

Module No.	Title of Module
10-MAT-MPSTAN	Selected Topics of Analysis

Recommended for 2nd or 3rd semester of Int. Master Program Math. Phys.

Duration 1 Semester

Frequency Usually every two years

Course types (1) Lecture „Selected Topics of Analysis" (2 SWS) = 30 h in class + 120 h individual studies = 150 h
(2) Seminar „Selected Topics of Analysis" (2 SWS) = 30 h in class + 120 h individual studies = 150 h

Workload 10 LP = 300 h

Aims After active participation the students are able to show and apply the basic methods and notions from sections of Analysis. They can solve minor problems individually or in groups and examine proofs for completeness.

Contents One ore more of the following topics:
 1. Geometric measure theory
 2. Curvature flows
 3. Regularity theory for elliptic and parabolic systems
 4. Nonlinear elasticity theory
 5. Phase transitions in continuum physics
 6. Equations of Fluid Mechanics
 7. Hyperbolic field equations
 8. Homogenisation

Lectures and seminars will be held in English. Students' performance has to be in English as well.

Prerequisites None

Literature According to section
 - Leon Simon: Geometric Measure Theory
 - Giaquinta u. Hildebrand: Calculus of Variations
 - Peter Topping: Lectures on Ricci Flow (CUP, 2006)
 - Lions: Mathematical topics in fluid mechanics

Examinations Oral exam of 25 min

Oral lecture (60 min.) + written report (4 weeks)

Requirements attendance at lecture „Selected Topics of Analysis" (2 SWS)
 participation in seminar „Selected Topics of Analysis" (2 SWS)