



# KESHAV MEMORIAL INSTITUTE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTE)

Accredited by NBA & NAAC, Approved by AICTE, Affiliated to JNTUH, Hyderabad



## B. Tech. in COMPUTER SCIENCE AND ENGINEERING

III Year I Semester Syllabus (KR23)

WEB TECHNOLOGIES (23CS503PC)

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### Pre-requisites/ Co-requisites:

1. 23CC305PC- OOPS through Java
2. 23CC302PC – Database Management Systems Course

### Course Objectives: The course will help to

1. Comprehend and apply the concepts of JavaScript.
2. Gain knowledge and to build a web page using HTML and Bootstrap.
3. Implement the server-side functionality using NodeJS and ExpressJS.
4. Comprehend and demonstrate the application of Express routing mechanism.
5. Practice and demonstrate the working of NoSQL databases and to implement the integration of front end with backend database (MongoDB) using ExpressJS.

### Course Outcomes: The student will be able to

1. Apply asynchronous programming techniques using java script.
2. Apply HTML and JavaScript effectively to create an interactive and responsive website.
3. Develop a simple client server model using NodeJS and ExpressJS.
4. Analyze and Implement routing methodologies using ExpressJS.
5. Design and create a NoSQL(Mongo) database and then integrate it with the front end using ExpressJS.

### UNIT-I:

**HTML Common Tags:** Semantic elements, Lists – ordered lists, unordered lists, lists attributes, tables, images, forms.

**Bootstrap Framework:** Bootstrap tags like tables, images, forms, grid model. Bootstrap components like Navbar, Card, Badge, buttons and pagination.

### UNIT- II

**Client Side Scripting:** Basic Java Script, DOM Manipulation from JS, Strings and regular expressions, functions, arrays, sets and maps, objects, destructuring of arrays and objects, JSON, Asynchronous operations using promises, callbacks and async/await.

### UNIT- III

**Getting Started with Node:** Introduction to NodeJS, NPM, Node Module System – Path, OS, FS, http modules.

**Introduction to ExpressJS:** Life cycle and routing of Express App, first web server, reading configuration parameters, Handling request and response parameters.

### UNIT- IV

**Introduction to Middleware:** Route, Express Route Methods - GET, POST, PUT, DELETE, Route Paths- strings,

## **UNIT- V**

**Introduction to No-SQL Databases:** Introduction to MongoDB, Importing and exporting documents, querying (CRUD)—creating and manipulating documents.

**Aggregation Pipeline** - group, limit, project, sort, match, addFields, count,lookup out, Integration with Express.

### **TEXT BOOKS:**

1. Understanding ECMAScript 6: The Definitive Guide for JavaScript Developers 1st Edition, Nicholas C. Zakas, No Starch Press, 2016.
2. Web Programming with Html, CSS, Bootstrap, Javascript, Jquery, Php, and Mysql, Larry Sanchez, Createspace Independent Pub, 2017.
3. Web Development with Node and Express, Ethan Brown, O’Reilly, 2020.
4. MongoDB: The Definitive Guide, 2ndEdition, Kristina Chodorow, O’Reilly, 2019

### **REFERENCE BOOKS:**

1. Exploring ES6, A book by Dr. Axel Rauschmayer, Learnpub, 2018.
2. Beginning Node.js, Express & MongoDB Development, Greg Lim, 2019.
3. MongoDB Basics by Peter Membrey David HowsEelcoPlugge, aPress, 2014.