Government Polytechnic, Balangir

Department of Computer Science Engineering

LESSON PLAN 2026-27(WINTER)

NAME OF THE TEACHER : ASHUTOSH THANAPATI, GUEST FACULTY

Subject: **Web Technologies (Course Code: CSEPC 303/TH2)**
Program: Diploma in Computer Science and Engineering
Semester: 5th
Total Contact Hours: 45
Total Marks: 100
Assessment: Internal Assessment – 30, End Term – 70

After completion of the course, the students will be able to:
CO1: Identify key web development protocols, technologies, and architectures.
CO2: Explain the role of client-side and server-side scripting in dynamic web applications.
CO3: Develop interactive web pages using HTML, CSS, JavaScript, and PHP.
CO4: Compare different web application architectures and evaluate their scalability and security.
CO5: Develop a functional, database-driven web application using modern web development tools

Lesson	Unit	Topic / Sub-Topic	Learning Objectives	Activity	Learning Methodology	Homework	Course Outcome
1	I	Protocols and programs	Understand core web protocols (HTTP/FTP)	Protocol mapping exercise	Lecture & Discussion	Read about the history of the WWW	CO1
2	I	Secure connections	Differentiate HTTP vs HTTPS and SSL/TLS	SSL certificate inspection	Demonstration	Summarize how SSL encryption works	CO1
3	I	Application and development tools	Identify modern tools for web development	IDE setup (e.g., VS Code)	Hands-on Lab	Install a code editor and extensions	CO1
4	I	The web browser, what is a server	Explain the client-server request cycle	Browser dev tools tour	Interactive Lecture	Inspect a webpage using Chrome DevTools	CO1, CO2
5	I	Setting up UNIX and LINUX web servers	Understand basic server configuration	Apache/Nginx demo	Guided Demonstration	Review basic Linux command line syntax	CO1
6	I	Logging users, dynamic IP	Understand user sessions and IP assignments	IP tracking simulation	Case Study	Write a short note on static vs. dynamic IP	CO1
7	I	Web Design: Website design principles	Apply basic UI/UX design concepts	Analyze poor vs. good UI	Visual Analysis	Sketch a wireframe for a simple homepage	CO3
8	I	Planning the site and navigation	Structure a user-friendly site hierarchy	Sitemap creation	Group Activity	Create a sitemap for a mock college portal	CO3
9	II	Architecture of Web based systems	Define high-level web system structures	System diagramming	Lecture	Read chapter on Web Architecture	CO1, CO4
10	II	Client/server (2-tier) architecture	Explain direct database communication	2-tier mapping	Whiteboard Session	List pros and cons of 2-tier systems	CO4

11	II	3-Tier architecture	Differentiate presentation, logic, and data tiers	Roleplay tiers	Interactive Lecture	Draw a diagram of a 3-tier architecture	CO4
12	II	Fast and scalable data access concepts	Understand bottlenecks in web applications	Identify lag points	Brainstorming	Research real-world scalability failures	CO4
13	II	Caches & Proxies	Explain caching mechanisms and proxy servers	Cache clearing demo	Demonstration	Read an article on CDN networks	CO4
14	II	Indexes	Understand how indexing speeds up data retrieval	Database search simulation	Concept Mapping	Write a summary on database indexing	CO4
15	II	Load Balancers & Queues	Describe traffic distribution and task queuing	Load balancing game	Group Activity	Research AWS or Nginx load balancers	CO4
16	II	Web Application Architecture (WAA)	Synthesize all unit concepts into WAA	Design a scalable WAA	Project/Presentation	Review Unit 2 concepts for a quiz	CO4
17	III	Client-side scripting, what is JavaScript	Understand JS purpose and syntax	"Hello World" in console	Hands-on Coding	Add JS to a basic HTML file	CO2, CO3
18	III	Simple JavaScript	Write basic inline and external JS scripts	Script linking	Hands-on Coding	Create an external .js file and link it	CO3
19	III	Variables	Declare and use let, const, and var	Variable assignment lab	Live Coding	Write a script to calculate area using variables	CO3
20	III	Functions	Define and invoke reusable code blocks	Calculator function	Hands-on Coding	Create a function that converts Celsius to Fahrenheit	CO3
21	III	Conditions	Apply if/else and switch statements	Number guessing game	Problem Solving	Write a script to check if a number is even/odd	CO3
22	III	Loops	Iterate code using for and while loops	Printing multiplication tables	Live Coding	Write a for loop to print numbers 1 to 50	CO3
23	III	Repetition	Combine loops and conditions for complex logic	Array iteration lab	Hands-on Coding	Create a loop that filters even numbers	CO3
24	III	JavaScript Review & Integration	Synthesize basic JavaScript concepts	Mini-project: Calculator	Workshop	Complete unfinished class mini-project	CO3
25	IV	JavaScript and objects, JavaScript own objects	Create and manipulate JS objects	Object literal creation	Interactive Coding	Create an object representing a student profile	CO3

