Arab American University

Faculty of Information Technology
Information Technology Department

الجامعــــــة العربيـــــة الأمريكيــــة

كلية تكنولوجيا المعلومات
قسم تكنولوجيا المعلومات

Course Syllabus

A. COURSE INFORMATION AND TEACHING STAFF

1. Course	Name	WEB DEVELOPMENT II
	Code	240214120
	Activity	Lecture
	Credit hours	3
	Semester	Fall 2025/2026
	Pre-requisite	240213081 WEB DEVELOPMENT I

2. Teaching staff, time and location	Section	Building	Room	Day	Time	Instructor	Office hours
	1	EIT	112	N T Th	08:30-09:20	Kareem Tayseer Sadeq KHalil kareem.khalil@aaup.edu	

B. COURSE POLICIES

1. Commitment and Attendance	Attendance is required; and university regulations in this regard are strictly applied. It is important to note the following:
	1. The student is expected to follow all announcements issued by the university, faculty, department as well as the course instructor through the official channels. It is the student's full responsibility to get aware of these announcements and to react accordingly.
	2. The student has to communicate electronically with the course instructor, whenever needed, through the official channels exclusively which are limited to the AAUP email and Moodle messages only.
	3. The student is expected to attend all classes* and to arrive at classroom on time.
	4. If the instructor is late for class, the student must wait for at least 10 minutes before leaving the classroom.
	5. Absence by more than 25% of classes leads to an automatic withdrawal from the course (the grade W is assigned).
2. Performance of assessment activities	The student must perform all course assessment activities, i.e. assignments, quizzes, exams etc. It is important to note the following:
	1. Absence from an exam or a quiz other than the final exam leads to a zero mark in that exam or quiz. An exception allowing a makeup is made for a student submitting a legitimate excuse that is accepted by the instructor in a timely manner.
	2. Absence from the final exam leads to an FA grade that eventually turns to an F grade. An exception allowing a makeup exam is made if the student submits an official excuse that is accepted by the Academic Affairs in compliance with the university regulations.

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3. Academic Integrity	The student is expected to be honest during the performance of assessment activities. While not limited to the list below, the following actions are examples of cheating: 1. Copying from other students. 2. Using materials that are not authorized by the proctor during quizzes or exams. 3. Collaborating with other students during quizzes or exams. 4. Stealing or buying the content of exams, quizzes, and assignments. 5. Stealing ideas and work of others and presenting them as that of the student
4. Grading	The university uses the letter grading system. It is important to note the following: 1. The passing grade is D, and the corresponding score (out of 100) is determined at the end of the semester. 2. At the end of the semester, the scale of scores is determined by converting each

5. Learning and teaching methods	Lectures	Class sessions involve lectures, video shows, case studies, discussions, debates, and power-point presentations on topics and current issues related to the course contents.
	In class learning activities	Students are encouraged to learn actively individually and cooperatively in groups. Students are expected to engage with the material, participate in the class, and collaborate with each other. Students will be asked to analyze an argument, demonstrate role play, discuss case studies, make presentations, or apply a concept to a real-world situation.
	Online learning	Online learning platforms are utilized to provide students with additional resources as well as a continuous access to the course material beyond the classroom.

C. COURSE DETAILS

1. Course description & purpose	This course provides a comprehensive overview of website development. Students explore the general vocabulary, tools, and standards used in web development and learn how the various facets including php, Ajax, jquery, clients, servers, and databases function (MYSQL) together in web environment. The course provides a solid web development foundation, focusing on content and client-side, and server-side technologies.

2. Course learning outcomes (CLOs)		Upon the completion of the course, students will be able to achieve the following learning outcomes:
	CLO1	Understand the architecture of modern web applications, including client–server communication, RESTful APIs, and the interaction between frontend, backend, and databases.
	CLO2	Apply HTML5, CSS3, and modern frontend frameworks (ReactJS, Tailwind/Bootstrap) to design and implement responsive and accessible user interfaces
	CLO3	Apply ASP.NET Core MVC and Web API frameworks to build, configure, and maintain scalable server-side web applications.
	CLO4	Analyze and implement data persistence and management using Entity Framework Core with PostgreSQL, and integrate NoSQL solutions such as MongoDB where appropriate.
	CLO5	Apply authentication, authorization, and web security best practices using ASP.NET Identity, JWT, and secure configuration management.

