

Course Title	Software Development – Web Development	
Module Title	SD00	
Course Code	SD01	
Course Prerequisites	CS01	
Course Description	This course is intended for a learner who aspires to gain practical skills of designing a website and seeks to become a professional web developer. The course first highlights the fundamental terminologies related to developing a website and provides hands-on-training on front-end development and styling languages, such as <i>HTML</i> and <i>CSS</i> respectively. The trainees will then explore and use the client-side programming language such as <i>JavaScript</i> to design an interactive and user-friendly web application. Following that, they will perform server-side scripting with <i>PHP</i> programming language and as well gain the skills to persistently store data in the database engine, including <i>MySQL</i> database. The course also arms learners with the skillset to professionally use content management systems, such as <i>WordPress</i> and <i>Joomla</i> to develop industry-standard websites.	
Learning Outcomes	<p>Upon successful completion of this course, the trainees will be able to:</p> <ul style="list-style-type: none">• Illustrate their website development skills including the core web design principles to showcase their understanding of the concepts• Competently design websites’ user interface and proficiently style it accordingly• Integrate the front-end technologies with back-end or persistent storage during the development process• Develop responsive, user-friendly and professional websites for commercial purposes• Distinguish between poorly designed websites and professionally developed ones to provide valuable input to other web designers	
Course Content		
Topic		Duration (Week)
1. The Basics		1-2
1.1.Overview of the Internet		
1.1.1. The World Wide Web (WWW)		
1.1.2. Client-Server Architectural Overview of WWW		
1.1.3. Browser and Web Server		
1.1.4. Document Types and MIME		

1.1.5. Uniform-Resource Locators (URLs)	
1.1.6. Domain Name System (DNS)	
1.2. TCP/ IP Protocols	2-3
1.2.1. General description of the TCP/IP protocols	
1.2.2. TCP/IP services	
1.2.3. Components of TCP/IP, UDP, ICMP	
1.2.4. Overview of HTTP Protocol	
1.2.5. What is HTTP?	
1.2.6. HTTP Methods	
1.2.7. HTTP Messages	
1.3. HTTP Request Model	
1. Web Design and Development Processes	3-4
1.1. Gathering requirements	
1.2. Information organization and architecture	
1.3. Information Visualization	
3. Introduction to Hyper Text Markup Language (HTML)	5-6
3.1. Introduction to Markup Languages	
3.2. Document Object Model (DOM) of HTML	
3.3. Headings, Paragraph and Breaks	
3.4. Formatting Text	
3.5. Working With List	
3.6. Working with Graphics	
3.7. Anchors, URLs and Image Maps	
3.8. Tables	
3.9. HTML Frames	
3.10. HTML Forms	
3.11. ActiveX Objects and Applets	
3.12. Special HTML Elements	
3.13. Page Layout and Design Considerations	
4. Cascading Style Sheets (CSS)	7-8
4.1. CSS Basics	

<ul style="list-style-type: none"> 4.2. Style Sheet Rules 4.3. CSS Selectors 4.4. Style Properties 4.5. Font and Text properties 4.6. Foreground and Background properties 4.7. Layout and Positioning Properties 4.8. Type of CSS Styles <ul style="list-style-type: none"> 4.8.1. Inline 4.8.2. Embedded 4.8.3. External 4.8.4. Imported 4.9. Style Inheritance 4.10. Style Rules Precedence 4.11. Style Sheet Layers 	
<p>5. Client-Side Scripting Language - JavaScript</p> <ul style="list-style-type: none"> 5.1. Introduction 5.2. Client-Side Scripting Using JavaScript <ul style="list-style-type: none"> 5.2.1. Introduction to JavaScript 5.2.2. JavaScript Basics 5.2.3. Variables, Expression, Control Structure, Array, Functions 5.2.4. Handling Events and Exception Handling 5.2.5. User Inputs: Form Processing 5.2.6. Java script Functions 5.2.7. Cookies and Hidden Fields 5.3. Dynamic HTML (DHTML) <ul style="list-style-type: none"> 5.3.1. Introduction 5.3.2. Dynamic Styles 5.3.3. Dynamic Content 5.3.4. Positioning and Animation 5.3.5. Filters and Transitions 	9-10

