Description of Course Unit: Computer Systems Security

Code: EIC0072 **Acronym:** SSIN

Keywords	
Classification	**Keyword**
OFICIAL	Operating Systems and Networks

Instance: 2020/2021 - 2S

Active? Yes
Web Page: https://moodle.up.pt/course/view.php?id=1358
Responsible unit: Department of Informatics Engineering
Course/CS Responsible: Master in Informatics and Computing Engineering

Cycles of Study/Courses

Acronym	No. of Students	Study Plan	Curricular Years	Credits UCN	Credits ECTS	Contact hours	Total Time
MIEIC	58	Plano de estudos a partir de 2009/10	4	-	6	42	162

Teaching Staff - Responsibilities

Teacher	Responsibility
José Manuel de Magalhães Cruz	
António Miguel Pontes Pimenta Monteiro	

Teaching - Hours

Recitations: 3,00

Type	Teacher	Classes	Hour
Recitations	Totals	3	9,00
	António Miguel Pontes Pimenta Monteiro		3,00
	José Manuel de Magalhães Cruz		6,00

Teaching language

English

Objectives

This Course aims the study of IT security systems, in order to provide students with a basic understanding of the concepts and of the threats and defenses to the misuse and operational destruction of these systems.

Learning outcomes and competences

At the end of this course unit, the students that have passed should be able to: - describe the security fundamentals of computer systems; - specify a security policy for a typical computer system and select the adequate mechanisms for enforcing the policy and for verifying its compliance; - analise a typical communication channel and identify its associated main protection levels or the ones that should be in use; - study, program and operate some security devices and tecniques in real situations.

Working method

Presencial

Pre-requirements (prior knowledge) and co-requirements (common knowledge)

Basic knowledge of programming, networks, operating systems and distributed systems.

Program

1. Fundamental concepts.
2. Secure coding
3. Cryptography
4. OS security, policies and trusted computing
5. Distributed systems security
6. Web security

Practical classes: Practical aspects in networks, systems and in programming.

Mandatory literature

William Stallings, Lawrie Brown; Computer Security: Principles and Practice, 4th Edition, Pearson, 2018. ISBN: 9780134794105
Seacord Robert C.; Secure coding in C and C++. ISBN: 0-321-33572-4

Complementary Bibliography

Bishop Matt; Introduction to Computer Security. ISBN: 0-321-24744-2

Fred Long, Dhruv Mohindra, et al; The CERT Oracle Secure Coding Standard for Java, Pearson, 2012. ISBN: 978-0-321-80395-5
Justin Richer, Antonio Sanso; OAuth 2.0 in Action, Manning, 2017. ISBN: 9781617293276

Teaching methods and learning activities

The classes will consist of the exposition and discussion of contents, followed by the presentation of examples and complemented with periods of search and study of techniques and case studies published in the literature and in the Web.
Practical classes for solving problems with coding, relative to concrete scenarios.
Presentation, by the students, of specific topics illustrating the security issues studied and materialised on the proposed mini projects.

keywords

Technological sciences > Technology > Information technology > Security technology

Evaluation Type

Distributed evaluation with final exam

Assessment Components

Designation	Weight (%)
Exame	50,00
Trabalho escrito	40,00
Trabalho laboratorial	10,00
Total:	**100,00**

Amount of time allocated to each course unit

Designation	Time (hours)
Elaboração de projeto	40,00
Estudo autónomo	60,00
Frequência das aulas	34,50
Trabalho laboratorial	27,50
Total:	**162,00**

Eligibility for exams

As specified in the current FEUP's General Evaluation Rules.

Calculation formula of final grade

0,5 F + 0,5 E = 0,4 P + 0,1 L + 0,5 E where: F - distributed evaluation's grade E - written exam's grade P - mini project's grade L -lab grade (1 report)

Examinations or Special Assignments

All through the course unit, the students are encouraged to make a set of lab exercises. Also along the course, groups of students should perform a mini project specified in more detail in a separate document. These mini projects include: the study and planning of the assigned topic, the development of the theme out of classes' hours and the presentation of the final product in the final classes. The mini projects' themes and their assignment to the students will be validated by the teacher; members of the same group may have a different classification in this item, due to inequivocal differences of contribution in the global effort.

Special assessment (TE, DA, ...)

All components of evaluation apply to all students, whatever their enrollment type is, because a regular presence in the classroom is not required. The special examinations allowed by law consist of a written test identical to the exam in the normal evaluation period and the implementation of a mini project similar to those offered in the semester. The theme and the development time will be settled and presented to the student. The final grade is calculated by the following formula: 0,4 P + 0,6 E where: P - grade of mini project E - grade of written exam

Classification improvement

Classification improvement is possible, by choice of the student, in the component of the written test and the mini project. The written test will be identical to the exam in the normal evaluation period; a new mini project, similar to those offered in the semester, can be performed and presented in the next occurrence. The theme of the new mini project and its development time will be similar to the ones of the last occurrence. The final grade is calculated by the following formula: 0,4 P + 0,6 E where: P - grade of (new or previous) mini project E - grade of (new or previous) written exam

Observations

Pre-requirements: basic knowledge of programming, networks, operating systems and distributed systems. All examinations are individual, written, with no personal documentation allowed for consultation, except that provided by the teacher; the final presentation of the mini project's results is presential. Important comment: the student who shows dishonest academic behavior will be reported to the Director.