Universitat de Lleida

DEGREE CURRICULUM

COMMUNICATION AND INFORMATION TECHNOLOGIES

Coordination: LLEO LASO, JOFRE

Academic year 2022-23

Subject's general information

<table>
<tr><td>Subject name</td><td>COMMUNICATION AND INFORMATION TECHNOLOGIES</td></tr>
<tr><td>Code</td><td>102174</td></tr>
<tr><td>Semester</td><td>1st Q(SEMESTER) CONTINUED EVALUATION</td></tr>
<tr><td>Typology</td><td>
<table>
<tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr>
<tr><td>Bachelor's Degree in Digital Design and Creative Tehcnologies</td><td>1</td><td>COMMON/CORE</td><td>Attendance-based</td></tr>
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<tr><td>Course number of credits (ECTS)</td><td>6</td></tr>
<tr><td>Type of activity, credits, and groups</td><td>
<table>
<tr><th>Activity type</th><td>PRALAB</td><td>TEORIA</td></tr>
<tr><th>Number of credits</th><td>3</td><td>3</td></tr>
<tr><th>Number of groups</th><td>1</td><td>1</td></tr>
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<tr><td>Coordination</td><td>LLEO LASO, JOFRE</td></tr>
<tr><td>Department</td><td>COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING</td></tr>
<tr><td>Important information on data processing</td><td>Consult this link for more information.</td></tr>
<tr><td>Language</td><td>The classes will be done in catalan</td></tr>
<tr><td>Distribution of credits</td><td>1 credit is equivalent to 25 hours of work of the student
6 credits are 150 hours</td></tr>
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Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
DIAZ LLOBET, MANEL	manel.diazllobet@udl.cat	3	
LLEO LASO, JOFRE	jofre.lleo@udl.cat	3	

Learning objectives

The objectives of the course are:

- To get to know basic concepts related to Information and Communication Technologies. (ICT)
- To identify the main characteristics and the basic components of the computers and the main devices.
- To identify the main characteristics of the operating systems and the software applications.
- To know the parameters of configuration more important of the networks of communication.
- To configure and use different basic services of Internet.
- To develop students' autonomy in using Information and Communication Technologies.

Competences

Basic and transversal competences:

- CB1. Show an ability to dominate the concepts in its area of study. It goes from general secondary education, based in advanced books, but also in some aspects, that involves knowledge of the current and new fields of study.
- CT3. Acquire a significant proficiency in the use of the new technologies and in the Information and Communication Technologies. (ICT)

General competences:

- CG1. Skill to create and develop answers to problems of communication for the different digital contents.
- CG4. Apply the concepts and own methods of the digital technologies.
- CG10. Use tools and digital means in its professional development.

Specific competences:

- CE9.Get to know the methodologies, programs, technical, rules and standard. Moreover, be able to use the base of knowledge purchased with specific elements of development web.

Subject contents

Part 1: HARDWARE AND NETWORK ELEMENTS

TOPIC 1: Computers and devices

1. Internal architecture of a computer

2. Components of a computer
    - Functionalities
    - Characteristics
3. Peripheral devices
    - Characteristic
    - Devices to begin with (Keyboard, mouse, tablet, sensors)
    - Devices of exit (Screen, Sound, Actuators (Servos, motors)
    - Devices to begin with and to exit (tactile screens, network interface cards)

TOPIC 2: Architecture of networks

1. Type of networks
    - According to its scope (PAN, LAN, MAN, WAN)
    - According to its technology (Wired, Wireless)
    - According to its topology (Peer tone peer, adhoc, star)
    - According to its function (NOSE, Vlan, Wlan, VPN)
2. Hardware of networks
    - With threads
        1. Wires
        2. Switch
        3. Router
        4. PLCs
    - Without threads
        1. Antenna
        2. Points of access
        3. Repeaters
3. Architecture of networks
    - OSI model and TCP/IP model
    - Structured Cabling System (ECS)

Part 2: OPERATING SYSTEMS

TOPIC 3: Introduction to the current operating systems

1. The three big families
    - a. Windows
    - b. Linux
    - c. Mac BONE
2. Operating systems for mobiles
3. Operating systems hybrids
4. Operating systems WEB (EyeOS, Craythur, Desktoptwo…)

Part 3: ICT Information and Communication Technology)

TOPIC 4: Basic Services of Internet:

1. Basic services of internet
    - Domain name system service
    - IP adress assignment service
    - File transfer service
    - E-mail service

TOPIC 5: The ICT in the society

1. Telecommuting
2. Fake news
3. E-Commerce
4. Health and medicine

Methodology

Each week the student attends 2 theoretical contact hours with the Large Group and 2 practical contact hours with the Large Group. The practical sessions are taught in the classroom / laboratory.

Theory and Problems Classes (3 credits)

- Theoretical part: supported classes with digital information and/or with notes.
- Practical application part: work of application of concepts more practical.

Laboratory Classes (3 credits)

Conducted Classes and personalised monitoring for practical groups.

Development plan

Week	Description	Attendance activity WG (Whole group)
1st	Subject presentation	Presentation subject
2nd	Computers and peripheral	HW components
3rd	Computers and peripheral	Peripherals
4th	Network architecture	Typology of networks and basic concepts
5th	Network architecture	Network components and OSI / TCP-IP stack
6th	Structured Cabling System	Building networks
7th	ICT Security	Security in networks and backups
8th	Review of knowledge and resolution of doubts	Review and doubts
9th	Mid term examination	Mid Term Partial
10th	Introduction to the operating systems	Current operating systems
11th	Monitoring, auditing and security	Maintenance, malware and antivirus

12th	Domain Name System and IP assignment	Network services:DNS and DHCP
13th	File transfer service and e-mail	Network services:FTP and Mail
14th	ICT in the society	Discussion topics
14th	Review of knowledge and resolution of doubts	Review and doubts
16-17th	Final exam	Final exam
19th	Resitting exam	Resitting exam

Evaluation

Acronym	Activities of Evaluation	Grade%	Minimum note	In group	Compulsory	Recoverable
P1	1st Exam	30%	4	NO	YES	YES
P2	2nd Exam	30%	4	NO	YES	YES
PRA1	Practice1	20%		YES (<=2)	YES	NO
PRA2	Practice 2	20%		YES (<=2)	YES	NO
All students are expected to sit for and have a grade above 4 in the exams in order to be able to pass the course. However, the grade must be >=5.						
Final note = 0,30*P1 + 0,30*P2 + 0,20*PRA1 + 0,20*PRA2						

Bibliography

- Kurose, J., Redes de Computadoras. Pearson 2017
- Tanenbaum, A.S. , Bos, H., Modern Operating Systems. Pearson 2016
- Montero, R. , Servicios De Red e internet. Editorial Sintesis 2020
- Carceller, R., Campos, C., García, C.J., González, J., Servicios en Red. MACMillan Profesional 2013