Óbuda University Bánki Donát Faculty of Mechanical and Safety Engineering				Insitute of Mechatronics and Vehicle Engineering			
Subject title and code:	**Programming II. BMXPNY4BNE**				**Credits:**		*5*
Full-Time Study	2023/2024	*ac. year*	2.	*semester*			
The course is available at:		Mechatronical Engineering					
Supervised by:	Dr. habil Edit Laufer		**Lecturers:**		Bence Varga		
Prerequisite (neptun code):		Programming I. (BMXI2YHBNE)					
Weekly number of lessons							
Lecture:	8	Exercise:	-	Laboratory ex.:	8	Consultation	-
Way of assessment:	Midterm (Writing) Grade						
Online Consulatation (in case it's required):				*https://bbb2.banki.hu/b/var-3hq-469 (BBB link)*			
Educational goal:	*Students will learn the basics of the Python programming language, learn the steps of programming with the language and be able to develop applications independently. This will help them to tackle more complex engineering problems.*						

Schedule

Education week	Topics
1.	Introducing major differences between compiler and interpreter. Introduction to Python programming language (language specific properties, syntax, console class, numric type variables, type casting etc.)
2.	Program flow control in Python (Conditions and If statement, Loops)
3.	Data structures in python (List, Dictionary, Tuple, Set)
4.	String type variables. Operation on texts.
5.	Object Oriented Programming in Python. (Classes and objects)
6.	1. Midterm test.
7.	Introduction to the Numpy package. Numpy arrays, operations on numpy arrays, random numbers.
8.	School Break (2024. March 28. – April 02.)
9.	Advanced file management using Pandas package. Operations on CSV files.
10.	Data visualization using Matplotlib package.
11.	Introduction to image processing using OPENCV package.
12.	2. Midterm Test. (Project submission)
13.	Project presentations.
14.	Midterm Test Retake.

Mid-semester requirements

Test		Assignment to be submitted		Lab measurements	
Amount	Schedule	Amount	Deadline	Amount	Schedule
2pcs.	6,12. week	1 pcs.	12. week	-	-

According to the Study and Examination regulations of Óbuda University attendance of group seminars and lab exercises are mandatory

Other requirements for participation in sessions not covered by the regulations and restrictions on
substitutions:

As per the schedule above, students are expected to take two midterm tests during the semester. Moreover, they are required to submit an individual project by the 12th week, which should be accompanied by proper documentation (a 10-slide presentation and documented program code). In order to successfully complete the course, students must obtain a minimum of 10 points on each midterm test and 12 points on the assignment.

A student will be withdrawn from the course:
- if the absences exceed the threshold given by the regulations and they are unable to provide a justification or;
- the student failed to participate on both midterm- or retake test or;
- did not submit the assignment by the deadline or;
- did not acquired at least 12 points for the assignments or;

A signature denied entry will be given to those students who:
- submitted their assignment by the deadline;
- acquired at least 12 points for the assignments;
- failed at least one of the midterm tests.

Final grade is calculated based on the scores obtained from the midterm tests and assignments shown below.

The midterm tests can be retaken on the 14. week of education.

Students with signature denied entry are eligible for a signature retake exam that can be taken in the first two weeks of the exam period. The assignments cannot be submitted in the exam period.

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
50 points	10 points	25 points	12 points	-	-

Total number of points achievable in semester:		75 points		

Grading thresholds	Pass from 50 %	Average from 60 %	Good from 75 %	Excellent from 90 %

Other evaluation criteria: -	
Receive a signature denied entry:	If a student's absences exceed the threshold given by the regulations and they are unable to provide a justification, or if the student fails to submit the assignment by the deadline or participate in any of the midterm or retake tests.
Required references:	MOODLE
Recommended references:	Mark Lutz: Learning Python Web: https://www.python.org/ https://www.w3schools.com/python/

Quality assurance methods of the subject:	

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