INTERNSHIP PROGRAMME FOR UG DEGREE (SEMESTER-V)

(For the students admitted under New Curriculum and Credit Framework from the academic session 2023-24)

Course Title: Web Development	
Internship Providing Organization (IPO):	**Department of Computer Science, Bankura Sammilani College**
Category of Course:	**For UG DEGREE (SEM-V)**
Duration:	**60 Hours**
Course Coordinator and Contact Details:	**Mr. Tapas Kumar Ghosh** **Mob: 9474491830**
Mentors:	**Mr. Sanjoy Sen** **Mrs. Sucheta Mahato** **Mrs. Antara Kar** **Mrs. Tanushree Dey**
Intake Capacity:	**50 Students**
Course Fees:	**Rs. 100/- (Students from Host Institution)** **Rs. 400/- (Students from Other Institution)**

SYLLABUS

Course Title: Web Development
[50 Marks/2 Credits/60 Hours]

Learning Outcomes (LO)

- Use their learned skills, knowledge and abilities to develop web sites for the internet.
- Apply basic design principles to present ideas, information, products, and services on websites.
- Apply basic programming principles to the construction of websites.
- Effectively manage website projects using available resources.
- Demonstrate communication skills, service management skills, and presentation skills.
- Complete job preparation tasks including writing resumes and cover letters, conducting job interviews and developing an ePortfolio.
- Apply employability skills including fundamental skills, personal management skills, and teamwork skills.

Module 1 – Web Foundations (Theory + Practical) (10 Hours)

Internet Basics: In the web development syllabus, the first module focuses on "Web Foundations," which thoroughly covers the basics of the Internet.

You will learn about the fundamental concepts of the Internet, including the TCP/IP protocol suite, DNS (Domain Name System), HTTP/HTTPS protocols, and the interplay between web servers and clients.

This module forms the foundation for a deeper understanding of web development technologies by explaining how data is transmitted over the Internet and the role of different protocols.

Introduction to Web Development: Having explored the Internet fundamentals, you gain insights into the dynamic world of web development. This part of the module clarifies the roles and responsibilities of web developers, provides an overview of the technologies used, and sets the stage for deeper learning.

You will grasp the importance of HTML and CSS, JavaScript, and other tools in crafting web applications and websites.

Node.js and Git: Concluding the first module is a dive into "Node.js and Git." Node.js, being a JavaScript runtime environment, offers the capability for server-side scripting. You

get hands-on experience with Node.js by setting up a basic server and understanding its usage in server-side development.

Concurrently, Git, a crucial version control system, is introduced. You will learn to utilize Git for collaborative coding, version tracking, and managing project history. This knowledge becomes indispensable as you progress in your web development journey.

Module 2: Front-end Development (Theory + Practical) (20 Hours)

HTML: The second module commences with an in-depth study of HTML. HTML (Hypertext Markup Language) is the backbone of web content, and you have to immerse in its intricacies.

You will learn how to structure web content using HTML tags, elements, and attributes, thereby gaining the ability to create well-organized web pages.

CSS Basics & Properties: Simultaneously, you explore "CSS Basics & Properties." Cascading Style Sheets (CSS) empower you to style HTML elements, and this module delves into CSS syntax, selectors, properties, and the art of applying styles to web pages.

The module fosters a deep understanding of how to make web content visually appealing and user-friendly.

JavaScript and HTTP (forms): Moving forward, you will tackle "JavaScript and HTTP (forms)." JavaScript, a pivotal scripting language in the web development syllabus, becomes the focal point. You delve into JavaScript's core concepts, including variables, data types, and control structures.

Furthermore, you discover how to work with web forms, allowing yourself to handle HTTP requests and user input effectively. This knowledge forms a critical foundation for building interactive web applications.

Sessions and HTTP: Complementing the understanding of HTTP, this module also delves into "Sessions and HTTP." Here, you will learn about web sessions and cookies, crucial mechanisms for maintaining user state across web pages.

Understanding HTTP's request-response model and its connection with sessions and cookies is essential for you to craft robust and user-friendly web applications.

JavaScript & Document Object Model (DOM): To further enhance frontend development skills, you will progress to learning how to manipulate HTML and CSS using JavaScript through the Document Object Model (DOM).

Concepts such as DOM traversal, event handling, and dynamic content creation will empower you to build responsive and interactive web interfaces.

Creating HTML Forms: This module section builds upon previous knowledge by taking a more in-depth dive into form creation. You will explore advanced form design, validation techniques, and form submission, equipping yourself with the skills to design user-friendly and data-driven web applications.

Creating Stylish Websites: Completing this module, you will focus on responsive web design principles. You will learn to implement CSS frameworks like Bootstrap, making websites visually appealing and ensuring optimal user experiences across different devices and screen sizes.

Module 3: Backend Development (Theory + Practical) (20 Hours)

PHP HyperText PreProcessor: Module 3 marks your transition to server-side development. It starts with exploring the "PHP HyperText PreProcessor" (PHP). PHP is a widely used server-side scripting language, and you will gain a solid understanding of its syntax and capabilities.
You will learn how to create dynamic web pages, making generating content on the server possible before delivering it to the client.

SQL & MySQL: Next, you delve into Structured Query Language (SQL). It is a fundamental component of database management, as well as the web development syllabus.

You will learn SQL basics and focus on MySQL, a renowned relational database management system (RDBMS). This knowledge is invaluable for managing and manipulating data in web applications.

Integrating PHP and MySQL: As you progress, you will learn about the integration of PHP and MySQL. This module section demonstrates the seamless connection between PHP and MySQL, enabling you to create dynamic web applications with robust data storage and retrieval capabilities.

You will gain proficiency in integrating the PHP scripting language with the MySQL database management system, creating a solid foundation for building database-driven web applications.

Database Interaction: Having learned about the integration, you will get hands-on experience building database-driven web applications. You will learn to perform CRUD (Create, Read, Update, Delete) operations, allowing you to create interactive and data-rich web solutions.

You will understand the worth of efficient database management for web development projects, equipping yourself with the skills required for backend web development.

You will eventually become proficient in using PHP for server-side scripting, SQL for database management, and integrating these technologies to create dynamic and data driven web applications.

Module 4: Hosting and Deployment (Theory + Practical) (10 Hours)

Website Structure and Hosting: Module 4 introduces the critical aspects of making web projects accessible online. This module section covers website architecture, domain registration, and the various web hosting providers.

You will learn how to deploy your web applications to live servers, making them accessible to a global audience.

Serverless Development: Concurrently, you will go through the concept of serverless computing, where the infrastructure management burden is significantly reduced.

Creating Web Applications: You will then jump to building web applications, applying your cumulative knowledge of HTML, CSS, and JavaScript to develop full fledged web applications.

Reference Books:

- HTML and CSS: Design and Build Websites by Jon Duckett: A great starting point for understanding the fundamentals.
- Eloquent JavaScript by Marijn Haverbeke: A comprehensive guide to JavaScript.
- Learning React by Adam Freeman: A detailed introduction to React for beginners.
- React Up & Running by Stoyan Stefanov: Another excellent resource for learning React.
- Node.js Cookbook by Bethany Griggs: A practical guide to Node.js development.

Additional Resources:

- Online tutorials and courses:

  Numerous platforms offer free or paid online courses and tutorials on web development.

- Documentation for frameworks and libraries:

  Refer to the official documentation for frameworks like React, Angular, and Vue.js.

- Online communities and forums:

  Engage with other developers and ask questions on platforms like Stack Overflow or Reddit.**