THESIS TITLE

Interim Report and Project Plan - guidelines

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Supervisor: Supervisor

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Abstract

Write a short abstract outlining the importance of the project, your progress to date, and your planned future work. Do not exceed 100 words in the abstract. The maximum length of the entire report is 20 pages, excluding appendices. This will form a strong foundation for your final Research Thesis report. Please regard this as a great opportunity to collect your initial thoughts and data. You can use Microsoft Word or other document editors such as LaTeX, InDesign, or OpenOffice, however font sizes and margins should be similar to this guide. NOTE: this guide is indicative and can be modified in agreement with your supervisor. Please refer to the course outline (marking criteria and rubrics) for more details about expectations for each section.

[1]contact email

1 Introduction

THIS document provides a guide for you to use for your Thesis A report. It is also intended to provide you with some structure and to help you understand the standard of writing required for your final submission – take it as an opportunity to get right into the habit of high-quality technical reporting. The style of writing here, including how figures are labeled, how referencing is done, and the general flow of a research report (that will be fleshed out into your thesis), is what is expected of you. You can use this guide fully or just reproduce your own, but font sizes and margins should be similar to this guide. Your report should have a similar tone and style to the peer-reviewed literature that you have already been reading. It is preferred that you speak in the "scientific voice", i.e. "the humidity was calculated", rather than "I calculated the humidity". Keep the language objective, and be specific where you can be; for instance use "significantly altered from the test conditions" and "20% greater", rather than "amazingly, it was drastically different from the test conditions" and "a bit more".

In this section, you should introduce your topic (to a reader who is an engineer, but may not be fully familiar with your topic – this is for the benefit of readers other than your supervisor, i.e. the moderator or incoming future students). Here you need only reference very significant literature, and provide an overview of what the field is, what your project is, why your project is important, and very briefly how you intend(ed) on going about the work. It should set up the literature review – the reader now knows roughly what they are reading about and what they are looking for in the coming section(s).

The introduction might run to **about 1 to 1.5 pages**, assuming a figure or two showing something highly useful for the reader, such as a picture of the problem (perhaps with annotation), and maybe some kind of flowchart showing the workflow.

2 Literature Review

The literature review is not just about presenting descriptions of the important papers you have found, but telling a meaningful story and, where appropriate, some critical discussion of previous findings (i.e. was another study useful but flawed?). Remember that you may read hundreds of papers/books/web pages etc., but often only about 20 or 30 are really important, and these are the ones you will mention in your literature review, which this report will be a concise version of. This section needs to flow logically, and this does not always imply that the material is chronological. By the end, the reader should have a clear appreciation of what the major work in the field was, why it is relevant to the current project, and where the unknowns and questions lie (**research gaps**) – these are the issues that you are going to address with your thesis research.

For the purposes of this report, this section will be **12-15 pages long**. Remember to reference properly any material that you obtain from literature or other sources. If you are unsure how to discuss literature properly, find a really good review paper on your topic, or if there isn't one, a similar topic, and you will have a good example to refer to.

3 Research Question and Project Plan

This section will start with a clear statement on your research question, i.e. what you want to discover in relation to the already available literature and its gaps (connect to previous section). Hypothesis and aims at the basis of your research will also be presented to detail your research question, again in relation to what has been already observed in literature (e.g. a particular aspect is not considered because multiple studies have shown it is not relevant). After detailing your research question, you will describe with technical detail how you are going to conduct your research (research plan). In particular you should discuss:

- your proposed solution/experimental methodology to address the research question;
- your thesis timeline (possibly with a Gantt chart or some kind of dated mindmap, which can go in appendix, and can be referenced to in this section) and a justification of time allocation for each task;
- the resources you have identified as available to your research; and
- the required training and upskilling you will need to obtain.

Try to corredate textual descriptions with visual aids (e.g. pictures of your experimental rig). This section is **3-5 pages** long.

4 Project Dependent Preparations

This section will describe, in **1-2 pages**, your preparations, progress and preliminary results (assuming you have relatively few at this stage). This section should include:

- Evidence of training on specific equipment and/or upskilling in new software/methods
- Preliminary results/sketches
- Components/parts ordered
- Detailed budget of parts to be ordered
- Risk Assessment

In terms of preliminary results, you are encouraged to present your findings with graphical aids (figures, see example below).

