Republic of Yemen

Ministry of Higher Education & Scientific Research

Council of Academic Accreditation & Quality Assurance of Higher Education(CAQA)

21 September University for Medical and Applied Sciences

Faculty of Engineering and Computer

Department of Information Technology

Program of Information Technology

Course Specification of

Web Design and development

Course Code. (07.11. 715)

2024

T4: This Template is Developed and Approved by CAQA-Yemen, 2023

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean
Dr. ---------	Dr. -----			

I. General Information:

1.	Course Title:	Web Design and development				
2.	Course Code:	07.11. 715				
3.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours	
			Lecture	Tutorial/ Seminar	Lab	Clinical
		3	2	--	2	--
4.	Level/ Semester at which this Course is offered:	3 Level / 2 Semester				
5.	Pre –Requisite (if any):	Introduction to Information Technology, programming 1, programming 2				
6.	Co –Requisite (if any):	Non				
7.	Program (s) in which the Course is Offered:	Bachelor of Information Technology				
8.	Language of Teaching the Course:	English/Arabic				
9.	Location of Teaching the Course:	Faculty of Medical Technology				
10.	Prepared by:					
11	Date and Number of Approval by Council:					

II. Course Description:

Web Design and development aims to provide students with foundational knowledge and practical skills in designing and developing user-friendly, responsive, and accessible web applications tailored for diverse health information systems. The course covers web development fundamentals, including HTML, CSS, JavaScript, frameworks, web accessibility, and best practices for usability and security in healthcare contexts. Emphasis is placed on equipping students with the ability to design, implement, and maintain dynamic and secure web solutions to support health IT goals, focusing on real-world applications and collaborative problem-solving.

III. Course Intended Learning Outcomes (CILOs) : Upon successful completion of the course, students will be able to:		Referenced PILOs		
	A. Knowledge and Understanding:	**I, P or M/A**		
a1			A1	
a2			A2	
a3			A3	
a4	Demonstrate an understanding of web technologies, frameworks, and concepts necessary for analyzing, designing, and implementing health information systems		A4	Demonstrate a sound understanding the computing concept related to analysis, design, implementation, and evaluation of Health information system.
	B. Cognitive/ Intellectual Skills:			
b1	Analyze complex requirements for healthcare-related web applications and propose suitable design and development solutions.		B1	Critically analyse complex computing problems and propose appropriate information technology based solutions and integrate them effectively into the uses and organization Health.
b3			B3	
b4	Evaluate the effectiveness and		B4	Evaluate IT based solution to

	usability of web-based solutions in meeting healthcare requirements.			meet a given set of Health requirements in the context of Health Information Technology discipline.
	C. Practical and Professional Skills:			
c1			**C1**	
c2	develop dynamic and responsive web applications that address specific healthcare needs and requirements.		**C2**	design a computing-based solution to meet a given set of computing requirement in the context of Health Information Technology.
c3	Apply systematic approaches to the development and management of secure, user-friendly, and accessible healthcare web solutions.		**C3**	Use systematic approaches to select, develop, apply integrates, and administrate secure computing technologies to accomplish user and Health goals.
c4	Utilize current tools and technologies, such as HTML, CSS, JavaScript, and frameworks, to implement web solutions efficiently.		**C4**	Use current techniques, skills, and tools necessary for computing practices
	D. General and Transferable Skills:			
d1	Collaborate effectively within a team to design, develop, and review web-based applications for health information systems		**D1**	Function effectively as an individual, as a member, or leader of a team engaged in activities appropriate to the Health Information Technology discipline to accomplish a common goal.
d2			**D2**	
d3			**D3**	
d4	Engage in continuous learning to adapt to advancements in web design and development tools and		**D4**	Engage in continuing professional development and lifelong learning as an IT