26	IV	DOM and web browser environments	Traverse and modify the Document Object Model	Change text/colors via JS	Hands-on Lab	Write JS to change a webpage's background color	CO2, CO3
27	IV	Forms and validations	Validate user input before submission	Form validation script	Live Coding	Create a login form with empty-field validation	CO3
28	IV	DHTML: Combining HTML, CSS, JS, events and buttons	Create dynamic HTML interactions	Hover/Click event triggers	Demonstration	Add a button that toggles dark mode	CO3
29	IV	Controlling your browser, Ajax: Intro, pros & cons	Understand asynchronous web requests	Fetch API basic demo	Lecture & Demo	Read about synchronous vs asynchronous data	CO2, CO3
30	IV	Ajax based web application, alternatives of Ajax	Build a simple data-fetching application	Fetch JSON placeholder data	Hands-on Coding	Fetch weather data using an open API (Optional)	CO2, CO3
31	IV	XML, XSL, XSLT: Intro, uses, simple XML, DTD, Schemas	Understand XML syntax, structure, and validation	Write a well-formed XML file	Guided Practice	Write an XML document storing library books	CO1
32	IV	XML with application, XSL/XSLT, Intro to Web Services	Transform XML data and define web services	Apply basic XSL styling	Demonstration	Compare XML with JSON formats	CO1
33	V	PHP: Server-side scripting	Understand server-side logic vs client-side	Setup XAMPP/WAMP	Setup & Configuration	Write a PHP "Hello World" script	CO2
34	V	Arrays, function and forms, advance PHP	Process form data securely using PHP	POST/GET method demo	Hands-on Coding	Build a PHP script to capture user form input	CO3
35	V	Databases Basic command with PHP examples	Understand basic SQL commands in PHP context	Write basic SELECT/INSERT	Lecture	Review basic SQL commands	CO5
36	V	Connection to server, creating database	Connect PHP script to a MySQL database	Setup mysqli_connect	Live Coding	Write a secure database connection script	CO5
37	V	Selecting database, listing database & tables, creating tables	Dynamically generate tables via script	Execute CREATE TABLE queries	Hands-on Lab	Create a "Users" table via PHP	CO5
38	V	Inserting data, altering tables, queries	Populate and modify tables via PHP	Form-to-database insert	Hands-on Coding	Insert registration form data into the database	CO5

39	V	Deleting Database, deleting data and tables	Safely remove records and structures	Execute DELETE/DROP queries	Live Demo	Implement a "Delete User" button safely	CO5
40	V	PHP my admin and database bugs	Navigate phpMyAdmin and debug SQL errors	GUI database management	Troubleshooting Lab	Intentionally trigger and fix a SQL syntax error	CO5
41	VI	Introduction to Modern Frameworks: React	Understand component-based UI development	Explore React components	Video / Demo	Read about Virtual DOM concepts	CO3, CO5
42	VI	Angular	Understand MVC architecture in Angular	Compare React vs Angular	Lecture	List 3 companies using Angular vs React	CO3, CO5
43	VI	Node JS	Recognize JavaScript runtime for backend	Run a basic Node server	Demonstration	Install Node.js locally	CO2, CO5
44	VI	Bootstrap	Rapidly prototype responsive layouts	Build a grid layout	Hands-on Coding	Create a responsive navbar using Bootstrap	CO3
45	VI	Tailwind CSS	Apply utility-first CSS styling	Style a card component	Hands-on Coding	Recreate the Bootstrap navbar using Tailwind CSS	CO3

Ashutosh Thanapati
Dt. 13.07.26
Signature of Teacher

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13.07.2026
Signature of HOD