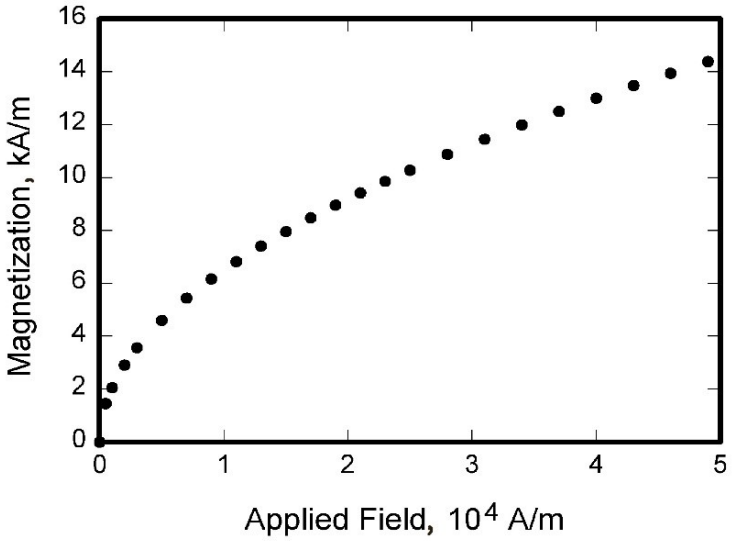

Figure 1: Magnetization as a function of applied field. *Figure captions should be bold and justified, with a period and a single tab (no hyphen or other character) between the figure number and the figure description. If you took a figure from another paper or the web (when permitted), you MUST include a reference in the caption)*

(a)

(b)

(c) Some Dogs

Table 1: A Table

1	2	3
4	5	6
7	8	9

Tables and figures of all types can be added inline or with text wrapping frames. Place figure captions below all figures; place table titles above the tables. If your figure has multiple parts, include the labels "a)," "b)," etc. below and to the left of each part, above the figure caption. Please verify that the figures and tables you mention in the text actually exist.

When citing a figure in the text, use the abbreviation "Fig." except at the beginning of a sentence. Do not abbreviate "Table." Number each different type of illustration (i.e., figures, tables, images) sequentially with relation to other illustrations of the same type.

Figure axis labels are often a source of confusion. Use words rather than symbols. As in the example in Fig. 1, write the quantity "Magnetization" rather than just "M." Do not enclose units in parenthesis, but rather separate them from the preceding text by commas. Do not label axes only with units. As in Fig. 1, for example, write "Magnetization, A/m" or "Magnetization, Am^{-1}," not just "A/m." Do not label axes with a ratio of quantities and units. For example, write "Temperature, K," not "Temperature/K."

Equations are centered and numbered consecutively, with equation numbers in parentheses flush right, as in Eq. (1).

$$Re = \frac{\rho U L}{\beta} \tag{1}$$

Be sure that the symbols in your equation are defined before the equation appears, or immediately following. Italicize symbols (T might refer to temperature, but T is the unit tesla). Refer to "Eq. (1)," not "(1)" or "equation (1)" except at the beginning of a sentence: "Equation (1) is…" Equations can be labeled other than "Eq." should they represent inequalities, matrices, or boundary conditions. If what is represented is really more than one equation, the abbreviation "Eqs." can be used.

Define abbreviations and acronyms the first time they are used in the text, even after they have already been defined in the abstract. Very common abbreviations such as CFD, SI, ac, and dc do not have to be defined. Abbreviations that incorporate periods should not have spaces: write "P.R.," not "P. R."

5 Conclusion

Although a conclusion may review the main points of the work to date, do not simply replicate the abstract. **Half a page** should be sufficient to concisely summarise everything that's been done to date.

Acknowledgments

Feel free to briefly thank anyone that's been helping you with your project – lab officer, the workshop, industrial partner, a friend that helped you solve a killer problem – this is a common courtesy in technical writing.

References

[1] Michael A Dornheim. Planetary flight surge faces budget realities. *Aviation Week & Space Technology*, 145(24):44–46, 1996.

[2] Gordon C Oates. *Aerothermodynamics of gas turbine and rocket propulsion*. American Institute of Aeronautics and Astronautics, 1997.

