Final Project for Advanced FEM (ME46050)

First M. Last

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I. Introduction

For the final project, each student must submit a final report in the format of a technical paper. Students must start with this LaTeX template. Please use 10pt font (default already) and do not change the margins. Data generated in your investigation must be presented in an appropriate graphical or tabular format. Figures should be clear, informative, and well labeled. Source code supporting the project must be included and documented in an appendix to the report. You should make the report as concise as possible, and thus do not copy material from the course material unless it is really needed. For the report, *less is more*! In fact, the report should not exceed 10 pages (including references but excluding appendixes). Once finished, the report should be submitted *only* in pdf to a.m.aragon@tudelft.nl.

Note on collaboration

The final product (report, code, results and discussion, *etc.*) must be your own individual work. You are encouraged to discuss issues pertaining to the understanding of the projects with other students in the class within reasonable and customary bounds. You must *write your own code*, you must *select your own parameter values* in your studies, and *your discussion of results should be completely independent*. You should be able to divide your development into understanding and execution. To get to understanding of a given topic is generally OK for collaboration, execution steps generally are not. Certainly, if you are sharing electronic files, you have probably gone too far. If you are unsure of what constitutes acceptable collaboration, please ask.

II. Structure

Name your sections appropriately. If you need subsections, you can also add them as shown above.

III. On LaTeX

The following is a compilation of frequently used LaTeX constructs that you can use to build your report. You can find further information in the LaTeX cheat sheet provided in class.

Itemized lists are given in this format:

- Item 1;
- Item 2;
- ...
- Item N.

Enumerated lists are given in this format:

1. First item;
2. Second item;
3. ...
4. Last item.

Citations can be included by using the `cite` command: [**?**]. You also have to add the bibliographic entry at the end of the file.

Text requiring further explanation[1].

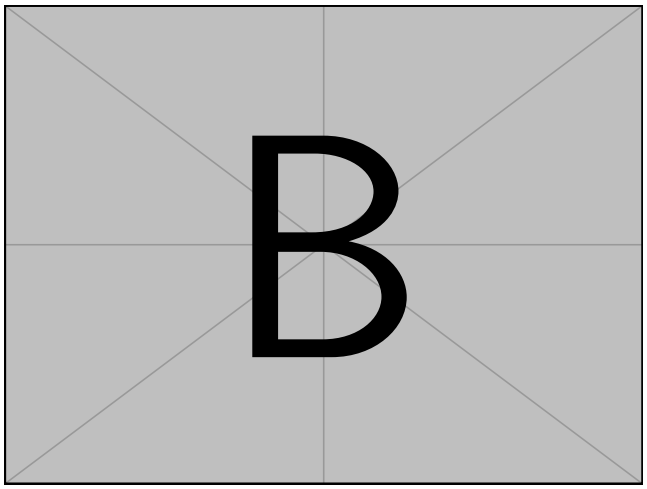


Figure 1: *A figure that takes a single column.*

Figures **??** and **??** show, respectively, figures that take the entire width or only one columen.

You can also add subfigures using the `subcaption` package. You can refer to the total figure with **??** or to individual components as **??-??**.

