

Optimization Algorithms (ACM 41030)

Second Written Exam

25/04/2024

The second written exam is worth 50% of the module grade. This will take place **Wednesday 15th May at 10:00**. The exam will last 60 minutes.

The exam will contain 4 questions. For maximum marks, all 4 questions must be answered. Not all questions carry equal marks, but the number of marks available per question will be given on the paper.

The exam format is **closed book**. Non-programmable calculators are permitted.

The questions will involve a mixture of definitions, theory, and calculations / exercises.

Definitions: The constrained OP / Equality and Inequality Constraints / The Active Set / LFDDs / Tangent Cone / LICQs / KKT Conditions

Theory:

- The projection operator – Section 12.4
- First-order optimality conditions in case of a single inequality constraint – Section 13.2
- Showing that the tangent cone is inside the set of LFDDs; showing that the tangent cone and the LFDDs are the same when the LICQs are satisfied – Section 15.2, Theorem 15.3

Calculations / Exercises: - these will come exclusively from Exercises 5 and 6:

- Everything on Exercises 5 is examinable.
- Everything on Exercises 6 is examinable *except for Question 5*.

Make sure you revised the corrected version of Exercises 5, which is available on the module webpage.