Introduction to Node.JS Web Development
(Moocs)

COURSE CODE: 20ITH1L1

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Pre-requisites: NIL

COURSE OUTCOMES:

At the end of the course the student shall be able to

CO1: Describe Node.js stack components. (L2)

CO2: Use Events and Listeners in Node.js (L3)

CO3: Demonstrate HTTP services using Node.js (L4)

CO4: Demonstrate socket services using Node.js (L3)

CO5: Use Node.js to access and manipulate MongoDB. (L3)

UNIT-I **(7 LECTURES)**

Introduction to Node.js:
Understanding the Basic Web Development Framework, Understanding the Node.js-to-AngularJS Stack Components

Learning Node.js:
Understanding Node.js, Installing Node.js, Working with Node.js Packages, Creating a Node.js Application, Writing Data to the Console.

Learning Outcomes: At the end of the module student will be able to:
1. explain web development framework. (L2)
2. describe usage of Node.js (L2)
3. discuss Node.js packages. (L2)

UNIT-II **(6 LECTURES)**

Using Events, Listeners, Timers, and Callbacks in Node.js:
Understanding the Node.js Event Model, Adding Work to the Event Queue, Implementing Callbacks.

Handling Data I/O in Node.js:
Working with JSON, Using the Buffer Module to Buffer Data, Using the Stream Module to Stream Data, Compressing and Decompressing Data with Zlib

Learning Outcomes: At the end of the module student will be able to:
1. describe Node.js Event Model. (L2)
2. use stream module in Node.js (L3)
3. show compression and decompression of data. (L3)

UNIT-III **(7 LECTURES)**

Accessing the File System from Node.js:
Synchronous Versus Asynchronous File System Calls, Opening and Closing Files, Writing Files, Reading Files, Other File System Tasks

Implementing HTTP Services in Node.js:
Processing URLs, Processing Query Strings and Form Parameters, Understanding Request, Response, and Server Objects, Implementing HTTP Clients and Servers in Node.js , Implementing HTTPS Servers and Clients, Other File System Tasks

Learning Outcomes: At the end of the module student will be able to:
1. use file system calls. (L3)
2. describe request, response and server objects.(L2)
3. apply client/server relationships. (L3)

UNIT-IV   (6 LECTURES)
Implementing Socket Services in Node.js:
Understanding Network Sockets, Understanding TCP Server and Socket Objects, Implementing TCP Socket Servers and Clients, Implementing TLS Servers and Clients.
Using Additional Node.js Modules:
Using the os Module, util Module.
Learning Outcomes: At the end of the module student will be able to:
1. use Socket objects. (L3)
2. demonstrate TLS servers and clients. (L3)
3. use the os and util module. (L3)

UNIT-V   (6 LECTURES)
MongoDB and Node.js:
Understanding MongoDB, MongoDB Data Types, Adding the MongoDB Driver to Node.js, Connecting to MongoDB from Node.js, Understanding the Objects Used in the MongoDB Node.js Driver, Accessing and Manipulating Databases, Accessing and Manipulating Collections.

Learning Outcomes: At the end of the module student will be able to:
1. describe MongoDB data types. (L2)
2. explain objects used in MongoDB. (L2)
3. use collections. (L3)

TEXT BOOKS:

1. Brad Dayley, Brendan Dayley, Caleb Dayley,*"Node.js, MongoDB and Angular Web Development"*, 2nd Edition, Pearson Education, 2018.

REFERENCES:

1. Krasimir Tsonev, *"Node.js By Example"*, 1st Edition, Packt Publishing, 2015.
2. Basarat Ali Syed, *"Beginning Node.js"* , 1st Edition, Apress, 2014.

WEB-REFERENCE:

1. https://www.udemy.com/course/nodejs-express-mongodb-bootcamp/