

## Guidelines for the Elective Topic Report

15% of your assessment for the Design Proficiency course as a whole is based upon a report that you write as a team and submit by email to [d.taubman@unsw.edu.au](mailto:d.taubman@unsw.edu.au), no later than 5pm Wednesday, June 6.

Submit as a single PDF document, including the cover sheet (see below)

Use the following subject line in your email: ELEC4123 REPORT

A draft version of the report must be available from the start of the laboratory session on Thursday of Week 13. However, this draft version does not need to conform to any particular structure – it will not be marked, but will be used only to assist in assessing understanding, as individual team members are interviewed.

### Report Structure

A high level structure for the report is as follows:

1. Problem statement
  - Here you provide a paragraph or so expressing what you understand to be the most important features of the design problem.
  - It is essential here that you identify the key challenges. Another way to put this is that you should say “What is actually problematic about the problem?”
  - This requires some thought. It is likely that your understanding of what is really challenging has changed over the 3 weeks of the elective topic, which is normal. Good design involves spending effort to anticipate these shifts in understanding early. In any case, document your final understanding of the problem, not your initial understanding.
2. Selected design concept reasoning
  - To address the challenging aspects of the problem, your team will have developed solution concepts and explored their viability. You may document up to two concepts considered, but focus on the the concept you finally employed.
  - Reasoning the key element here. Your design concept should have been selected to address the key challenges of the problem, keeping the stated design objectives in mind. Your reasons should not include things which are entirely outside the stated objectives of the topic.
3. High level block diagram
  - It is suggested that you identify the main tasks that were assigned to team members actually on the block diagram, in compact form.
4. Allocation of tasks to group members

- Provide a list of the tasks, with a brief description of what the deliverables for each task are and who is in charge.
  - Each task must have exactly one person who is ultimately in charge; shared responsibility rarely works.
5. One section for each task (written by the identified member)
    - There should be at least 4 sections for a 4 member team; can be many more.
    - Each task description section must include the author name in a sub-heading.
    - A detailed technical description of the design aspects associated with this task are expected, including relevant theory, calculations, diagrams, circuits, code, etc.
    - Do not fill these sections with computer code. You should move significant code to appendices, providing only brief snippets here that reveal key aspects of the design.
  6. Risk mitigation strategies
    - What we mean by “risk” here is primarily “technical risk,” i.e., “what might go wrong?”
    - In most cases, the risks are all related to the things you do not already know how to do, and mitigation of risks involves a concrete plan to resolve all uncertainties as early as possible.
  7. Reflection upon the design and achieved performance
    - You can only write this section after the Week 12 experience.
    - It is very important to look back on how your team performed and consider what you might have done differently in hindsight.

## Length and Style Guidelines

The main body of your report should be as concise as possible, while not missing out key information. You should assume that approximately 30 minutes will be spent reading and marking your report, so if you write more than can be digested in that space of time it will probably not be read.

Avoid unnecessary text. There is no need to tell the marker anything that is a priori quite obvious, such as the benefits of electric power to mankind, or the value of communication in the modern world. There is also no need to replicate the topic description.

Your objective is to assist the reader in making good use of the 30 minutes, so you should use appendices for material that the reader does not need to actually read, but may want to refer to. It is equally important that you do not move material to appendices if it is actually needed to make sense of your report. Failure to move less relevant material to appendices and the decision to move very important material to appendices are both errors that will make your report less readable, and so ultimately hurt you.

Equations are extremely valuable. A very common error by students is to use text to clumsily or ambiguously describe a concept that could be compactly and precisely described by an equation. Remember to define all notation in equations. The right way to use equations in your text is to consider the equation as a *noun* in a sentence and to define any terms in the equation that have not previously been defined by following the equation with a clause such as “, where x denotes ..., y means ... and z is ...” or “Here, x denotes ..., y means, ...”

Figures are also extremely valuable. Even a (neat) hand-drawn figure that is photographed and inserted into your report is better than a lot of waffly text.

Use labeled captions for all figures and tables, as is the convention for all technical writing.

Under no circumstances should you ever cut-and-paste an equation from a third-party source into your document. This is completely unnecessary and almost always a massive error in judgement. If you cannot create your own equations to match the notation you need in your report, then there is something terribly wrong with your technical proficiency, so do not risk giving that impression!!

## Marking Guideline

The report will be assigned a mark out of 30, which will subsequently be multiplied by 0.5 to obtain a (non-integer) mark out of 15, corresponding to the 15% weight carried by this element of the course. By and large, the same mark will be awarded to all members of the team, but we reserve the right to assign different marks, especially if there is a marked difference between the individual task descriptions that are produced by team members.

These 30 marks will be distributed according to the following scheme, noting that fractional marks may be awarded in each category:

1. Problem statement: 0-3
  - Be quite sure to identify what your team identifies as the key challenges
2. Design concept and reasoning: 0-6
  - This should be oriented strongly towards how you address the key challenges from the problem statement
3. High level block diagram and task allocation: 0-4
  - Note that poor choices in task allocation will result in a lower mark
4. Task descriptions: 0-12
  - Mark reflects an average quality of the descriptions provided for all relevant tasks.
  - This is where you provide all relevant design details for your team's solution.
5. Risk mitigation: 0-2
  - Mark reflects your understanding of the real risks; don't forget to relate these to challenges identified in the problem statement
6. Reflection: 0-3
  - Mark reflects your judgement regarding what went well and, especially, what could have been done better and how
  - How has the design process and outcome affected your understanding of the key challenges?

## Report Cover Sheet

Your report must contain a filled out copy of the cover sheet found on the subject web-page at <http://subjects.ee.unsw.edu.au/~elec4123>.