

Display Technology (E032411)

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

Credits 6.0

Study time 180 h

Course offerings and teaching methods in academic year 2023-2024

A (semester 1)	English	Gent	lecture seminar
B (semester 1)	English	Gent	
C (semester 1)	Dutch	Gent	
O (semester 1)	English	Gent	

Lecturers in academic year 2023-2024

Strubbe, Filip	TW06	lecturer-in-charge
De Smet, Herbert	TW06	co-lecturer

Offered in the following programmes in 2023-2024

	crdts	offering
Bridging Programme Master of Science in Photonics Engineering	4	B
Master of Science in Electrical Engineering (main subject Electronic Circuits and Systems)	6	A
Master of Science in Photonics Engineering	4	C
Master of Science in Photonics Engineering	4	B, O

Teaching languages

English, Dutch

Keywords

human vision, liquid crystal displays, OLED displays, projection displays, 3D-displays, e-ink displays

Position of the course

Explaining the principles of the most important technologies for the visualisation of information, the principles of visual perception and the characterisation of visualisation devices.

The course includes writing a paper on a particular display topic (only for the course of 6 credits, not for the partim of 4 credits).

Contents

- Introduction
- Visual perception: physics and physiology of the eye, colorimetry, contrast
- Liquid crystal displays: liquid crystals, modes, addressing, display system
- OLED displays
- Projection displays: fundamentals, components, projector lay-outs, diffractive modulators
- electronic paper displays
- 3D-displays
- Written and oral report on a particular display technology (only for the course of 6 credits, not for the partim of 4 credits).

Initial competences

Knowledge of the basic principles of the calculus (differential equations), of physics (electromagnetic waves, polarization).

Final competences

- 1 INSIGHTS: basic principles and limitations of emissive and modulating display technologies
- 2 INSIGHTS: basic understanding of projection systems
- 3 INSIGHTS: basic principles and limitations of the human visual system
- 4 PROFICIENCIES: basic calculations in colorimetry
- 5 PROFICIENCIES: calculation of transmission of liquid crystal structures

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

Seminar, Lecture, Independent work

Extra information on the teaching methods

individual tasks:

- solving exercises
- Written and oral report on a literature study (only for the course of 6 credits, not for the partim of 4 credits).

Learning materials and price

Syllabus (cost in the order of 10 euro)

References**Course content-related study coaching**

The teachers are available before and after lectures or after making an appointment.

Assessment moments

end-of-term and continuous assessment

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

Oral assessment, Written assessment open-book

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

Oral assessment, Written assessment open-book

Examination methods in case of permanent assessment

Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

- During examination period:
 - theory: oral examination with written preparation;
 - problem-solving: written open-book exam.
- During semester: evaluation of homework assignments;
- reporting on a literature study (only for the course of 6 credits, not for the partim of 4 credits).

Calculation of the examination mark

The score is determined as the average of two (4 credit course) or three (6 credit course) scores with equal weight:

- Theory-exam
- Average of the homework assignments and the problem solving exam
- Oral and written report on a literature study (only for the course of 6 credits, not for the partim of 4 credits).