[1] Example footnote

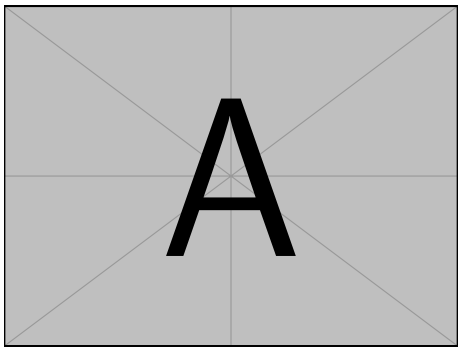
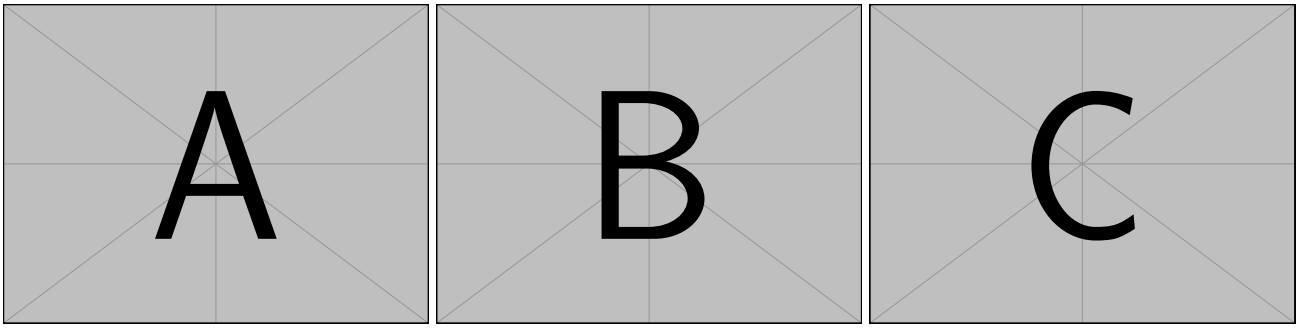


Figure 2: *A figure that spans both columns.*



(a) **(b)** **(c)**

Figure 3: *This is the caption for the entire figure: (a) Left; (b) Middle; and (c) Right.*

Here there is a complex table prepared in LaTeX that showcases several improvements over standard tables, including footnotes, handling multiple hierarchical levels using `multirow` and `multicolumn`, different alignment options using custom column commands, partial rules, and coloring particular cells or even entire columns.

	categories		
	A	B	C[†]
A	1	2	3
	4	5	6
	7	8	9

[†] Center-aligned

Equations can be written using hte `equation` environment:

$$s\boldsymbol{v} = \boldsymbol{T}\boldsymbol{v} \tag{1}$$

Notice the notation for scalars, vectors, and tensors. In addition, you can use $\boldsymbol{\nabla}, \boldsymbol{\nabla}\cdot$ to denote gradient and divergence. If you need to align equations, you can use the `align` environment:

$$\mathrm{d}x \qquad \frac{\mathrm{d}}{\mathrm{d}x} \qquad \frac{\mathrm{d}f}{\mathrm{d}x} \qquad \frac{\mathrm{d}^n f}{\mathrm{d}x^n}, \tag{2}$$

$$\frac{\partial}{\partial x} \qquad \frac{\partial f}{\partial x} \qquad \frac{\partial^n f}{\partial x^n}. \tag{3}$$

Here you also have the syntax for braces and (partial) derivatives. Equations can also be referred with (**??**) and (**??**). If a single equation number is needed for an equation spanning multiple lines, use the `aligned` environment inside the `equation` environment:

$$\begin{aligned} &|a| \quad \|b\|, \\ &(a) \quad [b] \quad \{c\} \quad |d|, \end{aligned} \tag{4}$$

where you see the syntax used for braces.

Some results will require log-log plots, which can be created in LaTeX using the `pgfplots` package:

IV. Discussion

The discussion is a very important part of the report, so make sure you write it properly.

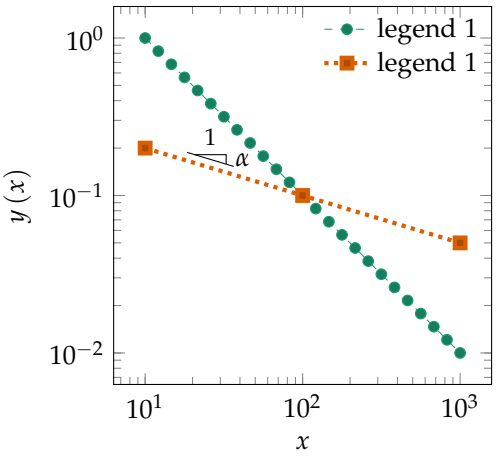


Figure 4: *A log-log plot.*

References

[Figueredo and Wolf, 2009] Figueredo, A. J. and Wolf, P. S. A. (2009). Assortative pairing and life history strategy - a cross-cultural study. *Human Nature*, 20:317–330.

Remember there is a 10-page limit!