Project Report and Presentation Guidelines

These are the guidelines that will be considered when grading your assignments. We strongly advise you to follow them not only to get better grades, but because they are pretty close to what a scientific article submission requires. If you prepare your assignments adhering to these guidelines, you are going to have a reasonable template for your thesis and first articles etc.

The weights of the elements for the grading are included at the end of the file.

Contents

1 Submission

Please submit by uploading one single PDF file to the appropriate directory on Kooplex-edu (https://kooplex-edu.elte.hu). Submit all of your code alongside the PDF file, but refrain from including raw code in your report. (A short tutorial on how to submit can be viewed at https://icsabai.github.io/simulationsMsc/kooplex_tutorial.pdf.)

Keep in mind that your work will be collected automatically, so if you do not upload to the correct place, it will be seen as if you had no submission.

2 Project report

2.1 Content

Motivation. Please try to introduce your subject in a way that raises interest. It does not suffice only to state that this was a school project assignment, maybe it helps if you think about what intrigued *you* most in the assignment. If you have no better idea, you can write about what motivated others when they were thinking about the problem. Try to think as if you were the reader, who has to read several assignments (articles) in a row, and you would like to hook his or her attention.

Introduction and theoretical background. Try to place your project work in a broader context to help the reader evoke his or her connotations and former knowledge on your subject. Write as if the reader had only superficial knowledge of the area, and keep in mind that even if the reader is an expert, it is most likely that at the time of the writing you have spent much more time with your subject than he or she has. Your text should be self-contained, that is, it has to be coherent in a way that the reader does not necessarily have to turn to other resources in order to roughly understand your subject.

Always include ideas and formulas that you are going to test in your work, and explain the notations you use. Explain briefly your methods. Even if they are widely known, explain your choice in a sentence, but do not discuss in detail (only if you added some new elements to the implementation, but then, the method in itself will be part of your work), cite further resources, if necessary.

Emphasize your contribution. You should make it clear what your own contribution was. Even if you work on known/solved problems, as in the case of assignments, write about the ideas and questions you had concerning your simulations, and emphasize how you tested these ideas or what part of your own work answered those questions. If up to some point, the work was done by somebody else (e.g. you contributed to/experimented with a larger open-source/open data project), explain again, what you added to the work done by others.

Discussion. The most important part of your work is when you present your results, and you evaluate whether they fit into your expectations or not. Below, we present our most important questions, think of them while writing!

- Is it the number/function/behaviour that is in the literature? Is it what you expected? If yes, please underline that your results are in accordance with the theoretical/literature/ expected/experimental behaviour, values, functions. Discuss errors.

- If not, then why not? Could you think of methods with that you could improve your results (you don't have to implement them, only think about it)?
- Are you sure that you did not underestimate your error? How did you estimate your errors?
- Can you reach the limits of your model, or the limits of your computer? Try to discuss scenarios, when your algorithm fails. What is the role of numerical error in your work? Does this influence your results? *Experiment and play* with your simulation/data, it is (as opposed to real experiments) costless!
- What has been difficult to realize? What are the pros and cons of the methods you used?
- Present measurable quantities, if there are several parameters of your model, explore the parameter space, demonstrate the fundamentally different behaviours!

Conclusion. Please wrap up your work at the end of the assignment, again, underline your own contribution, state the main results. It helps the reader to summarize and to see what you wanted to emphasize.

2.2 Format

PDF. You can write your assignment with your favourite text processing engine (Word, Latex, Jupyter Notebook etc.), as long as you submit your work in one single PDF file that contains all of your figures, text and tables. However, it should not contain your code! Think of your code as your lab experiment, and your project work as your research article. If you do not submit a final codeless PDF report, your work will not be graded.

If you have problems exporting your Jupyter Notebook directly to PDF, or exporting it without code, check out nbconvert's option to convert it to tex, then format it in your favourite tex editor, and compile to PDF.

Sectioning. A good header containing your name, the date and the title of the project always helps. Even if you don't make any headers, you should include an article-like title section with at least the the project title, the course name, your own name and the actual date.

Make a reasonable division of your work by using section and subsection headers. Make sure that the margin, font choice and the font size provide the reader with maximum readability. Pay attention to page breaks, paragraph and line spacing, remain moderate in formatting.

Language. You have to submit your work in English, as that is the official language of the course.

Pay attention to orthography and your choice of words *in both languages*! Use a spell-checker: it removes most of the annoying mistakes. Have your document proof-read, if you are not sure in your own skills *in both languages*! Wrong spelling can make the understanding and the interest of the reader decay with a remarkably short half-life.

Remain objective and concise. Do not use very long sentences, pay attention to using the special terminology of your subject.

2.3 Figures

All figures must have a numbering and a short caption describing the content. Figures are the first objects a reader skims through after the introduction. The captions and the legend should

provide enough information to understand the content of your figure. If you refer to the figures in your text, use the numbering you introduced.

If possible, include vector graphics in your work (PDF, SVG, EPS).

Pay attention to line width, the color choice, axis title, tick label and legend font sizes. They all have to be easily readable in your paper.

Always write axis titles with units, and clear legends that explain colors, lines and markers on your figure.

Minimize figure margins, padding and whitespace in them.

If possible, have a consistent color scheme across all figures. Especially when simulation runs or different experiments are shown through different measurements or parameters, colors must remain consistent.

2.4 References

All external sources must be indicated in the text, and listed in a reference list below the document. In Latex, using BibTex is the most convenient way to produce this output. Most reference management softwares provide BibTex support: the easiest way is to collect the articles or web pages you use as sources during your working phase in Mendeley (free), EndNote (free academic account is available), Zotero (free), KBibTex (free) or other reference managers, and then let LaTex handle your citations in the default manner.

Documents without references will not be accepted: it is simply not possible that you worked without sources. We strongly encourage you to try to read or use some parts of original research articles.

3 Grading

During the semester, there will be two projects. You'll be proposed two grades from 1 to 5 (5 being the best) on each of them: one for the content and one for the format of your work. The grading will be based upon the above guidelines.

If you submit after the deadline, your grade will decay obeying the following law:

$$G(t) = G_0 - 0.5 \cdot t,$$

where G_0 is your proposed grade based on your work (it is the average of the content and the format grade), and t is the integer number of days (24 hours) passed since the deadline.

You're also going to have an oral examination, where our work will be discussed, and the final course grade decided upon your knowledge of the course material and the proposed grades.