



Course Information

Course Code

4300310

Course Section

1

Course Title

VISUAL C# PROGRAMMING FOR EDUCATORS

Course Credit

3

Course ECTS

4.0

Course Catalog Description

Fundamentals of C#. Compilation and debugging of the C# applications. Design of visual interfaces with user controls. Variables, data types, arrays, and lists. Decision and control structures. User-defined methods. Text processing. Object-oriented programming. Database connection and CRUD operations. Game programming in Unity with C#.

Prerequisites

No prerequisites

Schedule

Monday , 10:40 - 12:30, EFC104

Friday , 09:40 - 11:30, EFC104

Lab Hours & Location

Lectures will be hybrid (classroom & zoom at the same time), and labs will be asynchronous.

Instructor Information

Name/Title

Assist.Prof.Dr ERKAN ER

Office Address

EF-C 20

Email

erkane@metu.edu.tr

erkanererkaner@gmail.com

Personal Website

<https://avesis.metu.edu.tr/erkane>

<https://scholar.google.es/citations?user=HiRsvogAAAAJ&hl=en>

Social Media



https://twitter.com/e_r_k_a_n_e_r
<https://www.instagram.com/ererkkan/>
<https://www.linkedin.com/in/erkan-er-79069131>

Office Phone

Office Hours

Office hours will be scheduled based on students' requests.

Course Objectives

C# (pronounced "See Sharp") is a simple, modern, and powerful programming language used to build robust, stable, and safe applications in a quick and easy way. According to a [recent Stack Overflow survey](#), it is one of the most demanded and used programming languages in the industry.

This course is designed to teach the fundamentals of C#. A particular focus will be on creating *Windows desktop* applications using C#. While this course will mostly cover the fundamental programming concepts, such as variables, string operations, conditions, etc., in the C# context, some advance topics such as databases, LINQ will also be introduced. Although recommended, prior programming experience is not mandatory.

In this course, students will learn:

- Fundamentals of C#. Compilation and debugging of the C# applications.
- Design of visual interfaces with user controls.
- Variables, data types, arrays, and lists.
- Decision and control structures. User-defined methods.
- Text processing.
- Object-oriented programming.
- Connecting to SQL databases,
- Adding and deleting database records,
- LINQ expressions.

Course Learning Outcomes

By the end of the course, students will:

- Gain general knowledge about C# programming language,
- Create, execute, and debug C# applications,
- Create visual interfaces to collect and process data, Understand and utilize variables and data types,
- Use decision and control structures properly,
- Define user-defined methods,
- Define and manipulate arrays and lists,
- Apply string methods to process text,
- Apply object-oriented programming techniques including classes, objects, inheritance, and polymorphism,
- Write code to access and manipulate databases,
- Write LINQ expressions

Program Outcomes Matrix

Undergraduate

	Program Outcomes	Level of Contribution			
		0	1	2	3
1	They have the skill and knowledge to use information technologies.				X
2	They use information technology to access information, and they analyze, synthesize, and evaluate knowledge by adapting to new situations.			X	

	Program Outcomes	Level of Contribution			
		0	1	2	3
3	They use strategies and techniques based on learning theories and apply them to solve instructional problems in a systemic and systematic way	X			
4	They have skill and knowledge in analysis, design, development, implementation and evaluation in instructional design process.	X			
5	They implement learning-teaching methods and techniques in computer education.	X			
6	They have knowledge, skill and competency about computer hardware, operating systems, computer networks and programming languages.				X
7	They determine measurement and evaluation methods and techniques used in computer education.	X			
8	They have the ability to conduct and present results of intra-disciplinary and inter-disciplinary researches in the field of instructional technology.	X			
9	They comprehend project management processes and implement and present projects electronically.	X			
10	They have critical thinking and problem solving skills.				X
11	They have social communication and cultural exchange skills.				X
12	They have legal knowledge, skills and attitudes required for teaching profession and apply them in the learning environment.	X			

0: No Contribution 1: Little Contribution 2: Partial Contribution 3: Full Contribution

Instructional Methods

The lectures will be face-to-face (f2f) with an option to join through Zoom. Zoom link is shared in OdtuClass. Participation through zoom will give you less attendance points than f2f. F2f participation is strongly encouraged for more interactive and productive sessions.

