

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

4

offering

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