

BLOCK NAME	CYBERSECURITY
BLOCK CODE	CS-L5B1
COURSE	3
LEVEL	5
CREDITS	6
CLASS HOURS	60
HOMEWORK	90
TOTAL HOURS	150

DESCRIPTION

This block introduces the importance of cybersecurity and its basic principles and techniques. We will face the challenge of interacting with the SecureBox API to implement a command-line client capable of uploading and downloading files in a secure way. This will facilitate the learning about public clouds and API's. SecureBox requires all the files to be previously encrypted and signed, so we will also learn about cryptography and its methods.

PRE-REQUISITES

Basic programming and networking skills are needed.
CS-L1B1, CS-L3B1

OBJECTIVES

The goal is for students to understand the need to make good use of cybersecurity and be familiar with the principles and techniques in order to secure both systems and information.

SKILLS TO BE DEVELOPED

- 1 - The cybersecurity science.**
 - 1.1 - Understand the basis of cybersecurity as a science.
- 2 - Basic cryptography.**
 - 2.1 - Design encryption methods and evaluate their strength.
- 3 - Test environments.**
 - 3.1 - Prepare test environments and perform cybersecurity experiments on them.
- 4 - Experimentation.**
 - 4.1 - Perform cybersecurity experiments on test environments.
- 5 - Penetration Testing and Red Teaming.**
 - 5.1 - Detect intrusions.
 - 5.2 - Break into insecure systems.
- 6 - Incident response.**
 - 6.1 - Know how to respond to security incidents.
- 7 - System security engineering.**
 - 7.1 - Design a secure system.
 - 7.2 - Secure an existing system.
- 8 - Visualization of cybersecurity data.**
 - 8.1 - Design graphical representations to show cybersecurity data.

SYLLABUS

- 1 - The cybersecurity science.
- 2 - Basic cryptography.
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METHODOLOGY

Resolution of practical activities supervised by the mentor. Compulsory attendance.

DEDICATION AND EVALUATION

The student must pass the mandatory activities (challenges/projects) that are covered in the block.

Each challenge/project produces its own score and has been designed to cover certain block percentages.

Such score is 80% objective (the program that solves the challenge/project works without errors and producing the expected results) and 20% subjective (solution elegance, how clean the code is, documentation).

Block scores are finally calculated by prorating individual activities with respect to their block coverage percentages.