This course will be delivered using [Flipped Classroom](#) instructional strategy. Each week, you will be required to **study the given materials, do the practice exercises, take the quiz, and start working on your lab assignment before the lecture**. The lecture will be implemented as a question & answer session to support your conceptual understanding of the programming concepts and to help you with completing the programming exercises.

During each lecture, you will be given a small programming exercise [called **inclass assignment**] to complete before the lecture ends. Therefore, it is very important that you come to class prepared for that week's topic.

Until the end of each lecture, you must submit your lab assignment. You will receive help during the class if you have any problems with your codes. In any case, you should make sufficient progress on your work before the class, to be able to submit it until the class ends.

There will be in total **11 lab sessions** which will be conducted in an **asynchronous** manner (that is, no lab hours). Labs will be **due at 12:30 every lecture day**. Late submissions are allowed until 23:59 on the same day with a penalty of 30% deduction.

Online discussions will be the main way for students to ask questions if they face difficulty while working on the programming exercises. Students are also highly recommended to respond to their peers' questions. **Slack** will be used to conduct online discussions. You can download it from this URL: <https://slack.com/intl/en-tr/downloads/windows>

Visual Studio 2022 [Community Edition] will be used as IDE. In other words, you will develop your C# programs using VS. Please download it and install it. It is free!

Tentative Weekly Outline



Week	Topic	Relevant Reading	Assignments
1	Week 1- Introduction to the course and an overview of C# and Visual Studio IDE.		
2	Week 2- Creating graphical user interfaces (GUI).		
3	Week 3- Writing C# code for Windows forms.		
4	Week 4- Variables and user inputs		
5	Week 5- Decision structures.		
6	Week 6 - Methods in C#.		
7	Week 7- Loops, arrays and lists.		
8	Week 8 - Strings and chars.		
9	Week 9- Introduction to classes and objects.		
10	Week 10- Inheritance, polymorphism, and interfaces.		
11	Week 11- Databases and entity framework		
12	Week 12- One to Many (1:M) Relationships in Entity Framework		
13	Week 13- Midterm Exam		
14	Week 14- Midterm Solutions and Review		

Course Textbook(s)

Starting out with Visual C# (Fifth Edition), Gaddis, T. (2019), Pearson Education. ISBN-10: 0135183510

Course Material(s) and Reading(s)

Material(s)

Laptop or desktop computer with Windows OS.

Reading(s)

The weekly readings will be available in the OdtÜClass.

Supplementary Readings / Resources / E-Resources



Resources

Open-source books:

- C# Programming Yellow Book (8th Edition), Miles, R. (2019). <http://www.csharpcourse.com/>
- Fundamentals of Computer Programming with C#, Nakov, S., Kolev, V. (2014). <https://introprogramming.info/english-intro-csharp-book/>

Other books:

- Microsoft Visual C# Step by Step (9th Edition), Sharp, J. (2018), Microsoft Press. ISBN-10: 1509307761.
- C# 9.0 in a Nutshell: The Definitive Reference (1st Edition), Albahari, J. (2021), O'Reilly Media. ISBN-10: 1098100964.
- Beginning C# 7 Programming with Visual Studio, Perkins, B., Hammer, J. V., Reid, J. D. (2018). Jon Wiley Publishing. DOI: 10.1002/9781119549550.

Other Internet resources:

- Learn C#: <https://dotnet.microsoft.com/learn/csharp>
- C# Tutorial: <https://www.w3schools.com/cs/>
- Interactive C# Tutorial: <https://www.learncs.org/>

Assessment of Student Learning

Assessment	Dates or deadlines
In-class programming exercises: During each lecture, you need to complete a light programming exercise.	Until the end of each lecture.
Lab Assignments: There will be in total 11 lab assignments. The labs will further enable students to put in practice what they have learned and sharpen their programming skills. The instructor will act as a facilitator and actively coach students during their coding efforts.	Until the end of each lecture. Late submissions until 23:59 with 30% penalty.
Quizzes: Students are required to take a short quiz 3-4 days after each lecture. The quiz will be composed of 5 questions. The questions will be true/false and multiple choice type.	
Final Assignment: Similar to lab assignments, in the final exam you will be required to complete some programming tasks in C#. It will be an OPEN-INTERNET exam. More detailed instructions regarding format and content of the exam will be given later in the semester.	End of the semester.
Final Exam: Exam will be paper-based and contain 20 Multiple-Choice questions. More detailed instructions regarding format and content of the exam will be given later in the semester.	End of the semester.

