

Login



Politecnico di Torino

Academic Year 2009/10 (first time established in A.Y.2007/08)

01LTAJA

Sensors and Transducers

1st degree and Bachelor-level of the Bologna process in Electronic And Computer Engineering - Vercelli (III FACOLTA' DI INGEGNERIA)

Teacher	Status	SSD	Les	Ex	Lab	Years Stability
---------	--------	-----	-----	----	-----	-----------------

SSD	CFU	Activities	Area context
ING-INF/07	5	D - A scelta dello studente	A scelta dello studente

NOTA: Il programma non e stato modificato rispetto a quello dell'anno accademico 2008/09

Objectives of the course

This course is meant as the prosecution of Measurements on physical systems and is designed to give students the skill required to design measurement systems with special attention to the sensors for physical quantities and to their related conditioning systems. The course contains details of use and performance of the main sensor type employed in the civil and industrial applications and related to temperature, strain, pressure, velocity, acceleration, rate gyro, photometric quantities. In addition details are given regarding the main conditioning systems (bridges, isolation and differential amplifiers, '.'). The course has a large laboratory section where students are required to set-up measuring systems and to characterize different types of sensors.

Expected skills

Knowledge to choose the correct sensors and conditioning systems for the main quantities in the civil and industrial field.

Prerequisites

Basic maths, physics, electrical and electronic and measurement knowledge obtained by previous courses.

Syllabus

Lessons:

Temperature sensors (thermo-resistors, thermocouples, pirometers') and related conditioning circuits (bridges, active conditioning systems based on op-amps)

- Strain gages and load cells
- Accelerometers, tachometers rate gyros
- Sensors for photoelectric quantities
- Strain gages and load cells
- ' Differential transformers (LVDT) encoders and resolvers

Laboratories and/or exercises

Practical activity: temperature measurements, load cell uses photoelectric measurements, plus the design of a specific measurement system.

Bibliography

Material prepared by the teacher on the different topics.

Revisions / Exam

Written and oral examination.

Programma definitivo per l'A.A.2008/09