6. Introduction to Extensible Markup Language (XML) <ul style="list-style-type: none"> 6.1. Overview of XML 6.2. XML Components 6.3. Document Type Definition 6.4. Data Elements 6.5. Defining Attributes and Entities 6.6. XML Schema 6.7. XML Core Technologies 	11-12
Web Development - PART II: Advanced Web Development	
<i>Course Content</i>	<i>Duration (Week)</i>
1. Advanced Topics on Web Engineering Basics <ul style="list-style-type: none"> 1.1. Web services 1.2. Semantic Web 1.3. RSS and ATOM 1.4. Captcha 1.5. Workflow Languages 	13-14
2. Server-Side Scripting Basics <ul style="list-style-type: none"> 2.1. Introduction to server-side scripting 2.2. Server-side scripting languages 2.3. Use Basic Syntax 2.4. Send Data to the Web Browser 2.5. Write Comments 2.6. Utilize Variables 2.7. Manipulate Strings 2.8. Manipulate Numbers 2.9. Work with constants 	14-15
3. HTML Forms and Server-Side Scripting <ul style="list-style-type: none"> 3.1. Use Conditionals and Operators 3.2. Validate Form Data 3.3. Send Values to a Script Manually 3.4. Work with Forms and arrays of data 	16-18

3.5. Use For and While Loops 3.6. Create a Simple Form using PHP 3.7. Receive Data from a Form in PHP 3.8. Introduction to regular expressions		
4. Files and Directories 4.1. Write to Files 4.2. Read from Files 4.3. Create Directories 4.4. Upload Files 4.5. Rename and Delete Files and Directories		18-19
5. Connecting to MySQL Database 5.1. Connect to an existing Database 5.2. Send Data to a Database 5.3. Retrieve Data from a Database 5.4. Modify Existing Data 5.5. Remove Existing Data 5.6. Data base security using server-side scripting		19-20
6. Cookies and Sessions 6.1. Describe the stateless model 6.2. Explain the concepts of maintaining state with sessions 6.3. Create and Read data from sessions 6.4. Putting PHP session IDs in pages 6.5. Create and Read data from Cookies 6.6. Destroy a session 6.7. Maintain session data using Cookies 6.8. Add Parameters to a Cookie 6.9. Delete a Cookie		20-21
7. Content Management System (CMS) Platforms 7.1.WordPress CMS 7.2.Joomla CMS		22-24
Assessment Criteria	The trainees are fully assessed based on their practical competency of the course and are expected to demonstrate such skills at the highest level with innovative and creative elements involved.	

Trainer's Role	Providing hands-on training; assigning individual and group projects and tasks, evaluating learners' work and providing constructive feedback accordingly; following learners' progress regularly; and arming the trainees with relevant practical skills
Students' Role	Attending classes; practically illustrating mastery of the daily sessions and topics; working on and demonstrating the projects and tasks assigned to them; actively requesting for feedback and asking for clarification as needed and as often as possible; engaging in group discussions; undertaking real-world problem-solving innovative projects with real social impacts under the trainer's guidance and the institute's close supervision.
Required Software & Hardware	<i>MS Visual Studio Code IDE, Adroid Studio IDE & PCs</i>
References	<ul style="list-style-type: none"> • Chris, N. (2018). The Full Stack Developer: Your Essential Guide to the Everyday Skills Expected of a Modern Full Stack Web Developer • Eric, F. (2017). Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages • Niederst, R. (2018). Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics • Stephen, B. (2017). JavaScript: JavaScript for Beginners - Learn JavaScript Programming with Ease • Matt, S. (2019). Laravel: Up & Running: A Framework for Building Modern PHP Apps • Vasan, S. (2017). Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node • Sanjib, S. (2017). Beginning Laravel: A beginner's guide to application development with Laravel 5.3 • Steve, P. (2016). Learn PHP 7: Object Oriented Modular Programming using HTML5, CSS3, JavaScript, and XML • Nixon, R. (2018). Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5 • Adrian, W., Steve, P. (2018). Practical PHP 7, MySQL 8, and MariaDB Website Databases: A Simplified Approach to Developing Database-driven Websites