

Modulbeschreibung für Vertiefungsmodule des Wahlpflichtbereiches

Titel des Moduls	Nichtlineare Optimierung/ Nonlinear Optimization
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R	X
A	

	Vorlesung	Übung
Umfang	4	2

Inhalt	
<p>0. Linear Optimization: Existence of solutions, Duality, Simplex method (repetition, should be already known)</p> <p>1. Topics of Convex Analysis: Separation of convex sets, subdiff, duality and perturbations, saddle points... (Proofs will be made in such a manner that the generalizations for B-space problems become obvious and can be - later - applied to optimal control).</p> <p>2. Particular classical problems: Transportation, max flow (Ford-Fulkerson), shortest ways in graphs, Matrix games, Steiner-Weber problem, ...</p> <p>3. Nonconvex problems: Linearizations and KKT-points, Regularity conditions (constraint qualifications) and related stability properties</p> <p>4. Basic methods: Penalization, barrier methods, cutting planes, feasible directions, proximal points, computing Brouwer fixed points.</p> <p>5. Newton-type methods for solving the KKT system and other complementarity problems; inner point methods.</p> <p>6. Basics for problems in Banach spaces: Lyusternik theorem and Ekelands principle.</p>	

Voraussetzungen	Abschluß Modul 2. Functional Analysis is desirable, not necessary
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Regelsemester	ab 5
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Abschluss	Prüfung
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Prüfungszulassungsvoraussetzung	Keine
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Studienpunkte	10
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R = Reine Mathematik
A = Angewandte Mathematik