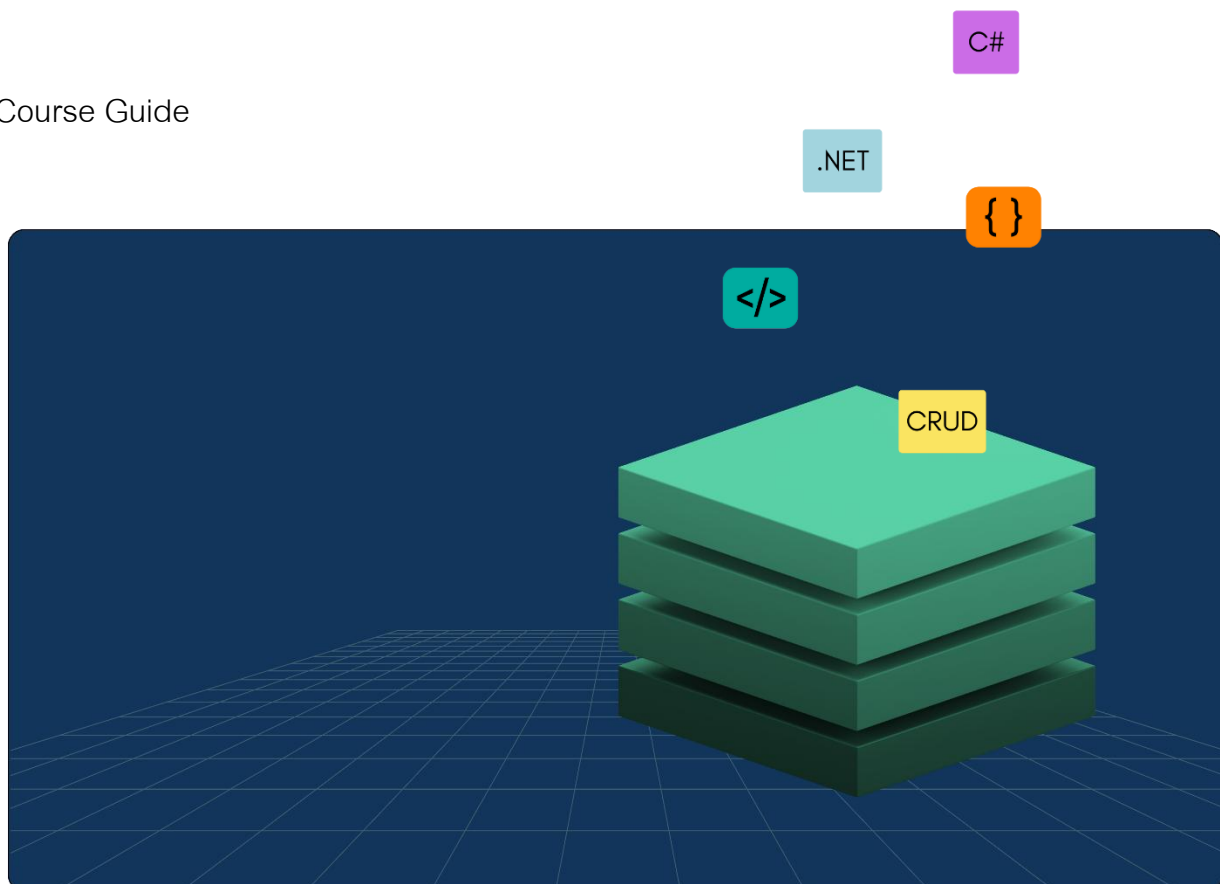


# LAYERED ARCHITECTURE:

## From Zero to a Working Application

Course Guide



## THE OVERVIEW

### Layered Architecture:

From Zero to a Working Application



Provides a practical and comprehensive introduction to building modern .NET applications using Layered Architecture, empowering learners to structure solutions that are clean, scalable, and easy to maintain. Participants will gain hands-on experience designing a robust Data Access Layer with Entity Framework Core, applying proven techniques for managing data efficiently and reliably. The course also focuses on developing a strong Business Logic Layer, where core rules, validations, and application behavior are centralized for better consistency and reuse. Learners will then build and integrate a user-focused Presentation Layer using ASP.NET Core MVC, creating intuitive interfaces that connect seamlessly with the underlying system.

To complete the experience, participants will test, secure, and deploy a full layered application, preparing them to deliver production-ready solutions that meet real-world standards.

