

Sensors and Actuators (I002183)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size *(nominal values; actual values may depend on programme)*
Credits 4.0 **Study time** 120 h **Contact hrs** 45.0 h

Course offerings in academic year 2021-2022

A (semester 1) English Gent

Lecturers in academic year 2021-2022

Joseph, Yvonne FREIBE01 lecturer-in-charge

Offered in the following programmes in 2021-2022

	crdts	offering
International Master of Science in Sustainable and Innovative Natural Resource Management	4	A

Teaching languages

English

Keywords

Position of the course

Contents

Physical (e.g. temperature, force, acceleration, etc.) chemical (gas sensors, ion sensors) and biological sensors and actuators will be discussed. First, the physical principles are presented and then applications will be given. The focus is on the relationship between the parameters of the finished device and the properties of the used materials to enable their applications. Specific examples of sensors and actuators are discussed in their measurement environment.

Initial competences

Final competences

- 1 Apply techniques for qualitative and quantitative exploration and physicochemical characterization of resources present in the environment, including spatial and temporal variability.
- 2 Apply techniques to assess environmental impacts of products and processes. Insights in the different (technological) options for optimizing resource flows in the different parts of the value chain and be able to compare them, taking technical and economic aspects as well as social and environmental impact into account.
- 3 Consult specialist literature and interpret it critically according to scientific standards.
- 4 Understand the complexity of a problem/system using quantitative methods.
- 5 Consider specifications and technical, economic and social preconditions and transform them into a sustainable and qualitative system, product, service or process.
- 6 Entrepreneurial mindset to develop new ideas within a multidisciplinary context.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, seminar

Extra information on the teaching methods

WS: Lecture (2 SWS)

WS: Seminar (1SWS)

Learning materials and price**References**

Peter Gründler, Chemical Sensors, Springer, 2007, ISBN: 9783540457435;

Course content-related study coaching**Evaluation methods**

Examination methods in case of periodic evaluation during the first examination period

Examination methods in case of periodic evaluation during the second examination period

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

For the award of credit points it is necessary to pass the module exam. The module exam contains:

KA: Written examination (120 min) for 10 and more Students OR

MP: oral examination (30 min) for less than 10 Students

Calculation of the examination mark