Sensors, principles and use

In brief

Course langage: French

Presentation

Prerequisites

Basic knowledge of electronics.

Learning objectives

Sensors are multiple and affect all areas of measurement and instrumentation, their diversity makes their choice often difficult to establish.
The ambition of this course is to enable the engineer to identify relevant criteria to guide the choice of a sensor and its electronic environment (conditioner) from a specification; the environment and the operation of sensors will be developed and studied in practical work.

Description of the programme

The objective of this course is to focus on the exploitation of a physical phenomenon to generate information that can be used in the context of a process control.

Notions covered :

- Metrological characteristics of sensors (influence quantities, errors on the measurement, calibration of the sensor, limits of use, sensitivity, speed, response time...)

- The different physical principles used for the design of sensors
- Passive and active sensors
- Signal conditioning for passive and active sensors
- Sensors treated according to their applications (temperature, pressure, position, ...)

- Practical study of a system with different types of sensors.

Generic central skills and knowledge targeted in the discipline

Contribution to :
- Mastering the complexity of systems.
- Development of technical and scientific innovations.
- Solving complex problems.
- Solving transdisciplinary problems requiring the introduction of a process control.

How knowledge is tested

Personal work: - Presentation / Written report. (50%)
Project: Report. (50%)

Bibliography

Manufacturer documents
Sensors in industrial instrumentation (G Hasch Dunod).

Teaching team

Alain Kilidjian

Sustainable Development Goal

Access to health

Clean water and sanitation

Total des heures		**30h**
CM	Master class	10h
TD	Directed work	4h
TP	Practical work	16h

Useful info

Name responsible for EU

Lead Instructor

Alain Kilidjian

alain.kilidjian@centrale-marseille.fr