

<b>Module title</b>		<b>Abbreviation</b>
Introduction to Complex Analysis		10-M-FTH-222-mo1
<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>
10	numerical grade	--
<b>Duration</b>	<b>Module level</b>	<b>Other prerequisites</b>
1 semester	undergraduate	--
<b>Contents</b>		
Complex differentiability, Cauchy-Riemann differential equations, conformal maps (in particular Möbius transformations), complex integration, Cauchy's integral theorem and Cauchy's integral formula, basic principles of complex analysis (in particular identity theorem, maximum principle, openness principle, Schwarz lemma), general Cauchy integral theorem, isolated singularities and Laurent series, residue theorem and its applications (computation of real integrals, argument principle, Rouché's theorem), normal families (in particular Montel's theorem and Vitali's theorem), Riemann's mapping theorem.		
<b>Intended learning outcomes</b>		
The student is acquainted with the fundamental concepts and methods in complex analysis. He/she is able to apply these methods to practical problems.		
<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)		
a) written examination (approx. 90 to 180 minutes, usually chosen) or b) oral examination of one candidate each (15 to 30 minutes) or c) oral examination in groups (groups of 2, 10 to 15 minutes per candidate) Language of assessment: German and/or English creditable for bonus		
<b>Allocation of places</b>		
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<b>Additional information</b>		
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<b>Workload</b>		
300 h		
<b>Teaching cycle</b>		
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<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)		
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<b>Module appears in</b>		
Bachelor' degree (1 major) Mathematical Data Science (2022) exchange program Mathematics (2023)		
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