



Universitat de Lleida

GUIA DOCENT

PROGRAMACIÓ I

COMUNICACIONS III

Coordinació: GUITART BRAVO, FRANCESC JOSEP

Any acadèmic 2016-17

Informació general de l'assignatura

Denominació	PROGRAMACIÓ I COMUNICACIONS III			
Codi	102135			
Semestre d'impartició	2N Q(SEMESTRE) AVALUACIÓ CONTINUADA			
Caràcter	Grau/Màster	Curs	Caràcter	Modalitat
	Grau en Enginyeria Electrònica Industrial i Automàtica	4	OPTATIVA	Presencial
Nombre de crèdits ECTS	6			
Grups	1GG			
Crèdits teòrics	3			
Crèdits pràctics	3			
Coordinació	GUITART BRAVO, FRANCESC JOSEP			
Departament/s	INFORMATICA I ENGINYERIA INDUSTRIAL			
Distribució càrrega docent entre la classe presencial i el treball autònom de l'estudiant	6 ECTS = 25x6 = 150 - 60 hours of on-class activities - 90 hours of autonomous activities			
Informació important sobre tractament de dades	Consulteu aquest enllaç per a més informació.			
Idioma/es d'impartició	Anglès			
Distribució de crèdits	GUITART BRAVO, FRANCESC (6)			
Horari de tutoria/lloc	Professorat de l'àrea CCIA pendent contractació			

Professor/a (s/es)	Adreça electrònica professor/a (s/es)	Crèdits impartits pel professor	Horari de tutoria/lloc
GUITART BRAVO, FRANCESC JOSEP	fguitart@diei.udl.cat	7,2	Office 3.01 appointment by email

Informació complementària de l'assignatura

The student must have taken and passed the subjects: Programming and Communications I and Programming and Communications II.

For students who come from other university degrees, you must have completed subjects covering knowledge about fundamentals of computer programming, have knowledge about Python programming (syntax and data structures), have basic knowledge about the Linux operating system and electronic circuits and digital sensors.

Objectius acadèmics de l'assignatura

Expected learning outcomes related to the strategic transversal competences:

- The student is able to learn and work with technical documentation in English on programming languages on Linux environment (Competences UdL2, EPS4).
- The student is able to work in teams to carry out the development of a computer system composed of different subsystems in which there to apply knowledge from different fields (Competence EPS9).
- The student is able to prepare presentations in English to show aspects main programs developed for other equipment engineers can understand their solutions. (Competences UdL2, UdL3).
- The student is able to generalize basic algorithmic schemes to apply them in different contexts and problems from the ones initially seen (Competence EPS4).

Expected learning outcomes linked to specific competencies:

- The student is able to understand the basic features of the functioning of operating systems multitasking, multiuser based on the Linux kernel (Competences GEEIA3 and GEEIA34).
- The student is able to integrate the knowledge of circuits, sensors and processes industrial on knowledge of computer programming for address the full development of small automated systems monitoring / control software based processes on Raspberry Pi computers or microcomputers (Competences GEEIA3, GEEIA28 and GEEIA34).

Competències

Strategic competences UdL:

- UdL2. Knowledge of an foreign language.
- UdL3. Knowledge of ICT.

Transversal competences EPS:

- EPS4. Have the learning abilities needed to start superior studies or improve the academic learning with a certain autonomous degree.
- EPS9. Ability to work in teams, both as a unidisciplinary and multidisciplinary.

Specific competences GEEIA:

- GEEIA3 Basic knowledge on using and programming computers, operating systems, databases and

software with applications in engineering.

- GEEIA28. Applied knowledge of industrial computing and communications.
- GEEIA-EPS34. Knowledge of the fundamentals of computer systems and applications.

Continguts fonamentals de l'assignatura

- Introduction to Computer Communications
- Basics of Communications with the RaspberryPi
- Ethernet Protocol
- IP Protocol
- WiFi
- IP Sockets
- HTTP Protocol
- CGI Programming
- Web Programming
- Object Relational Mapping
- Web Services

Eixos metodològics de l'assignatura

Face to face activities (40%): The percentages associated to each one of the activities are computed over 100%

- Master class (42,5%)
- Problems (25%)
- Laboratory (25%)
- Tests and evaluation (7,5%)

Autonomous work (60%): The percentages associated to each one of the activities are computed over 100%

- Working on the mandatory programming assignments (80%)
- Solving small programming problems (20%)

Pla de desenvolupament de l'assignatura

Week	Description	Face-to-Face Activity	Autonomous Activity	Hours (F and A)
1	Presentation and introduction to communication with microcomputers	Lectures and programming laboratory	Solve Exercises	4 2
2	Ethernet	Lectures and programming laboratory	Solve Exercises	4 6
3	IP Protocol	Lectures and programming laboratory	Solve Exercises	4 6
4	IP Protocol	Lectures and programming laboratory	Solve Exercises	4 6
5	WiFi	Lectures and programming laboratory	Solve Exercises	4 6

6	IP Sockets	Lectures and programming laboratory	Solve Exercises	4 6
7	Developement Enviroments (PyCharm)	Lectures and programming laboratory	Work on 1st programming assignment Solve Exercises	4 8
8	HTTP Protocol	Lectures and programming laboratory	Work on 1st programming assignment Solve Exercises	4 8
9		Oral Presentation of programming assignment	Work on 1st programming assignment - work on presentation	4 8
10	Flask Framework	Lectures and programming laboratory	Solve Exercises	4 6
11	Flask Framework	Lectures and programming laboratory	Solve Exercises	4 6
12	ORM (PyAlchemy)	Lectures and programming laboratory	Solve Exercises	4 6
13	ORM (PyAlchemy)	Lectures and programming laboratory	Solve Exercises Work on 2nd programming assignment	4 10
14	Web Services	Lectures and programming laboratory	Work on 2nd programming assignment	4 8
15	Web Services	Lectures and programming laboratory	Work on 2nd programming assignment	4 8
16			Work on 2nd programming assignment	- 6
17		Oral Presentation of programming assignment	work on presentation	2 4
18				
19				

Sistema d'avaluació

Acr.	Evaluation activity	Weight	Minimum grade	In group	Mandatory
P1	Programming assignment (1)	40%	NO	YES	YES
P2	Programming assignment (2)	40%	NO	YES	YES
PR	Exercises	20%	NO	NO	NO
OR1	Oral Presentation and questions (1)		NO	YES*	YES
OR2	Oral Presentation and questions (2)		NO	YES*	YES

FinalGrade = $0,4 \cdot P1 + 0,4 \cdot P2 + 0,2 \cdot PR$

The oral presentations will be used to validate the work performed on the programming assignments, and an insufficient presentation can downgrade the grade of the programming assignment up to a 50%

* Each member of the group will perform a different part of the presentation, and individual questions will have to be answered

Bibliografia i recursos d'informació

Basic Bibliography:

- Introduction to Computing and Programming in Python (4th Edition) - [Mark J. Guzdial](#)
- Computer Networks (5th Edition) - [Andrew S. Tanenbaum](#)

Some free on-line books for learning python:

- Foundations of Python Network Programming: The comprehensive guide to building network applications with Python - <http://www.gbv.de/dms/tib-ub-hannover/646164511.pdf>

On-line resources.

- Python: <http://docs.python.org/2.7/>
- Raspberry Pi: <http://www.raspberrypi.org/>