

| Government Polytechnic, Balangir                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |                                       |                                             |                            |                      |                                             |                |
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| Department of Computer Science Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |                                       |                                             |                            |                      |                                             |                |
| LESSON PLAN 2026-27(WINTER)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |                                       |                                             |                            |                      |                                             |                |
| NAME OF THE TEACHER : DEEPAK KUMAR BARDA, LECT.CSE(STAGE-II)                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |                                       |                                             |                            |                      |                                             |                |
| Subject: <b>Web Technologies (Course Code: CSEPC 303/TH2)</b><br>Program: Diploma in Computer Science and Engineering<br>Semester: 5th<br>Total Contact Hours: 45<br>Total Marks: 100<br>Assessment: Internal Assessment – 30, End Term – 70                                                                                                                                                                                                                                                                                    |      |                                       |                                             |                            |                      |                                             |                |
| After completion of the course, the students will be able to:<br>CO1: Identify key web development protocols, technologies, and architectures.<br>CO2: Explain the role of client-side and server-side scripting in dynamic web applications.<br>CO3: Develop interactive web pages using HTML, CSS, JavaScript, and PHP.<br>CO4: Compare different web application architectures and evaluate their scalability and security.<br>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            |

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| 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      |



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| 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      |



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| 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      |

*Deepak Kumar M*  
25.06.2026  
**Signature of Teacher**

*Deepak Kumar M*  
25.06.2026  
**Signature of HOD**

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|-----|-----------------------------------------------|-----------------------|--------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------|-----|----|
| CO1 | Compare XML                                   | Transform XML         | Apply basic XSL styling                    | XML with                                     | application                                                                 | XML | 32 |
| CO2 | Write a PHP "Hello World" script              | Setup & Configuration | Setup XAMPP/WAMP                           | server-side logic vs client-side             | PHP, Server-side scripting                                                  | V   | 33 |
| CO3 | Build a PHP script to capture user form input | Hands-on Coding       | POSTGET method demo                        | Process form data securely using PHP         | Arrays, function and forms, advance PHP                                     | V   | 34 |
| CO5 | Review basic SQL commands                     | Lecture               | Write basic SELECT, INSERT, UPDATE, DELETE | Understand basic SQL commands in PHP context | Databases Basic command with PHP examples                                   | V   | 35 |
| CO5 | Write a secure database connection script     | Live Coding           | Setup mysql_connect                        | Connect PHP script to a MySQL database       | Connection to server, creating database                                     | V   | 36 |
| CO5 | Create a "Users" table via PHP                | Hands-on Lab          | Execute CREATE TABLE queries               | Dynamically generate tables via script       | Selecting, inserting, updating, deleting database & tables, creating tables | V   | 37 |
| CO5 | Insert form data into the database            | Hands-on Coding       | Form-to-database insert                    | Populate and modify tables via PHP           | Inserting data, altering tables, queries                                    | V   | 38 |