MAKERERE UNIVERSITY
MAKERERE UNIVERSITY BUSINESS SCHOOL
FACULTY OF COMPUTING AND INFORMATICS
DEPARTMENT OF INFORMATION SYSTEMS
ACADEMIC YEAR: 2025/26 | SEMESTER: TWO
COURSE OUTLINE

Course Name: Web Application Development
Course Code: BUC2226
Programme: Bachelor of Business Computing (BBC)
Course Level: 2
Credit Units: 5
Instructors: *Mutebi Bashir, Tiko Joy, Sadat Bukoma, Makubuya Rogers*

COURSE DESCRIPTION

The course focuses on designing and developing Web-based applications using a variety of programming languages and tools. It ventures into web scripting with JavaScript, the primary client-side scripting language of the Internet. Server-side programming with PHP, one of the world's most popular programming languages for web development. It is a flexible, scalable and easy language to program with. PHP is currently used in more than fifteen million web sites and the students will learn as part of the curriculum what this language is all about. With increased familiarity on PHP, the course will introduce MySQL, an open source and reliable database management system that is rapidly acquiring a world-wide-user base.

Course Objectives

- To help students quickly acquire the core skills needed to develop web applications.
- Choose appropriate technologies and development tools to implement a given web development task
- Distinguish between server-side and client-side technologies to develop web applications

Learning Outcomes

By the end of this course learners should be able to:

- Understand how web-based applications function and the technologies involved.
- Understand the Model-View-Controller (MVC) software architecture
- Build their own web applications
- Feel confident enough to explore more advanced topics on their own through freely available internet resources

Detailed Course Content

No.	Topics	Lesson Details	Hours
1.	Anatomy of a Web Application	• Introduction to Web Application Development • Client vs Server Apps • Single Page Applications	2
2.	Introduction to Client-side scripting with JavaScript Programming	• Introduction to JavaScript • Variables & Data Types • Conditional statements for decision-making • Arrays and loops for data handling • Functions and modular coding • Objects and basic object-oriented concepts Error handling and debugging techniques	12
3.	Document Object Manipulation	• Understanding the Document Object Model (DOM) • Selecting and accessing elements (getElementById, querySelector, etc.) • Modifying DOM elements (content, attributes, styles) • Creating, inserting, and removing elements dynamically • Handling events (click, submit, keypress, mouse events) • Event listeners and event propagation (bubbling and capturing) • Basic form validation using DOM and events	7
4.	Introduction to Server-side scripting with PHP	• Introduction to PHP • Variables & Data Types • Conditional statements & loops • Arrays and functions • Objects & basic OOP in PHP	12
5.	Combining Server and Client-side Scripts	• Folder and File Structure • Introduction to JSON • Processing Forms	12

6.	Integrating Databases	• Connecting to a Database • Inserting into a Database • Reading data from a Database • Updating data in a Database • Deleting data from a Database	20
7.	Web Application Security	• Introduction to web application security concepts • Common web vulnerabilities (OWASP overview) • Input validation and output sanitisation • Secure handling of forms and user data • Preventing SQL Injection and basic XSS attacks	4
8.	Deploying web applications	• Preparing for deployment • Understanding hosting (Shared, Dedicated, Cloud etc.) • Identifying a host • Uploading files	6
	Total Hours		**75**

Mode of delivery

- Lectures (face to face and online)
- Practical
- Tutorial

Mode of assessment

Course work 30%
End of semester examination 70%

Reading list

Books

1. Duckett, J. (2014). *JavaScript and jQuery: Interactive front-end web development*. Wiley.
2. Shklar, L., & Rosen, R. (2009). *Web application architecture: Principles, protocols and practices* (2nd ed.). Wiley.
3. Nixon, R. (2018). *Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5* (5th ed.). O'Reilly Media.
4. Ullman, L. (2017). *PHP for the Web: Visual QuickStart Guide* (5th ed.). Peachpit Press.
5. Beighley, L., & Morrison, M. (2009). *Head First PHP & MySQL: A brain-friendly guide*. O'Reilly Media.

Web Resources

6. Mozilla Developer Network (MDN). (n.d.). *Learn web development*. Retrieved April 11, 2024, from https://developer.mozilla.org/en-US/docs/Learn
7. W3Schools. (n.d.). *JavaScript reference*. Retrieved April 11, 2024, from https://www.w3schools.com/jsref/
8. W3Schools. (n.d.). *jQuery tutorial*. Retrieved April 11, 2024, from https://www.w3schools.com/jquery/
9. W3Schools. (n.d.). *HTML forms and PHP*. Retrieved April 11, 2024, from https://www.w3schools.com/php/php_forms.asp