	techniques			professional
I= Introduced, P=Practiced or M/A= Mastered/Advanced				

	(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:		
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
a1	Identify and explain fundamental data structures, algorithms, and mathematical concepts relevant to Health Information Technology.	▪ Lectures ▪ Discussion ▪ Presentation ▪ Self-learning	▪ Written exam (mid and final terms and quizzes) ▪ Final practical exam ▪ Assignments
a2			▪ Written exam (mid and final terms and quizzes) ▪ Final practical exam ▪ Assignments ▪ Programming
a3	Apply appropriate data structures and algorithms to solve specific computing problems in healthcare settings.	▪ Lectures ▪ Discussion ▪ Presentation ▪ Self-learning	▪ Written exam (mid and final terms and quizzes) ▪ Final practical exam ▪ Assignments ▪ Programming
a4	Analyze data organization and storage strategies to optimize healthcare information system efficiency.	▪ Lectures ▪ Discussion ▪ Presentation ▪ Self-learning	▪ Written exam (mid and final terms and quizzes) ▪ Final practical exam ▪ Lab assignments ▪ Practical exams
	(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:		
	Course Intended Learning Outcomes	**Teaching Strategies**	**Assessment Strategies**
b1	Evaluate and select suitable	▪ Lectures ▪ Tutorials	▪ Written exam (mid and final

	algorithms for addressing computational challenges in health data management.	▪ Discussion ▪ Self-Learning	terms and quizzes) ▪ Final practical exam ▪ Assignments ▪ Lab assignments ▪ Practical exams
b2		▪	▪
b 3	Formulate efficient data processing techniques to meet the needs of healthcare information systems.	▪ Lectures ▪ Tutorials ▪ Discussion ▪ Self-Learning	▪ Written exam (mid and final terms and quizzes) ▪ Final practical exam ▪ Assignments ▪ Lab assignments ▪ Coding projects
b 4	Assess the effectiveness of different algorithmic solutions in meeting healthcare-specific requirements.	▪ Lectures ▪ Tutorials ▪ Discussion ▪ Self-Learning	▪ Written exam (mid and final terms and quizzes) ▪ Final practical exam ▪ Assignments ▪ Lab assignments ▪ Project presentations
		▪	▪

(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
c1		▪	▪
c2	Test algorithmic solutions and their performance within health information applications	▪ Tutorials ▪ Training ▪ Lab work ▪	▪ Written exam (mid and final terms and quizzes) ▪ Final practical exam ▪ Assignments ▪ Project evaluation
		▪	▪
c4		▪	▪

(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
d1		▪	▪
d2		▪	▪
	…	▪	▪

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Introduction to Web Design and Development	Overview of web design principles, history of the web, and healthcare applications of web systems.	1	2	**a4, c4**
2	Web Technologies Overview	HTML5, CSS3, JavaScript basics, and their roles in healthcare applications.	2	4	a4, c2
3	User Interface (UI) and User Experience (UX) Design	rinciples of responsive design, accessibility standards, and UI/UX for healthcare systems	2	4	b1, c3
4	Frontend Development	Advanced CSS frameworks (Bootstrap), JavaScript libraries, and healthcare-focused web application layouts.	2	4	c2, c4
5	Midterm Exam	Midterm Exam	1	2	a4, c2,,c3,c4
6	Backend Development	Server-side programming, databases, and integration with healthcare systems using PHP and MySQL.	3	6	a4, b4, c3
7	Web Security	Security fundamentals, common vulnerabilities, and securing healthcare web applications.	2	4	c3, d1

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
8	Testing and Deployment	Testing strategies, hosting platforms, and deployment of healthcare web applications.	2	4	b4, c4, d1
9	Final Exam	Covers all Units	1	4	all
Number of Weeks /and Units Per Semester			16	32	

B. Practical Aspect (Lab(/Clinical) (if any):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Setting up the development environment	1	2	c4
2	Building a basic web page using HTML and CSS	2	4	c2, c4
3	Designing a responsive healthcare website using a CSS framework	2	4	c2, c3
4	Developing interactive web pages using JavaScript	2	4	c2, c4
5	Midterm Practical	1	2	c2, c3, c4
6	Creating a database and connecting it to a web application	2	4	c3
7	Implementing basic security measures in a healthcare web app	2	4	c3, c4
8	Testing a healthcare web application	1	2	c4
9	Deploying a healthcare web application	1	2	c3, d1
10	Final Practical Exam	1	2	all
Number of Weeks /and Units Per Semester		15	30	

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1				

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
Number of Weeks /and Units Per Semester				

