Assessment	**Design Proposal**	
Due	Friday 5pm of Week 8 (27th April, 2018)	
Description	The proposal will be in the form of a professionally formatted document that summarises the output of the first three design phases – a detailed design for the Project, supported with a project plan, schedule, budget estimate, and preliminary test results (if any). This is a sufficient design description package that could be handed over to the client, if required. The length of the report should be between 10 – 14 pages core content (not including title pages, figures, tables, references, and appendixes). The key technical content to be included is a system-level design of your proposed device, along with detailed descriptions of how sub-systems fit together and interact, and detailed designs of these sub-systems, where possible. From a planning perspective, the key component is the detailed project development plan, most likely in the form of a Gantt chart, along with explanations and justifications that this plan is indeed realistic and achievable within the schedule allowed.	
Mark	15% Group in combination with the Design Presentation	
Submission	Moodle Submission Forum – one report for the group submitted by one student from the group	
Grading Criteria	Report Outline	3
	Formatting and general appearance	3
	Quality of Technical Design and Presentation	9
	Detailed Project Plan	5
	Total Marks	20

Note: This template is designed as guide, not a set of requirements. Any aspect, including the fonts, formatting and section headings, can be changed.

We also recommend that you and your group members view the IWRITE Design Reports online resource.

ENGINEERING DESIGN AND INNOVATION

ENGG1000

DESIGN PROPOSAL

PROJECT 'XXX'

TEAM XX *Create list of student details, in alphabetical order, last name first.*

Cagney, Jimmy z1110000 z1110000@student.unsw.edu.au,
Good, Johnny B.
Mercury, Freddy
Richard, Little
Thornton, Billy Bob

EXECUTIVE SUMMARY

In about half a page, summarise the purpose of the project, the main points of your design, including its advantages and limitations, and any reasoning behind your design choices that you think is important. Include any key risks or resource requirements that are relevant to the project. You might like to finish with some statement of how you expect the design to perform, relative to the design objective function given in the project brief.

It might open with something like:
This proposal contains our recommendations for developing and constructing a competitive device for the Project 'XXX'. Etc etc….

Note also that an Executive Summary needs to indicate what the key findings or results are! In effect, the executive summary should be a stand-alone, half-page summary of the entire document. A busy executive (manager) should be able to read this at any time to refresh their memory of the report – aim for it to stand-alone from the report as a concise summary. Given the limited length you have available, you need to specific in your statements – any general overview of the topic should be left for the introduction.

See this LINK for more information

USE ROMAN numerals for pages after the title page and before the introduction.

TABLE OF CONTENTS

Be consistent in numbering your sections and sub-sections.

Taken from “Guidelines to Presenting Written Assignments – Reports-Organisation”, available on the ENGG1000 Moodle page:

1. INTRODUCTION

The introduction is where you tell the reader what you are going to tell them in the report. This is where you provide the background and the reason for this report. You need to pretend that the reader (me) doesn't know as much about design as you do.

You must include a problem definition here. You should talk (in general terms) about some of the key sub-problems raised by the design brief, as a lead-in to discussing the proposed solutions (in the following sections). You should explain what questions the reader can expect to find answered in the remainder of the report. Any other discussion concerning motivation for the project or design, or background to the project, can be included here. Aim to write around 1-2 pages. See this LINK for more information

Engineering reports are not essays or novels. Engineers just love bullet points. If you find yourself struggling to construct a paragraph to explain a process or sequence of steps, or a collection of facts, consider using bullet points. For example;

Computer Aided Process Planning (CAPP) software automates the process of matching a product to a manufacturing process traditionally undertaken by a human expert. This process involves a number of key steps:

1. Interrogating and interpreting a product Computer Aided Design (CAD) model for its key features;
2. Selecting a machine capable of manufacturing these features, and;
3. Creating a sequence of activities to have the selected machines create the product described by the geometry of its CAD model.

Your aim is to get your ideas and concepts across as clearly and concisely as possible.

The following example is how you refer to a figure or a diagram in the report.

From the introduction to the end of the report use Arabic numerals for page numbering.

