YILDIZ TEKNİK ÜNİVERSİTESİ

MAK 1062 PROGRAMMING

Credits: 2

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Course description:

http://www.bologna.yildiz.edu.tr/index.php?r=course/view&id=9569&aid=97

MAK1062 introduces undergraduate students to the fundamental principles of programming for solving engineering problems, using the *C* programming language. It familiarizes students with the process of computational thinking and the translation of real-life engineering problems to computation problems. Further, it describes the basic techniques for systematic software design. It provides fundamental knowledge in basic programming concepts such as program flow control, memory management, and elementary data structures.

Textbook : C How to Program, Paul Deitel & Harvey Deitel, 7/e

Week	Subject
#1 February 22, 2024	Introduction to C Programming
#2 February 29, 2024	Structured Program Development in C
#3 March 7, 2024	Selection structures
#4 March 14, 2024	Repetition structures (loops)
#5 March 21, 2024	Repetition structures (loops)
#6 March 28, 2024	Functions
#7 April 4, 2024	Arrays
#8 (Midterm Week)	***Midterm exam I***
#9 April 18,2024	*Arrays*
#10 April 25, 2024	Pointers
#11 May 2, 2024	Pointers
#12 May 9, 2024	Formatted Input/Output
#13 May 16, 2024	Structures, Unions. ***Midterm exam II***
#14 May 23, 2024	File processing.
#15 (Final Week)	*Final exam*

Exams and grading:

- Two midterm exams : 8th and 13th weeks
- One final exam : 15th week

The grading distribution for the exams is as follows:

- Midterm Exam I : 40%
- Midterm Exam II: 20%
- Final Exam : 40%
- Total : 100%

Absence policy:
According to University policy, %80 regular attendance is required.

Course objectives:

Upon the completion of this course, students are provided with the basics of algorithms and computer programming knowledge and skills.

Specifically, students will gain fundamental understanding of the following topics:

Introduction to computer systems

- Engineering problems as computational problems
- Overview of computer systems
- Software design

Introduction to *C*

- Code build process (editing, compiling, linking, executing)
- Elements of a *C* program; preprocessor directives; statements and expressions; functions; coding formatting style
- Identifiers; simple data types; constants and variables; type casting; binary arithmetic representations
- The IDE environment

Branching

- Conditional expressions; relational operators; logical operators; precedence rules
- Selection structures; if---else statements; while statements; switch statements

Loops

- Repetition and loop statements; for statements; do---while statements
- Increment/decrement operators; nested loops; loop tracing

Modular programming

- User functions; library functions; function declaration and definition; function calls; pass by value; scope rules; programs with multiple functions
- Pointers and addresses; pass by reference; pointer arithmetic
- File input/output

Simple data structures

- Arrays; declaration and initialization; multi---dimensional arrays; searching and sorting arrays; pointers and arrays
- String arrays; string library functions; substrings; concatenation; strings vs. characters
- Recursion
- Structures; structures and functions; arrays of structures; dynamic data structures