03-IBFW-HTO	Hands-on Tutorial on Optimization

Lehrform *(teaching format)* / **SWS** *(hours per week)*: 2K

Kreditpunkte *(credit points)*: 3

Turnus *(frequency)*: usually, each summer term (during the semester break)

Inhaltliche Voraussetzungen *(content-related prior knowledge/skills)*: no prerequisites, some background in discrete optimization or operations research is helpful

Sprache *(language)*: English

Lehrende *(teaching staff)*: AG Kombinatorische Optimierung und Logistik (Prof. Dr. Nicole Megow, u.a.)

Studiengang *(degree program)*	Module	Semester
Informatik (Bachelor)	Freie Wahl	ab 4.Sem.
Informatik (Master)	General Studies	
Mathematik		

Lernergebnisse / *Learning Outcome*:

- to be able to model optimization problems as (integer) linear programs, (I)LPs
- to know how to implement a model in optimization software such as CPLEX and know of several features of the software
- to be able to analyze CPLEX outputs on solution quality and running times
- to know some techniques to solve large problems
- to have basic knowledge of the theoretical background of linear optimization and methods for solving ILPs

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Inhalte / *Contents*:

- Modeling linear and integer linear programs
- How to use CPLEX
- Geometry of linear programming, duality
- Methods for solving integer linear programs: cutting planes, branch and bound, column generation

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Hinweise *(remarks)*: The table lists only the primary / most specific modules to which this course is assigned.