From the perspective of feature-based design, an example might be the conversion of design features in the product model to manufacturing features useful to a CAPP system as described in Figure 1.

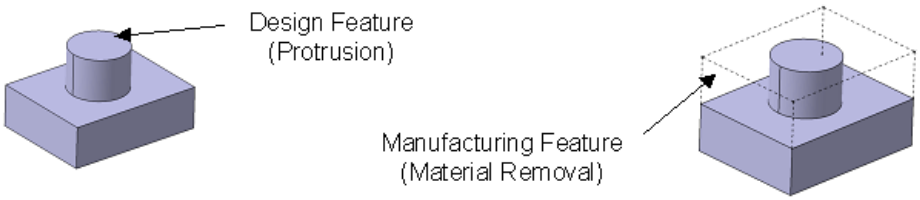

Figure 1: Example of Design Features vs. Manufacturing Features

Remember that Figure titles/captions go at the bottom of the figure as shown.

This is the terminating sentence (or sentences) that completes the discussion in this section (Introduction) and leads to the next section (Problem Formulation). Think about this carefully because this skill distinguishes an excellent report from a poor report. A good report links all the sections together and gives the reader a sense of continuity throughout

2. PROBLEM FORMULATION

The aim of this section should be to convince the client that you fully understand the problem that you are solving. Imagine yourself sitting across the desk from me and explaining what you know about the problem. Relate your explanation to what you have learned (and hopefully did) in the first design phase activity. What did you do? What did you find out? How did you go about this? What methods did you use?

It is important to emphasize here that in Engineering we don't write as a narrative – you are not telling the story of how you formulated the problem. Engineering writing is a lot more factual – you present how you have formulated the problem, and support it with arguments justifying your choices, potentially describing alternatives that were considered and rejected.

The key content to present here are you project objectives and requirements (functions and constraints). See this Link for more information

When you use tables include the reference to the table in the sentence that calls for it. For example;
A brief comparison of these two standards is shown in Table 1. The use of neutral files offers a number of advantages to the KBE software developer. Note that the title for the table goes at the top of the table and not at the bottom as for figures.

Table 1: Feature Differences between IGES and STEP

Feature	**IGES**	**STEP**
Level of Automation	Moderate –user control required	High
Wireframe Geometry	Excellent	Good
Surface Geometry	Excellent	Good
Solid Geometry – CSG and B-Rep	Poor for most CAD software	Excellent
Non-geometric data transfer (drawings, etc)	Yes	Controlled by AP
Layers and colours	Yes	No

3. SYSTEM OVERVIEW

In this section provide a clear presentation of the overall design concept or concepts, including any relevant sketches and/or block diagrams, which your team settled on at the end of Phase 3 of the Design Process – the Design Evaluation. Alternative design concepts might be mentioned briefly. Allow around 1-2 pages.

The aim of this section should be to demonstrate to the client that you have thought carefully about a range of different possible solutions, and have decided on a solution that will succeed. Diagrams and sketches of some of the important parts of your design should be included. Do not simply throw everything you thought of in here. Any excess should be included in an appendix but ensure that it is necessary. At this stage of your career, “quantity rather than quality” is not just a cliché. Think carefully about the solutions that you generated. Can you show that your solution will work, and explain the principles of its operation? What elements ensure its success? See this Link for more information

4. SYSTEM LEVEL DESIGN

The aim of this section is to detail how your system will operate on a functional level. We encourage you to think of your proposed design in terms of sub-systems, which will operate together to meet the stated design objectives. In this section you detail how the various sub-systems or components of your design will interact. This is a crucial stage of engineering development, as it allows the various specialist teams (structural, mechanical, electrical, computing) to implement their particular components yet make sure that they will all properly integrate at the end.

A key aspect of this section should be a block diagram illustrating how your sub-components fit together and interact to produce the fully-functional system.

If you have any significant research, calculations, simulations or experimentation to support you system design, you should mention it (but with the details included as an appendix). The more precise and specific you are in detailing these interactions and interfaces the better – you'll benefit when it comes time to integrate the system together as an operational whole. Around 2-4 pages would be expected here.

