Óbuda University Bánki Donát Faculty of Mechanical and Safety Engineering	Institute of Mechatronics and Vehicle Engineering

Subject title and code: **Object Oriented Programming BMXOPE3BNF** **Credits:** *4*

Full-time study *2025/2026 ac. year* 1 *semester*

The course is available at: mechatronics engineering BSc

Supervised by: Prof. Dr. Ludányi-Laufer Edit

Instructors: Prof. Dr. Ludányi-Laufer Edit, Dr. Frigyik Béla András

Prerequisite (neptun code): **Algorithms and Data Structures, BMXAAE2BNF**

Weekly number of lessons

Lecture:	Group seminar:	Lab:	Consultation:
1		2	

Way of assessment: Midterm mark (Written and oral)

Online consultation *(in case it's required): ... (BBB link)*

Edu. goal: The goal of the lecture is to develop further the algorithmic way of thinking through object oriented programming. It builds on the knowledge base that was introduced in the course Algorithms and Data Structures but develops it into another direction. The Lab sessions aim to help the students deepen their knowledge of algorithms through practical problems by implementing them using a concrete OOP language. By the end of the semester the students should be able to develop projects on their own.

Schedule

Education week	**Topics**
1.	*Lecture*: Basics of object oriented programming, Classes, objects, Constructor, Destructor *Lab*: Creation of simple classes, Instantiation
2.	*Lab*: Object arrays
3.	*Lecture*:Properties, dealing with value and reference types, objects in the memory, object arrays *Lab*: Using Properties in practice
4.	*Lab*: Working with files, handling dates and time
5.	*Lecture*: Elements of the object oriented paradigm, class level members, static classes *Lab*: Using class level members in practice
6.	*Lab*: Complex problem solving
7.	*Lecture*: Inheritance, polymorphism *Lab*: **Lab midterm**
8.	*Lab*: Inheritance, polymorphism
9.	*Lecture*: Exception handling *Lab*: Exception handling in practice
10.	*Lab*: Assignment of projects. **Labor make-up midterm**
11.	*Lecture*: Rector's holiday *Lab*: Rector's holiday
12.	*Lab*: Complex problem solving
13.	*Lecture*: **Theoretical midterm** *Lab*: Project assignment consultation
14.	*Lab*: Project assignment presentation

Mid-semester requirements

Test		Assignment to be submitted		Lab measurement	
amount	dates	amount	deadlines	amount	dates
2	weeks 7,13	1	week 13	8	weeks 1,2,3,4,5,6,8,9

According to the HKR attendance of group seminars and lab exercises are mandatory.

Other requirements for participation in sessions not covered by the regulations and restrictions on substitutions: During the semester, in accordance with the schedule above, a student can make up one of the midterms if they have a valid official absence note (from a doctor or from a coach). The make up test for theory will happen during the semester at a separately assigned time. The blitz quizzes cannot be made up.					
Test		Assignment to be submitted		Lab measurement	
maximum points available	minimum score required to pass /test	maximum points available	minimum score required to pass / assignment	maximum points available	minimum score required to pass /lab
40 points	16 points	20 points	10 points	8 points	- points

Total number of points achievable in semester: …points				
Grading thresholds	**satisfactory** 40 % and above	**average** 55% and above	**good** 70 % and above	**excellent** 85 % and above
Other evaluation criteria: For the midterms only those solution elements (data or control structures and algorithms) are acceptable that were covered either in the lectures or at the lab sessions. Those problems that can be solved by using programming theorems are expected to be solved that way. Similarly, problems requiring object oriented approach are expected to be solved through that approach. Percentage-wise contribution of the different tests to the final grade: Lab midterm 40%, theory midterm 40%, project 20%. Blitz quizzes provide extra points: 4-4 points to lab and theory midterms, respectively.				
Receive a signature denied entry:	The signature will be denied to that student who misses a midterm and has no absence note to justify their non-attendance, misses more than two blitz quizzes, fails to submit the project assignment or misses more classes than it is allowed by HKR.			
Required references:				
Recommended references:	Computer Programming: The Bible: Learn From The Basics to Advanced of Python, C, C++, C#, HTML Coding, and Black Hat Hacking Step-by-Step, Createspace Independent Publishing Platform, 2018. Robert Ciesla, Programming basics, Getting Started with Java, C#, Python, Apress, 2021			
Quality assurance methods of the subject:				

Things, that are not included, can be found within the regulations of Óbuda University.