## Module description

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Condensed Matter (Quanta, Atoms, Molecules, Solid State Physics)</td>
<td>11-KM-092-m01</td>
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<table>
<thead>
<tr>
<th>Module coordinator</th>
<th>Module offered by</th>
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<tbody>
<tr>
<td>Managing Director of the Institute of Applied Physics</td>
<td>Faculty of Physics and Astronomy</td>
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### ECTS | Method of grading | Other prerequisites |
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<tbody>
<tr>
<td>16</td>
<td>numerical grade</td>
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### Duration | Module level |
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<tr>
<td>2 semester</td>
<td>undergraduate</td>
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### Contents


### Intended learning outcomes

The students know the basic contexts and principles of quantum phenomena, Atomic Physics and solids (bonding and structure, lattice dynamics, thermal properties, principles of electronic properties (free electron gas)). They are able to apply mathematical methods to the formulation of modern physical contexts and autonomously apply their knowledge to the solution of mathematical-physical tasks.

### Courses (type, number of weekly contact hours, language — if other than German)

| Kondensierte Materie 1 (Quanten, Atome, Moleküle) (Condensed Matter 1 (Quanta, Atoms, Molecules)): V (4 weekly contact hours) + Ü (2 weekly contact hours), once a year (winter semester) |
| Kondensierte Materie 2 (Festkörperphysik 1) (Condensed Matter 2 (Solid State Physics)): V (4 weekly contact hours) + Ü (2 weekly contact hours), once a year (summer semester) |

### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

This module has the following assessment components

1. Topics covered in lectures and exercises in part 1 (Kondensierte Materie 1 (Condensed Matter 1)): written examination (approx. 120 minutes).
2. Topics covered in lectures and exercises in part 2 (Kondensierte Materie 2 (Condensed Matter 2)): written examination (approx. 120 minutes).
3. Topics covered in lectures and exercises in parts 1 and 2: oral examination of one candidate each (approx. 30 minutes, usually chosen) or written examination (approx. 120 minutes).

Assessment component 3 will be offered in German; English if agreed upon with examiner(s). Successful completion of approx. 50% of practice work each is a prerequisite for admission to assessment components 1 and 2. To qualify for admission to assessment component 3, students must pass assessment component 1 and/or 2. Students are highly recommended to attend both courses Kondensierte Materie 1 (Condensed Matter 1) and Kondensierte Materie 2 (Condensed Matter 2). The topics discussed in these two courses will be covered in assessment component 3. Students must register for assessment components 1 through 3 online (details to be announced). To pass this module, students must first pass assessment component 1 or 2 and must then pass assessment component 3. The grade achieved in assessment component 1 or 2 (whichever is better) and the grade achieved in assessment component 3 will each count 50% towards the overall grade awarded for the module.

### Allocation of places

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### Additional information

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

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### Module appears in

- Bachelor' degree (1 major) Mathematics (2012)
- Bachelor' degree (1 major) Mathematics (2013)
- Bachelor' degree (1 major) Physics (2010)
- Bachelor' degree (1 major) Physics (2012)
- Bachelor' degree (1 major) Nanostructure Technology (2010)
- Bachelor' degree (1 major) Nanostructure Technology (2012)
- Bachelor' degree (1 major) Mathematical Physics (2009)
- Bachelor' degree (1 major) Mathematical Physics (2012)
- Bachelor' degree (1 major) Computational Mathematics (2012)
- Bachelor' degree (1 major) Computational Mathematics (2013)
- Bachelor's degree (1 major, 1 minor) Physics (Minor, 2010)