



Modern Optimisation Methods

Lecturer:

dr hab. inż. Krzysztof Tesch (WM)

Course topics:

1. Introduction and mathematical background. Local and global optimisation. Single- and multi-objective optimisation. Deterministic and randomised algorithms. Single-point, multi-point and multi-start algorithms. Derivative-based and derivative-free algorithms (2h).
2. Basic principles. Necessary and sufficient conditions for local extrema (1h).
3. Unconstrained and constrained optimisation (Lagrange multipliers, penalty function method) (1h).
4. Newton-like and quasi-Newton methods. Other single-point methods (1h).
5. Single-point and derivative-free algorithms: random walk, Hooke-Jeeves method, direct search methods (brute force), random walk (1h).
6. Variational problems (1h).
7. Heuristic methods: evolutionary algorithms, differential evolution, particle swarm optimisation, firefly algorithm, simulated annealing (4h).
8. Nature-inspired algorithms (1h).
9. Multi-objective optimisation methods. Scalarisation methods (1h).
10. Statistical analysis of algorithms. Typical test functions for global optimisation (1h).
11. Engineering applications (1h).

Terminy wykładów			
Data	Dzień tyg.	Godzina	Sala
2015-11-03	Wt	9.15-14.00	WM 200
2015-11-04	Śr	9.15-14.00	WM 200
2015-11-05	Cz	9.15-14.00	WM 200