

Óbuda University John von Neumann Faculty of Informatics		Software Engineering Institute		
Name and code:		Problem solving using programming (NSXPP1EBNF)		Credits: 6
Computer Science BSc		Full-time, 2023/24 year, 1st semester		
Subject lecturers: Dr. László Csink, Erika Csernyey-Jakab, Kaziwa Hassan Saleh, Dániel Kiss				
Prerequisites:		-		
Weekly hours:	Lecture: 1	Seminar: 0	Lab hours: 3	Consultation: 0
Way of assessment:	Mid-term grade			
Course Description				
Goal: The purpose of the subject is to present the basics of computer programming and to develop the skills of algorithmic thinking and computer problem solving.				
Course description: The subject material covers the most important elements of general-purpose programming languages, such as the use of variables, control structures and functions, as well as the methodology of structured programming. Students will also learn the basics of the object-oriented programming paradigm, the process of program code development with objects, the use of complex data structures, strings and files. Within the scope of the subject, students learn the basic use of a specific programming language by implementing some well-known and commonly used algorithms, and by solving practical problems with a computer program.				

Lecture schedule	
Education week	Topic
1.	Basic of programming languages, instructions, keywords
2.	Using variables, data types and operators
3.	Program control with branches and loops
4.	Arrays
5	Characters and character strings
6.	File handling, reading and writing data
7.	Procedures, functions, parameter handling
8.	Introduction to object-oriented programming, structure of classes
9.	Basic query operations with arrays
10.	Program development in an object-oriented approach
11.	Basics of recursive algorithms
12.	Sorting algorithms
13.	Debugging approaches in practice
14.	Programming tasks
Mid-term requirements	
<p>Attending the lectures and laboratory hours at the scheduled times is mandatory. During the semester, 10 programming tasks (home works) must be prepared and submitted by a predetermined deadline, which cannot be replaced later. A maximum of 20 points can be obtained with the home works. In weeks 8 and 13, the students write assessment midterm tests. A maximum of 20 points can be obtained with the first test, and its main purpose is to provide feedback on the level of knowledge acquired up to that point. The second test is worth a maximum of 60 points and must be completed at a minimum of 40%. To successfully complete the course, the student must obtain at least 50 points out of the maximum possible 100 points.</p>	

<b>Assessment schedule</b>	
<i>Education week</i>	<i>Topic</i>
8.	Midterm test from the topics presented in the lecture and lab
13.	Midterm test from the topics presented in the lecture and lab
14.	Replacement of either the first or the second midterm test (optional)
<b>Method used to calculate the mid-term grade</b>	
The mid-term grade is determined by the sum of the points obtained by the student. Only students having completed the second midterm test at least 40% (including possible replacement results) and obtained a total of at least 50 points can have a mid-term grade. If the number of absences of the student exceeds 30% of the total number of lessons, the student will be banned from the course.	
<b>Type of the replacement</b>	
One of the two midterm exams can be retaken in week 14. If the student did not complete the replacement exam at least 40%, or did not manage to achieve at least 50 points out of the 100 points that can be obtained during the semester, the mid-term grade can be only obtained on the mid-term grade replacement exam in the examination period.	
<b>Calculation of the midterm grade</b>	
<p>The midterm grade is calculated as follows from the total score obtained by the student:</p> <p style="text-align: center;"> 0 – 49: Insufficient (1)  50 – 61: Sufficient (2)  62 – 73: Satisfactory (3)  74 – 85: Good (4)  86 – 100: Excellent (5) </p>	
<b>References</b>	
<i>Obligatory:</i>	
Cormen, Leiserson, Rivest, Stein: Introduction to Algorithms (The MIT Press, 2009) Practical introductory videos and notes available in the e-learning system	
<i>Recommended:</i>	
Bradley L. Jones: Teach Yourself C# in 21 Days (Sams Publishing, 2001)	
<i>Other references:</i>	
Additional material (including videos and notes) available in the e-learning system	