LUTSK NATIONAL TECHNICAL UNIVERSITY
COMPUTER SCIENCES & INFORMATION TECHNOLOGIES FACULTY
SOFTWARE ENGINEERING DEPARTMENT

Syllabus

MODERN SOFTWARE AND SOLUTIONS

training of higher education applicants second (master's level)
educational and professional program «Software Engineering»
field of knowledge 12 Information Technologies
Specialty 121 Software Engineering
Days of classes and consultations: according to the current schedule
Year of study: I, Semester: II
Number of credits: 5
Course language: English

Course leader
Ph.D, docent
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Description of the discipline

This discipline is organized in topical sections on lectures learned from industry-research collaborations; instruments to improve the software development process; requirements, features, and release management; practices of modern development processes; human factors in modern software development; effort and size estimation validated by professionals; empirical generalization; software reliability and testing in industry; workshop on processes, methods and tools for engineering embedded systems; workshop on human factors in software development processes; and workshop on software startups: state of the art and state of the practice.

Main tasks of «**Modern Software and Solutions**»:

- To be able to develop and evaluate creation strategies of program tools; explain, analyze and evaluate management decisions which are made in terms of the quality of developed software product.
- To be able to analyze, evaluate and choose methods, modern software, instrumental and computing tools, technologies, algorithmic and programming decisions for effective implementation of special industrial tasks in software engineering.
- To make organize and management decision in conditions of uncertainty.

- To be able to analyze, evaluate and choose methods, modern software, instrumental and computing tools, technologies, algorithmic and programming decisions for effective implementation of special industrial tasks in software engineering.
- To know and use main conceptions and modeling methodologies of information processes.

The educational material of the discipline is structured by the module principle and consists of two educational modules:

– educational module № 1 «*Instrumental Promotion of Software Development*»;

– educational module № 2 «*Project Management Methods for Software Development Teams*».

Course System

Hours (lect. / lab.)	Themes	Results of Studying	Tasks
1	2	3	4
2 /5	**Theme N 1.** *Instruments to improve the software development process*	To develop and evaluate creation strategies of program tools; explain, analyze and evaluate management decision which are made in terms of the quality of developed software product. To analyze, evaluate and choose methods, modern software, instrumental and computing tools, technologies, algorithmic and programming decisions for effective implementation of special industrial tasks in software engineering.	Tests, practical tasks, questions
2 / 4	**Theme N 2.** *Requirements, features, and release of management*	To make organize and management decision in conditions of uncertainty. To develop and evaluate creation strategies of program tools; explain, analyze and evaluate management decision which are made in terms of the quality of developed software product.	Tests, practical tasks, questions
2 / 4	**Theme N 3.** *Practices of modern development process*	To analyze, evaluate and choose methods, modern software, instrumental and computing tools, technologies, algorithmic and programming decisions for effective implementation of special industrial tasks in software engineering. To know and use main conceptions and modeling methodologies of information processes.	Tests, practical tasks, questions
2 / 4	**Theme N 4.** *Human factors in modern software development*	To know and use main conceptions and modeling methodologies of information processes. To make organize and management decision in conditions of uncertainty.	Tests, practical tasks, questions
2 / 4	**Theme N 5.** *Effort and size estimation validated by professionals*	To develop and evaluate creation strategies of program tools; explain, analyze and evaluate management decision which are made in terms of the quality of developed software product.	Tests, practical tasks, questions
2 / 4	**Theme N 6.** *Empirical generalization*	To know and use main conceptions and modeling methodologies of information processes. To develop and evaluate creation strategies of program tools; explain, analyze and evaluate management decision which are made in terms of the quality of developed software product.	Tests, practical tasks, questions

1	2	3	4
3 / 5	**Theme N 7.** *Software reliability and testing in industry*	To know and use main conceptions and modeling methodologies of information processes. To develop and evaluate creation strategies of program tools; explain, analyze and evaluate management decision which are made in terms of the quality of developed software product.	Tests, practical tasks, questions

References

1. Ellen Gottesdiener. *The Software Requirements Memory Jogger: A Pocket Guide to Help Software and Business Teams Develop and Manage Requirements*, Goal Q P C Inc, 2005.

2. Hafedh Mili et al. *Reuse-Based Software Engineering: Techniques, Organizations, and Controls*. John Wiley & Sons; 1st edition (December 15, 2001; ©2002).

3. Karl E. Wiegers. *More About Software Requirements: Thorny Issues and Practical Advice*. Microsoft Press, 2005.

4. Mark J. Christensen, Richard H. Thayer. *The Project Manager's Guide to Software Engineering's Best Practices*. Wiley-IEEE Press; 1st edition (©2002).

5. Michael Jackson. *Problem Frames: Analyzing and Structuring Software Development Problems*. Addison-Wesley Pub Co; 1st edition (December 15, 2000; ©2001).

Evaluation Policy

– Deadline and Recompilation:

All works with the violation of deadlines without good reason are evaluated with low marks   (-20 marks). Rearrangement of modules takes place with the permission of the dean's office if there are good reasons (for example, the document from the hospital).

– Academic Integrity Policy:

All written works are checked for plagiarism and are allowed to be defended with correct text borrowings of no more than 20%.

Write-offs during tests and exams are prohibited.

– Attendance Policy:

Attendance is a mandatory component of the assessment, for which points are awarded. For objective reasons (for example, illness, international internship) training can take place online (mixed form of training) in consultation with the course leader.

Evaluation

Final assessment is calculated as:

Types of evaluation	% of the final assessment
Interviews during classes – orally	40
Module 1 (themes 1-3) – evaluation test	30
Module 1 (themes 4-7) – evaluation test	30
Test (themes 1-7) – tests, tasks	40

Students assessment scale:

ECTS	Marks	Content
A	90-100	EXCELLENT
B	82-89	Very GOOD
C	74-81	GOOD
D	65-73	SATISFACTORY
E	60-63	SUFFICIENT
FX	35-59	FAIL- some more work required before the credit can be awarded
F	1-34	FAIL- considerable further work is required