

Program	59EC – Communications Electronic Engineering B. Eng.
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Course number and name	
Number	595010044
Name	Product Engineering
Semester	S7 [(September-January)]

Credits and contact hours	
ECTS Credits	4,5
Contact hours	45

Coordinator's name	Núñez Mendoza, Neftalí [neftali.nunez@upm.es]
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Specific course information

Description of course content

Study of the design and development process of an electronic equipment available for commercialization.
It includes multidisciplinary activities related to reduce the production cost, to control functionality, quality and guarantee, and to fulfill the international standards and reliability requirements.
The goal is to achieve a competitive product and a satisfactory lifecycle so the user will always buy the same brand.

List of topics to be covered

1. Introduction
2. Product and System Design:
 - 2.1. Theoretical framework.
 - 2.2. Strategies for new product development.
 - 2.3. Value assessment (tangible and intangible).
3. PLM (Product Life Cycle Management) and ISO 14000.
 - 3.1. Environmental Management-Life Cycle Assesment
4. Reliability of products and systems.
5. Theoretical bases of environmental, electrical, mechanical, optical testing and EMC.
6. Test plans for the qualification and validation of systems.

Lab sessions:

1. PCB Pull and Shear Test (MIL_STD standard) to check the weld.
2. Software PLM. Product Life Management.
3. Characterization for electrical and optical testing of optoelectronic devices
4. Environmental testing of product liability by UNE-EN climate chambers: ALT (Accelerated Life Test).

Prerequisites or co-requisites

- Electronics I

- Electronics II
- Production Technologies of Electronics Systems

Specific goals for the course

Specific outcomes of instruction

- RA342 – To know the tests for the qualification of systems and equipment.
- RA344 – To carry out a study of prediction of reliability of an electronic equipment.
- RA341 – To learn about and plan the lifecycle and prediction of reliability of components and systems.
- RA340 – To learn about the interaction of the product design and manufacturing process chains.
- RA339 – To learn about new products of high added value from technology-based strategies.
- RA343 – To design a planning to test an equipment for an application in a specific sector.

Further reading and supplementary materials

- Marketing. Philip Kotler, Gary Armstrong. Ed. Pearson Educación, 14th Ed.
- Operations Management. R.Dan Reid & Nada R. Sanders. Ed. Wiley, 4th Ed.
- ISO 14000, and more standards ISO,IEC, UNE y MIL
- Moodle.