WEB APPLICATION DEVELOPMENT

Subject Code: UGAI4K0420	L	T	P	C
II Year / II Semester	1	-	2	2

Prerequisites:
Student should be familiar with basic programming concepts and web browsing.

Course Objectives:
On completion of this course, a student will be familiar with client and server architecture and able to develop and deploy a both static and dynamic web application.

HTML Common tags: Basic Elements, attributes, headings, paragraphs, styles, formatting, colors, links, images, List, Tables, forms, Frames, HTML media- audio, video

CSS: CSS Properties, Controlling Fonts, Text Formatting, Pseudo classes, Selectors, CSS for Links, Lists, Tables, forms, flex box.

JavaScript: Data Types, Variables, operators, Control structures, Arrays, Strings, Functions, Regular expressions, Form Validation, Objects, Events, DOM- methods, elements, events.

Node.JS : Node.JS architecture, setup Dev Environment-installation, Node JS Console, Modules- using built-in modules-HTTP, File System, URL, Creating and using user defined modules, Node Package Manager, Web server- Creating a web server, handling http requests, File System- reading, writing, uploading files synchronously and asynchronously, sessions and cookies , sockets.

Express JS: Configuring routes, Parsing incoming requests, Serving static files, RESTful APIs and JSON, Generating Dynamic Content using EJS.

Experiments:

1. Develop a static web page using HTML Tags, List Tags, Image Tags.

2. Demonstrate table tag to create different orientation of table in static web page.

3. Develop static web page having different partitions using iframes

4. Develop a web page to demonstrate CSS properties.

5. Design a dynamic web page with validation of various form elements using JavaScript regular expression.

6. Write a JavaScript that calculates the squares and cubes of the numbers from 0 to 10 and outputs HTML text that displays the resulting values in an HTML table format.

7. Design an HTML having a text box and four buttons for Factorial, Fibonacci, Prime, and Palindrome. When a button is pressed an appropriate javascript function should be called to display

   1. Factorial of that number

   2. Fibonacci series up to that number

   3. Prime numbers up to that number

   4. Is it palindrome or not

8. Write a Java script code to demonstrate the objects

9. Write a java script code to demonstrate the callback function.

10. Demonstrate the installation of NODE.JS.

11. Demonstrate the process of importing NPM Modules, Core Modules.

12. Demonstrate the process of creating and importing the user defined modules.

13. Demonstrate the process of creating web server and handling HTTP requests.

14. Illustrate the process of handling HTTP GET and POST request parameters and sending response to browser.

15. Demonstrate the process of handling dynamic routes

16. Demonstrate the file handling in NODE JS.

17. Demonstrate how Session management takes place between several HTTP requests using express-session module.

18. Demonstrate how to perform File upload and download from browser.

19. Design server application with static HTML pages using Express module.

20. Design dynamic website using EJS (Embedded JavaScript Template) and Express.

21. Demonstrate the process of handling an API with sample application (Eg Show the top 100 movies from IMDB).

22. Implement CRUD operations using SQL module.

23. Create Telegram ChatBot using telegram-bot-api module

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to:

CO 1: Apply the knowledge gained to develop a static website

CO 2: Develop scalable web applications.

CO 3: Demonstrate handling the routes, sessions, HTTP requests.

CO 4: Develop database-driven applications.

Mapping of COs to POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1			3		3				3		3			
CO2	3				3				3		3			
CO3			3		3				3		3			
CO4	3				3				3		3			

ONLINE COURSES & REFERENCES:
1. HTML, CSS, and Javascript for Web Developers, offered by Johns Hopkins University- Coursera
2. Responsive Website Basics: Code with HTML, CSS, and JavaScript, University of London - Coursera
3. Full-Stack Web Development with React Specialization - The Hong Kong University of Science and Technology - Coursera.
4. Server-side Development with NodeJS, Express and MongoDB, offered by The Hong Kong University of Science and Technology - Coursera.
5. https://www.mysql.com/
6. https://nodejs.org/en/
7. https://expressjs.com/
8. https://www.w3schools.com/