

## Monitoring Systems in Agriculture (I002651)

<b>Course size</b>	<i>(nominal values; actual values may depend on programme)</i>			
<b>Credits</b> 5.0	<b>Study time</b> 150 h	<b>Contact hrs</b>	50.0 h	

### Course offerings in academic year 2023-2024

A (semester 1)	Dutch	Gent
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### Lecturers in academic year 2023-2024

Maes, Wouter	LA21	lecturer-in-charge
Degroote, Jeroen	LA22	co-lecturer

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

	crdts	offering
<a href="#">Master of Science in Bioscience Engineering: Agricultural Sciences</a>	5	A

### Teaching languages

Dutch

### Keywords

GNSS, plant sensors, drones, image processing, thermal, animal sensors

### Position of the course

The purpose of this course is to give the students insight of the different sensors and monitoring systems in agriculture and animal husbandry, with special attention to the most recent advances, such as drones, biometry in animal husbandry and plant sensors.

### Contents

Course content:

- 1) Visual and near infrared sensors: basic principles and application in agriculture and animal husbandry
- 2) Thermal sensors: basic principles and application in agriculture and animal husbandry
- 3) Satellites and drones: practice, application and future perspectives
- 4) Image and data processing and interpretation
- 5) GNSS and precision GNSS applications in agriculture
- 6) Plant sensors
- 7) Sensors in animal husbandry

Practical courses

- 1) Drone flight and field sensors (lectures 1-4)
- 2) Data processing drone flight (lect. 4)
- 3) Interpretation of drone imagery (lect. 1-5)
- 4) Plant sensors: processing of dataset (lect. 6)
- 5) Sensors in animal husbandry: interview of farmer (lect. 7)
- 6) Sensors in animal husbandry: processing of dataset (lect. 7).

### Initial competences

General knowledge on agricultural production, as obtained in the Bachelor in Bioengineering (Agricultural Sciences)

### Final competences

- 1 Managing application of precision GNSS systems

- 2 Explaining the principles of plant-based sensors and processing and interpreting their data
- 3 Knowing the main developments in sensor and monitoring systems in animal husbandry and being able to apply them in practice.
- 4 Knowing the basic principles of visual, near infrared and thermal sensors in agriculture and animal husbandry and being able to critically assess their applications
- 5 Overviewing the application of satellites and drones in agriculture and controlling the steps of drone measurements and data processing in agricultural applications.

#### **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**

Excursion, group work, lecture, practicum, seminar: practical PC room classes

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

Besides the plenary lectures, a series of practical classes is organized. The purpose of these practical classes is to make the students acquainted with the different monitoring options through the applications in a small measurement campaign.

#### **Learning materials and price**

Power point presentation, lecture recordings

#### **References**

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

Through UFORA

#### **Evaluation methods**

end-of-term and continuous assessment

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

Written examination

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

Written examination

#### **Examination methods in case of permanent evaluation**

Assignment, report

#### **Possibilities of retake in case of permanent evaluation**

examination during the second examination period is possible in modified form

#### **Extra information on the examination methods**

Theory: oral exam with written preparation. Exercices (practica): written report in group

#### **Calculation of the examination mark**

Theory: periodic evaluation (60%); Practica (non-period evaluation): 40%. Students with an insufficient dedication in the group activity or with an unmotivated absence in the excursions cannot earn their credits