#### Objectives:

- Understand and apply layered architecture principles in modern .NET applications by identifying the responsibilities of each layer and organizing application components to promote separation of concerns, scalability, and long-term maintainability.
- Design and implement a robust Data Access Layer using Entity Framework Core by creating data models, applying the Code-First approach, implementing repositories, and managing database connections and migrations effectively.
- Develop an effective Business Logic Layer that enforces rules and validation by encapsulating business rules, validation logic, and core behaviors to ensure consistency, reusability, and independence from the presentation and data layers.
- Build and integrate a user-focused Presentation Layer using ASP.NET Core MVC by implementing controllers, views, and models that interact with the Business Logic Layer to handle user input, perform CRUD operations, and display data clearly.
- Test, secure, and deploy a layered application to production environments by applying testing strategies, enforcing authentication and role-based access control, and deploying the application using industry-standard tools and platforms.

**Duration:** 11 Days – 3 to 4 hrs per day

**Pre-requisites:**

**Intended Participants:**

- Junior to Mid-level developers looking to enhance their understanding of .NET and Layered Architecture
  - Individuals with roles in IT who want to transition into software development or deepen their knowledge in application architecture
  - Enthusiasts aiming to build scalable applications using .NET
- **Basic Programming Knowledge:** Understanding of programming concepts such as variables, loops, conditionals, and functions
  - **Familiarity with object-oriented programming (OOP) principles,** such as classes, inheritance, and encapsulation
  - **Experience with C#:** Knowledge of C# syntax, data types, and basic libraries
  - **Understanding of Web Development:** Familiarity with HTML, CSS, and JavaScript basics.
  - **Knowledge of how web applications work,** including client-server interactions.
  - **Basic Database Knowledge:** Understanding of relational databases and SQL syntax
  - **Familiarity with basic CRUD (Create, Read, Update, Delete) operations**



This course can be customised to meet the specific needs of organisations and corporate teams. The programme may be tailored based on industry requirements, business objectives, and technical environments to ensure relevance and immediate workplace application. Course content, projects, and case studies can be adapted to reflect real organisational scenarios, workflows, and challenges.

Training will be delivered virtually, providing a flexible and accessible learning experience for teams across different locations while maintaining strong interaction, collaboration, and hands-on engagement.

# COURSE OUTLINE



**Layered Architecture** equips participants with the skills to design clean, scalable .NET solutions while building a complete, production-ready application from the ground up.

## **Module 1: Introduction to .NET and Layered Architecture**

### Topic list

- Overview of the .NET ecosystem and its components
- Introduction to Layered architecture: Presentation Layer, Business Logic Layer (BLL), Data Access Layer (DAL).
- Creating the initial solution with separate projects for each tier

## **Module 2: Implementing the Data Access Layer (DAL)**

### Topic list

- Introduction to Entity Framework Core (EF Core) and the Code-First approach
- Creating the data model for the To-Do-List application
- Implementing the repository pattern in the DAL
- Setting up the database connection and initial migration

## **Module 3: Developing the Business Logic Layer (BLL)**

### Topic list

- Introduction to business logic and its role in Layered architecture
- Implementing services to handle business rules and logic
- Creating interfaces for the service layer
- Handling data validation and business rules in the BLL

## Module 4: Building the Presentation Layer - Setting Up ASP.NET Core MVC

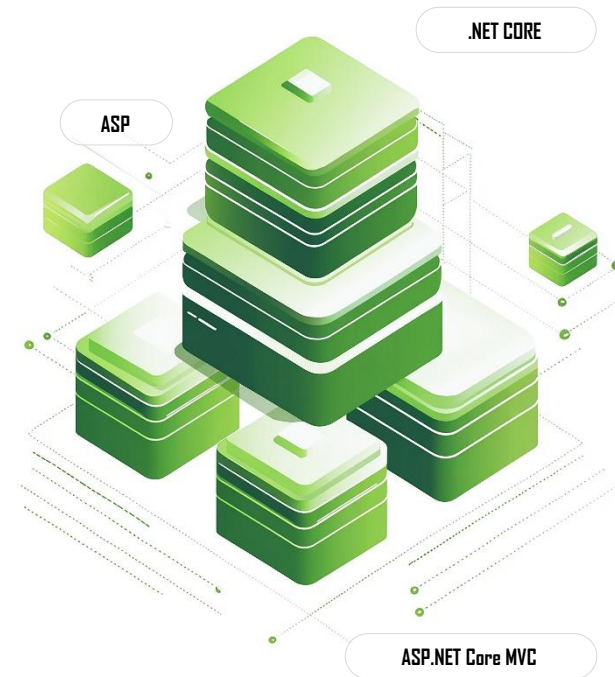
### Topic list

- Introduction to ASP.NET Core MVC and its role in the Presentation Layer
- Integrating the BLL with the Presentation Layer
- Creating the basic UI for listing tasks

## Module 5: CRUD Operations in the To-Do-List Application

### Topic list

- Implementing Create, Read, Update, Delete (CRUD) operations in the Presentation Layer
- Form handling in ASP.NET Core MVC
- Validating user input and handling errors



## Module 6: Enhancing the UI/UX

### Topic list

- Introduction to Bootstrap and its integration with ASP.NET Core MVC
- Improving the UI/UX with responsive design
- Adding client-side validation using JavaScript/jQuery

