# Module description

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Quantum Field Theory II</td>
<td>11-QFT2-Int-201-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 Theoretical Physics and Astrophysics</td>
<td>Faculty of Physics and Astronomy</td>
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<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Only after succ. compl. of module(s)</th>
</tr>
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<tbody>
<tr>
<td>8</td>
<td>numerical grade</td>
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<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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<tbody>
<tr>
<td>1 semester</td>
<td>graduate</td>
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## Contents

1. Generating Functionals  
2. Path Integrals  
3. Renormalization  
4. Renormalization group  
5. Gauge theories  
6. Spontaneous Symmetry Breaking  
7. Effective Field Theory (optional)

## Intended learning outcomes

In-depth knowledge of the concepts and methods of quantum field theory, including the principles of renormalization and of gauge theories. Ability to formulate problems in quantum field theory and to solve them using the acquired calculational methods.

## Courses

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

V (4) + R (2)  
Module taught in: English

## Method of assessment

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

- a) written examination (approx. 90 to 120 minutes) or  
- b) oral examination of one candidate each (approx. 30 minutes) or  
- c) oral examination in groups (groups of 2, approx. 30 minutes per candidate) or  
- d) project report (approx. 8 to 10 pages) or  
- e) presentation/talk (approx. 30 minutes).

If a written examination was chosen as method of assessment, this may be changed and assessment may instead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original examination date at the latest.

Language of assessment: English  
Assessment offered: In the semester in which the course is offered and in the subsequent semester

## 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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