[3] Susan Stepney and Sergey Verlan, editors. *Proceedings of the 17th International Conference on Computation and Natural Computation, Fontainebleau, France*, volume 10867 of *Lecture Notes in Computer Science*, Cham, Switzerland, 2018. Springer.

[4] Leonard Susskind and George Hrabovsky. *Classical mechanics: the theoretical minimum*. Penguin Random House, New York, NY, 2014.

[5] W Terster. Nasa considers switch to delta 2. *Space News*, 8(2):13–19, 1997.

[6] GH Vatistas, S Lin, and CK Kwok. Reverse flow radius in vortex chambers. *AIAA journal*, 24(11):1872–1873, 1986.

Bibtex Examples (Shown above)
Examples of Periodicals [1] [5] [6]
Examples of Books [2] [4]
Example of a Proceeding [3]

The following are intended to provide examples of the different reference types. You are not required to indicate the type of reference; different types are shown here for illustrative purposes only. You are welcome to use slightly different referencing formats – whenever you are in google scholar and click on "cite", you get the three most popular and standard referencing layouts. We don't mind if you prefer to go alphabetical rather than numbers in this list and correspondingly in the text, or whatever your supervisor prefers. *Just be consistent all the way through!*

Periodicals

[1]Vatistas, G. H., Lin, S., and Kwok, C. K., "Reverse Flow Radius in Vortex Chambers," *AIAA Journal*, Vol. 24, No. 11, 1986, pp. 1872, 1873.

[2]Dornheim, M. A., "Planetary Flight Surge Faces Budget Realities," *Aviation Week and Space Technology*, Vol. 145, No. 24, 9 Dec. 1996, pp. 44-46.

[3]Terster, W., "NASA Considers Switch to Delta 2," *Space News*, Vol. 8, No. 2, 13-19 Jan. 1997, pp.,

1, 18.

All of the preceding information is required. The journal issue number ("No. 11" in Ref. 1) is preferred, but the month (Nov.) can be substituted if the issue number is not available. Use the complete date for daily and weekly publications. Transactions follow the same style as other journals; if punctuation is necessary, use a colon to separate the transactions title from the journal title.

Books

[4]Peyret, R., and Taylor, T. D., *Computational Methods in Fluid Flow*, 2nd ed., Springer-Verlag, New York, 1983, Chaps. 7, 14.

[5]Oates, G. C. (ed.), *Aerothermodynamics of Gas Turbine and Rocket Propulsion*, AIAA Education Series, AIAA, New York, 1984, pp. 19, 136.

[6] Volpe, R., "Techniques for Collision Prevention, Impact Stability, and Force Control by Space Manipulators," *Teleoperation and Robotics in Space*, edited by S. B. Skaar and C. F. Ruoff, Progress in Astronautics and Aeronautics, AIAA, Washington, DC, 1994, pp. 175-212.

Publisher, place, and date of publication are required for all books. No state or country is required for major cities: New York, London, Moscow, etc. A differentiation must always be made between Cambridge, MA, and Cambridge, England, UK. Note that series titles are in roman type.

Proceedings

[7]Thompson, C. M., "Spacecraft Thermal Control, Design, and Operation," *AIAA Guidance, Navigation, and Control Conference*, CP849, Vol. 1, AIAA, Washington, DC, 1989, pp. 103-115

[8]Chi, Y., (ed.), *Fluid Mechanics Proceedings*, SP-255, NASA, 1993.

[9]Morris, J. D. "Convective Heat Transfer in Radially Rotating Ducts," *Proceedings of the Annual Heat Transfer Conference*, edited by B. Corbell, Vol. 1, Inst. Of Mechanical Engineering, New York, 1992, pp. 227-234.

At a minimum, proceedings must have the same information as other book references: paper (chapter) and volume title, name and location of publisher, editor (if applicable), and pages or chapters cited. Do not include paper numbers in proceedings references, and delete the conference location so that it is not confused with the publisher's location (which is mandatory, except for government agencies). Frequently, CP or SP numbers (Conference Proceedings or Symposium Proceedings numbers) are also given. These elements are not necessary, but when provided, their places should be as shown in the preceding examples.

Reports, Theses, and Individual Papers

[10]Chapman, G. T., and Tobak, M., "Nonlinear Problems in Flight Dynamics," NASA TM-85940, 1984.

