

# Course

## OD - Optical Design

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### ^ General information

<b>Long name</b>	Optical Design
<b>Approving CModule</b>	<a href="#">OD_BaET</a> , <a href="#">OD_BaOPT</a>
<b>Responsible</b>	Prof. Dr. Holger Weigand Professor Fakultät IME
<b>Level</b>	Bachelor
<b>Semester in the year</b>	summer semester
<b>Duration</b>	Semester
<b>Hours in self-study</b>	78
<b>ECTS</b>	5
<b>Professors</b>	Prof. Dr. Holger Weigand Professor Fakultät IME
<b>Requirements</b>	Geometric optics and wave optics Foundations in Mathematics and Physics Basic knowledge of technical English
<b>Language</b>	German and English
<b>Separate final exam</b>	Yes

### Final exam

#### Details

The proof of achievement is based on a software project that deals with the design of an imaging optical system (evaluation with 60% share of the module grade). In addition, a German-language paper on selected topics in optical design is required (evaluation with 40% share of the module grade). The basis for the work is English-language technical literature.

#### Minimum standard

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

In the preparation of the paper, it is necessary that English technical literature can be made accessible in terms of language and content. In addition, the relevant content must be reproduced in a meaningful technical text in German.

### Exam Type

The proof of achievement is based on a software project that deals with the design of an imaging optical system (evaluation with 60% share of the module grade). In addition, a German-language paper on selected topics in optical design is required (evaluation with 40% share of the module grade). The basis for the work is English-language technical literature.

## ^ Lecture / Exercises

### Learning goals

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#### Knowledge

Connection of Gaussian optics, geometric optics and wave optics  
Basic concepts of aberration theory  
Modelling an imaging system in optical design  
Modelling of image errors in terms of ray and wave aberrations  
Importance of simulation software in the context of optical design

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#### Skills

Use of optical design software for:  
Structure of imaging optical systems  
Analysis of imaging optical systems  
Optimization of imaging optical systems  
Tolerancing of imaging optical systems

### Expenditure classroom teaching

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

### Separate exam

### Exam Type

other course-related type of test

### Details

A self-written German-language paper on selected topics of optical design is required as exam performance. Basis of the work is English-language technical literature.

### Minimum standard

In the preparation of the paper, it is necessary that the English literature can be made accessible in terms of language and content. In addition, the relevant content must be reproduced in a meaningful technical text in German.

## ^ Practical training

### Learning goals

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#### Skills

Independent development / programming of simulation scripts with the help of English-language software documentation

### Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	2
Tutorial (voluntary)	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 design of an imaging optical system (evaluation with 60% 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 optical systems in the context of the software used must be understood.