

Guidelines for project

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Rules and Guidelines:

1. The project can be done in groups of up to two people.
2. Participants are free to come up with their own optimization project. A (practical) numerical optimization problem must be chosen/constructed and solved with different tools taught throughout the course (at least two). An adequate interpretation of the results is also expected.
3. The main result is a written report in $\text{\LaTeX}$ submitted as a PDF file. Please use the *report* template with font size 12pt. The report should be between 4 pages (excluding figures, tables, etc.) and 10 pages (including all content).
4. The report must be a new and self-written document and may not contain any copy of other text or figures. Not a single one. The report must be solely written by the author(s).
5. The report must include a short, interesting title, the name(s) of the author(s) and an abstract. The content should be clearly structured in sections. It should start with an introduction and conclude with a short summary and critical discussion of the results.
6. Figures and tables should have a short caption and be referenced in the text properly, e.g., “the results are shown in Fig. 1”. Use the latex commands `\caption`, `\label` and `\ref`.
7. Plots must contain physical units and axis descriptions.
8. The report must cite all external sources as references at the end and other people’s contributions must be acknowledged. Using other people’s ideas and help is allowed, even encouraged. But not citing or acknowledging them properly is a crime.
9. Mathematical or physical variables shall consist of one letter only and be printed in italics. This is automatic in Latex, e.g., a_i as `$a_i$`. Physical units and sub- or superscripts that refer to words are in normal roman letters (use `\mathrm` when in Latex `mathmode`, e.g. x_{initial} as `$x_{\mathrm{initial}}$` or $\frac{\text{kg}}{\text{m}^3}$ as `$\frac{\mathrm{kg}}{\mathrm{m}^3}$`. Write, e.g., $m = 5 \text{ kg}$ (and not $m = 5kg$ or $m = 5\text{kg}$).
10. Describe your optimization problem in a clean and correct way. It should comprise:
 - Minimization/Maximization of an objective function.
 - Subject to a set of constraints (don’t forget indexing, e.g., $i = 0, \dots, N - 1$, if required)
 - List of optimization variables (DOF) under min/max operator.
 - Further definitions in text below, if needed.
11. For a convenient environment to type optimization problems in $\text{\LaTeX}$, check the *optidef* package: <https://www.ctan.org/pkg/optidef?lang=en>.
12. The project grade is based on the form and content of the report as well as the originality and quality of the results.

Important dates:

1. Topic and participants of each project should be agreed upon by July 29, 18:00. Please do so by filling in the online google sheet using the link below:

https://docs.google.com/spreadsheets/d/1xrzTE3W8fsUzQ2p1WwiGAS_FK_mEhk7U02BdoeI1LCJY/edit?usp=sharing.

2. Submit your final report and accompanying code by email to *dimitris.kouzoupis@imtek.de* before **August 14, 22:00**.