[11]Steger, J. L., Jr., Nietubicz, C. J., and Heavey, J. E., "A General Curvilinear Grid Generation Program for Projectile Configurations," U.S. Army Ballistic Research Lab., Rept. ARBRL-MR03142, Aberdeen Proving Ground, MD, Oct. 1981.

[12]Tseng, K., "Nonlinear Green's Function Method for Transonic Potential Flow," Ph.D. Dissertation, Aeronautics and Astronautics Dept., Boston Univ., Cambridge, MA, 1983.

Government agency reports do not require locations. For reports such as NASA TM-85940, neither insert nor delete dashes; leave them as provided by the author. Place of publication should be given, although it is not mandatory, for military and company reports. Always include a city and state for universities. Papers need only the name of the sponsor; neither the sponsor's location nor the conference name and location are required. Do not confuse proceedings references with conference papers.

Electronic Publications

CD-ROM publications and regularly issued, dated electronic journals are permitted as references. Archived data sets also may be referenced as long as the material is openly accessible and the repository is committed to archiving the data indefinitely. References to electronic data available only from personal Web sites or commercial, academic, or government ones where there is no commitment to archiving the data are not permitted (see Private Communications and Web sites).

[13]Richard, J. C., and Fralick, G. C., "Use of Drag Probe in Supersonic Flow," *AIAA Meeting Papers on Disc* [CD-ROM], Vol. 1, No. 2, AIAA, Reston, VA, 1996.

[14]Atkins, C. P., and Scantelbury, J. D., "The Activity Coefficient of Sodium Chloride in a Simulated Pore Solution Environment," *Journal of Corrosion Science and Engineering* [online journal], Vol. 1, No. 1, Paper 2, URL: http://www.cp/umist.ac.uk/JCSE/vol1/vol1.html [cited 13 April 1998].

[15]Vickers, A., "10-110 mm/hr Hypodermic Gravity Design A," *Rainfall Simulation Database* [online database], URL: http://www.geog.le.ac.uk/bgrg/lab.htm [cited 15 March 1998].

Always include the citation date for online references. Break Web site addresses after punctuation, and do not hyphenate at line breaks.

Computer Software

[16]TAPP, Thermochemical and Physical Properties, Software Package, Ver. 1.0, E. S. Microware, Hamilton, OH, 1992.

Include a version number and the company name and location of software packages.

Patents

Patents appear infrequently. Be sure to include the patent number and date. [17]Scherrer, R., Overholster, D., and Watson, K., Lockheed Corp., Burbank, CA, U.S. Patent Application for a "Vehicle," Docket No. P-01-1532, filed 11 Feb. 1979.

Private Communications and Web Sites References to private communications and personal Web site addresses are generally not permitted. Private communications can be defined as privately held unpublished letters or notes or conversations between an author and one or more individuals. They

may be cited as references in some case studies, but only with permission of the AIAA staff. Depending on the circumstances, private communications and Web site addresses may be incorporated into the main text of a manuscript or may appear in footnotes.

Unpublished Papers and Books Unpublished works can be used as references as long as they are being considered for publication or can be located by the reader (such as papers that are part of an archival collection). If a journal paper or a book is being considered for publication choose the format that reflects the status of the work (depending upon whether it has been accepted for publication):

[18]Doe, J., "Title of Paper," Conference Name, Publisher's name and location (submitted for publication)
[19]Doe, J., "Title of Paper," *Name of Journal* (to be published).
[20]Doe, J., "Title of Chapter," *Name of Book*, edited by… Publisher's name and location (to be published).
[21]Doe, J., "Title of Work," Name of Archive, Univ. (or organization) Name, City, State, Year (unpublished).

Unpublished works in an archive must include the name of the archive and the name and location of the university or other organization where the archive is held. Also include any cataloging information that may be provided. Always query for an update if a work is about to be published.

Appendix

Add in the appendices any material which supports this document, but does not "fit" naturally in the flow of your report's narrative.

Place here your Gantt chart with detailed activities (to be referred to in the project plan section). Feel free to put it in "sideways" to fit better. In the appendix, the more detail the better – make realistic dates and specific milestones, you should have a good idea by now what you need to do and how you're going to do it... if not, you definitely need to discuss with your supervisor as soon as possible.

Also remember to add your draft thesis outline in the appendices. This is in the form of a table of contents of the Thesis, with detailed sub-section headings linked to your research topic and planned activities.