

Syllabus of the educational discipline

«SOFTWARE ENGINEERING»

Cycle of Higher Education	<i>First cycle of higher education (Bachelor's degree)</i>
Field of Study	<i>12 Information Technologies</i>
Specialty	<i>123 Computer engineering</i>
Educational program	<i>Computer systems and networks</i>
Discipline status	<i>Normative</i>
Teaching language	<i>English</i>
Year of studies, semester	<i>4 year (7 semester, 8 semester)</i>
Number of credits ECTS	<i>6 credits</i>
Distribution by types of trainings and hours of study	<i>Lectures, Laboratory studies, Independent training</i>
Form of final assessment	<i>Test</i>
Teacher	<i>Mulesa O. Yu., Doctor of technical sciences, Professor at the department of computer systems and networks</i>
Teacher's contacts	<i>oksana.mulesa@uzhnu.edu.ua</i>
Course Schedule	<i>According to the timetable</i>

The purpose of the discipline - study of modern engineering principles (methods) of creating reliable, high-quality software that meets the requirements for it; formation of students' understanding of the necessity of applying these principles of software engineering and acquisition by students of theoretical knowledge and practical skills in designing software products

At the end of this course, students should:

know:

- advantages of the engineering approach to software development; the main difficulties encountered when implementing this approach;
- relationship of software engineering with the life cycle of software tools; the main stages and content of work at each stage of software system development;
- basic concepts and models of software development process; conducting planning, system analysis, analysis of the subject area and requirements to the created system

be able to:

- make decisions about the appropriateness of using a particular technology in the design and development of software applications.
- navigate in different ways of organization and models of the development process: cascade model, iterative model, step-by-step development model, spiral model, etc. Apply the acquired knowledge in their professional activities;

Prerequisites for learning

Prerequisites for the study of the discipline "Software Engineering" is the mastery of students of the following academic disciplines: "Programming", "Object-oriented programming", "System programming".

Content of the educational discipline

Module 1

Topic 1. The subject of software engineering

Topic 2. Software development life cycle

Topic 3. Software requirements

Topic 4. Traditional and Agile project management methodologies

Topic 5. Scrum and self-organizing teams

Topic 6. Kanban, XP, Lean methodologies

Topic 7. Architecture of software systems.

Topic 8. Modularity and decomposition in the design of software systems.

Topic 9. Designing the architecture of software systems

Topic 10. Architecture templates.

Topic 11. Lower level design patterns.

Topic 12. Basic patterns.

Course page on the Moodle platform (personal training system)	<i>Syllabus of the educational discipline, hyperlinks to electronic publications of the discipline, recommended literature, students' attendance, lecture materials, presentations, questions for self-control, tests, tasks for checking students' knowledge.</i> https://e-learn.uzhnu.edu.ua		
Recommended literature			
1. <i>Frederick Brooks Jr. Design of Design, The: Essays from a Computer Scientist.</i> - Addison-Wesley Professional; 1st edition (March 22, 2010). - 448p 2. <i>Sandro Tosi. Matplotlib for Python Developers.</i> - 2009. - 307p. 3. <i>David A. Marca. Sadt: Structured Analysis and Design Techniques.</i> - McGraw-Hill. - 292p			
Assessment system of learning outcomes			
The ECTS grade that a student receives after studying a credit module of a discipline is determined according to the student's rating. The student's rating is made up of the points that the student receives during the semester for such types of work: 1. Module control work (MCW) is 2 acad. hours. The maximum number of points for the MCW is 50 points. 2. Performing laboratory work. During the semester, students perform laboratory works, where the maximum number of points is 40. Points for individual and independent work of students are awarded for: preparation of essays, modernization of tasks, for a creative approach to problem solving, performance of tasks to improve didactic materials in the discipline: 0-10 points for each module Each module is graded a maximum of 100 points. A necessary condition for admission to the test is the absence of debts on laboratory work and enrollment control works.			
ECTS and national grading scale			
Mark scale	ECTS	Exam	Test
90 - 100	A	Excellent	Satisfied
82 - 89	B	Good	
74 - 81	C		
64 - 73	D	Satisfactory	
60 - 63	E		
35 - 59	FX	“Unsatisfactory” with possibility to pass the exam again	“Not satisfied” with possibility to pass the exam again
1 - 34	F	“Unsatisfactory” with obligatory repeated study of the discipline	“Not satisfied” with obligatory repeated study of the discipline