<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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</thead>
<tbody>
<tr>
<td>Overview Complex Analysis and Ordinary Differential Equations for Mathematical Physics</td>
<td>10-M-FTGD-PÜ-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>Dean of Studies Mathematik (Mathematics)</td>
<td>Institute of Mathematics</td>
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<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Other prerequisites</th>
</tr>
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<tbody>
<tr>
<td>13</td>
<td>Only after succ. compl. of module(s)</td>
<td></td>
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<table>
<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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### Contents

Complex differentiability and Cauchy-Riemann differential equations, path integrals and Cauchy integral theorems, isolated singularities, meromorphic functions and Laurent series, residue theorem and applications, Weierstraß product theorem and theorem of Mittag-Leffler, conformal maps; existence and uniqueness theorem, continuous dependence of solutions on initial values, systems of linear differential equations, matrix exponential series, linear differential equations of higher order.

### Intended learning outcomes

The student is acquainted with fundamental concepts and methods in complex analysis and the theory of ordinary differential equations. He/She is able to relate these concepts with one another, and realises the advantages of thinking across the borders of different branches in mathematics.

### Courses

<table>
<thead>
<tr>
<th>type, number of weekly contact hours, language — if other than German</th>
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<td>V (4) + Ü (2)</td>
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### Method of assessment

Aural examination of one candidate each (20 to 40 minutes)

Assessment will have reference to two topics in pure mathematics as agreed upon with the examiner. Each topic may only be selected as the subject of one examination in the sub-field Gesamtüberblick Mathematische Methoden (Overview Mathematical Methods) or in module group Ergänzung Mathematik (Supplementary Topics in Mathematics).

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) Mathematical Physics (2015)
Bachelor' degree (1 major) Mathematical Physics (2016)