**Report Title***(~10-15 words with specific keywords for report contents)*by

A. Someone

**Abstract:#**

**Page Limit of 5 sides of A4**

The abstract is a summary of the report in roughly 8-10 sentences. It gives the reader a quick idea of the report context, introduces the topic, explains what you did, highlights the main results, and their significances. For instance: *Report writing is an essential skill for engineers. This document provides a template for a report. The report format is standard in both academia and industry and helps the reader to quickly find information in specific sections. The template depicts the specific purpose of each section. This makes it a good basis to start writing a report. It is generally found that a good report or paper adheres to this structure and presents a strong and clear analysis in as few words as necessary but no less than that!*

**1 Introduction**

The introduction should introduce your subject, state the objectives of the research and give some background information with references. Here, you (the expert) set out what you present in this report and you can give the reader a few pointers with references for more information. A good introduction also hooks the reader’s attention and explains **why** the experiment was carried out. An easy way to do this is to first write a paragraph (#1) on the context or wider problem of the research. Then, write a paragraph (#2) with a possible solution (which links to your research) to that problem. Then last paragraph(s) (#3) can introduce your research. To help you a bit, here is a very generic example:   
*In aerospace engineering, weight is a crucial factor as aircraft need to defy gravity to stay up in the air. At the same time, an aircraft structure also needs to fulfil multiple load cases, which makes it challenging to… [*finish paragraph + add references]

*To develop lighter aircrafts and aerospace structures, it is important to take the material performance into account early in the design process. This allows to ….* [finish paragraph + add references]

*In this report, we investigate the material selection process for a prototype lighter-than-air aircraft using material performance indices and Ashby plots. The case study is the design of the wing and …* [finish paragraph(s) with more details on what you are presenting + add references]

**2 Methodology**

In the methodology, you must explain how you obtained and analyzed your results. This is one of the key pillars of the scientific method such that others can replicate your results. It is easy to think of what you did but it is more difficult to present it clearly to your audience. For your report on material selection, you want to present/explain the following things here:

- How the material properties were obtained and compared (Ashby plots and CES EduPack).  
- Which material performance indices were used (how were the derived or why were they chosen)  
- How the shape factors were chosen and implemented in the graphs

**3 Results**

Here you present your findings, with as little subjective analysis possible. Show your main results/graphs and point out any notable trends. Tell the reader what they should be paying attention to. All figures/tables need captions and supporting body text, they can’t stand alone without being mentioned. What you should have in your report for material selection:

* Ashby plot(s) for spars
* Ashby plot(s) for ribs
* A table with relevant material properties of your considered materials so you can discuss them later in the next section.

1. **Discussion and analysis**

This section requires the most thinking, but it also allows you to comment on the results and add your opinion/thoughts. It follows the introduction (where you mentioned a problem and what you did), and then you showed the methodology and results to the reader. Now it is time to discuss them:

* + What did you expect to happen and are the results as expected? If so, state/explain what was expected (use references) and mention in the discussion that the results are as expected. For material selection, what materials are commonly used for wing design, and did you find those?
  + Are there unexpected results? If so, what is unexpected, and do you have an explanation for it or an idea for further investigation? If a material comes out which is not used in aerospace, mention it and give possible reasons why it might not be a good material (or actually why it can be a good material)
  + State sources of error you might expect which could invalidate the results and suggest how the experimental method could be improved. Maybe there are more material performance indices that should be considered? If so, which ones would you propose?

There are no right and wrong answers here, it is important to use clear arguments to discuss your results. Show your thought process and use clear paragraphs for different aspects of the results you discuss. Your results are the way they are, but here you can discuss whether you think they make sense or not, or propose what you would improve/change to help other people improve their work.

**5 Conclusion**

Conclusions are often the last thing you write, but one of the first sections being read. It should be a concise summary of the report and stand-alone:

* What did you do? Give few sentences on context and methodology
* What were your main findings? Provide the reader with actionable information
* What is next? Any improvements possible in experiments or follow-up experiments.

It is like the abstract, but more expansive on the results parts. Also, it cannot present any new information/data not mentioned before.

**6 References**

Should follow a standard referencing format, such as Vancouver [1]. Citation management software are available on UoB computers, such as EndNote and Mendeley, to help with compiling and formatting references.

1. Open Journals Publishing. Vancouver Reference Style Guide. c2009. Accessed 1 December 2017. Available from: http://openjournals.net/files/Ref/VANCOUVER%20Reference%20guide.pdf