Embedded electronics

Number of ECTS credits: 3
Coefficient: 3

Description:
Development of modules (drivers) for GNU / Linux, abstraction of access to hardware, management of virtual memory at the kernel level, methods provided by the kernel (tasklet, timer), portability between various architectures (ARM / x86) That the material is not involved.

Pedagogical objectives:
Knowledge to be acquired
- structure of a kernel module
- description of the material: Industrial I / O (IIO)
- exchanges between kernel and user

Skills to be acquired:
- Compile a kernel module
- Manage interrupts from the Linux kernel
- Transfer data from kernel space to user space (read, write)
- Kernel-user interface: / dev and / sys

Bibliography:
- P. Ficheux & E. Bernard, Linux embarqué, 4eme Ed., Eyrolles (2012)
- revue OpenSilicium

Prerequisite:
C programming on microcontroller, reading of technical documentation describing a microprocessor and its peripherals, development in user space under GNU / Linux

Lectures Hours: 10.5
Tutorials Hours: 6
Labs Hours: 12

Knowledge monitoring modalities: 100% continuous assessement
Assessement: Reports of labs, exam

Leader: Jean-Michel FRIEDT

Participants: