Pla docent
Universitat d'Andorra

122040053 - Bachelor of Computer Science (face to face and online) (2020)

0053007 - Networks and Computer Security

Dades generals

Codi: 0053007

Tipus: OB

Semestre: 4

Crèdits: 15.0

Llengua d'impartició: Anglès

Llengua de suport: Anglès

Professorat

Professorat responsable

Casanovas Cantarero, Eric (Titulació: Grau en Enginyeria Informàtica i Màster en Ciberseguretat; Àrea de coneixement: Ciències tecnològiques)

Ward Koeck, Alan (Titulació: Enginyer en informàtica i Doctor en societat de la informació; Àrea de coneixement: Ciències tecnològiques)

Alcon Beltran, Alfredo (Titulació: Enginyer en telecomunicaciones i Master en Ciberseguretat; Àrea de coneixement: Ciències tecnològiques)

Informació

Presentació del mòdul:

This module delves into the concepts taught in the Computer Fundamentals and Computer Architecture modules, focusing on the part most related to operating systems.The aim of this seminar is to be able to provide solutions to possible problems posed by the management of processes, memory or files in a real environment.

The administration and networking and services seminar implements everything previously learned about the basic operation of local area networks, implementing common services such as automatic hardware configuration, DNS services, web, mail,

etc. The aim of this seminar is for the student to know how to plan and configure the essential services of any network of a medium or large company.

At the same time, the seminar dedicated to computer security provides the student with the knowledge and tools to be able to provide security and privacy to network services, focusing on the most well-known and popular techniques of symmetric and asymmetric encryption, firewalls, etc. The aim of this seminar is for the student to know the algorithms used today in terms of security and to know how to configure and apply them in production services in a local network.

Metodologia:

The module is based on a methodology that differentiates between two types of learning that complement each other. The first is related to the acquisition of knowledge and the second to its application.

This methodology combines a theoretical approach with a practice-oriented approach in to guide and provide the student with the necessary skills for the development of the different activities of the module and, more specifically, towards the resolution of the challenge.

The application of this methodology requires a permanent collaboration between the teacher staff and the student. Consequently, each week, this module has associated in the calendar of the course 6 face-to-face teaching sessions that are destined to seminars and, on the other hand, 1 session of guided work.

Alternatively, for students who follow their training in virtual modality and, complementary for face-to-face students, the seminars and guided work sessions will be monitored through the virtual campus and online consultations and tutorials. In addition, students who follow the virtual modality have the opportunity to attend face-to-face sessions, aimed at seminars or guided work, as they consider appropriate.

In the sessions for the seminars, the teaching staff provides students with the contents and tools necessary to develop the activities and the challenge of the module.

In the guided work sessions, the tutor teacher guides and monitors the students in the development of the challenge.

In addition, it should be added, the personal work that, although it is present throughout the semester, intensifies in the last weeks for the resolution of the final activity and, above all, of the challenge of the module.

Avaluació continuada:

The different assessment activities, including the challenge, are set by the teaching staff and will be available in the calendar of seminars and the challenge.

See the comments section.

Avaluació final:

Students who have not followed or who have not passed the continuous assessment will have the opportunity of recovering the pending seminars and the challenge during the recovery period planned according to the module schedule.

See the comments section.

Bibliografia bàsica:

Each seminar will detail the basic bibliography.

Bibliografia complementària:

Each seminar will detail the complementary bibliography.

Observacions:

The module has associated learning outcomes that are described in the syllabus. These learning outcomes are assessed using a numerical scale from 0 to 10 (per tenths).

To pass the module it is necessary that the grade of all these learning outcomes is greater than or equal to 3 and that the value of the arithmetic mean of all of them is greater than or equal to 5.

In addition, the learning outcomes of the module, each one at its level of competence, contribute to the evaluation of the specific and transversal competences that the student will have at the end of his studies.

Competències / Resultats d'aprenentatge específics (9)

	Codi - Competències (C) / Resultat d'aprenentatge específic (RA)	Nivell
C	BInfo-E004 - Manage networks and communication systems.	
RA	BInfo-E004-04 - Understands the basic operation of a free environment and knows how to implement the basic network services of any small / medium enterprise.	2
RA	BInfo-E004-05 - Implements basic security policies to improve the confidentiality of access to network services.	3
RA	BInfo-E004-06 - Designs and implements load distribution and high availability solutions that minimize the impact of critical system crashes.	3
RA	BInfo-E004-07 - Understands the issue of the need for secure communications.	2
RA	BInfo-E004-08 - Understands and applies the essential algorithms for symmetric and asymmetric encryption.	2
RA	BInfo-E004-09 - Applies cryptographic solutions for confidentiality, authentication, integrity, and non-repudiation.	3
C	BInfo-E008 - Use the principles of computer architecture, as well as the different functionalities of operating systems.	
RA	BInfo-E008-04 - Relate the different parts of an operating system and how they interact with each other.	2
RA	BInfo-E008-05 - Distinguishes the possibilities offered by an operating system for solving problems in the management of processes, files, memory and communication.	2
RA	BInfo-E008-06 - Proposes solutions to problems that use native operating system resources.	3

Competències / Resultats d'aprenentatge transversals (2)

	Codi - Competències (C) / Resultat d'aprenentatge transversal (RA)	Àrea	Nivell

C	BInfo-T006 - Be able to use and apply information technologies in the academic and professional field with ethical criteria.	Emprenedoria i treball en equip	
RA	BInfo-T006-02 - Assesses and selects the most adequate tools to carry out a project.		3
C	BInfo-T009 - Interpret and apply knowledge in accordance with ethical values.	Gestió del coneixement i autonomia en el treball	
RA	BInfo-T009-02 - Assumes the ethical practice of the profession.		2

Continguts (21)

1. Seminar: Networks and Systems Administration (Més informació)
   - 1.1. The application layer.
   - 1.2. Virtualization.
   - 1.3. Service administration.
   - 1.4. Distributed and scalable services.
   - 1.5. High availability and load balancing.
2. Seminar: Operating Systems. - Pla Docent SO (Més informació)
   - 2.1. Introduction to Operating Systems (OS).
   - 2.2. Process management.
   - 2.3. General concepts of concurrent programming.
   - 2.4. Memory management.
   - 2.5. File system.
   - 2.6. Input / Output.
3. Seminar: Computer Security. (Més informació)
   - 3.1. Introduction to computer security.
   - 3.2. Cryptography.
   - 3.3. Symmetric key algorithms.
   - 3.4. Public key algorithms.
   - 3.5. Authentication.
   - 3.6. Web Security.
   - 3.7. Firewalls and network security.