<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Mathematics 3 for Students of Physics and related Disciplines (Differential Equations)</td>
<td>11-M-D-152-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>
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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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</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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**Contents**

1. Ordinary differential equations;  
   1.1. Solution methods  
   1.2 Existence and uniqueness theorem  
   1.3 Systems of differential equations  
2. Partial differential equations  
   2.1 Non-linear partial differential equations of the 1st and 2nd order  
   2.2 1D and 3D wave equation  
   2.3 Helmholtz equation and potential theory  
   2.4 Parabolic differential equations  

**Intended learning outcomes**

The students have basic mathematical knowledge of dynamic equations and solution methods for common and partial differential equations and have mastered the necessary calculation methods.

**Courses**

V (4) + Ü (2)  
Module taught in: Ü: German or English

**Method of assessment**

written examination (approx. 120 minutes)  
Language of assessment: German and/or English

**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) Physics (2015)  
Bachelor’ degree (1 major) Nanostructure Technology (2015)  
Bachelor’ degree (1 major) Functional Materials (2015)