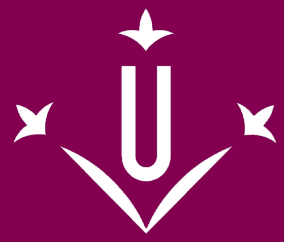

Universitat de Lleida

DEGREE CURRICULUM

PROGRAMMING AND COMMUNICATIONS II

Coordination: VERDÉS CASTELLÓ, FERRAN

Academic year 2019-20

Subject's general information

Subject name	PROGRAMMING AND COMMUNICATIONS II
Code	102134
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION
Typology	<table><tr><th>Degree</th><th>Course</th><th>Character</th><th>Modality</th></tr><tr><td>Bachelor's Degree in Automation and Industrial Electronic Engineering</td><td>4</td><td>OPTIONAL</td><td>Attendance-based</td></tr></table>
Course number of credits (ECTS)	6
Type of activity, credits, and groups	<table><tr><th>Activity type</th><td>PRAULA</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></table>
Coordination	VERDÉS CASTELLÓ, FERRAN
Department	COMPUTER SCIENCE AND INDUSTRIAL ENGINEERING
Teaching load distribution between lectures and independent student work	Total load: 150h - Lectures (40%) = 60h - Independent student work (60%) = 90h
Important information on data processing	Consult this link for more information.
Language	English
Distribution of credits	Carles Mateu Piñol (6)
Office and hour of attention	Make an appointment by e-mail. Office 3.23 of the EPS.

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
VERDÉS CASTELLÓ, FERRAN	ferran.verdes@udl.cat	7,2	

Subject's extra information

Continuation of Programming and Communications I. Must have taken PIC1 before this course.

Learning objectives

- Development of basic applications using Python libraries.
- Development of applications that interact with hardware devices.
- Installation and deployment of applications on SBC type devices (Raspberry Pi).
- Design of home automation applications, industrial applications, etc. based on SBC.

Competences

Specific

Basic knowledge of the use and programming of computers, operating systems, databases and computer programs with applications in engineering.

Applied knowledge of industrial computing and communications.

Knowledge of the basics of the applications and computer systems.

General

To have the skills required to undertake new studies or improve the training with self-direction.

Capacity for unidisciplinary and multidisciplinary teamwork.

Strategic of the University

Command of a foreign language.

Mastering ICT's.

Subject contents

1. Advanced Python programming language.
2. Use of virtual environments in python.
3. Version control and configuration management tools.
4. Lightweight and fast mobile application development.
5. Conversational (bot) based applications.
6. Interaction with physical devices

Methodology

The methodology is based on project-based learning and consists on developing an application on Raspberry Pi devices, jointly with the PIC3 course. This joint project is divided into two parts, one part with web-based tasks (developed in PIC3) and the other developed in PIC2.

We introduce students to more advanced development techniques, respect to those taught on PIC1. We develop, iteratively, a "real" project.

Once we have developed a framework for developing the project, more libraries are introduced, as well as techniques, methodologies, etc. depending on the requeriments of the yearly chosen project.

Students develop the proposed project (they can propose their own project under the guidance of the professor, if they have a proposal that is attractive and appropriate), in groups of three or four people.

Development plan

Setmana	Descripció	Activitat Teòrica	Activitat Pràctica	Treball Autònom
1	Python	Course presentation Advanced Python	Python tools setup	Knowledge consolidation and project work
2	Python	Advanced Python	Python tools setup	Knowledge consolidation and project work
3	Python	Advanced Python	OOP Development	Knowledge consolidation and project work
4	Virtualenv	Virtuals Environments	VirtualEnv Development	Knowledge consolidation and project work
5	SQLite1	Basic databases	SQLite Development	Knowledge consolidation and project work
6	Telegram	Introducing telegram libs	Development: Bot 1	Knowledge consolidation and project work Deliberable 1
7	Telegram	Telegram Libraries	Development: Bot 2	Knowledge consolidation and project work
8	GIT	Introducing GIT	Git and Github usage	Knowledge consolidation and project work
9	Exams			Knowledge consolidation and project work
10	Holiday	Holiday	Holiday	Holiday
11	GIT	Github	Git and Github usage	Knowledge consolidation and project work

Setmana	Descripció	Activitat Teòrica	Activitat Pràctica	Treball Autònom
12	AppInventor	Appinventor and mobile apps	Simple App Development	Knowledge consolidation and project work Deliberable 2
13	AppInventor	Appinventor and mobile apps	HTTP/REST Development	Knowledge consolidation and project work
14	Physical devices	Physical devices	Physical devices interaction development	Knowledge consolidation and project work
15	Physical devices	Physical devices	Physical devices interaction development	Knowledge consolidation and project work
16	Beyond course topics	Beyond course topics	-	
17	Exams			
18	Exams			
19				Deliberable 3

Evaluation

The evaluation is based primarily on the development of a project by a group of three or four people with three partial deliveries and final evaluation:

Avaluació

AC	Activity	Ponderation	Mínimum	Group	Mandatory	Recoverable
E1	Deliberable 1	25%	NO	SI	SI	NO
E2	Deliberable 2	25%	NO	SI	SI	NO
E3	Deliberable 3	25%	NO	SI	SI	NO
EF	Global Deliberable	25%	NO	SI	SI	NO

Bibliography

Documentation and examples in the virtual campus.

https://www.python.org/about/gettingstarted/

https://docs.python.org/2/

https://docs.python.org/2/tutorial/index.html

http://flask.pocoo.org/docs/0.10/

https://pypi.python.org/pypi/wiringpi2