

What is optimisation?

An optimisation is one of these words that has many meanings, depending on the context you take as a reference. In the context of this course, optimisation refers to mathematical optimisation, which is a discipline of applied mathematics.

In mathematical optimisation, we build upon concepts and techniques from calculus, analysis, linear algebra, and other domains of mathematics to develop methods that allow us finding values for variables within a given domain that maximise (or minimise) the value of a function. In specific, we are trying to solve the following general problem:  $\min f(x) \text{ s.t. } x \in \mathcal{D}$

In a general sense, these problems can be solved by employing the following strategy: enumerate

- A nalyzing properties of functions under specific domains and deriving the conditions that must be satisfied such that a point  $x$  is a candidate optimal point.
- A pplying numerical methods that iteratively searches for points satisfying these conditions.