

## Sensors and Actuators (1002183)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits** 4.0

**Study time** 120 h

**Course offerings in academic year 2023-2024**

A (Year)

English

Gent

**Lecturers in academic year 2023-2024**

Joseph, Yvonne

FREIBE01

lecturer-in-charge

**Offered in the following programmes in 2023-2024**

[International Master of Science in Sustainable and Innovative Natural Resource Management](#)

**crdts**

4

**offering**

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**

Seminar, Lecture

**Extra information on the teaching methods**

WS: Lecture (2 SWS)

**Learning materials and price**

**References**

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

**Course content-related study coaching**

**Assessment moments**

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

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

**Examination methods in case of permanent assessment**

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

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**