

## Display Technology (E032411)

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

**Credits 6.0**

**Study time 180 h**

**Course offerings in academic year 2024-2025**

**Lecturers in academic year 2024-2025**

Strubbe, Filip

TW06

lecturer-in-charge

De Smet, Herbert

TW06

co-lecturer

**Offered in the following programmes in 2024-2025**

**crdts**

**offering**

**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).

### **Study material**

Type: Syllabus

Name: Display Technology

Indicative price: Free or paid by faculty

Optional: no

Number of Pages : 182

Oldest Usable Edition : 2023

Available on Ufora : Yes

Online Available : Yes

Available in the Library : No

Available through Student Association : No

### **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).