

Module title					Abbreviation
Introduction to Partial Differential Equations					10-M-PAR-202-m01
Module coordinator				Module offered by	
Dean of	Studie	es Mathematik (Mathema	atics)	Institute of Mathematics	
ECTS Method of grading		Only after succ. compl. of module(s)			
5 (not) successfully completed					
Duration		Module level	Other prerequisites		
1 semester		undergraduate			
Contents					
Examples of partial differential equations; existence and uniqueness theorems; exact solutions for the linear transport equation, the Poisson equation, the heat equation and the wave equation; boundary value problems, Dirichlet problems; energy methods, Green's functions, maximum principle; explicit solutions for general nonlinear partial differential equations of first order; Hopf-Lax formula for Hamilton-Jacobi equations; Lax-Oleinik formula for scalar conservation laws; further methods for solving partial differential equations (e.g., separation of variables, Fourier and Laplace transformation).					
The student is acquainted with the fundamental concepts and methods in the theory of partial differential equa- tions. He/she is able to apply these methods to practical problems.					
Courses (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 Assessment offered: In the semester in which the course is offered and in the subsequent semester creditable for bonus					
Allocation of places					
Additional information					
Workload					
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Bachelor's degree (1 major) Mathematical Physics (2020) Bachelor's degree (1 major) Mathematical Physics (2024)					

JMU Würzburg • generated 18.04.2025 • Module data record 110521