

## Display Technology (E032411)

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

**Credits** 6.0      **Study time** 180 h      **Contact hrs** 30.0 h

**Course offerings and teaching methods in academic year 2016-2017**

B (semester 1)	lecture	22.5 h
	seminar	7.5 h
	self-reliant study activities	0.0 h
A (semester 1)	lecture	22.5 h
	self-reliant study activities	0.0 h
	seminar	7.5 h
C (semester 1)	self-reliant study activities	0.0 h
	lecture	22.5 h
	seminar	7.5 h

**Lecturers in academic year 2016-2017**

Neyts, Kristiaan	TW06	lecturer-in-charge
Strubbe, Filip	TW06	co-lecturer

**Offered in the following programmes in 2016-2017**

	crdts	offering
<a href="#">Bridging Programme European Master of Science in Photonics</a>	4	B
<a href="#">European Master of Science in Photonics</a>	4	B
<a href="#">Master of Science in Photonics Engineering</a>	4	C
<a href="#">Master of Science in Engineering Physics</a>	6	A

**Teaching languages**

Dutch, English

**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**

Lecture, seminar, self-reliant study activities

### **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.

### **Evaluation methods**

end-of-term evaluation and continuous assessment

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

Open book examination, oral examination

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

Open book examination, oral 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 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).