



# Faculté des sciences appliquées

## FSA

### ELEC2811 INSTRUMENTATION AND SENSORS

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

**Teacher(s):** Hervé Buyse, Christian Eugène  
**Language:** french  
**Level:** 2nd cycle course

#### Aims

The acquisitions and the processing of data related to physical quantities of various nature converted in an electrical signal is a domain of electrical engineering of great actuality. The training of students in engineering to the analysis and design of this type of systems requires a multidisciplinary approach and is at best finalised through case studies.

#### Content and teaching methods

First part

- Various basis disciplines are particularised to the sensors and associated instrumentation. Fundamental metrology and methods for characterising the systems for a quantitative approach of the performances of the measuring chain - the principles governing the conversion of primary physical quantities into an electrical quantity - the analogic conditioning of signals (instrumentation amplifiers ...) - telemeasure in a corrupted environment.

Second part

- Case studies, sometimes conducted on an autonomous way by the students (projects) and centred on the analysis and the design of complete data acquisition chains. The choice of some examples will be function of the students orientation and the teachers experience. Accent will be made on the real application conditions (industrial, natural, medical milieu...). Some applications, important in industrial sector, will be emphasised : measurement of speed, force, acceleration, pressure, temperature....

**Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)**

Teaching method

Combination of lectures and practical training in the laboratory

A complete syllabus is available

Assessment

Reports (per group) on the laboratory works. An individual evaluation during the exam session

#### Other credits in programs

<b>ELEC22</b>	Deuxième année du programme conduisant au grade d'ingénieur civil électricien	(5 credits)	
<b>ELME22/M</b>	Deuxième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (mécatronique)	(5 credits)	Mandatory
<b>FSA3DA</b>	Diplôme d'études approfondies en sciences appliquées	(5 credits)	