Seminar Topics
for the
Proseminar "Formal Modelling"

Wolfgang Windsteiger

March 6, 2019

1 Common Requirements

The topics listed below cover well-known problems from the areas of graph theory and discrete optimization. Literature containing the theoretical framework explaining the problem and some solution algorithms will be available. The requirements are then

- to give a self-contained presentation of the problem,

- to present *one solution algorithm* **OR** an *overview over several solution methods,* and

- to implement at least one algorithm, if possible in Mathematica.

The results will be summerized in a short scientific paper and an accompanying talk.

2 List of Possible Topics

- The Max-Flow Problem.

- The Knapsack Problem.

- The Graph-Vertex-Coloring Problem.

- The Graph-Edge-Coloring Problem.