COURSE UNIT DESCRIPTION

Course unit title	Course unit code
Information Security	**PMIS7134**

Lecturer(s)	Department where the course unit is delivered
Coordinator: dr. Gintaras Skersys **Other lecturers:**	Department of Computer Science Faculty of Mathematics and Informatics Vilnius University

Cycle	Type of the course unit
Second	Optional

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Face-to-face	Spring semester, first year of study	Lithuanian, English

Prerequisites and corequisites	
Prerequisites: Requirements Engineering	**Corequisites (if any):** -

Number of ECTS credits allocated	Student's workload	Contact hours	Self-study hours
5	130	68	62

Purpose of the course unit: programme competences to be developed		
Purpose of the course unit – to increase knowledge and abilities in the area of information security, to train abilities to assess the security of software, to apply the principles of secure design and programming, to develop critical thinking.		
Learning outcomes of the course unit: students will be able to	**Teaching and learning methods**	**Assessment methods**
Explain the importance of information security; define its goals and problems.	Lectures, reading of literature, analysis of examples during lectures and individually, project.	Examination. Project report and defence. Participation in discussions.
Analyse the security risks of an information system, assess them, and propose measures to reduce them.		
Formulate the documents of organization's security policy, according to security standards.		
Explain cryptographic algorithms, select the appropriate cryptographic algorithm for a given problem, and assess the complexity and security of cryptographic algorithms.		
Apply the principles of secure design and programming in software engineering.		

Course content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Tutorials	Seminars	Practice	Laboratory work	Practical training	**Contact hours**	**Self-study hours**	**Assignments**
1. The basic notions of information security, security threats and attacks	2						**2**	**1**	Reading of literature, analysis of examples,

2. Theoretical foundations of information security, security policies and models	4						**4**	**3**	and preparation of project.
3. Security mechanisms of operating systems, access control, security of Windows and Unix operating systems, security monitoring and auditing	6		6				**12**	**10**	
4. Security risk analysis, assessment and management	4		6				**10**	**9**	
5. Organization's security policy, security standards, information security management system	4		6				**10**	**9**	
6. Basic concepts of cryptography, symmetric cryptosystems, hash functions	4		2				**6**	**6**	
7. Public-key cryptography, digital signature, public key infrastructure, certificates	4		4				**8**	**6**	
8. Principles of secure design and programming	4		8				**12**	**10**	
9. Preparing for the exam and taking the final exam		2					**4**	**8**	8 hours to prepare for the exam, 2 hours tutorial duration, 2 hours exam duration.
Total	**32**	**2**	**32**				**68**	**62**	

Assessment strategy	**Weight %**	**Deadline**	**Assessment criteria**
Written examination	50	Exam session	The exam is allowed only after the student carries out his project. Exam questions are formulated according to the topics of lectures. Some of the questions can be practical exercises. Assessment criteria: clear expression of ideas in written, the quality of answers, well-grounded and correct solution of exercises.
Project	40	During the semester	The logical justification of the solution, the fulfilment of the technical requirements, the level of eloquence and presentation.
Participation in discussions	10	During the semester	Active evaluation, criticism, additions to presentations of projects prepared by other students.

Author	**Publishing year**	**Title**	**Number or volume**	**Publisher or URL**
Required reading				
M. Bishop	2005	Introduction to Computer Security		Addison-Wesley
C. P. Pfleeger and S. L. Pfleeger	2007	Security in Computing, 4th Edition		Prentice Hall
V. Stakėnas	2007	Codes and ciphers (in Lithuanian)		TEV
A. Mikalauskienė, Z. Brazaitis	2010	Information Systems Security (in Lithuanian)		Vilnius University Press
G. Skersys	2011	Information security (in Lithuanian)		TEV
Recommended reading				
D. Gollmann	2006	Computer Security, Second Edition		John Wiley and Sons
N. Ferguson, B. Schneier	2003	Practical cryptography		John Wiley and Sons
O. Vasilecas, A. Čenys, S. Sosunovas, N. Goranin	2008	Information Systems Security (in Lithuanian)		Technika