



Syllabus of the educational discipline «Algorithms and Data Structures»

Specialty	<i>121 Software engineering</i>
Educational program	<i>All educational programs</i>
Level of education	<i>The first (Bachelor) level of higher education</i>
Discipline status	<i>Mandatory</i>
Teaching language	<i>English</i>
Course / semester	<i>2 year, 1 semester</i>
Number of credits ECTS	<i>7</i>
Distribution by types of trainings and hours of study	<i>Lectures – 24 hours. Practical studies (seminars) – 0 hours. Laboratory studies – 48 hours. Self-study – 138 hours.</i>
Form of final assessment	<i>Grading including Exam</i>
Department	<i>Information Systems, 61166, Kharkiv, Nauky av., 9a, S Kuznets Khneu, 412, 413., http://www.is.hneu.edu.ua/</i>
Teacher (-s)	<i>Gryzun L.E., Doctoral Degree in Pedagogical Science, Professor, Full Professor</i>
Teacher's contacts	Lgr2007@ukr.net
Days of the classes	<i>Lectures: Due to the schedule Laboratory studies: Due to the schedule</i>
Consultations	<i>Online consultations via PNS chat.</i>
The purpose of the discipline is to provide students' understanding of efficient algorithms, methods of their investigation and analysis as well as students' skills of basic algorithms developing.	
Prerequisites for learning The list of the preliminary learnt disciplines: Programming, Fundamentals of Algorithmization, Higher Mathematics.	
Content of the educational discipline Content module 1. <i>Algorithm concept and algorithmic strategies</i> Theme 1. Algorithm concept. Its main attributes and properties Theme 2. Search and sorting algorithms Theme 3. Dynamic programming Theme 4. Algorithms of integers processing Content module 2. <i>Fundamental algorithms of data processing</i> Theme 5. Fundamental graph algorithms Theme 6. Basic data structures Theme 7. Search algorithms in strings Theme 8. Combinatorial and recursive algorithms	
Material and technical support (software) of the discipline (software https://www.101computing.net/flowchart/ , repl.it .)	
Course page on the Moodle platform (personal training system)	https://pns.hneu.edu.ua/
Assessment system of learning outcomes The system of assessment of formed students' competencies takes into account the types of classes, which according to the curriculum of the discipline include lectures, laboratory classes, as well as independent work. Assessment of the formed competencies of students is carried out according to the accumulative 100-point system. Control measures include: current control, which is carried out for the semester during lectures, laboratory classes and is estimated by the amount of	



points scored. Maximum amount for current control is 60 points, the minimum amount that allows a student to take the exam is 35 points. Maximum grades for the exam are 40 points, minimum grades are 25.

The procedure for conducting current assessment of students' knowledge include: the tasks doing at the laboratory classes, presentations and test papers.

More detailed information on assessment is given in the technological card of the discipline.

Discipline policies

Policy of academic integrity is kept during the course studying. Students have to attend lectures and laboratory classes on the discipline. If there are proper reasons, they have to inform the teacher of their absence. Regular studying of lecture material and doing laboratory tasks due to deadlines are obligatory. The tasks of independent work are to be passed in the established terms. The presence of students at the modular and final tests is mandatory.

More detailed information about competencies, learning outcomes, teaching methods, assessment forms, independent training is given in the working plan of the discipline.

Syllabus approved at the meeting of the Department «Information Systems».

Protocol № 7 of 10.06.22