

DESCRIPTION OF THE STUDY SUBJECT

Title

BASICS OF ALGORITHMIZATION

Scope of the subject

Semester	Mode of studies	Structure*				Total number of hours	Number of credits	Group and type of subjects
		L	PS	C	S			
I	Full-time	16	17	6	41	80	3	Compulsory subjects of the study field
I	Part-time	6	12	21	41	80	3	

*L – lectures, PS – practical activities, seminars, LW – laboratory work, PR – practice, CP – course paper, C – consultations, S – self-study

Aim of the subject

To know the principles of building algorithms, their operation, applying mathematical data structures and functions, to develop the ability to rationally choose the algorithm for the task, to identify initial data, main and auxiliary variables and expected results, to build and analyze algorithms of various structures, to interpret their operation with real data.

Necessary background knowledge for studying the subject

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Content of the subject

Title of the topic and description of the content	Number of contact hours			S	Total number of hours
	L	PS	C		
1. The concept of the algorithm. Algorithmic schemes.	2	-	-	1	3
2. Linear algorithms.	2	-	-	1	3
Practical work: recording of the linear algorithm by the structure diagram and algorithmic scheme.	-	4	1	4	9
3. Branching algorithms.	2	-	-	1	3
4. Cyclic algorithms.	4	-	-	2	6
Practical work: applications in one-dimensional and two-dimensional arrays.	-	4	1	5	10
Test.	-	2	-	5	7
5. Algorithms for calculating the sum and product.	3	-	-	2	5
Practical work: applications in one-dimensional and two-dimensional arrays.	-	3	1	5	9
6. Algorithms for detection of minimum and maximum values.	3	-	-	2	5
Practical work: applications in one-dimensional and two-dimensional arrays.	-	4	1	5	10
Preparation and taking the exam			2	8	10
Total number of hours	16	17	6	41	80

Assessment of learning outcomes

Ten-point criteria-based assessment system as well as cumulative assessment using individual cumulative index (ICI) are applied. The overall grade is the sum of test (T), and exam (E) marks multiplied by weighted coefficients. $ICI = 0,5 T + 0,5 E$

Recommended literature

Key literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house	Number of copies and/or internet link		
				ŠSC library	Other premises	Other libraries *
1.	2014	Dulinskienė T., Jakštienė V., Petreikienė V., Sturienė R., Anufrijev I. Computation and Data Visualization in MATLAB Environment	Technologija	https://www.ebooks.ktu.lt/eb/1310/computation-and-data-visualization-in-matlab-environment/		

2.	2012	Horak O., Mitrovič L. Description of the Basic Algorithm Blocks and Structures Representation in Courses of Algorithm Development	Wseas transactions on advances in engineering education, 9(2)	http://www.wseas.org/multimedia/journals/education/2012/55-346.pdf		
3.	2010	Adomavičius J. ir kt. Informatika 2	Technologija	2	-	29
Additional literature						
No.	Year of publishing	Author(s) and title of the publication		Publishing house and/or internet link		
1.	2007	Čiegis R. Duomenų struktūros, algoritmai ir jų analizė		Technika		
2.	2007	Dagienė V. Informacinės mokymo technologijos		http://ims.mii.lt/valentina/publ/IMT_dagiene.pdf		
3.	2007	Juozapavičius A. Duomenų struktūros ir efektyvūs algoritmai		http://mif.vu.lt/cs2/lt/kursai/algoritm/files/dstruct.pdf		
4.	2002	Jusas V. Matematinė logika		Technologija		
5.	2001	Новиков Ф.А. Дискретная математика для программистов		Питер		
6.	2000	Burgis Br., Kulikauskas A. Kompiuterija: mokymosi knyga studentams, moksleiviams, entuziastams		Naujasis lankas		

* ŠAVB – Šiauliai Region Povilas Višinskis Public Library, ŠU – library of Šiauliai University

Required material resources and their short description

<ul style="list-style-type: none"> • Equipment (devices): a computer with Internet access, multimedia projector.
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The description prepared by:

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