

# Development of automated tests in Visual Studio

Course code: DOTNET\_TEST

The course offers an introduction to testing concepts and strategies and will teach you how to use the MS TEST framework, but you will also try other frames such as NUnit and XUnit. The course covers unit testing concepts, requirements and characteristics of good testing strategies and ways in which these concepts can be implemented. Emphasis is placed on the practical application of acquired knowledge.

## What we will teach you

You will learn the basic terminology of testing and you will better understand the testing process. You will learn to create tests using the MS TEST framework. You will learn about the Test Driven Development approach. You will learn to monitor the progress of the tests. You will improve your ability to find defects and prevent them.

## Required input knowledge

Experience with programming in c # at GOC2125 level is assumed. Basic testing experience is beneficial.

## Teaching methods

Expert explanation with practical examples, exercises on computers

## Course syllabus

Introduction and terminology

- Types of tests
- UAT
- Integrative
- Unit - unit size

Testable application architecture

- Status of classes and components
- Encapsulation
- Static operations
- IoC / DI and implications for testing

Creating tests using MS TEST framework

- Anatomy test (AAA)
- Test explorer
- Running tests
- Read results
- Debugging tests
- Initialization and cleanup
- Assertion (Assert, CollectionAssert, StringAssert)
- Data driven tests

Unit insulation

- Creating fake implementations of collaborating objects
- Manual fake objects
- Moq
- Microsoft Fakes tool

Test Driven Development

- "Test First" approach
- Red-Green-Refactor
- Finding test cases using the "Devil's Advocate" technique

Code coverage analysis

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# Development of automated tests in Visual Studio

- Code blocks and quantification
- Syntax coloring
- What percentage is just?

## IntelliTest

- Generating unit tests
- Configuration

Configure the Test runner using a .runsettings file

## Other test frameworks

- NUnit
- XUnit

## Azure Pipelines and test runs

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