### Module title
Overview Geometric Analysis and Ordinary Differential Equations

| Abbreviation | 10-M-GAGD-Ü-152-m01 |

#### Module coordinator
Dean of Studies Mathematik (Mathematics)

#### Module offered by
Institute of Mathematics

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>numerical grade</td>
<td>1 semester</td>
<td>undergraduate</td>
<td>--</td>
</tr>
</tbody>
</table>

#### Contents
Fundamentals in analysis on manifolds, submanifolds, calculus of differential forms, Stoke's theorem and applications in vector analysis and topology; 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 geometric 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 (type, number of weekly contact hours, language — if other than German)
V (4) + Ü (2)

#### Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)
oral 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-fields Gesamtüberblick (Overview).
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) Mathematics (2015)
Bachelor' degree (1 major) Computational Mathematics (2015)