T-104
2022

Course Specification
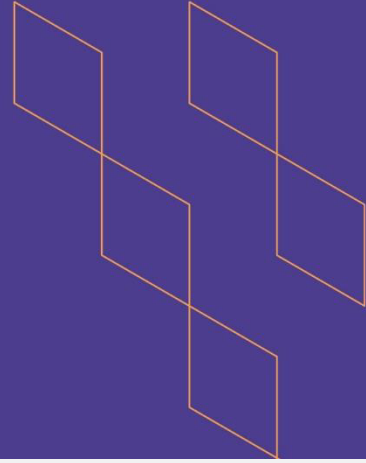
Course Title: **Web Technology 2**
Course Code: **ITXXXX**
Program: **Information Technology**
Department: **Information Technology**
College: **Computer Science and Information Technology**
Institution: **Albaha University**
Version: *Course Specification Version Number*
Last Revision Date: **5 April 2023**

Table of Contents:

A. General information about the course:

Course Identification	
1. Credit hours:	3 Hours

2. Course type

a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☐			

3. Level/year at which this course is offered:6ᵗʰ

4. Course general Description

This course is designed for students who already have a solid foundation in web development, and they have to expand their skills in back-end web development. Students will learn how to build sophisticated server-side web applications using modern technologies and best practices.

Lecture:
The lecture covers advanced programming concepts, server-side languages and frameworks such as PHP, design and architecture of server-side applications, performance optimization and scaling strategies, and web security and best practices. Students will learn how to build scalable and maintainable server-side applications with a focus on PHP, explore best practices for designing and optimizing server-side applications, and gain knowledge and skills in web security.

Lab:
The lab is planned to give students practical experiments on WEB Page Development.
Students will also learn how to:
• Build Dynamic web site.
• WEB Server Configuration.
• My SQL.
• Sever Side Program such as PHP
PHP Function used to connect with web site and MySQL

Through hands-on projects and assignments, students will gain practical experience in server-side web development with PHP and develop a strong understanding of the best practices in building modern web applications. By the end of the course, students will be able to confidently design, develop, and deploy complex server-side web applications using PHP.

5. Pre-requirements for this course (if any):
ITXXXX

6. Co- requirements for this course (if any):

7. Course Main Objective(s)
The main objective for this course is to teach students how to:

- ▪ Describe the PHP language and web server configurations.

- Utilize modern PHP frameworks to build scalable and maintainable web applications.
- Design and manage SQL and NoSQL databases to store and retrieve data in web applications.
- Explain PHP data types and operators.
- Develop Content Management Systems (CMSs)
- Interact MySQL database with PHP
- Implement web application security measures and user authentication to protect web applications from potential attacks.
- Interact in groups collaboratively.
- Communicate concepts and techniques in oral presentations

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	44	100%
2.	E-learning		
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	22
2.	Laboratory/Studio	22
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	Total	44

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Describe the PHP language and web server configuration	K1	Lectures Class discussions	Homework Quiz Midterm Exam Final Exam
1.2	Apply advanced PHP programming concepts, such as object-oriented programming, design patterns, and error handling.	K2	Lectures Class discussions	Homework Quiz Midterm Exam Final Exam
1.3	Define Functions and control structures of PHP Language.	K3	Lectures Class discussions	Homework Quiz Midterm Exam Final Exam
1.4	Explain PHP data types and operators.	K4	Lectures Class discussions	Homework Midterm Exam Final Exam
1.5	Explain web application security and authentication techniques using PHP.	K5	Lectures Class discussions	Homework Midterm Exam Final Exam
2.0	Skills			
2.1	Write object-oriented PHP code that uses inheritance, polymorphism, and encapsulation.	S1	Lectures Assignments Lab	Homework Lab Exam
2.2	Implement common web development tasks such as user authentication, form	S2	Lectures Assignments Lab	Homework Lab Exam Final Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	handling, and database integration using PHP frameworks.			
2.3	Design and implement databases that are efficient, scalable, and maintainable.	S3	Lectures Assignments Lab	Final Exam Lab Exam
2.4	Use PHP to interact with databases using SQL commands.	S4	Lecture Lab	Homework Lab Exam
2.5	Implement secure user authentication and authorization in their PHP applications.	S5	Lab	Lab Exam
3.0	Values, autonomy, and responsibility			
3.1	Participate in groups collaboratively.	V1	Team-based learning	Homework

