<table>
<thead>
<tr>
<th>Module</th>
<th><strong>Nano-Optics</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td></td>
</tr>
<tr>
<td>Instruction language</td>
<td>English</td>
</tr>
<tr>
<td>ECTS credits</td>
<td>4</td>
</tr>
<tr>
<td>Attendance time</td>
<td>2 hours per week</td>
</tr>
<tr>
<td>Duration</td>
<td>1 semester</td>
</tr>
<tr>
<td>Cycle</td>
<td>irregular</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Dean of Physics Studies</td>
</tr>
<tr>
<td>Lecturer</td>
<td>Prof. Heinrich Hoerber</td>
</tr>
</tbody>
</table>
| Allocation to study programmes | Physics M.Sc., elective module  
Wirtschaftsphysik M.Sc., elective module |
| Recommended prerequisites | Students who successfully passed this module  
- understand the problems of traditional electrodynamics when interactions between radiation and matter become localized far below the wavelength of the radiation involved  
- have enough background knowledge to understand recent developments in the use of light in new technologies and are able to apply them in their own research projects |
| Learning objectives | The course on Nano-Optics will provide an understanding of the problems traditional Electrodynamics is facing when interactions between radiation and matter become localized far below the wavelength of the radiation involved. The path followed in a series of lectures will be along the old particle-wave discussion, which ended after Huygens with the great success for the wave description of light helping in developing a large array of optical instruments.  
In the second half of the course students will present recent research papers on this topic to develop an understanding of the scientific discussion and the different paths of investigations pursued. |
| Syllabus | Content  
- Introduction to electromagnetic radiation  
- Wave description of electromagnetic radiation  
- Interaction of electromagnetic radiation with matter  
- Detection of electromagnetic radiation  
- Optical Microscopy •Beyond the diffraction limit  
- The eye as an image sensor |
<p>| Literature |</p>
<table>
<thead>
<tr>
<th>Teaching and learning methods</th>
<th>Lecture with exercises (24 hours lecture)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workload</td>
<td>24 hours lecture (attendance time)</td>
</tr>
<tr>
<td></td>
<td>96 hours exercise, self-study and exam preparation</td>
</tr>
<tr>
<td></td>
<td>Total: 120 hours</td>
</tr>
<tr>
<td>Assessment</td>
<td>The module assessment consists of a graded written or oral exam.</td>
</tr>
<tr>
<td>Examination</td>
<td>The module grade is equal to the examination grade.</td>
</tr>
<tr>
<td>Basis for</td>
<td></td>
</tr>
</tbody>
</table>