APPENDIX 3 TO THE STUDY GUIDE
REQUIREMENTS FOR THE FIRST SEMESTER REPORT

It is *compulsory* for this report to contain exactly the layout and content described below. Use the same numbering scheme as below.

A **template** will appear on the Project website.

TITLE PAGE

> ►NOTE: The title on the approved Project Proposal **is the final official title of the project** and can only be changed with written permission from the Project Lecturer.
>
> Therefore, this same title should be used on the first semester report.

The first page (cover) is a title page that contains declarations by your language editor and by yourself.

Use the template on the Project website for this cover page. The title page should not be numbered. The next page will be page 1. Use the font sizes and layout as used in the template.

MAIN BODY OF THE FIRST SEMESTER REPORT

It is required that the first semester report contain the following sections. The proposed length of each section is indicated at the beginning of each section in the description below.

1. Literature study

Length
Length of the literature study section: one page minimum, two pages maximum.

Content
In this section, you have to provide a very brief summary based on literature (mainly journal articles) *that provides the foundation for your project* and *that places your work into context*.

> ► This section is a concise view of the most important literature that supports your work (as opposed to a comprehensive review of all available literature on the subject).

Organise the literature study section into the following.
(i)   *A description of the background and context, referring to (citing) the relevant literature.* This is a summary of what other people have done before you that supports your work, including (but not limited to) how others have solved similar or related problems.

(ii)   A *brief summary (one paragraph) of your intended contribution and how the literature that was cited supports your work.* This paragraph describes how

the literature that you summarised fits into your project and why it forms a foundation of what you will do. You could also mention where shortcomings exist in the knowledge on this subject and why the project that you are undertaking will be useful or will contribution to the knowledge of the engineering community.

How to approach the literature study

One way to approach a literature study is to *see it as a supporting argument*. The student would typically argue the point that the project fills a need by referring to examples (here you will cite literature) of what has been done before, and a description of what needs to be done in your project to contribute and to perhaps extend what has been done before.

It is worth noting that final year projects seldom contribute new theory or new methods, although this does happen sometimes. More often, the contribution will be in the development of a new implementation or new application using existing theory and existing methods.

You should write a concise, to the point literature study. This would be similar to those found in the introductory sections of typical research articles in engineering journals. Look, for example, at IEEE journals, and perhaps specifically articles that you have read and like, and use the Introduction section of a chosen article as an example. You will see that it briefly reviews the work of other engineers or researchers, often without giving mathematics, but usually focussing on concepts and findings of previous work.

These brief literature studies unfold in a storyline format, *with the objective of motivating the present work in context of previous work*. It is important to note that a good literature study *will **not** be an article-by-article summary* of the material you read, but will merge the material into a unified view of the literature.

A note on the length of a literature study

Comprehensive literature studies can be very long. See, for example, review articles as published in some journals. These can easily be twenty pages, and sometimes a hundred pages or longer.

However, this is *not* what is required in Project. In Project you need show in a to-the-point way what you used as the foundation of your project. Importantly, note that if you did not consult literature at all, there is a serious problem in your project (projects require new knowledge), or you are trying to build on a foundation that does not yet exist.

What material to consult

Literature to be consulted and cited includes specifically (and *mostly*) journal articles from technical journals (often IEEE journals), conference papers, technical information from high quality technical websites, books and standards documents.

Do not cite Wikipedia! Do not Google for solutions! Do not use or cite Hackaday or Instructables or related amateur technical fiddling sites. This is a shortcut to misery.

Rather make sure your foundation is correct by reading and understanding appropriate technical material.

Requirement

The minimum requirement is that you should give at least *five references to articles*

in technical journals (IEEE journals and others) and/or conferences (IEEE or other), and then perhaps further references to other material.

Note that there should be a *one-to-one correspondence* between the citations in the text and the references in the reference list.

> ► You should not include an article in the reference list if it is not cited in your report.

Referencing style
Use either IEEE style or an author-date referencing style. Whichever format you use, be consistent in its use. Note again that all references appearing in the reference list should be cited in the text.

The Harvard style is one of a family of "author-date" referencing styles that may be used. Another style in this format is APA, which may also be used. Many Harvard, APA and IEEE style guides are available on the internet.

Kindly use the style preferred by your research group (check with your study leader). If the study leader has no preference, the default is IEEE style. Bioengineering uses APA style. Many other groups prefer IEEE format.