Course Grading

Deliverable	Grade Points
Inclass exercises	11
Quizzes	11



Deliverable	Grade Points
Lab assignments	32
Midterm	21
Final Assignment	15
Attendance	11
Total	101

Course Policies

Class Attendance

Attendance to the live lectures is **NOT** mandatory. However, it is **HIGHLY RECOMMENDED** that you attend all lectures on a regular basis so that you do not miss quizzes or fail to submit in-class programming exercises. If you have a GOOD reason for missing the class, please inform me before the class.

Class Participation

Active participation in class is strongly encouraged and you should keep in mind that the definition of participation includes relevant contributions to class discussion, and participation in-class activities

Late Submission of Assignments

In-class exercises: Late submissions are allowed during the first three hours after the submissions are closed. There will be 20% deductions for the late submissions.

Lab assignments: Labs will be due until 23:59 on the lab day. Late submissions are not allowed for lab assignments.

Inform me timely if you have an exceptional case.

Make up for Exams and Assignments

Under no circumstances will a make-up exam be administered if a student misses a midterm. If a student misses a midterm exam due to an unanticipated and serious medical emergency or due to a death in the immediate family, then the missed midterm exam score will be imputed by using only the final exam score. The Department-wide method of imputation is simple. If the midterm exam was missed due to unanticipated and serious medical emergency or due to a death in the immediate family, and the final exam score turns out to be, for example, 80 out of 100, then the missed midterm grade will be recorded as 80 out of 100. This simple method of imputation, which does not adjust for potentially different difficulty across exams, will be used unless an instructor specifically states a different rule. If a student misses the final exam due to an unanticipated and serious medical emergency or due to a death in the immediate family, then that student will be required to take a makeup final exam administered by the Department at the officially announced day and time. It is the student's responsibility to contact the instructor
(Source: <http://www.econ.ucla.edu/undergraduate/?p=commonsyllabus>)

Final Exam Entrance Conditions

No final exam.

Class and Laboratory Rules (Eating-Drinking, Use of Mobile Phones and Electronic Devices, Civility, etc.)

- Be on time and do not interrupt the session after the first 10 minutes. Wait for the next session to attend the class. Random arrivals and exits are disturbing.
- Do not come to class with food or beverages, however you can drink water.
- Show respect and courtesy for others and avoid any disruptive behaviors. Have rational and intellectual discussions with your friends. Students engaging in unacceptable behavior may be instructed to leave the



classroom.

- Unless very necessary, turn off your mobile phones (or on vibrate or silent mode) or other electronic devices and hide them from view during the lesson hours.
- You can only bring and use your laptops for note-taking. Others activities such as surfing on the Net or chatting are not allowed.
- You have to accept the assistant of this course as the other instructor of this course and show respect.
- When you have any problems or questions in relation to the course, you can e-mail me or have an appointment to visit my office.

Information for Students with Disabilities

Students who experience difficulties due to their disabilities and wish to obtain academic adjustments and/or auxiliary aids must contact ODTU Disability Support Office and/or course instructor and the advisor of students with disabilities at academic departments (for the list: <http://engelsiz.metu.edu.tr/en/advisor-students-disabilities>) as soon as possible. For detailed information, please visit the website of Disability Support Office: <https://engelsiz.metu.edu.tr/en/>

Academic Honesty

The METU Honour Code is as follows: *"Every member of METU community adopts the following honour code as one of the core principles of academic life and strives to develop an academic environment where continuous adherence to this code is promoted. The members of the METU community are reliable, responsible and honourable people who embrace only the success and recognition they deserve, and act with integrity in their use, evaluation and presentation of facts, data and documents."*