# phy631 - Advanced Metrology

**Module label**  
Advanced Metrology

**Module code**  
phy631

**Credit points**  
6.0 KP

**Workload**  
180 h

**Used in course of study**  
- Master's Programme Engineering Physics > Pflichtmodule

**Contact person**  
- Walter Neu
- Björn Poppe
- Simon Doclo
- Martin Kühn

## Module responsibility

**Entry requirements**

**Skills to be acquired in this module**

The course in Advanced Metrology sets up a high level route enabling the students to acquire skills to allow them to operate effectively in the majors of Engineering Physics. This is achieved by provision of state-of-the-art technical and physical approaches covering broad aspects of advanced metrology within the context of Laser&optics, Biomedical physics & acoustics, and renewable energies.

Demonstrate systematic knowledge across appropriate advanced metrology technologies, management and environmental issues to provide solutions for international industries and/or research organisations.

## Module contents

The module combines theory and practical applications of the fundamentals of metrology in all majors.

- Fundamentals of Metrology
- Dimensional Measurement Systems
- Basic metrology operators including Association and Filtration.
- Optical Metrology and Instrumentation
- Surface and Nanometrology
- Machine Tool and Large Volume Metrology
- Process Measurement and Control
- Individual Project

## Reader’s advisory


Recent publications on specific topics

## Links

<table>
<thead>
<tr>
<th>Language of instruction</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration (semesters)</td>
<td>1 Semester</td>
</tr>
<tr>
<td>Module frequency</td>
<td>halbjährlich</td>
</tr>
<tr>
<td>Module capacity</td>
<td>unlimited</td>
</tr>
<tr>
<td>Modulart</td>
<td>Pflicht</td>
</tr>
<tr>
<td>Lern-/Lehrform / Type of program</td>
<td>Lecture: 4 hrs/week</td>
</tr>
</tbody>
</table>

## Examination

<table>
<thead>
<tr>
<th>Time of examination</th>
<th>Type of examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final exam of module</td>
<td>1 written exam or 1 presentation or 1 oral exam or 1 seminar paper</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course type</th>
<th>Comment</th>
<th>SWS</th>
<th>Frequency</th>
<th>Workload attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Specialization Biomedical Physics)</td>
<td>Course selection</td>
<td>4.00</td>
<td>WiSe</td>
<td>56 h</td>
</tr>
<tr>
<td>(Specialization Acoustics)</td>
<td>Course selection</td>
<td>2.00</td>
<td>WiSe</td>
<td>28 h</td>
</tr>
<tr>
<td>(Specialization Renewable Energies)</td>
<td>Course selection</td>
<td>2.00</td>
<td>WiSe</td>
<td>28 h</td>
</tr>
<tr>
<td>(Specialization Laser &amp; Optics)</td>
<td>Course selection</td>
<td>2.00</td>
<td>WiSe</td>
<td>28 h</td>
</tr>
</tbody>
</table>

**Total time of attendance for the module**  
140 h