**Course: Biological Physics I: Molecules and Cells**

Lecturers: T. Bollenbach, B. Maier  
Email: t.bollenbach@uni-koeln.de, berenike.maier@uni-koeln.de

<table>
<thead>
<tr>
<th>Category</th>
<th>Type</th>
<th>Language</th>
<th>Teaching Hours</th>
<th>CP</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Course</td>
<td>Lecture</td>
<td>English</td>
<td>3+1</td>
<td>6</td>
<td>WiSe</td>
</tr>
<tr>
<td>Core Course</td>
<td>Lecture + Seminar</td>
<td>English</td>
<td>4+1</td>
<td>7.5</td>
<td>WiSe</td>
</tr>
</tbody>
</table>

**Requirements for participation:**  
Bachelor in Physical Sciences

**Type of module examinations:**  
Oral Examination

**Duration of the course:**  
1 semester

**Aims of the course:**  
Life as an interplay between physics and genetics; understanding how physical principles guide the behavior of biological cells and organisms; introduction into biophysical methods.

**Contents of the course:**
- Introduction to molecular cell biology
- Random-walks in biology
- Rate equations and cellular dynamics
- Mechanical forces in molecular and cellular biology
- Signal transduction in nerve cells
- Photophysics
- Physical methods for analysis of biological molecules and processes

**Recommended literature:**  