



- 2 Dealing with inaccurate measurement data in a judicious way; eliminate or take into account interferences and digitizing artifacts.
- 3 Programming of microcontrollers for data acquisition and programming in Python to process measurement data.
- 4 Collaborate in a small group on a project to design and realize a practical sensor based measurement system.

#### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

#### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Group work, Lecture

#### **Extra information on the teaching methods**

Lectures on campus if can be organised in a safe manner, online as a fall-back solution.

Group work: in small groups, spread over several sessions during the whole semester, a working sensor based measurement system is designed and built, comprising both the hardware (signal conditioning) and software (microcontroller software and processing software on the PC).

#### **Study material**

Type: Syllabus

Name: Sensor Based Measurement Systems

Indicative price: Free or paid by faculty

Optional: no

Language : English

Number of Pages : 159

Available on Ufora : Yes

Online Available : Yes

Available in the Library : No

Available through Student Association : No

Type: Slides

Name: Sensor Based Measurement Systems

Indicative price: Free or paid by faculty

Optional: no

Language : English

Number of Slides : 228

Available on Ufora : Yes

Online Available : Yes

Type: Other

Name: Completely equipped practicals room including a supply of electronic components

Indicative price: Free or paid by faculty

Optional: no

Usability and Lifetime within the Course Unit : intensive

Usability and Lifetime within the Study Programme : intensive

Usability and Lifetime after the Study Programme : not

#### **References**

- E.U. Doebelin "Measurement Systems", Mc Graw-Hill, 4th. Ed., New York (1990)

#### **Course content-related study coaching**

4-5 researchers

#### **Assessment moments**

end-of-term and continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Oral assessment

#### **Examination methods in case of periodic assessment during the second examination period**

Oral assessment

**Examination methods in case of permanent assessment**

Assignment

**Possibilities of retake in case of permanent assessment**

examination during the second examination period is not possible

**Extra information on the examination methods**

During examination period: oral closed-book exam (with written preparation if organised on campus, without written preparation if organised online); followed by brief interview about group work. If the number of students is more than 65, the option of a written exam with closed book will be considered. This decision will be announced well in advance of the exam.

Year work (= continuous assessment): assessment of group work (possibly including peer assessment), deliverables (including hard and software), final report.

**Calculation of the examination mark**

50% exam + 50% year work

**Facilities for Working Students**

Work students cannot be exempted from the compulsory participation in the group work.