MERN COURSE SYLLABUS

(MongoDB,ExpessJs,ReactJs,NodeJs)

HTML-5

TITLE	DISCRIPTION
Introduction to web programming	The fundamentals elements of web page structure and basic concept
Introduction to Html	History , Doctype , Structure of Html page, Element ,Tags, Headings & paragraphs
Html Formatting	Formatting of text using various elements.
Html div span	It maintains the flow of content in Html page
Attribute and comment	Attributes and comments importance
Color	Adding colors to text and background
Images	Embed Images in webpage
Class and id	Importance of use of class and id
Html Lists	Different Types of list and their significance
Hyperlink	Create link and go to next page
Html Tables	Arrange data in tabular form in web page
Block & inline	Difference between block and inline elements
IFrames	Embed one page into another
Audio & video	Inserting Video and audio into webpage
Html forms	Integrating forms into webpage and use of various form element
Html head	Html headers and use of Meta tags

Assignment :

1. Create a HTML form with 3 or more fields.

2. Create Table with row span and col span.

3. Create order list and unorder list.

CSS

TITLE	DISCRIPTION
Css Introduction	Importance of Css ,methods to add in Html document & Syntax
Selectors	Selectors types and applying it on Html elements
Css Color	Apply color to background and text
Opacity & Gradient	Making elements transparent and use of gradient
Backgrounds	Styling in various ways of applying background and its different properties
Border & Margin	Use of Borders and margin in positioning element on a web page
Text Fonts	Use of font family and manipulating text accordingly
Google fonts	Google font cdn used to style text in webpage
Padding /Height/Width	Importance and uses of width , height and padding used on elements
Css box model	Box model uses to set padding ,margin ,border
Flex	Flexbox to define the layout of elements on webpage
Position/Float	Absolute and Relative position of element/use of float property
Overflow	Overflow property to work with text
Inline-block	Converting of inline element to Block and vice-versa
Media Query	Media Query used to create responsive website
!important	!important property used to override other properties
Psedo-Class & Psedo-Elements	Use of psedo-class and psedo-elements
Css generators	Introduction to Css Generators for applying various styles and animaton to website

Assignment :

1.Create a google search page .

2.Create a Blog page.

Bootstrap-5

TITLE	DISCRIPTION
Introduction to Bootstrap-5	Introduction of bootstrap framework and connectivity of bootstrap in page ,Syntax
Container and container Fluid	Use of container fluid and container difference
Bootstrap Grid	Use of Bootstrap Grids to make pages responsive .Nested grids. And Various breakpoints
Bootstrap Component	Jumbotron , Button , table Modal Alert, Carousal, Cards Images, Toast Badge ,Modals ,Popover
Bootstrap Utilities	Borders Colors Spacing Flexbox Typograpy Overflow Display
Forms	Form control Floating Labels Input Group

Assignment :

Create a website with multiple pages Eg. Home page, About page , Contact page

Insert Navbar , Carousal, Cards ,Images etc

Insert Google Map to show location

JAVASCRIPT

TITLE	DISCRIPTION
Introduction to Javascript	Evolution of Javascript , Features ,Advantages. Editors used for javascript Adding Javascript in Html Hoisting
Javascript Data types and variables	Datatypes in javascript Javascript Keywords and their uses Types of variables and difference between Var , let and Const , Template Literals (ES6)
Javascript Operators	What are operators? Arithmetic Operator Comparison Operators Logical Operators Ternary Operators
Javascript Statement	Conditional statement (if, if else ,switch statement) Loop statement(while loop , forloop ,do while loop ,break and continue, Nested loop, For in ,For of)
Javascript Function	What is function? Why to use? How to call function using arguments . Passing parameters Function return Anonymous function Arrow Function Local variable global variable, Scope Built in methods
Javascript array	What is array ,uses, Properties ,methods(built-in function of array)
Javascript object	What is object and its properties, creating of object, Use of this keyword in object, (...)spread operator, built-in methods Methods of creating object
Javascript Class	Creating class, use of this keyword ,Difference between class and object

Import and Export	Import and export in javascript
Regular Expression	Search patterns ,String methods ,quantifiers
Events in javascript	What is events, its uses Adding Event Handler
Javascript async	Synchnorous javascript ,Callback ,callback hell, Promises ,promise hell, async await
Document object model	Intro to Dom tree ,method to access elements, Adding event listeners and manipulating Dom elements, Use of get set
Json Placeholder api	Introduction to Json Placeholder Use of Fake REST api ,Fetching data using Axios
Storage	Local and session storage

Logic building Questions are also included.

