

Course: Telecommunication Network Design
Teachers: Andrzej Kamisiński (andrzejk@agh.edu.pl)
Studies: Electronics and Telecommunications
Speciality: Networks and Services
Semester: 2nd sem. MSc stud., Fall

Preparation to the laboratory classes

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Scope of the quiz at the beginning of the class

You should be familiarized with the material presented during the following lectures:

- Lecture 5: *Network design based on mathematical programming — introduction,*
- Lecture 6: *Linear programming.*

How to prepare to the class

Students are asked to practise the scripting language used in the `execute` block (in particular, printing information on screen). In addition, please review the following optimization problems defined on graphs:

- minimum spanning tree,
- maximum flow,
- minimum cut,
- vertex coloring,
- shortest path,

and then attempt to model them using linear programming (LP) or mixed integer linear programming (MILP) techniques. The related problem formulations are provided in a concise mathematical form in the following research paper: LiYing Cui, Soundar Kumara, and Réka Albert. Complex Networks: An Engineering View. *IEEE Circuits and Systems Magazine*, 10(3):10, third quarter 2010.