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2. Course learning outcomes (CLOs)		Upon the completion of the course, students will be able to achieve the following learning outcomes:
	CLO6	Create full-stack web applications integrating ASP.NET Core APIs, ReactJS frontend, and PostgreSQL databases, with deployment using Docker and cloud platforms.
	CLO7	Judge web application performance, testing, and deployment pipelines using tools like Postman, Swagger, Docker Compose, and GitHub Actions (CI/CD).

3. Assessments	Assessment tool	Weight %	CLOs	Due week
	Project	25%	1,2,3,4,5,6,7	
	Mid. Term	35%	1,2,3,4	
	Final Exam	40%	1,2,3,4,5,6,7	
	Total	100%		

null

4. CLOs assessment	Outcomes	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7
	1 - Project	✓	✓	✓	✓	✓	✓	✓
	2 - Mid. Term	✓	✓	✓	✓			
	3 - Final Exam	✓	✓	✓	✓	✓	✓	✓

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	Week	Topics	Study material	Assignment	CLOs
5. Course schedule	1	Introduction to Web Development • Internet basics: HTTP/HTTPS, client–server model • Frontend vs backend vs database • Development tools setup (.NET 8 SDK, VS Code, Node.js, PostgreSQL) • HTML5/CSS quick demo			1
	2	HTML5 & CSS Frameworks Review • Semantic HTML • CSS layout: flexbox & grid • Frameworks: Bootstrap 5 / Tailwind CSS • Accessibility and responsive design labs			2
	3	Introduction to ASP.NET Core 8 • Project structure and conventions • Routing, controllers, middleware • Serving static files • Configuration and dependency injection			3
	4	Building RESTful APIs • HTTP verbs (GET/POST/PUT/DELETE) • JSON responses and model binding • DTOs and validation (FluentValidation) • Swagger/OpenAPI documentation			3
	5	Entity Framework Core & PostgreSQL Integration • Database design, migrations, seeding • Relationships (1-1, 1-many, many-many) • LINQ queries, eager/lazy loading • Repository pattern (optional)			4
	6	Advanced Data Handling & MongoDB Intro • JSONB columns, indexes, full-text search in PostgreSQL • Intro to MongoDB (NoSQL concepts, collections, aggregation) • When to use NoSQL vs SQL			4

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5. Course schedule	7	Authentication & Authorization Basics • ASP.NET Identity setup • JWT authentication flow • Role-based authorization and policy checks • Secure passwords and token storage			5
	8	Frontend Integration: React Basics • React project setup (Vite/CRA) • Components, props, state, hooks • Routing with React Router • Connecting to API endpoints (Axios/Fetch)			2,6
	9	Full-Stack Integration I • CORS configuration in ASP.NET Core • Fetching data from APIs in React • Displaying data tables and forms • Error handling and loading states			6
	10	Full-Stack Integration II – Forms & Validation • React forms with validation (Formik / React Hook Form + Zod) • Server-side validation responses • Controlled inputs and user feedback			2,3,6
	11	Testing & Debugging • Unit testing (xUnit) and integration testing (WebApplicationFactory) • Postman / Swagger for API testing • Debugging React and ASP.NET apps			7
	12	Performance & Security Enhancements • Logging (Serilog), configuration management, environment variables • Middleware for exception handling & rate limiting • API optimization and caching (IMemoryCache, Redis overview)			5,7
	13	Docker Fundamentals • What Docker is and why it matters • Dockerizing ASP.NET Core API and PostgreSQL • Docker Compose for multi-container setup • Running React + API + DB together			6,7

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	Week	Topics	Study material	Assignment	CLOs
5. Course schedule	14	Deployment & CI/CD • Git basics and branching workflow • GitHub Actions pipeline (build → test → deploy) • Deployment to Render / Azure / AWS / Vercel • Environment variables and secrets			6,7
	15	Capstone Project Development & Consultation • Students work on final full-stack project • Teacher reviews designs, code, and deployment plans			6
	16	Final exam and project			1,2,3,4,5,6,7

D. COURSE MATERIAL	
1. Textbook	Pro ASP.NET Core 8: Develop Cloud-Ready Web Applications Using MVC, Blazor, and Razor PagesProfessional ASP.NET Core 8: Cloud-Ready Web Applications Using C# and .NET 8
2. Reference material	
3. Internet resources	ASP.NET Core 8 Documentation: https://learn.microsoft.com/en-us/aspnet/coreEntity Framework Core Docs: https://learn.microsoft.com/en-us/ef/coreReact Official Docs: https://react.devPostgreSQL Official Docs: https://www.postgresql.org/docsMongoDB Manual: https://www.mongodb.com/docs/manualDocker Documentation: https://docs.docker.com