Instructions for preparing and writing M.Sc. Dissertations
(Research-oriented work)
Version 1.0, January, 7th, 2015

1. Before starting your dissertation, you need to **define** what is the subject you are going to work with and perform a **thorough systematic** bibliography review of the theme you chose.

What is a systematic review? It is the one where you search the web or books for the subject, and define rules for filtering papers in two sets "included" and "excluded" and explain why some papers go to one set or the other.

In order to start the search, you need to prepare keywords related to your subject and prepare queries to be used in Google Scholar, Scopus, MesH etc. These search engines will return a number of papers on the subject you are looking for. **You need to read at least the abstract and conclusions of every paper retrieved after your search**. Now, you filter out only the ones you think are very closely related to your research work, and give a reason for choosing those papers.

2. Start organizing your bibliography file. Choose one of the standards available to start organizing your references. Usually your department/faculty has clear rules about the standard to be used. If you are formatting yout text using LaTeX, most references found during your bibliographic search can be exported in BibTeX format.

3. Your dissertation needs to have a Bibliography Section with a list of the cited works you have in the text. In the process of writing your dissertation, make sure to properly refer the authors you are basing your text on. For example, "Smith et al. [1] discovered that...". In this sentence, Smith is the first author of one of the publications you list in the Bibliography Section of your dissertation and [1] is the link that connects this citation to the publication in the bibliographic list. If your bibliographic entry has only one author, you cite only the author's surname. If the bibliographic entry has two authors you cite the two authors' surnames (e.g., Smith and Jones [1]). If the bibliographic entry has more than two authors, you can use the expression "et al.", like in the example shown before.

4. Every picture, graph, diagram, algorithm etc needs to have a caption and a number and needs to be cited and explained in the text.

5. If you want to use any picture, graph, diagram etc available in one of the publications in your dissertation, you need to make sure that you can use it (check the copyright rules). If the copyright rules allow you to reproduce the picture (or others) in your text, you need to insert a reference to the source (where the picture was taken from) in the caption. If you are allowed to use a picture, but want to slightly modify it, you need to say in the caption: Adapted from [1] (where [1] is the number of your reference in the Bibliographic Section).

6. Your dissertation should have at least the following chapters:

- **Chapter 1**: Introduction
  This should be a summary of what comes in the next chapters. Here you explain in two to five pages: (1) the context of your work highlighting and **defining** the problem you need to solve, (2) what you want to do (objectives) and (2) why you want to do it (motivation), (3) how you want to achieve your objectives (methodology), always supporting your text on the available literature, (4) contributions (Results that confirm that you achieved your objectives) and (5) organization of the chapters that come next.

- **Chapter 2**: Basic Concepts
  In this chapter you need to present the foundations of your work: theoretical aspects, background material etc, all that is needed to understand the terminology and expressions used in the remaining chapters.

- **Chapter 3**: Related Work
  Here you need to discuss about other works in the literature that do something similar to what you want to do. You need to cite and discuss the relevant papers you chose to include in your study during your survey. Explain what others do, why it is not sufficient, and why you need to do what you want to do. It is helpful to **define some criteria to compare your work against others,** and build a table with main charateristics of other works contrasting to what you want to do. In other words, in which aspects is your work different from others?

- **Chapter 4**: Your Work

- **Chapter 5**: Materials and Methods
- Definition of Experiments (if any)
- Definition of Evaluation Metrics

- **Chapter 6**: Results and Analysis

- **Chapter 7**: Conclusions and Future work
- Research Summary
- Main Findings
- Limitations
- Future Work
- Conclusion

During writing, some of these chapters may collapse into just one. **Your work (chapters 4-7) should account for at least 50% of your whole dissertation.**

7. Your dissertation needs to have a cover, and a table of contents. It is also useful to have, in the preamble, a list of Figures, Tables, Algorithms etc. It is recommended to have a look at other recent dissertations of your colleagues of the same department to make sure you use the right formatting rules. These dissertations are publicly available online in the digital repository of the University of Porto. For example, the FCUP repository can be found at:

https://repositorio-aberto.up.pt/handle/10216/9535.