# Application Lifecycle Management Using Visual Studio (3 Days)

This three-day comprehensive course provides students with the knowledge and skills to effectively use the Application Lifecycle Management (ALM) tools found in Visual Studio and Azure DevOps Server (f.k.a. Team Foundation Server) to plan, track, design, develop, test, and deliver business value in the form of working software. The course demonstrates to developers, testers, product owners, project managers, architects, testers, and release managers the value of the various features and capabilities found throughout Visual Studio and Azure DevOps Server.

***Prerequisites***

Before attending this course, a student should have experience working on a software development team and be familiar with that team's development processes, practices, and tools. Additionally, students should:

✓ Have familiarity with agile practices and Scrum

✓ Be able to read and understand C# .NET code (all source code will be provided)

✓ Have used Visual Studio 2015, 2017, or 2019

✓ Be able to read and understand requirements

✓ Understand Microsoft Windows basics

***Audience***

This course is intended for current software development professionals who are involved in building applications with Visual Studio and Azure DevOps. Regardless of the student's role, he or she will be able to learn and get hands-on experience with all of the ALM features found in Visual Studio and Azure DevOps Server.

## *Course Outline*

**Module 1: Introduction to Visual Studio ALM**
✓ Application Lifecycle Management overview
✓ Visual Studio and Azure DevOps tools and features
✓ Azure DevOps Server vs. Azure DevOps Services
✓ Features and capabilities by edition and role

**Module 2: Team Projects**
✓ The various administrator roles
✓ Team project collections and team projects
✓ Creating a team project collection and team project
✓ Configuring a team project (areas, iterations, etc.)
✓ Configuring teams and team membership
✓ Securing a team project

**Module 3: Planning and Managing Work**
✓ Introduction to Azure Boards
✓ Selecting a work item process (e.g. Scrum)
✓ Creating a custom, inherited process
✓ Work item types, categories, and hierarchies
✓ Creating, tagging, finding, and managing work items
✓ Querying and charting work items
✓ Using the agile backlogs, boards, and task boards
✓ Using Excel to query and update work items
✓ Hierarchical backlogs (e.g. epics and features)

**Module 4: Version Control**
✓ Introduction to Azure Repos
✓ Git version control system overview
✓ Basic and advanced Git workflows
✓ TFVC version control system overview
✓ Basic and advanced TFVC workflows
✓ Working with Azure Repos from Visual Studio
✓ Associating work items to commits for traceability

**Module 5: Collaborating as a Team**
✓ Collaborating effectively as a team
✓ Improving team productivity
✓ Pairing, swarming, and mobbing patterns of work
✓ Creating and maintaining a wiki
✓ Using pull requests to perform code reviews
✓ Requesting and capturing stakeholder feedback
✓ Collaborating in real time with Visual Studio Live Share

**Module 6: Writing Quality Code**
✓ Writing and running unit tests
✓ Using Visual Studio Test Explorer
✓ Leveraging parameterized unit tests
✓ Measuring code coverage while testing
✓ Using IntelliTest to generate unit tests
✓ Using Live Unit Testing to run impacted tests
✓ Test-Driven Development (TDD) overview
✓ Code analysis, code metrics, and code clone analysis
✓ Using application profiling and IntelliTrace

**Module 7: Testing the Application**
✓ Introduction to Azure Test Plans
✓ Test case management (test plans, suites, cases)
✓ Manually testing web and desktop applications
✓ Automated acceptance testing in Visual Studio
✓ Testing through the UI using Selenium and Appium
✓ Load testing using JMeter
✓ Exploratory testing using Test & Feedback extension

**Module 8: Building and Releasing**

✓ Introduction to Azure Pipelines
✓ Configuring and using build pipelines
✓ Running tests in the pipeline
    ✓ Practicing Continuous Integration (CI)
    ✓ Configuring and using release pipelines
✓ Practicing Continuous Delivery (CD)

**Module 9: Reporting**

✓ Agile metrics vs. traditional metrics
✓ Configuring alerts and notifications
✓ Ad-hoc reporting/charting using Excel
✓ Using the Microsoft Analytics extension
✓ Querying data using the REST API

**Module 10: Improving DevOps**

✓ What is DevOps?
✓ Principles, challenges, and goals
✓ The Three Ways (flow, feedback, continual learning)
✓ Achieving Continuous Delivery (CD)
✓ Resources