Course Manual BS

Simulation of Illumination Systems

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— General information

Long name	Simulation of Illumination Systems
Approving CModule	CSO_MaET
Responsible	Prof. Dr. Holger Weigand Professor Fakultät IME
Valid from	winter semester 2020/21
Level	Master
Semester in the year	winter semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr. Holger Weigand Professor Fakultät IME
Requirements	Geometric optics and wave optics Radiation physics and photometry Optical design Technical English
Language	German and English
Separate final exam	Yes

Literature

W. T. Welford, R. Winston: High Collection Nonimaging Optics, Academic Press, 1989

G. Kloos: Entwurf und Auslegung optischer Reflektoren, Expert, 2007

Deutsche und US-Amerikanische Patentschriften

Datenblätter optischer und opto-elektronischer Komponenten

Final exam

Details	The proof of achievement is based on a software project. The corresponding project work is started and supervised during the attendance. In addition, there is a supervision of the project work outside the attendance, similar to supervising theses.

Prerequisite for admission to the examination is the preparation of a support request in English. The support request may be, for example, an error report or a feature request and must have at least one system file of the simulation software for explanation. |
| **Minimum standard** | For the successful realization of the software project, basic knowledge of the used simulation software is required. Furthermore, the modelling of real optical systems in the context of the software used must be understood. |
| **Exam Type** | EN andere summarische Prüfungsform |

− Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	Modelling of non-imaging optics Connection of imaging and non-imaging optics Modelling luminous flux-specific evaluation parameters Basic concepts of luminous flux simulation Basics of non-sequential raytrace simulation
Skills	Non-sequential construction of illumination systems Analysis of illumination systems Tolerancing of illumination systems Optimization of illumination systems

Special requirements

Basic knowledge of mathematical modeling in physics

Accompanying material	Lecture slides (as PDF) Exercise examples (simulation scripts, system files) Raytrace-Simulationssoftware Software for numerical and graphic evaluations Software for scripting Software Documentation
Separate exam	No

Expenditure classroom teaching

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

− Practical training

Learning goals

Goal type	Description
Skills	Independent development / programming of simulation scripts with the help of English-language software documentation
Skills	Successful use of raytrace simulation software to design non-imaging optics based on real specifications

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	2
Tutorial (voluntary)	0

Special requirements

see special requirements for lecture / exercise

Accompanying material	see accompanying material to lecture / exercise
Separate exam	Yes

Separate exam

Exam Type	EN andere studienbegleitende Prüfungsform
Details	Required is the preparation of a support request in English. The support request may be, for example, an error report or a feature request and must have at least one system file of the simulation software for explanation. The support request provides the prerequisite for admission to the examination.
Minimum standard	The support request requires a basic knowledge of English communication.