Universitat de Lleida

DEGREE CURRICULUM

SYSTEMS INTEGRATION II

Coordination: Marcel Tresanchez Ribes

Academic year 2014-15

SYSTEMS INTEGRATION II 2014-15

Subject's general information

Subject name	SYSTEMS INTEGRATION II
Code	102131
Semester	2nd Q. Continued evaluation
Typology	Optative
ECTS credits	6
Groups	1
Theoretical credits	2
Practical credits	4
Coordination	Marcel Tresanchez Ribes
Office and hour of attention	Robotics Lab (2.04-EPS building). Monday 10:00-11:00 AM.
Department	Computer Science and Industrial Engineering
Modality	Presencial
Important information on data processing	Consult this link for more information.
Language	Speaking: As required (Catalan, Spanish or English). Materials and resources: English. Student workload: English.
Degree	Degree in Automation and Industrial Electronic Engineering
Distribution of credits	Theoretical sessions: 1 ECTS Experimental training sessions: 3 ECTS Practical sessions: 2 ECTS
Office and hour of attention	Robotics Lab (2.04-EPS building). Monday 10:00-11:00 AM.
E-mail addresses	mtresanchez@diei.udl.cat

SYSTEMS INTEGRATION II 2014-15

Marcel Tresanchez Ribes

Learning objectives

Acquire knowledge to be able to develop integrated systems with more complexity and automatization.

Learn to use current multimedia peripherals: Signal audio processing, audio compression, display and touch screen interaction, CMOS sensing.

Learn to use advanced communication interfaces in systems integration: USB and TCP/IP Ethernet communication.

Know how to develop low cost integrated systems based on computer vision with image processing techniques.

Experiment with the design of new systems and new applications of automation and control with industrial level validity and application.

Competences

Strategic Competences of the UdL

UdL2 Command of a foreign language.

UdL3 Mastering ICT's.

Cross-disciplinary competences

EPS4. To have the skills required to undertake new studies or improve the training with self-direction.

EPS9. Capacity for unidisciplinary and multidisciplinary teamwork.

Specific competences

GEEIA21. Knowledge of the basics and applications of the digital electronics and microprocessors.

GEEIA25. Knowledge and capacity for modelling and simulation of systems.

GEEIA27. Knowledge of principles and applications of robotic systems.

Subject contents

1. The USB OTG interfaces

2. Audio processing, playing and recording

3. MMC and SD Card interfaces

4. Ethernet TCP/IP communication

5. Embedded displays and touch systems

6. CMOS image sensors and image processing

Methodology

Learning systems integration will be carried out by STMicroelectronics development tools, mainly with STM32F4 - Discovery.

Development kits will be provided entirely by the school where each student will work individually.

Practical exercises will be based on microcontroller programming using C language development environments.

Evaluation

The course assessment will take place continuously and be based on the weighted evaluation of the reports of the activities undertaken throughout the course.

These experimental exercices should be carried out individually.

Bibliography

STM32 32-bit ARM Cortex MCUs

http://www.st.com/web/en/catalog/mmc/FM141/SC1169

ARM Cortex-M architecture

http://www.arm.com/products/processors/cortex-m/

STMicroelectronics development boards

http://www.st.com/web/catalog/tools/FM116/SC959/SS1532/PF252419

http://www.st.com/web/catalog/tools/FM146/CL1984/SC720/SS1462/PF255417

Atollic TrueSTUDIO

http://www.atollic.com/index.php/truestudio

KEIL MDK-ARM

http://www.**keil**.com/**arm**/