

WINDOWS PROGRAMMING USING C#

12/03/2025

Chapter 0: Course outline + Basics

□ **Instructor Information**

- Andargachew A. (M. Sc.)

□ **Class Schedule**

- Section A
 - Monday 10:00AM – 12:00 PM --- 401
 - Thursday 3:30PM – 5:30PM ---- 202
- Section B
 - Monday 8:00AM - 10:00 AM ---- 401
 - Wednesday 10:00AM – 12:00 PM --- 201
- Section C
 - Wednesday 8:00AM - 10:00 AM --- 302
 - Thursday 1:30PM – 3:30PM --- 202

Course Description

- This course aims to providing the students with an understanding of visual programming concepts, principles and techniques involved in developing applications using C# as one of the windows programming tools.
- The students will become familiar with the C# design environment and the development of windows applications.

Objectives

- At the end of this course students are expected to:
 - Understand the .NET Framework and its components –
 - Common Language Runtime (CLR),
 - .NET Framework Class Library (FCL),
 - .NET Common Language Specification (CLS),
 - Assemblies,
 - Assembly meta data and Global Assembly Cache (GAC)
 - Create, compile and run object oriented C# programs using Visual Studio
 - Write and understand C# language constructs, syntax and semantics

- 
- Produce programs for the desktop using solid multilayer architectures
 - Develop reusable .NET components via inheritance and interface realization
 - Leverage the major namespaces and classes of the .NET Framework

Reference

- No textbook
- Other Books
 - Fundamentals of Computer Programming with C#, Svetlin Nakov & Co., 2013
 - The Complete Reference C# 4.0, the McGraw Hill, April 2010
 - Professional C# 5.0 and .NET 4.5.1, Christian Nagel, Jay Glynn, Morgan Skinner, Wrox Programmer to Programmer, 2014
 - A Programmer's Guide to C# 5.0, A. Eric Gunnerson and Nick Wienholt, 4th Ed.

Assessment [Methods]

Assessment Type	Weight
Attendance & Class Appreciation	5%
Assignments/Quiz	10%
Mid Exam	20%
Final Exam	45%
Lab/Project	20%

Contents



1. Introduction
2. Components of a .NET program
3. Control Statements
4. OOP Concepts in C#
5. Error Handling Mechanisms / Exception Handling
6. Windows Programming in C#
7. Collections
8. Introduction to Delegates, Events, Lambdas and Generics

- 
9. Regular Expressions
 10. Files in C#
 11. Database Programming in C#
 12. Introduction to Asynchronous Programming
 13. Introduction to Reflection
 14. Introduction to Memory Management and Pointers

B A S I C S

12/03/2025

- Nowadays computers have become **irreplaceable**.
 - It's not an overstatement to say that computers build the **neural system of our contemporary society** and it is difficult to imagine its existence without them.
- Despite the fact that computers are so widespread, few people know **how they really work**.
 - In reality, it is not the computers, but the programs (the software), which run on them, that matter.
 - It is the software that makes computers valuable to the end-user, allowing for many different types of services that change our lives.

- The essence of programming is to control the work of the computer on all levels.
 - This is done with the help of "orders" and "commands" from the programmer, also known as programming instructions.
- To "program" means to organize the work of the computer through sequences of instructions.
 - These commands (instructions) are given in written form and are implicitly followed by the computer (respectively by the operating system, the CPU and the peripheral devices).

- A sequence of steps to achieve, complete some work or obtain some result is called an **algorithm**.
 - This is how programming is related to algorithms.
- Programming involves describing what you want the computer to do by a sequence of steps, by algorithms.

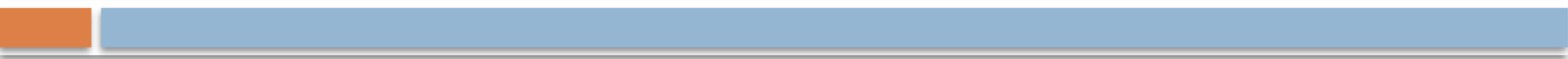
- In addition to the basic knowledge in programming proper **algorithmic thinking** and **using basic data structures** in programming.
 - DSA are a programmer's most important fundamental skills!
 - If you have a good grasp of them, you will not have any trouble becoming proficient in any software technology, development tool, framework or API.

- This course is intended for senior students who already have programming experience in C, C++, JavaScript, or Java and **understand the concepts of object-oriented programming.**
 - This course is not designed for students who are new to programming; it is targeted at professional developers with at least one month of experience programming in an object-oriented environment.

- Numerous programs exist, and they are created using different kinds of programming languages.
 - Each language is oriented towards controlling the computer on a different level.
 - There are languages oriented towards the **machine level** (the lowest) – Assembler for example.
 - Others are most useful at the **system level** (interacting with the operating system), like C.
 - There are also **high level** languages used to create application programs. Such languages include **C#**, Java, C++, PHP, Visual Basic, Python, Ruby, Perl, JavaScript and others.

□ Stages in Software Development

- Gathering the requirements for the product and creating a task;
- Planning and preparing the architecture and design;
- Implementation (includes the writing of program code);
- Product trials (testing);
- Deployment and exploitation;
- Support.



Questions?

12/03/2025



Thank You

12/03/2025