Technology, fabrication and industrialization of embedded systems

ECTS
6 credits

Component
INSTITUT NATIONAL DES SCIENCES APPLIQUEES TOULOUSE

Number of hours
74h

Presentation

Description

Programme (detailed contents):

* modeling techniques and power circuit components
* integration techniques and design (schematic packages in accordance with standard JDEC, manufacture of PCBs in accordance with the standard norm NFC93-713, reflow process, bonding techniques)
* industrialization constraints (BOM, FMEA, BTF, traceability, components définitions)
* awareness of standards (DBT, TERN, CE, RoHS, WEEE) and qualification processes
* analysis techniques and metrics for monitoring quality of an industrial process

Organization:

This teaching approach based on voluntary industry is made around the design of two prototypes in industrial workshops:

• a prototype electronic board assembled on a line classe4 Industrial CMS

• SoP prototype, produced in a clean room for micro-electronic chip part and then assembled as an MCM (hybrid indirect) consisting of mixed SMD/chips carried and connected on different substrates (ceramic, epoxy FR4, flex)

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

• how to write a specification of industrialization of an embedded system (BOM, Gerber files, BTF, FMEA, ..)

• how to define classes technology of a printed circuit board (PCB rigid, flexible, hybrid)

• how to route the signals in terms of constraints in line with the aspects heat dissipation and signal integrity

• how to define the type of mounting card (single / double layer, size Class)

• how to comply with different standards (NF 93-713, RTTE, DBT, RoHS, WEEE)

• how to set up a monitoring process quality (ISO17025)

• How to estimate the reliability of the assembly (standard FIDES)

The student will be able to know all stages of manufacturing, design methods and standards / compliance of an electronic product ready to sell.

Useful info

Place

› Toulouse