

## Lecture 4: Convex Problems

*Lecturer: G. Iosifidis*

## 4.1 Convex Optimisation Problems

Read Chapter 3 from [BV04], focusing on the following sections:

- 4.1.1, 4.1.2, 4.1.3; 4.2.1, 4.2.2, 4.2.3, 4.2.4
- 4.3 (up to 4.3.1; diet problem, dynamic activity planning, piecewise-linear minimization),
- 4.4, 4.4.1
- 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 4.7.6

## 4.2 Questions for practice

- Remember to see the separate document (in this folder) with exercises and questions (related to all lectures so far).
- Also, read Part I from [CZ4] (and the examples therein) for the necessary background material. Many of these concepts were already discussed in the lectures.
- All the problems can be discussed in Blackboard (Forum). You are encouraged to ask questions about exercises that you do not fully understand, and provide answers for questions asked there by other students. These exercises are not for evaluation but for practice, and it helps a lot if you discuss them!

## 4.3 Notes about Matlab Scripts

- Prepare for programming convex problems by reading about CVX; more info here: <http://cvxr.com/cvx/>
- See also the CVX tutorial in the folder, and the sample script with examples.

## References

- [BV04] S. Boyd, L. Vandenberghe, “Convex Optimization”, *Cambridge University Press*, 2004.
- [CZ4] E. K. P. Chong, S. H. Zak, “An Introduction to Optimization”, *Wiley, 4th Edition*, 2013.