## Module 7: Implementing Task Management Features

### Topic list

- Adding additional features: task prioritization, due dates, and task completion status
- Filtering and sorting tasks based on various criteria
- Implementing advanced search functionality

## Module 8: User Authentication and Role-Based Access

### Topic list

- Introduction to authentication and authorization in ASP.NET Core
- Setting up Identity for user management
- Implementing role-based access control (RBAC) in the application
- Securing API endpoints and views based on user roles

## Module 9: Testing and Debugging

### Topic list

- Unit testing with xUnit and Moq for the BLL and DAL
- Integration testing for the entire application
- Debugging techniques in Visual Studio
- Ensuring code quality with code analysis tools

## Module 10: Deployment and Final Project Presentation

### Topic list

- Introduction to deployment options: IIS, Azure, Docker
- Preparing the application for deployment: connection strings, environment variables, and configuration
- Deploying the To-Do-List application to a live server
- Final testing and project presentation

## CERTIFICATE OF COMPLETION

All participants who successfully complete the programme will receive a Certificate of Completion. This certificate recognises their commitment to the course and confirms that they have met the required learning outcomes through active participation and hands-on application of the concepts covered throughout the training. It serves as a formal acknowledgement of their skills development and learning achievement.

**WPH Academy** has built a growing learning community across the region, delivering accessible and industry-driven training programmes that bridge education and real-world application.

**8**

**INDUSTRY-ALIGNED  
TRAINING PROGRAMMES**

including an elective course with the University Partner DLSUD in Philippines.

**2,300+**

**LEARNERS  
ENGAGED**

through our training and bootcamp programmes

**65%**

**CAREER  
PROGRESSION RATE**

participants considered for internal job opportunities

Based on 40+ job offers from 60+ graduates

**5**

**REGIONAL TRAINING  
REACH**

across the Philippines, Singapore, Thailand, Indonesia, and Malaysia

**OUR ACADEMY MILESTONES**



**ACADEMIC PARTNERSHIP RECOGNITION**  
with De La Salle University Dasmariñas – Philippines



“WPH Academy is a collaborative and forward-thinking education partner. They respect academic structures while bringing valuable industry perspectives that enhance student learning without compromising institutional values.”

— **Marivic R. Mitschek, MIT**  
Dean, CITS DLSUD

**TRAINER**

Ready to join? Register now:  
<https://learn.wphdigital.com/>





### **Ansbert Gregana**

WPH Academy Instructor

Ansbert F. Gregana is an IT Trainer, Web Developer, and Academic Instructor with a strong background in computer science and hands-on industry experience. He specializes in full-stack web development, cloud technologies, and modern training methodologies for beginners and mid-level professionals.

He has extensive experience delivering bootcamps and corporate training programs covering .NET, ReactJS, MySQL, Kubernetes, frontend technologies, application security, and Generative AI fundamentals. Known for his hands-on, project-based approach, Ansbert simplifies complex concepts into practical, real-world applications.

Currently an IT Trainer at WPH Digital, he designs industry-aligned programs while mentoring learners toward professional and career readiness.

## WHAT OUR LEARNER SAY

“It’s not just about reading or watching tutorials; we’re building and solving real problems.”

**Chanella A.**

“The bootcamp gave me a solid foundation in coding and boosted my confidence, especially in responsive design and JavaScript. The hands-on activities and supportive feedback from the instructors and co-trainees really helped me improve and apply what I learned.”

**KC M.**

“The most important thing for me is the learning environment because I get to talk with my teacher and classmates. It’s very interactive, unlike other bootcamps where you cannot ask questions.”

**Clarence C.**

“Gained confidence in applying concepts to real scenarios—supportive, beginner-friendly setup made all the difference.”

**Angelo F.**

“I’ve been getting a quality education, and I really appreciate the effort of everyone involved. My knowledge has expanded beyond the university, and I value the opportunity to connect with like-minded individuals and work as part of a team.”

**Lanz M.**



“The programme was incredibly enriching, with daily quizzes to assess our understanding and activities that helped us apply what we learned to real-life scenarios. The trainer is knowledgeable and approachable, and you really learn and understand the topics each day.”

**Anthony A.**

“It’s been incredibly rewarding to join Bootcamp. I learned a lot, and I feel confident now in my coding abilities, especially in my designing skills.”

**Rad V.**

“I gained hands-on experience in AWS and Generative AI, boosting my confidence and real-world coding skills.”

**Kurt L.**

## GET IN TOUCH

Have questions or want to learn more about our programmes? We'd love to hear from you. Drop us an email and our team will be glad to connect with you and provide the information you need.

**Email:** [wphacademy@wphdigital.com](mailto:wphacademy@wphdigital.com)

**Ready to join? Register today**

<https://learn.wphdigital.com/>