



Aksum University  
Aksum Institute of Technology  
Faculty of Computing Technology  
Department of Computer Science

**Course Title: Web Programming**  
**Course Code: CoSc 3081**

**Credit Hrs.: 4    ECTS: 7    Lecture Hrs.: 4    Lab Hrs.: 3    Tutorial Hrs. 0**

**Prerequisite: None**

**Course Category: Compulsory**

**Year III    Semester I**

**Instructor's Information**

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Consultation Hours: TBA

Academic Year: 2023-2024

### **Course Description**

Client-server Architecture: Web page Design and development; information Architecture & visualization; static & dynamic pages, client side programming using scripting languages (JavaScript), OOP programming using PHP, File manipulation and Management using PHP. Multimedia web programming, dynamic web content creation; session tracking; Internet protocols, PHP Web controls, connecting web page to data base, loading and manipulating XML documents, web security; cryptography theory.

### **Objectives**

The objective of this module is to familiarize students:

- The concepts, principles and methods in programming for web and Internet environment and the services and technologies available and used on Internet. Specifically, at the completion of this module the student is able to
- Provide fundamental concepts and skills for the understanding and development of web- based applications.
- Construct Web sites using HTML and Server Side scripting Languages.
  - Implement client-side interactivity
- Use CSS to manage Web site presentation and maintenance
- Select and customize existing technologies to set up and maintain web servers
- Specify, build and manage form and content of information-rich web sites
- Design, implement and evaluate client-server systems following specific protocol specifications, taking into account concurrency issue.

## **Course outline**

### **Chapter 1: The World Wide Web (4hr)**

- 1.1. Course overview
- 1.2. The Internet and World Wide Web
- 1.3. Web Hosting and Domain Name Registration

### **Chapter 2: Hyper Text Markup Language (HTML) (10hr)**

- 2.1. Introduction to HTML
- 2.2. HTML tags
  - 2.2.1. Basic HTML tags (HTML, HEAD, BODY, TITLE)
  - 2.2.2. Meta tag
  - 2.2.3. HTML Comments
  - 2.2.4. HTML Link
  - 2.2.4. HTML Text Formatting tags
  - 2.2.5. HTML image inserting tag
    - 2.2.5.1. IMG tag and its attribute
    - 2.2.5.2. Inserting Image Map
  - 2.2.6. HTML Table
  - 2.2.7. Ordered and Unordered List in HTML
  - 2.2.8. HTML Frames
    - 2.2.8.1. Frame Set
    - 2.2.8.2. Internal Frame
  - 2.2.9. HTML Form and Form Controls
  - 2.2.9. Inserting Multimedia in HTML
    - 2.2.9.1. Embed vs Video and Audio tags
  - 2.2.10. HTML Graphics
    - 2.2.10.1. HTML Canvas
    - 2.2.10.2. HTML SVG

### **Chapter 3: Cascading Style Sheet (CSS) (10hr)**

- 3.1. CSS Basics
  - 3.1.1. Introduction to CSS
  - 3.1.2. CSS Syntax (CSS Selectors and Declarations)
  - 3.1.3. Attaching CSS with HTML (External , Embedded and Inline)
- 3.2. Style Sheet Rules
  - 3.2.1. Style Inheritance
  - 3.2.2. Style Rules Precedence
- 3.3. Style Properties
  - 3.3.1. Foreground and Background Properties
  - 3.3.2. Font and Text Properties
  - 3.3.3. CSS Box Model

- 3.3.4. Table Styling Properties
- 3.3.5. More On Styling List (Creating Navigation bars)
- 3.3.6. Layout and Positioning Properties

#### 3.4. CSS Measuring Units

### **Chapter 4: Client Side Scripting (JavaScript) (8hr)**

- 4.1. Introduction to JavaScript
- 4.2. JavaScript Basic
  - 4.2.1. JavaScript Syntax
  - 4.2.2. Attaching JavaScript to HTML (External, Embedded, Inline)
- 4.3. JavaScript Comments
- 4.4. Basic JavaScript Input Output
- 4.5. JavaScript Data Types and Variables
  - 4.5.1. JavaScript Data types
  - 4.5.2. Variable declaration in JavaScript
  - 4.5.3. Data Type Conversion
- 4.6. Arithmetic and Logical Operators in JavaScript
- 4.7. Control Structures (Conditional and Looping Statements)
- 4.8. Array in JavaScript
- 4.9. JavaScript Functions
- 4.10. JavaScript DOM (Document object Model)
  - 4.10.1. Accessing HTML elements in JavaScript
  - 4.10.2. CSS in JavaScript
  - 4.10.3. Events in JavaScript
  - 4.10.4. Handling Exception in JavaScript
- 4.11. Form Processing using JavaScript
- 4.12. JavaScript BOM (Browser Object Model)
  - 4.12.1. JavaScript Window
  - 4.12.2. JavaScript Location
  - 4.12.3. JavaScript Location
  - 4.12.4. JavaScript Cookies

### **Chapter 5: Server-Side Scripting (PHP) (8hr)**

- 5.1. Introduction to PHP
- 5.2. Basic PHP Syntax
  - 5.2.1. PHP Comments
  - 5.2.2. Predefined and User Variables in PHP
- 5.3. PHP Output Statements
- 5.4. Data Types and Variables in PHP
- 5.5. Arithmetic and Logical Operators
- 5.6. Conditional Statements

- 5.7. Loop Statements in PHP
- 5.8. Arrays in PHP
- 5.9. PHP Functions
- 5.10. Form Processing using PHP
- 5.11. PHP File Upload
- 5.12. PHP Cookies and Session
- 5.13. Database Programming using PHP
  - 5.13.1. Overview on MySQL database
  - 5.13.2. Creating Database Connection in PHP
  - 5.13.3. Sending Query to MySQL Database using PHP
  - 5.13.4. Processing Query Result.
- 5.14. PHP File Input-Output
- 5.15. PHP Date and Time
- 5.16. PHP Mathematical Functions
- 5.17. PHP OOP

#### Chapter 6: Advanced JavaScript and XML (AJAX) (4hr)

- 6.1. Introduction to AJAX
- 6.2. XMLHttpRequest Object
- 6.3. Sending Request to PHP server
- 6.4. Handling Response from Server

#### Chapter 7: Introduction to web development frameworks (4hr)

- a. Bootstrap & jQuery
- b. Node.js
- c. Angular.js
- d. React.js

### Teaching - Learning methods

Three contact hours of lectures, three hours of lab and 1 hour of tutorials per week. Students do home assignments.

### Assessment method (TBM)

Quizzes	20%
Assignments	10%
Project	20%
Final Exam	50%
Total	100%

### Teaching materials

#### Reference books:

- Fundamental Concepts for Web Development: HTML5, CSS3, JavaScript and much more!, by Roxane Anquetil
- Web Design with HTML, CSS, JavaScript and jQuery Set 1st Edition by Jon Duckett (Author)
- W3Schools, <https://www.w3schools.com>