



Course Specification

— (Bachelor)

Course Title: **Web Security**

Course Code: **APIS3214**

Program: **Diploma in Information Security**

Department: **Diplomas**

College: **Applied College**

Institution: **Umm Al-Qura University**

Version: **1**

Last Revision Date: **14/12/2024**

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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

2. Course type

- A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
- B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (level 3, 2nd year)

4. Course general Description:

This course introduces fundamental web development technologies (HTML, CSS, JavaScript, basic server-side programming) and essential web security principles. Students will learn about common web vulnerabilities like SQL injection, XSS, and CSRF, along with mitigation techniques, authentication, session management, and access control. This course equips students with the knowledge to build basic secure web applications.

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

Computer Networks (APIS2208)

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

7. Course Main Objective(s):

The main objective of this course is to provide students with a foundational understanding of web application development and the core security principles necessary to build secure web applications. Students will learn to identify common web vulnerabilities and implement basic mitigation techniques, gaining practical experience in secure coding practices.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

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	Recognize common Web application technologies and their security issues	K1	Course lectures, project	Quizzes, Midterm Exam, Final Exam
1.2	Identify common web vulnerabilities (e.g., SQL injection, XSS, CSRF).	K1	Course lectures, lab exercises, project	Quizzes, Midterm Exam, Final Exam
2.0				
2.1	Develop secure web applications using basic web technologies.	S2, S4	Lab coursework Project	Quizzes, Midterm Exam, Final Exam, project
2.2	Demonstrate the ability to identify, analyze, and mitigate common web application vulnerabilities	S3	Lab coursework Project	Quizzes, Midterm Exam, Final Exam, project
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate an understanding of the ethical and legal implications of web security.	V1	Project	Project

C. Course Content

No	List of Topics	Contact Hours
1.	<p>Web Development Fundamentals:</p> <ul style="list-style-type: none"> HTML5 fundamentals <ul style="list-style-type: none"> Document structure Basic semantic HTML Form security basics CSS fundamentals <ul style="list-style-type: none"> Basic layout techniques 	4
2.	<p>JavaScript and Backend Basics:</p> <ul style="list-style-type: none"> JavaScript fundamentals <ul style="list-style-type: none"> Variables, data types Functions DOM manipulation Event handling Basic server-side programming <ul style="list-style-type: none"> introduction PHP or Node.js basics Simple server setup Basic routing Database connection basics (MySQL/SQLite) 	4
3.	<p>Web Application Technologies Fundamentals</p> <ul style="list-style-type: none"> Basic web architecture overview HTTP Protocol essentials <ul style="list-style-type: none"> Request/response cycle Common HTTP methods Basic status codes Encoding schemes introduction <ul style="list-style-type: none"> URL encoding Basic character encoding Simple web application components <ul style="list-style-type: none"> Client-side technologies Server-side technologies 	4
4.	<p>Web Application Architecture and Security Principles</p> <ul style="list-style-type: none"> Web application architectural models <ul style="list-style-type: none"> Client-server model Basic MVC concept Security design principles <ul style="list-style-type: none"> Principle of least privilege Defense in depth Secure by design concept 	4



5.	<p>Authentication and Access Control</p> <ul style="list-style-type: none"> Authentication fundamentals <ul style="list-style-type: none"> Password storage basics Basic authentication mechanisms Access control introduction <ul style="list-style-type: none"> Role-based access control (RBAC) concept Common authentication vulnerabilities Weak password risks Basic credential protection 	4
6.	<p>Session Management</p> <ul style="list-style-type: none"> Session concept basics, creation, and management Basic session security <ul style="list-style-type: none"> Session token protection Simple session hijacking prevention 	2
7.	<p>Input Validation and Vulnerability Awareness</p> <ul style="list-style-type: none"> Input validation principles Basic vulnerability types SQL Injection overview Cross-Site Scripting (XSS) fundamentals Cross-Site Request Forgery (CSRF) basics Simple mitigation techniques Input sanitization Parameterized queries Basic output encoding 	4
8.	<p>Client-Side and Server-Side Security Controls</p> <ul style="list-style-type: none"> Client-side security basics JavaScript security considerations Basic cookie protection Server-side security fundamentals Basic server configuration security Simple logging and monitoring concepts 	4
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	1 - 15	10%
2.	Labs	1 - 15	15%
3.	Project	1 - 15	20%
4.	Midterm	Midterm's Week	20%
5.	Final Exam	Final's Week	35%

*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	<ul style="list-style-type: none"> Basics of Web Design: HTML5 & CSS, by Terry Ann Felke-Morris, 6th edition, ISBN-13: 9780137313303 Web Application Security by Andrew Hoffman, 2020- ISBN: 9781492053118
Supportive References	<ul style="list-style-type: none"> The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws by Dafydd Stuttard and Marcus Pinto, 2nd edition, ISBN-13: 978-1118026472 The Tangled Web: A Guide to Securing Modern Web Applications by Michal Zalewski, 1st edition, ISBN-13: 978-1593273880 Real-World Web Hacking: A Field Guide to Bug Hunting: A Field Guide to Web Hacking, by Peter Yaworski, ISBN-13: 9781593278618
Electronic Materials	Umm Al Qura e-learning system containing teaching resources (Slides, assignment papers, etc.)
Other Learning Materials	N/A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room with: * at least 30 seats * A data show projector connected to a PC preferably with Internet connection * sliding board * PC Lab (at least 30 seats)
Technology equipment (projector, smart board, software)	30 Linux/Windows PCs
Other equipment (depending on the nature of the specialty)	A maintenance lab + A PC lab with various operating systems such as Linux windows etc.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect
Effectiveness of Students' assessment	Peers	Direct
Quality of learning resources	Quality Assurance Committee/ Curriculum Committee	Direct
The extent to which CLOs have been achieved	Instructor	Direct
Other		



Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190358
DATE	1446/11/22

