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|---|--------------------------|---|
| <b>Module title</b>   |                          | <b>Abbreviation</b>                         |
| Overview Complex Analysis and Partial Differential Equations  |                          | 10-M-FTPA-Ü-152-m01                         |
| <b>Module coordinator</b>   |                          | <b>Module offered by</b>                    |
| Dean of Studies Mathematik (Mathematics)  |                          | Institute of Mathematics                    |
| <b>ECTS</b>   | <b>Method of grading</b> | <b>Only after succ. compl. of module(s)</b> |
| 12  | numerical grade          | --  |
| <b>Duration</b>   | <b>Module level</b>      | <b>Other prerequisites</b>                  |
| 1 semester  | undergraduate            | --  |
| <b>Contents</b>   |                          |   |
| 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; examples of partial differential equations and partial differential equations of first order, existence and uniqueness theorems, basic equations of mathematical physics, boundary value problems, maximum principle and Dirichlet problem. |                          |   |
| <b>Intended learning outcomes</b>   |                          |   |
| The student is acquainted with fundamental concepts and methods in complex analysis and the theory of partial 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.  |                          |   |
| <b>Courses</b> (type, number of weekly contact hours, language — if other than German)  |                          |   |
| V (4) + Ü (2)   |                          |   |
| <b>Method of assessment</b> (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)<br>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).<br>Language of assessment: German and/or English  |                          |   |
| <b>Allocation of places</b>   |                          |   |
| --  |                          |   |
| <b>Additional information</b>   |                          |   |
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| <b>Workload</b>   |                          |   |
| 360 h   |                          |   |
| <b>Teaching cycle</b>   |                          |   |
| --  |                          |   |
| <b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)  |                          |   |
| --  |                          |   |
| <b>Module appears in</b>  |                          |   |
| Bachelor' degree (1 major) Mathematics (2015)<br>Bachelor' degree (1 major) Computational Mathematics (2015)<br>Bachelor' degree (1 major) Mathematics (2023)   |                          |   |
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