

Module title		Abbreviation
Introduction to Differential Geometry		10-M-DGE-222-m01
Module coordinator		Module offered by
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics
ECTS	Method of grading	Only after succ. compl. of module(s)
10	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	undergraduate	--
Contents		
Curves in \mathbb{R}^n and \mathbb{R}^3 ; Frenet equations, Frenet–Serret frame, curvature and torsion of curves; 2-dimensional surfaces in \mathbb{R}^3 ; parametrisation of surfaces, examples; fundamental forms (metrics, normal vector fields); area of surfaces; curvature; outlook to further topics in differential geometry, for example covariant derivatives, minimal surfaces, submanifolds.		
Intended learning outcomes		
The student knows and masters the essential methods and basic notions in differential geometry. He/She is acquainted with the central concepts in this field, and is able to apply the fundamental proof methods independently.		
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)		
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 Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus		
Allocation of places		
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Additional information		
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Workload		
300 h		
Teaching cycle		
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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 Data Science (2022) exchange program Mathematics (2023)		