**Module title**
Optics and Waves - Exercises

**Abbreviation**
11-E-OA-152-m01

**Module coordinator**
Managing Director of the Institute of Applied Physics

**Module offered by**
Faculty of Physics and Astronomy

**ECTS**
5

**Method of grading**
numerical grade

**Duration**
1 semester

**Module level**
undergraduate

**Other prerequisites**
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### Contents

Exercises in Optics according to the content of 11-E-OAV. Among others Basic concepts, Fermat's principle, optical path, light in matter, polarization, Geometrical Optics, Optical instruments, wave optics, interference, thin films, interferometers, Fraunhofer diffraction optical grating, Fresnel diffraction, holography, wave packets, wave equation and Schrödinger equation, quantum structure of nature, etc.

### Intended learning outcomes

The students understand the basic principles and contexts of radiation, wave and quantum optics. They are able to apply mathematical methods to the formulation of physical contexts and autonomously apply their knowledge to the solution of mathematical-physical tasks.

### Courses

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of weekly contact hours</th>
<th>Language — if other than German</th>
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</thead>
<tbody>
<tr>
<td>Ü</td>
<td>2</td>
<td>German or English</td>
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</tbody>
</table>

Module taught in: Ü: German or English

### Method of assessment

<table>
<thead>
<tr>
<th>Type</th>
<th>Scope</th>
<th>Language — if other than German</th>
<th>Examination offered — if not every semester, information on whether module is creditable for bonus</th>
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<tbody>
<tr>
<td>written examination (approx. 120 minutes)</td>
<td>Language of assessment: German and/or English</td>
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### Allocation of places

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### Additional information

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### Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 53 I Nr. 1 a)
§ 77 I Nr. 1 a)

### Module appears in

- Bachelor' degree (1 major) Physics (2015)
- Bachelor' degree (1 major) Nanostructure Technology (2015)
- First state examination for the teaching degree Grundschule Physics (2015)
- First state examination for the teaching degree Realschule Physics (2015)
- First state examination for the teaching degree Gymnasium Physics (2015)
- First state examination for the teaching degree Mittelschule Physics (2015)
- Bachelor' degree (1 major) Physics (2020)
- Bachelor' degree (1 major) Nanostructure Technology (2020)
- Bachelor' degree (1 major) Quantum Technology (2021)