

Course

LB - Lighting Technology

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General information

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|----------------------|------------------------------------------------------------|
| Long name            | Lighting Technology                                        |
| Approving CModule    | <a href="#">LB_BaET</a> , <a href="#">LB_BaOPT</a>         |
| Responsible          | Prof. Dr. Holger Weigand<br>Professor Fakultät IME         |
| Level                | Bachelor                                                   |
| Semester in the year | winter semester                                            |
| Duration             | Semester                                                   |
| Hours in self-study  | 78                                                         |
| ECTS                 | 5                                                          |
| Professors           | Prof. Dr. Holger Weigand<br>Professor Fakultät IME         |
| Requirements         | Geometric Optics<br>Foundations in Mathematics and Physics |
| Language             | German                                                     |
| Separate final exam  | Yes                                                        |

Final exam

Details

The proof of achievement is based on a software project that deals with the conception and design of general lighting (evaluation with 60% share of the module grade). Furthermore, a qualified report on measurement and qualification of light sources, as well as a paper on selected topics of light metrology is required (evaluation with 40% share of the module grade).

Minimum standard

For the successful realization of the software project, basic knowledge of the used design software is required. Furthermore, the modelling of real configurations of a general lighting in the context of the software used must be understood.

The report requires a correct recording of the primary measurement data as well as a traceable calculation of the secondary measurement data. Likewise, the representation of the measurement results in the form of diagrams must reproduce the measured data consistently.

In the preparation of the paper, it is necessary that the theoretical foundations for the explained measurements are described correctly. In addition, the relevant content must be reproduced in a meaningful technical text.

**Exam Type**

The proof of achievement is based on a software project that deals with the conception and design of general lighting (evaluation with 60% share of the module grade). Furthermore, a qualified report on measurement and qualification of light sources, as well as a paper on selected topics of light metrology is required (evaluation with 40% share of the module grade).

^ **Lecture / Exercises**

**Learning goals**

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**Knowledge**

- Radiometric and geometric basics
  - Photometric, colorimetric and physiological basics
  - Basic concepts of light generation and light measurement
  - Basics of lighting design
  - Importance of simulation software in the context of lighting technology
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**Skills**

- Use of lighting design software for:
- Calculation of photometric quantities from selected sources and receivers
- Construction of lighting configurations
- Analysis of lighting configurations
- Optimization of lighting configurations
- Implementation of a lighting design in the field of general lighting

**Expenditure classroom teaching**

| Type                      | Attendance (h/Wk.) |
|---------------------------|--------------------|
| Lecture                   | 1                  |
| Exercises (whole course)  | 1                  |
| Exercises (shared course) | 0                  |

Separate exam

Exam Type

other course-related type of test

Details

The proof of achievement is based on a software project that deals with the conception and design of a general lighting (evaluation with 60% share of the module grade).

Minimum standard

For the successful realization of the software project, basic knowledge of the used lighting design software is required. Furthermore, the modelling of real lighting configurations in the context of the software used must be understood.

^ Practical training

Learning goals

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Skills

Development of an understanding of different photometric quantities and their significance for general lighting based on experiments. Whereby, real light sources are measured in team work.

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Preparation of data sheets for lamps and / or luminaries on the basis of previously performed measurements of the corresponding photometric properties.

Expenditure classroom teaching

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

Separate exam

Exam Type

other course-related type of test

Details

It requires a qualified report on the measurement and qualification of light sources, as well as a paper on selected topics of light measurement (evaluation with 40% share of the module grade).

## Minimum standard

The generated data sheets contain correctly determined primary measurement data. The calculation of the secondary measurement data must be traceable. Charts and numeric data must be consistent.

In the preparation of the paper, it is necessary that the theoretical foundations for the explained measurements are described correctly. In addition, the relevant content must be reproduced in a meaningful technical text.