Óbudai University Donát Bánki Faculty of Mechanical and Safety Engineering			Institute of Mechatronics and Vehicle Engineering	
Course name and Neptun-code: Programming I. BMXI2YHBNE				**Credits***: 4*
Full time, 2nd Semester of the Academic year 2020/21.				
Faculties in which the subject is taught: **BSc in Mechatronics**				
Supervised by: **Edit Laufer PhD**			Practice leaders: **Dániel Zentai**	
Prerequisites conditions: (Neptun Codes)			Basics of informatics, BMXIAYHBNE	
Lessons per week:	Theory: **2**	Practice (in Auditorium): **0**	Lab: **3**	Consultation:
Exam type (s,v,f):	**exam**			

Syllabus
Aim: Developing algorithmic thinking, introducing the basic tools of programming, which are needed during engineering work. The acquisition of basic algorithms and data structures. Show basic computer programming techniques and approaches. Students learn about the basic algorithms and data structures using an easy to learn programming language. This subject helps to solve complex engineering problems.

Schedule	
Weeks	Topics
1.	*Theory*: The aim and tools of computer programming. Structured programming. Event-driven programming. *Practice*: Visual Studio environment Event management. Basic components.
2.	*Theory*: Basic data structures and their operations. (integers, real, boolean). Conditional statement. *Practice*: Application of mathematical functions. Calculator. Conditional statement.
3.	*Theory*: Loops. Array data structure. *Practice*: Loops. Random number generator.
4.	*Theory*: Elementary programming theorems (result is a value) *Practice*: Array data structure. Operations with arrays.
5.	*Theory*: **Test 1** *Practice*: Methods. Elementary programming theorems.
6.	*Theory*: Holiday *Practice*: **Test 1**
7.	*Theory*: Character and string type. *Practice*: Character operations. Strings as character arrays.
8.	*Theory*: Complex programming theorems (result is a set). Sort and search algorithms. *Practice*: String operations.
9.	*Theory*: Easter *Practice*: Holiday
10.	*Theory*: File management. *Practice*: File management.
11.	*Theory*: Object oriented programming basics (abstraction, encapsulation, instantiation) *Practice*: Simple classes, instantiation
12.	*Theory*:. Object oriented programming (property, publicity, principles) *Practice*: Properties, object arrays
13.	*Theory*: **Test 2** *Practice*: **Test 2**
14.	*Theory:* **Retake test** *Practice:* **Retake test**

Requirements	
Weeks	Tests
5	Theory test 1.
6	Practical test 1.
13	Theory and practical test 2.
14	Retake test
Evaluation criteria	

The participation is governed by TVSZ III.23.§ (1)-(4).

The form of the classes and the tests depends on the current pandemic situation. We will keep you informed about this throughout the semester via Moodle course belonging to the subject.

Online education: all the classes (theory and lab) will be held via online platform announced in the Moodle course. Attendance at classes is based on the class assignments submitted. If someone miss to submit a class assignment is considered an absence.
If students are allowed to enter the building, the tests will be written in person, in groups, to ensure social distancing. If enter to the building is not allowed, an online test will be written, its details will be announced via the Moodle interface.

Hybrid education: the theory classes are held online, while the laboratory classes are held in person, in groups. Students who attend the lab session online can prove their presence by submitting a class assignment (see online education). The tests are organized with a personal presence (in groups).

Normal education: both lectures and lab sessions are held in person. Attendance at classes is mandatory

All main areas of the course are evaluated by test papers. The course is to be considered successfully executed and a **signature** is obtained if and only if both lab tests are successful (minimum 40%).

Signature is **denied** if the student cannot justify the absence for the test, has failed to write both tests, or absences exceed the number of classes specified in TVSZ.

During the semester, the signature requirements can be **replaced** in the following cases: one of the laboratory tests failed; illness. In this way, only one of the tests can be retake.

Based on the Study Regulations III.6.(4), the student receive **offered grade** if he/she has written all the tests with grades minimum 2 and the average of the test results is minimum 3.

Final grade is calculated in the following way: 40% average score of the lab tests, 60% written exam.

All matters which are not covered in this document, the Study and Examination Rules and the provisions of the Study Regulations, valid at Óbuda University, prevails.

The semester closing method (method of examination: written, oral, testing, etc.).
Written exam
Literature: Moodle
Quality Assurance: