

# ÇANKAYA UNIVERSITY

## Department of Industrial Engineering

Spring, 2026

### IE 218 - Computer Applications in Industrial Engineering

(4 0 4 credits – 7 ECTS)

	<b>Instructor</b>	<b>Assistant</b>
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#### Course Description:

This course is designed to provide a background necessary to develop computer-based applications required in IE activities. The course covers the basics of programming, Excel VBA, and Excel Applications. Introduction of basic data structures, predefined functions, programming basics, Introduction to algorithmic thinking, Flowcharting basics, debugging and tracing, Review of conditionals and loop structures, Advanced loop structures, Arrays and their applications and developing basic algorithms, Basic file operations, I/O using files, Introduction to functions, subroutines and recursion, User interface design, Computations on matrix operations and matrix inversion, List processing: Ordered vs Linked lists.

#### Weekly Course Schedule:

<b>Week</b>	<b>Topic(s)</b>
1	Basics of C# programming
2	Access modifiers and the static keyword in C#
3	Object-Oriented Programming basics in C#
4	Examples for OOP programming, access modifiers and the static keyword
5	Introduction to GUI with Windows Forms in C#
6	Advanced examples for Windows Form Applications
7	Introduction to SQL Server
8	SQL commands and Normalization
9	Introduction to SQL Server and C# connection
10	Advanced examples for SQL Server and C# connection
11	Recording macro, analyzing macro codes. <ul style="list-style-type: none"><li>Working with variables in Excel VBA, global and static variables.</li></ul>
12	Using If...then...else in Excel VBA. Nested If statements. <ul style="list-style-type: none"><li>Loops in Excel VBA</li></ul>
13	Arrays in Excel VBA <ul style="list-style-type: none"><li>Functions and Subroutines in Excel VBA</li></ul>
14	User Form in Excel VBA

**Textbooks:**

Author(s)	Title	Publisher	Publication Year	ISBN
Paul Deitel and Harvey Deitel	C# 2012 for programmers	Prentice Hall	2014	978-0-13-344057-7
S. C. Chapra	Introduction to VBA for Excel	Pearson Higher Education	2009	978-0132396677

**Grading:**

Project:	35% (2 projects)
Midterm	30%
Final:	35%
<b>Total:</b>	<b>100%</b>

**Grading Policy:**

- **Students who do not attend the midterm and final exams without a valid excuse (including make-up exams) will receive an "NA" (Not Available) grade.**
- **Students with an attendance rate of 60% or less will not be allowed to take the final exam.**

**Policy on Projects and Exams:**

Cheating in projects and exams has serious consequences. Therefore, all work submitted should reflect your honest effort.

All announcements will be posted on [webonline.cankaya.edu.tr](http://webonline.cankaya.edu.tr)

**The instructor has the right to change the syllabus.**

**Term project:**

There will be two term projects covering fundamental programming issues. In these projects, the students are expected to prepare a program individually.