	React Router and Forms	State and Props:	
		Understanding the concepts of state and props in React, and how they are used to manage data and pass information between components.,List,key, Diffing Algorithm	
		React Hooks:	
	Learning about React's hooks API, including useState, useEffect,Props Drilling problem, useContext, Pure, Impure functions., useReducer hook		
	React Router:		
	Exploring how to set up routing in a React application using React		
	React Forms:		
	Understanding different approaches to handling forms in React.		
Semester-6 (40 Hrs + Project)			
Part 2: Backend (Node JS)			
10 Hours	Node Part: (Backend)	Introduction to Node.js:	Assigned Project Back-end
		Node.js Core Modules / Built-in packages:	
		Callbacks	
		Blocking, Non-blocking	
		Event Emitters and Event loops	
		Async And Await	
	Working with events module	Introduction to Event Driven Programming	
		Typical Web Architecture	
		Node.js Architecture	
		Event Loop	
		Event Driven Programming in Node	
		Events	
		Events in the DOM	
		Events in Node.js	
		Event Emitters and Event Handlers	
		Creating Custom Event Emitters	
	Working with FS (File System) module	Introduction to File System:	
		Introduction to the fs module:	
		Explanation of the fs module and its role in the Node.js runtime	
		Overview of the functions provided by the fs module	
		Reading and Writing Files:	
		fs.readFile()	
		fs.writeFile()	
		fs.appendFile()	
		Reading and writing binary data	
		Working with Directories:	
		fs.mkdir()	
		fs.rmdir()	
		fs.readdir()	
		File and Directory Information:	
		fs.stat()	
		fs.lstat()	
		fs.fstat()	
		File System Watchers:	
		fs.watch()	
		fs.watchFile()	
fs.unwatchFile()			
File System Streams:			
fs.createReadStream()			
fs.createWriteStream()			
File System Operations:			
fs.rename()			
fs.truncate()			
fs.unlink()			
fs.link()			
fs.symlink()			

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Part 3 (Middleware) Semester-6			
10 Hours	Creating REST API's	Working with http module	Assigned Project Back-end
		Introduction to the http module:	
		Explanation of the http module and its role in the Node.js runtime	
		Overview of the functions provided by the http module	
		Creating an HTTP Server:	
		Using the http.createServer() function	
		Handling HTTP Requests and Responses	
		Accessing request data (headers, query string, etc.)	
		Routing:	
		Implementing routing in a Node.js HTTP server	
		Handling different HTTP methods (GET, POST, etc.)	
		Sending different types of responses (HTML, JSON, etc.)	
		Serving Static Files:	
		Using the fs module to serve static files	
		Installing and working with Express framework	
		working with Express JS framework	
		creating various routes	
Part 4: (MongoDB)			
14 Hours	Understanding and Working with MongoDB	Introduction to MongoDB	Assigned Project Database
		Setting up MongoDB	
		MongoDB data modeling	
		CRUD (Create, Read, Update, Delete) operations in MongoDB	
		Inserting Documents in MongoDB	
		Retrieving Documents from MongoDB	
		Updating Documents in MongoDB	
		Deleting Documents from MongoDB	
		MongoDB update operators (e.g. \$set, \$inc, \$push, etc.)	
		Finding and Modifying Documents Atomically	
		Batch Write Operations in MongoDB	
		MongoDB Upserts (Update or Insert)	
		Sorting, Skip, and Limit in MongoDB Queries	
		Query Selectors in MongoDB (e.g. equality, comparison, etc.)	
		MongoDB and Express.js integration	
		Basic CRUD operation and creating APIs in Nodejs using mongo and express.	
		using POSTMAN tool to test the API's created.	
6 Hours	Deployment using Cloud services	DevOps tools lik GITHUB, Docker (intergration with App) using AWS	Docker File and Docker Compose File
Part 5: Project			
20 Hours	M+ E+ R+ N: (All in one place)	Dynamic App (Parallel with sessions)	Final Project after all Unit Testings