

## Electronics for Photonic Integrated Circuits (E030460)

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

**Credits 4.0** **Study time 120 h**

### Course offerings in academic year 2025-2026

A (semester 1) English Gent

### Lecturers in academic year 2025-2026

Bauwelinck, Johan TW05 lecturer-in-charge

### Offered in the following programmes in 2025-2026

Master of Science in Silicon Photonics	crdts	offering
	4	A

### Teaching languages

English

### Keywords

Transmitter, receiver, transceiver, control circuits, equivalent circuits, driver amplifier, transimpedance amplifier, impedance matching, co-design

### Position of the course

Expose the students to various basic concepts

### Contents

- Equivalent circuits of electronic and photonic devices
- Transmission lines
- S-parameters
- Impedance matching
- Basic electronic circuits for optical transmitters
- Basic electronic circuits for optical receivers
- Basic measurements, handling sensitive devices and equipment

### Initial competences

Basics of circuit theory and circuit analysis, basics of analog electronic circuits, small signal analysis of transistor circuits, notions on electromagnetism

### Final competences

- 1 Understand and apply high-frequency models, transmission lines and matching circuits for interfacing electronic and photonic circuits
- 2 Analyze and characterize basic electronic circuits for optical transceivers

### 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

Lecture, Independent work

### Extra information on the teaching methods

Lectures, video lectures, guided self-study, lab demonstrations

### Study material

Type: Slides

Name: Slides and course notes used during the course

Indicative price: € 11

Optional: no

Language : English

Available on Ufora : Yes

Available through Student Association : Yes

Additional information: Available electronically (free) or through the student organization (8/11,5 euro member/non-member)

## References

### Course content-related study coaching

personal: by appointment

### Assessment moments

end-of-term assessment

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

Oral assessment open-book

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

Oral assessment open-book

### Examination methods in case of permanent assessment

### Possibilities of retake in case of permanent assessment

not applicable

### Extra information on the examination methods

During examination period: written open-book preparation and oral closed-book assessment

### Calculation of the examination mark

Evaluation during examination period