Valid from 2026.HS

Module description: Analysis 1

Module Code	t.BA.XXM5.AN1.26HS
ECTS Credits	4
Language of Instruction/Examination	German
Organizational Unit	IAMP
Module Coordinator	Marcello Robbiani
Legal Framework	The module description is part of the legal basis in addition to the general academic regulations. It is binding. During the first week of the semester a written and communicated supplement can specify the module description in more detail.
Module Characteristic	Type 3a 2 lecture lessons per semester week and class+ 2 weekly lab lessons per semester and half-class
Module Description	Introduction to calculus.
Module Content	**Introduction to calculus** • the concepts of derivation and integration • applications of derivation and integration in physics **Elements of Calculus** • sets and numbers • applications and functions • sequences and series • limit processes and limits **Introduction to differential calculus** • derivations of first and higher order • elementary derivation rules • elementary applications of differential calculus • elementary analysis of graphs **The fundamental properties of elementary functions as exp(x), log(x), sin(x) are refreshed ad hoc during the semester based on BM-mathematics.**
Prerequisite Knowledge	mathematics at the level of a technical BM

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Learning Objectives (Competencies)

Students...	Competencies	Taxonomies
You know the concepts "derivative" and "antiderivative" and their role in cinematics.You are in particular able to derivate polynomiale functions.	F, M	K2, K3
You know the fundamental concepts of differential calculus. Your are in particular able to calculate the derivative of an elementary function.	M, F	K2, K3
You know the basic concepts of calculus assets and numbers, applications and functions, sequences and series, limit processes and limits and are able to apply this concepts in an efficient way. You are in particular able to calculate elementary limits.	F, M	K2, K3
You know elementary applications of differential calculus (e.g. Newton's tangent method). You are in particular able to analyse the graph of a rational function.	M, F	K2, K3

Performance Assessment

End-of-module exam	Assessment	Length (min.)	Weighting	Social Form	Scenario/Format
written exam		90	80%	acc. to module agreement	

	Assessment	Length (min.)	Weighting	Social Form	Scenario/Format
Graded assignments during teaching semester	Grade		20%	acc. to module agreement	

Classroom Attendance Requirement

None

Learning material

- Papula, L. (2018). Mathematik für Ingenieure und Naturwissenschaftler. 15 Edition. Wiesbaden: Springer. ISBN 978-3-658-21745-7.