5. COMPONENT DESIGN

Now you turn your attention to the detailed design of each component or sub-system in your design, within the constraints established in the previous section. Outline the proposed implementation of each sub-system within your proposed device.

There may be some unknowns in this section, so it is also an opportunity for you to specify any research and development activities that your group must undertake. What do you need to know to produce a detailed design for the sub-systems discussed in the previous section? How much of this do you already understand? (Give details of this, including how you will use the knowledge in your design, if you know this already.) What else remains to be researched? This section will include physical properties, structures, materials, circuits, equations, properties of devices you will/might use (e.g. motors). You might also give some details of how to test the components and/or test the procedures you intend to use. Around 3-5 pages would be expected here.

6. PROJECT PLANNING

The aim of this section is to give the client a clear picture of what work your group needs to do to arrive in Week 13 with a winning entry. To demonstrate this you will need to prepare a project plan that includes a schedule of activities in the form of a Gantt Chart, as well as an estimate of the cost.

In this section you must include a list of tasks, each of which are time-limited, clear in their scope (i.e. not vague, e.g. "test device") and perhaps have already been assigned to team members. Tasks already completed can be included but pay particular attention to future tasks. This section should not comprise *only* a Gantt chart: discuss the key points of the project plan. Why is it a good plan?

Include a sub-section on risk management. What are the key risks faced by the project, and in particular what are the risks posed by the design concept that you have chosen? For each one, what are your contingency plans? Risks can certainly include non-technical risks (e.g. risks related to the project plan). Allow around 1-2 pages here. Note that the term 'risk management' here does not refer to OH&S matters for users or developers, but project management 'risks' – events, scenarios, et., that could prevent your project from being completed in time and within budget.
This section might be around 1-2 pages, not including figures and charts.

7. SUMMARY OR CONCLUSION

The aim of this final section is to briefly summarise what you have said in the report. In other words, "we did all of this and so we recommend"…. This section should be similar to the executive summary except that it is a closing argument. It should also be about the same size as the executive summary, 200-300 words.

Summarise your design, discussing how successfully it addresses the design problem, referring to key aspects or innovations in the design that you feel were significant. Be sure to cover the main take-home messages.

8. ACKNOWLEDGEMENTS

The authors would like to gratefully acknowledge the contribution from (whoever was helpful).

9. REFERENCES

You must **cite references in the text of the report**. A list of references at the end of the report without in text citations will not attract full marks. Very few references, or references with details missing (e.g. year, publisher or place of publication (for books), or date of access (for URLs)), will also not attract full marks for referencing.

There are a number of acceptable referencing styles that you may use. Please refer to ENGG1000 Moodle topic Communication Skills - 'The Rough Guide to Presenting Assignments' which contains several documents to help you format your report as well as to present it in a reasonable style and with acceptable grammar.
This example list uses a number citation style.

[1] Ozturk, F. and Ozturk, N., 1999. *Feature-Based Environmental Issues: Neural Network-Based Feature Recognition*. International Journal of Vehicle Design, Vol. 21, No. 2, pp. 190-204.

[2] Corbett J., Crookall J. R., (1986). Design for Economic Manufacture. *Annals of CIRP*, 1986, Vol. 35, No. 1 pp. 93-97.

[3] Shah, J., Anderson, D., Kim, Y., Joshi, S., 2001. *A Discourse on Geometric Feature Recognition from CAD Models*. Journal of Computing and Information Science in Engineering, Vol. 1, pp. 41-51.

[4] Yan, X., Yamazaki, K., Liu, J., 2000. *Recognition of Machining Features and Feature Topologies from NC Programs*. Journal of Computer Aided Design, Vol. 32, pp. 605-616.

[5] National Institute of Standards and Technology (USA). [online] http://www.nist.gov/iges/ accessed (/retrieved) 01AUG2010.

10.APPENDICIES

(if any)

For each appendix entry, give a title and add short explanatory notes if needed.
(e.g. Appendix A. Project Plan, Appendix B. Rotor Blade Specifications)
All images/ figures should be numbered and captioned.