Modeling and Simulation **Exercise 01**
2024/2025 **Deadline: see elearning**

Name: _____ **Aufwand (h):** _____

Punkte: _____

Task 1 (16 pt): Modeling and Simulation: Theory…

Describe in own words and using references from the literature (which should be cited correctly):

- Deductive modeling
- Inductive modeling
- Model Based Problem Solving, including
  - Modeling
  - Abstraction
  - Idealization
  - Simplification
  - Aggregation
- Continuous modeling & simulation
- Discrete modeling & simulation
- Control circuits

Total pages estimation: 3±1; content is more important than word count! Make sure a colleague with computer science background could understand the concepts. Figures help a lot - but don't just copy them, cf. public discussion about plagiarism!

Task 2 (8 pt): … and a bit of Practice

Model and simulate the time course of the water volume of the pond discussed in the lecture: 5% of the water are lost each hour, initially there are 100,000l, and there is an optional inflow of 1000l/h. Show figures of the results. In how far does the implementation of the simulation change results?

General remark: Make sure that you can present your submitted examples in the lecture.