Assignment :

Create a form with various fields and submit data to server.

Crud operation to be performed using Fake api (json placeholder)

Eg.Todo , Color game , KBC , Login And Register, etc

REACT JS

TITLE	DISCRIPTION
Introduction to REACT	What is React ? Concept of Virtual Dom History. Installation of Nodejs. Setting up environment Create First React app
Introduction of ES6	Use of ES6 features in react eg.Ternary operator, Spread Operator, Arrow function
Overview of JSX	Difference between JSX and JS, creating Components
Props	Use of props for passing data from one component to another
Events	Adding events handlers to JSX elements
List and Forms	Method to display list on webpage and working with forms
React Routers	Installing Router dom to move from one page to another
React CSS style	Various ways to add styles to component
React Hooks	What is hook ,History ,difference from class componenets
React hooks	Introduction to React hooks How hooks are different from Class components
Types of hooks	Usestate Useeffect Useref Usecontext Usereducer Usecallback Usememo Usenavigate Useparams Custom hook High order component
Formik forms	Formik Library to be used for handling forms

Assignment :

Create a react app and create a component of form with various fields and submit data to Json server

Crud operation to be perfomed using Fake api (json placeholder)

Node Js

Introduction to NodeJs	What is Node js ,Advantages Installation and setup
MVC	Introduction to mvc architecture
Introduction to modules	Function of modules and Types
Webserver	Creating web server ,sending Request
File System	Read, write, Delete, Open file using node js
Events	Event emmiters
Introduction to expesss js	Express js framework of nodejs .Installing express in nodejs and creating server ,Routers ,Controllers
Insomnia	A tool for for testing api
Creating api	Testing Api through insomnia Crud operation
Introduction to MongoDb	Connection of Node js with mongo db using (mongoose) ODM
Introduction to cors	Use Cross-origin resource sharing & its imporatance

Assignment

Ceating api of crud operation and sending data to database using mongoose.

MONGO DB

Introduction to MongoDB	Nosql is Mongodb. Installation of Mongodb and MongoDBcompass What is BSON?
Create database	Commands to create database
Create collection	To create collection(tables) in database
Insert	To insert data into collection
Find	To find data in collection
Delete	To delete data from collection
Query Operators	Query operators to compare values $eq ,$gt , $lt ,$ne
Update operators	$set, $unset
Nested Document	What is nested document ?How to create nested document and perform the above operations
Upsert	Update or insert document
Indexing	Creating index on fields and its importance
Aggregation	Aggregation operation allows to group ,sort ,perform calculation and importance of pipelines
Sharding and replication	What is sharding its uses and replication and its uses And their importance.
Schema	

PROJECT

Create React App of blogs with crud operation using Nodejs backend to create api with expressjs and using Mongoose ODM (library for mongodb) for database .

Use of json web token, Bcrypt for password.

Mongoose models provide several static helper function for CRUD operation.

- Model.deleteMany()
- Model.deleteOne()
- Model.find()
- Model.findById()
- Model.findByIdAndDelete()
- Model.findByIdAndRemove()
- Model.findByIdAndUpdate()
- Model.findOne()
- Model.findOneAndDelete()
- Model.findOneAndRemove()
- Model.findOneAndReplace()
- Model.findOneAndUpdate()
- Model.replaceOne()
- Model.updateMany()
- Model.updateOne()

Next.js

Introduction	Introduction to Next.js .Installation of Next js
SSR	Introduction to Server side render
Build Application	Importance of Routing ,Rendering,datafetching