Technology Arts Sciences
TH Köln

Course Manual OSE

Optical Software Development

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− General information

Long name	Optical Software Development
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	Programming experience Radiation physics and photometry Technical English
Language	German and English
Separate final exam	Yes

Literature

H. Ramchandran, A. S. Nair: Scilab (a Free Software to Matlab), S. Chand, 2012

F. Thuselt, F. P. Gennrich: Praktische Mathematik mit MATLAB, Scilab und Octave, Springer 2013

T. Sheth: SCILAB: A Practical Introduction to Programming and Problem Solving, CreateSpace, 2016

C. Gomez: Engineering and Scientific Computing with Scilab, Birkhäuser, 1999

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 control of the simulation software or the evaluation of simulation results must be able to be implemented by means of self-created programs.
Exam Type	EN andere summarische Prüfungsform

− Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	Modelling of non-imaging optics Modelling luminous flux-specific evaluation parameters Basic concepts of luminous flux simulation Basics of non-sequential raytrace simulation Basic concepts of script programming
Skills	Non-sequential construction of illumination systems Analysis of illumination systems Programming software tools for graphic analysis of illumination systems Programming of software tools for the automation of simulations

Special requirements

Basic knowledge of numerical modeling and programming

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, control and evaluation scripts with the help of English-language software documentation
Skills	Successful use of self-developed software tools for the expansion of commercial simulation software using non-imaging optics as an example

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. |