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	Exercises and Home Works, Problem Solving (I)	3	3	a4,b1,c2
2	Exercises and Home Works, Problem Solving (II)	9	3	c2, c3, c4,d1
3	Technical Report and Presentation.	11	4	a4,b1,c2, c3, c4,d1
Total			10	

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	3,8,11	10	10 %	a4,b1,c2, c3, c4
2	Quizzes 1 & 2	6,12	5	5 %	a4,b1,c2, c3, c4
3	Mid-Term Theoretical Exam	9	10	10 %	a4, c2,,c3,c4,b1
4	Mid-Term Practical Exam	7	5	5 %	c2, c3, c4
5	Final Practical Exam including Project Presentation & Evaluation	15	10	10 %	all
6	Final Theoretical Exam	16	60	60 %	all
Total			100	100%	

IX. Learning Resources:

- *Written in the following order:* Author, Year of publication, Title, Edition, Place of publication, Publisher.

1- Required Textbook(s) (maximum two):

1. Duckett, J. (2021). HTML and CSS: Design and Build Websites. 2nd Edition. Indianapolis, USA: Wiley.
2. Robbins, J. N. (2023). Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics. 5th Edition. Sebastopol, USA: O'Reilly Media.

2- Essential References:

1. Meyer, E. A. (2022). CSS: The Definitive Guide: Visual Presentation for the Web. 4th Edition. Sebastopol, USA: O'Reilly Media.
2. Keith, J., & Andrews, R. (2022). HTML5 for Web Designers. 3rd Edition. New York, USA: A Book Apart.
3. Nixon, R. (2022). Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5. 5th Edition. Sebastopol, USA: O'Reilly Media.

3- Electronic Materials and Web Sites etc.:

Websites:

1. Mozilla Developer Network (2023). https://developer.mozilla.org/
2. W3Schools (2023). https://www.w3schools.com/
3. World Wide Web Consortium (W3C) (2023). https://www.w3.org/

Journals:

1. *Journal of Web Engineering* (2023). https://journals.riverpublishers.com/index.php/JWE
2. *ACM Transactions on the Web* (2023). https://tweb.acm.org/

Other Web Sources:

1. Statista (2023). "Web Development Trends and Statistics." https://www.statista.com
2. CSS-Tricks (2023). "Modern Web Design Tutorials and Techniques." https://css-tricks.com

X. Course Policies: (Based on the Uniform Students' By law (2007)

1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the

	student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

Republic of Yemen
Ministry of Higher Education & Scientific Research
University: 21 September University for Medical & Applied Sciences

الجمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
جامعة: جامعة 21سبتمبر للعلوم الطبية والتطبيقية

Faculty of Medical Technology

Department of Medical Information Technology

Program of Medical Information Technology

Course Plan (Syllabus) of

Web Design and development

Course Code. 07.11. 715

I. Information about Faculty Member Responsible for the Course:							
Name of Faculty Member:		Office Hours					
Location& Telephone No.:							
E-mail:		SAT	SUN	MON	TUE	WED	THU

2024

II. Course Identification and General Information:

1	Course Title:	Data structures and algorithms			
2	Course Code & Number:	07.11. 715			
3	Credit Hours:	Credit Hours	Theory Hours		Lab. Hours
			Lecture	Exercise	
		3	2	--	2
4	Study Level/ Semester at which this Course is offered:	3 Level / 2 Semester			
5	Pre –Requisite (if any):	Introduction to Information Technology, programming 1, programming 2			
6	Co –Requisite (if any):	Non			
7	Program (s) in which the Course is Offered:	Bachelor of Information Technology			
8	Language of Teaching the Course:	English/Arabic			
9	Study System:	Semester Based System			
10	Mode of Delivery:	Full Time			
11	Location of Teaching the Course:	Faculty of Medical Technology			
12	Prepared by:				
13	Date of Approval:				

III. Course Description:

Web Design and development aims to provide students with foundational knowledge and practical skills in designing and developing user-friendly, responsive, and accessible web applications tailored for diverse health information systems. The course covers web development fundamentals, including HTML, CSS, JavaScript, frameworks, web accessibility, and best practices for usability and security in healthcare contexts. Emphasis is placed on equipping students with the ability to design, implement, and maintain dynamic and secure web solutions to support health IT goals, focusing on real-world applications and collaborative problem-solving.

