

Specification for the book of courses

Study program		Computing and Informatics		
Module		Computer Systems Security		
Type and level of studies		Master studies		
The name of the course		Secure Software Design		
Lecturer (for lectures)		Janković S. Dragan		
Lecturer/associate (for exercises)		Rajković J. Petar		
Lecturer/associate (for OFE)				
Number of ECTS		4	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		The main course objective is introducing students with basic concepts and applied techniques used for secure code development		
Course outcomes		The students have to be able to identify the main problems related to software solutions security and to apply learned resolution techniques.		
Course outline				
Theoretical teaching		1. Introduction 2. Passwords 3. Pseudorandom numbers 4. Pseudorandom generators 5. Buffer Overflow 6. Safety increase techniques 7. Shared resources deadlock problems 8. Input validation 9. Cryptography 10. Authentication protocols 11. Software configurability 12. Processing sensitive data 13. Memory management		
Practical teaching (exercises, OFE, study and research)		1. Weak points in shell scripts 2. Password coding 3. Pseudorandom numbers based applications 4. Implementation of random generators 5. Methods for the Buffer Overflow problem overcoming 6. Access control matrix implementation 7. Thread management 8. Methods against file level deadlocks 9. Input validation 10. Authentication protocols 11. Using cryptographic algorithms in software 12. Configurations - design and using 13. Problems with memory allocation and de-allocation		
Textbooks/references				
1	Anderson, Ross. Security engineering. John Wiley & Sons, 2008.			
2	Richardson, Theodor, and Charles N. Thies. Secure software design. Jones & Bartlett Publishers, 2012.			
3	Michael Howard, David LeBlanc: Writing Secure Code, ISBN 073561722-8, Microsoft Press, 2002.			
4	Charlie Kaufman, Radia Perlman, Mike Speciner, Network Security, Private Communication in a Public World, Prentice-Hall, 2002.			
5	Fernandez-Buglioni, Eduardo. Security patterns in practice: designing secure architectures using software patterns. John Wiley & Sons, 2013.			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	0		
Teaching methods		Lectures, Auditive exercises, Laboratory exercises		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures		5	Written exam	30
Exercises		15	Oral exam	20
Colloquia				
Projects		30		