C. Course Content

No	List of Topics	Contact Hours
	Lectures	
Part 1: Introduction to advanced PHP programming concepts		
1.	Object-oriented programming in PHP	1
2.	Design patterns in PHP	1
3.	Error handling and debugging techniques	1
Part 2: Introduction to PHP frameworks		
4.	Overview of popular PHP frameworks such as CakePHP	1
5.	Server-Side Programming (PHP)	2
6.	Implementation basic PHP scripts.	2
7.	PHP Code and Operation.	2
8.	PHP Method and Function.	2
Part 3: Database design and management with PHP		
9.	Relational databases and SQL	2
10.	Connecting PHP applications to MySQL	2
11.	Object-Relational Mapping (ORM) with PHP frameworks	2
Part 4: Web application security and authentication		
12.	Common web application security threats and how to prevent them	2

13.	Best practices for securing PHP applications	2
	Total	22

	Labs	
1.	**Lab. 1: Setting up a PHP development environment.** • Installing a local web server such as XAMPP or WAMP • Setting up a PHP development environment with a PHP framework • Creating (Declaring) PHP Variables • PHP Operators • PHP Conditional Statements • PHP Loops • PHP User Defined Functions • PHP WEB Forms • Building a "Hello, World!" application with a PHP framework	8
2.	**Lab. 2: Database design and management with PHP** • Designing a relational database schema for a web application • Connect WEB with MySQL. • Setting up a MySQL or PostgreSQL database with PHPMyAdmin or phpPgAdmin • Writing PHP code to connect to the database and perform CRUD (Create, Read, Update, Delete) operations. • Limit Data Selections from a MySQL Database	8
3.	**Lab 3: Implementing user authentication and authorization.** • Building a login and registration system with PHP and a PHP framework • Using password hashing and salting techniques to securely store user passwords. • Implementing role-based access control to restrict user access to certain parts of the web application.	6
	Total	22

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework	Week 3,7	10%
2.	Midterm exam	Week 6	20%
3.	Quiz	Week 8	10%

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4.	Lab report	Every two weeks	5%
5.	Lab Exam	Week 10	15%
6.	Final Exam	Week 13	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	• Lorna Jane Mitchell (2016). *PHP Web Services*. 'O'Reilly Media, Inc.' • Suehring, S. and Valade, J. (2013). *PHP, MySQL, JavaScript & HTML5 all-in-one for dummies*. Hoboken, Nj: John Wiley & Sons, Inc.
Supportive References	• Blum, R. (2018). *PHP, MYSQL, & JavaScript all-in-one for dummies*. Hoboken, New Jersey: John Wiley & Sons, Inc.
Electronic Materials	• Access to the Saudi Digital Library (SDL). • Using the learning management system of the university – Rafid System (https://lms.bu.edu.sa/). • https://www.w3schools.com/html/default.asp • Codecademy https://www.codecademy.com/learn
Other Learning Materials	Apache Server, DBMS (MySQL) HTML. Javascript, PHP

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	A classroom or lecture hall with whiteboard for 25 students.
Technology equipment (projector, smart board, software)	• A digital image projection system with connection to desktop computer or laptop computer. • High-speed Internet connection. • An instructor computer station.
Other equipment (depending on the nature of the specialty)	A laboratory with: 25 computers with Apache Server programming.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students Peer Reviewer Program Leader	Indirect: Survey Direct: Peer Review Direct: Class Visits
Effectiveness of students assessment	Exams Evaluation Committee Students	Direct: Exam Review Indirect: Survey
Quality of learning resources	Faculty Students	Indirect: Survey Indirect: Survey

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Faculty	Direct: Exams
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	