IV. Course Intended Learning Outcomes (CILOs) :

Upon successful completion of the Course, student will be able to:

	A. **Knowledge and Understanding:**
a1	
a2	
a3	
a4	Demonstrate an understanding of web technologies, frameworks, and concepts necessary for analyzing, designing, and implementing health information systems
	B. Cognitive/ Intellectual Skills:
b1	Analyze complex requirements for healthcare-related web applications and propose suitable design and development solutions.
b2	
b3	
b4	Evaluate the effectiveness and usability of web-based solutions in meeting healthcare requirements.
	C. Practical and Professional Skills:
c1	
c2	develop dynamic and responsive web applications that address specific healthcare needs and requirements.
c3	Apply systematic approaches to the development and management of secure, user-friendly, and accessible healthcare web solutions.
c4	Utilize current tools and technologies, such as HTML, CSS, JavaScript, and frameworks, to implement web solutions efficiently.
	D. Transferable Skills:
d1	Collaborate effectively within a team to design, develop, and review web-based applications for health information systems
d2	

d4	Engage in continuous learning to adapt to advancements in web design and development tools and techniques

V. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Introduction to Web Design and Development	Overview of web design principles, history of the web, and healthcare applications of web systems.	1	2	**a4, c4**
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3	User Interface (UI) and User Experience (UX) Design	rinciples of responsive design, accessibility standards, and UI/UX for healthcare systems	2	4	b1, c3
4	Frontend Development	Advanced CSS frameworks (Bootstrap), JavaScript libraries, and healthcare-focused web application layouts.	2	4	c2, c4
5	Midterm Exam	Midterm Exam	1	2	a4, c2,,c3,c4,b1
6	Backend Development	Server-side programming, databases, and integration with healthcare systems using PHP and MySQL.	3	6	a4, b4, c3
7	Web Security	Security fundamentals, common vulnerabilities, and securing healthcare web applications.	2	4	c3, d1
8	Testing and Deployment	Testing strategies, hosting platforms, and deployment of healthcare web applications.	2	4	b4, c4, d1
9	Final Exam	Covers all Units	1	4	all

Number of Weeks /and Units Per Semester	16	32	

B. Case Studies and Practical Aspect:

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	Setting up the development environment	1	2	c4
2	Building a basic web page using HTML and CSS	2	4	c2, c4
3	Designing a responsive healthcare website using a CSS framework	2	4	c2, c3
4	Developing interactive web pages using JavaScript	2	4	c2, c4
5	Midterm Practical	1	2	c2, c3, c4
6	Creating a database and connecting it to a web application	2	4	c3
7	Implementing basic security measures in a healthcare web app	2	4	c3, c4
8	Testing a healthcare web application	1	2	c4
9	Deploying a healthcare web application	1	2	c3, d1
10	Final Practical Exam	1	2	all
Number of Weeks /and Units Per Semester		15	30	

C. Tutorial Aspect:

No.	Tutorial	Number of Weeks	Contact Hours
1			
2			
3			
4			
5			
6			

No.	Tutorial	Number of Weeks	Contact Hours
7			
8			
9			
10			
Number of Weeks /and Units Per Semester			

VI. Teaching Strategies of the Course:

<u>Knowledge and Understanding Skills is developed through:</u>

- Lectures
- Discussion
- Presentation
- Self-learning

<u>Intellectual Skills are developed through:</u>

- Lectures
- Tutorials
- Discussion
- Case studies (CBL)
- Self-Learning
- Problem Based Learning (PBL)

<u>Practical and professional Skills are developed through:</u>

- Tutorials
- Training
- Case studies (CBL)
- Problem Solving Learning (PSL)
- Problem Based Learning (PBL)

<u>General/Transferrable Skills are developed through:</u>

- Discussion
- Case studies (CBL)
- Self-Learning
- Presentation

VII. Assessment Methods of the Course:

- Written exam (mid and final terms and quizzes),

- Final practical exam

Assignments

VIII. Assignments:

No.	Assignments	Week Due	Mark
1	Exercises and Home Works, Problem Solving (I)	3	3
2	Exercises and Home Works, Problem Solving (II)	9	3
3	Technical Report and Presentation.	11	4
Total			10

IX. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment
1	Assignments	3,8,11	10	10 %
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3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
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