Tárgytematika / Course Description

Photometry and Colorimetry

GKNM_FKTA031

Tárgyfelelős neve / Teacher's name: dr. Horváth András

Félév / Semester: 2021/22/1

Beszámolási forma / Assesment: Vizsga

Tárgy heti óraszáma / Teaching hours(week): 2/2/0

Tárgy féléves óraszáma / Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

The course aims to understand the basic concepts and methods of colorimetry and photometry, focusing on the applications in informatics, multimedia and image processing fields.

TANTÁRGY TARTALMA / DESCRIPTION

Week 1: Introduction and motivation. Light as a physical phenomenon.

Week 2: Summary of optics, image formation. The main parts of the human eye.

Week 3: Basics of photometry. Solid angle, Luminous energy, luminous flux, etc. Measurement devices and basic equations.

Week 4: Photometry applications. Street and indoor calculations.

Week 5: Practice and problem-solving.

Week 6: Mechanism of colour vision. Trichromatic and opponent colours theory.

Week 7: Munsell-system. Basics of additive color mixing.

Week 8: CIE Standard Colorimetric System. RGB, XYZ systems.

Week 9: Color temperature. Light sources in practice.

Week 10: Uniform color spaces. Concepts, CIE L*u*v*, CIE L*a*b* systems.

Week 11: Color systems in image formats.

Week 12: Measurement of color.

Week 13: Applications in informatics and industry.

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Mid-term project: 30 points. (Measurement or theoretical.)
Exam: 70 points.

The final mark is ht function of the total points:
0--39: 1 (insufficient)
40-54: 2
55-69: 3
70-84: 4
85- : 5 (excellent)

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Noboru Ohta, Alan Robertson: Colorimetry: Fundamentals and Applications, John Wiley & Sons, 2006., ISBN-13 978-0-470-09472-3

Janos Schanda (Editor): Colorimetry: Understanding the CIE System, John Wiley & Sons, 2007. ISBN: 978-0-470-04904-4

Other materials on Moodle page.