GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2026-2027

Sensors, Machine Learning, and Computer Vision (I003102)

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

Credits 5.0 **Study time 150 h**

Course offerings in academic year 2026-2027

A (Year)	English	Gent

Lecturers in academic year 2026-2027

Lecturer, External	FREIBE01	lecturer-in-charge

Offered in the following programmes in 2026-2027	**crdts**	**offering**
International Master of Science in Sustainable and Innovative Natural Resource Management	5	A

Teaching languages

English

Keywords

machine learning, computer vission, image processing, sensors

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)
WS: Seminar (1SWS)

Study material

None

References

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

Course content-related study coaching

Assessment moments

end-of-term and continuous assessment

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

Presentation, Written assessment

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

Presentation, Written assessment

Examination methods in case of permanent assessment

Participation, Assignment

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