

## INT222:ADVANCED WEB DEVELOPMENT

L:2 T:0 P:2 Credits:3

**Course Outcomes:** Through this course students should be able to

- CO1 :: Describe server-side JavaScript in web application development
- CO2 :: Analyze the web application development using HTTP, FS and Buffer modules
- CO3 :: Assess the node express, JSON, Socket.IO to allow high scalability with asynchronous code
- CO4 :: Demonstrate the use of CRUD application using Backend database in web application development
- CO5 :: Use MongoDB database with Node.js
- CO6 :: Construct rich interactive environments for the Web-based applications

### Unit I

**Getting Started with Node.JS** : Introducing Node.JS, Node Pacakage Manager (npm), Custom NPM modules,, Installing Node, use Node.js REPL, Explore and use built-in modules of Node.js, Use of Node.JS and GitHub, collaborate on code with others using the git tool

**JavaScript Primer** : Defining Variables and their Scope, Understanding JavaScript Data Types, Working with Operators and Loops, Creating Functions, JavaScript Objects, Working with Arrays, Adding Error Handling, Using Events, Listeners, Timers and Callbacks.

### Unit II

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

**Implementing HTTP Services in Node.JS** : Introduction to HTTP module,, Processing URLs, Processing Query Strings and Form Parameters, Understanding Request , Response and Server Objects

### Unit III

**Basic Websites With Node.JS** : Introducing Express, More on Express, GET, POST, bodyParser

**Creating Middleware with Connect** : What is Middleware?, Middleware in Connect, Access Control with Middleware

**Socket Services in Node.js:** : Understanding Network Sockets, A Socket.IO Chat Server, , A Streaming Twitter Client

### Unit IV

**Introduction to Backend:** : Introduction to PostgreSQL database, Basics of the CRUD pattern., Build application using CRUD, Add User Interface for To-do Application, Convert visual design into working HTML and CSS, Sequelize association, migration and validation.

### Unit V

**Getting Started with MongoDB** : Understanding MongoDB and Its Data Types, Building the MongoDB Environment, Connecting to MongoDB from Node.js, Accessing and Manipulating Databases, Accessing and Manipulating Collections, Administering Databases, Managing Collections

### Unit VI

**Debugging, Testing and Deploying** : Debugging Node.js Applications, Testing Node.js Applications, Deploying Node.js Applications

### List of Practicals / Experiments:

#### List of Practical

- Create JavaScript Objects and functions
- Working with the arrays
- Assessing file system from Node.js
- Create a basic website using node.js
- Implementing HTTP Services in Node.JS
- Implementing Socket Services in Node.js

- Use Jason API website development
- Building the MongoDB Environment and Administering Databases

**Text Books:** 1. PROFESSIONAL NODE.JS: BUILDING JAVASCRIPT BASED SCALABLE SOFTWARE by PEDRO TEIXEIRA, WILEY

**References:** 1. SAMS TEACH YOURSELF NODE.JS IN 24 HOURS by GEORGE ORNBO, SAMS PUBLISHING  
2. LEARN POSTGRESQL by LUCA FERRARI, ENRICO PIROZZI, PACKT PUBLISHING