

Obuda University
Alba Regia Technical Faculty

Subject name: Basics of Software Development		NEPTUN-code: ATXSF2IBNF	Weekly hours: 2 lectures+0 seminar+3 lab
Credit: 6 Requirement: exam		Prerequisites: no	
Lecturer: Nagyné Dr. Hajnal Éva	Position: associate professor	Institute name: Óbuda University Alba Regia Technical Faculty	
Way of assesment: Fullfill the requirements of lab (two laboratory test and a homework) and written test in the exam term from the lectures. Sudents have to achieve at least 50% of the points in the tests and have to prepare one homework.			
Subject description			
<p>Develop students' algorithmic thinking, algorithm building skills. Developing the ability to learn algorithms, learning about commonly used algorithms. To this end, students learn the principles of structured and object-oriented programming and and methods, and the use of a specific object-oriented programming language (generally on C# language).</p> <p>Topics:</p> <ol style="list-style-type: none"> 1. Elements of the object-oriented paradigm: object, class, relationships between classes. 2. General characteristics of OOP implementations: unit containment, data hiding, inheritance, multiformity, code reuse. 3. Extending OOP knowledge: interfaces. 4. Exception handling 5. Assembling programming items. 6. Composite programming batches I (Copy, sort, split) 7. Complex programming items II (intersection, union, intersection and union of ordered arrays) 8. Recursive algorithms. 9. Ordered arrays, search in ordered arrays iteratively and recursively. 10. Implementation of programming theorems recursively and in ordered arrays. 11. Sets, implementation of set operations. 12. "Divide and Conquer" algorithms I. Compound ordering. 13. "Divide and Conquer algorithms II. 14. "Divide and Conquer Algorithms III. Maximum Selection and k-th Least element selection. 			
ASSESSMENT			
<p>- During the semester, students will take two major lab tests in weeks 7 and 13, for a total of 40+40 points. The large lab final exams are compulsory. If the student has a large lab final or has not achieved at least 20 points, he/she may write a remedial paper from the material of that paper in the last week. A remedial examination is successful if the student achieves at least 20 points. A student may also write a remedial examination if he/she has passed both major examinations with more than 20 points. In this case, the student may improve the lower scoring major lab final. In addition to the points that can be earned on the major lab papers an additional 20 points may be earned for the labs 3-4-5 and the labs written at the beginning of week 11 "small lab final papers".</p> <p>During week 4, the student will be given a midterm assignment, which will be presented in lecture the expectations outlined in the lecture by Friday 23:59 of week 12.</p> <p>Final exam is a written test from the lectures. The final mark is the mean of the practice and the written exam.</p>			

The rating is the following:

- 90-100% Excellent (5)
- 80-89% Good (4)
- 60-79% Satisfactory (3)
- 50-59% Minimal Pass (2)
- 0-49% Insufficient (1)

Bibliography:

1. CORMEN, Thomas H., et al. *Introduction to algorithms*. MIT press, 2022. ISBN 978-0-262-53305-8
2. Presentations in Moodle system