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|---|--------------------------|---|
| <b>Module title</b>   |                          | <b>Abbreviation</b>                         |
| Overview Differential Geometry and Number Theory  |                          | 10-M-DGZT-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>   |                          |   |
| Curves in Euclidean spaces, curvature, Frenet equations, local classification, submanifolds (hypersurfaces in particular) in Euclidean spaces, curvature of hypersurfaces, geodesics, isometries, main theorem on local surface theory, special classes of surfaces; elementary properties of divisibility, prime numbers and prime number factorisation, modular arithmetics, prime tests and methods for factorisation, structure of the residue class rings, theory of quadratic remainders, quadratic forms, diophantine approximation and diophantine equations. |                          |   |
| <b>Intended learning outcomes</b>   |                          |   |
| The student is acquainted with fundamental concepts and methods in differential geometry and number theory. 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>   |                          |   |
| --  |                          |   |
| <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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