Technology
Arts Sciences
TH Köln

Course Manual PHO2

Photo Technology 2

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General information

Long name	Photo Technology 2
Approving CModule	PHO2_BaMT
Responsible	Prof. Dr. Gregor Fischer Professor Fakultät IME
Valid from	summer semester 2021
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr. Gregor Fischer Professor Fakultät IME
Requirements	none
Language	German
Separate final exam	Yes

Literature

Allgemein
Pedrotti/Bausch/Schmitt, Optik für Ingenieure, Springer
Naumann/Schröder, Bauelemente der Optik, Hanser
G. Schröder, Technische Optik, Vogel
G. Schröder, Technische Fotografie, Vogel
H.A.E. Keitz, Lichtberechnungen und Lichtmessungen, Philips TB
E. Helbig, Grundlagen der Lichtmesstechnik, Akademische Verlagsgesselschaft Geest & Portig, 1972

Final exam

Details	Written exam with arithmetic and comprehension excercises
Minimum standard	50% of maximum points
Exam Type	EN Klausur

− Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	Photometry Radiometric, spectral and photometric measures Photometric laws Secondary radiators Lambert radiator Mirror surfaces Photometric calculations
Knowledge	Radiant sources Emission mechanisms Spectral distribution Directional characteristic Temperature radiant laws Color temperature and color conversion Technical light sources Operating laws for tungsten lamps and LEDs
Knowledge	Radiation detectors Spectral sensitivity Directional sensitivity Radiant propagation through lens optics Exposure control
Knowledge	Illuminating engineering Head lamp technology Light formers Flash technology Basics of the illumination Illumination models
Skills	understand the physical definition of the radiometric, spectral and photometric measures
Skills	apply photometric laws and calculate simple illuminating set-ups
Skills	know the principles and technical embodiments for light generation
Skills	know the principles and technical embodiments for light detection
Skills	model the light propagation through a photographic lens and apply it to the exposure control in digital cameras

Special requirements

none

Accompanying material	electronic slides as presented during lectures, electronic collection of excercises
Separate exam	No

Skills	understand and analyse the geometric and spectral radiant flux to apply it to the illumination of a scene and to the spectral adaptation of a camera

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	3
Exercises (whole course)	1
Exercises (shared course)	0
Tutorial (voluntary)	2

− Practical training

Learning goals

Goal type	Description
Skills	apply photographic and illuminating measurement techniques
Skills	measure the directional sensitivity (detector) and the light distribution curve (source)
Skills	apply optical and electronic means for the spectral adaptation between light source and detector effectively
Skills	apply measurement technique for exposure control and white balance
Skills	install the lighting set-up for illumination uniformity and contrast control
Skills	document the results

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	1
Tutorial (voluntary)	0

Special requirements

none

Accompanying material	electronic instructions for the lab-exercises, electronic tools: access to raw image data
Separate exam	Yes

Separate exam

Exam Type	EN praxisnahes Szenario bearbeiten (z.B. im Praktikum)
Details	Technical discussion / colloquium before lab excercise Protocol reports about lab excercises
Minimum standard	Reports for all lab excercises must be delivered in correct form with correct results