2. Work breakdown and first semester project progress

Length of this section
One to three pages.

Content of this section
Give a complete list of your project tasks (for the entire year) in table format as in the example below. This is intended to help you plan and needs to be a complete and honest self-evaluation of your progress (column 2).

The brief description in column 3 is an overview-level explanation of what is meant in column 2, and may also provide brief technical details. The latter may include equations, calculations, description of models derived, description of simulations, description of experiments set up or performed, description of designs or concept designs, or description of software developed) even if these tasks have not been completed.

Table 1 on the next page *shows an example*. It should be labelled Table 1 as in the example.

The progress summarised in this table is intended to indicate your progress up to final report submission.

Apart from expanding on your tasks and summarising your progress in the table, you may also add functional block diagrams, hardware block diagrams and software flow diagrams in this section as appropriate to show your progress. If you do this, add appropriate text descriptions (i.e., a figure without an accompanying description in the text is of very little value).

Table 1

Task	Progress	Brief description
Preparation of Project Proposal	100% complete	Rev 2 was approved.
Conceptual design of entire system	100% complete	The concept design has been completed after the design approach has been decided on.
Design of inverter	75% complete	A paper design is mostly complete. The particular design is based on design found in literature. Design equations were derived from first principles. Calculations of component values still needs to be completed.
Simulation of inverter	5%	Simulations need to be done in PSpice. This has just commenced now. The student has installed PSpice and is learning to use it.
Building on inverter on protoboard	10%	All the necessary components have been sourced. No circuit construction has commenced at this stage.
Testing and fault finding	0%	
Final design PCB layout	0%	
Manufacturing of PCB	0%	
Placing of components and soldering	0%	
Developing and debugging code for PWM	10%	The microprocessor has been tested and some initial programming has been completed, but the main PWM code still needs to be completed.
Final testing	0%	
Writing of final report	0%	

3.	**Project plan (second semester)**

Length of this section
One to two pages.

Content of this section
It is important that you carefully consider the content of this section. You need to describe your non-completed project tasks (those that appear in table 1 that have not been completed) and schedule in the form of a project schedule or Gantt chart.

Provide your project schedule with time resolution of one week for the period from 25 July up to the Final Report submission deadline. You may use software tools of your own preference. To create a Gantt chart. A number of free software tools that produce project schedules or Gantt charts may be found on the internet. It does not really matter which you use – the idea is simply to attach timelines to your remaining tasks.

This tool, a project schedule template for Excel, is one example of a simple, project schedule that will work well. It produces clean and neat diagrams: https://www.vertex42.com/ExcelTemplates/project-schedule-template.html. Once completed, save as a figure to include in your report.

4. Reference list

Remember that your work does not exist in isolation. For the literature study (section 1 of the report), you should have consulted several sources. Provide a list of references here (at least five references to journal articles or conference proceedings, in addition to references to other material), using the referencing styles mentioned earlier. The chosen style should be used consistently.

Even if you are of opinion that nobody has ever done a project exactly like yours, think about the problem this way: there are either people who worked on similar or related projects, or you are building on someone else's work. As an example: say you are designing a system that includes a high sampling rate A/D converter which samples data from a plant and transmits these data via a wireless link to a remote PC. For this hypothetical project, one may wish to refer to books or articles on bit error rate, communications protocols, transmission lines, high frequency PC board design and sampling.

Note: Please do not refer to your study leader as (e.g.) "Prof. Jones" in your report. Use only proper references to journal articles or textbooks by him or her. Do not reference your study leader in any other way. It would be incorrect to write "personal conversation, 15 March 2022". The project is *yours*, and you have to *demonstrate* that you have made it your own and can defend it without assistance.

FORMAT OF THE FIRST SEMESTER REPORT

It is easy to follow the rules for proper formatting and it is expected that a final year engineering student demonstrate the ability to do this accurately. Students that make mistakes here will be penalised *heavily*.

The formatting rules remain as they were described previously for the Project Proposal (repeated below).

Kindly use the template provided on the Project website. The following gives additional details.

1. **Submission format.** You need to submit the report in pdf format on the AMS system.

2. **Font size.** Use a 12-point font size for the report, and a 10-point font size in the table in section 2. Smaller fonts are allowed on figures only. Never use any font smaller than 8-point font in any report in Project.

3. **Fonts.** Use a serif font (like Times Roman or Cambria) and *not* a sans-serif font (like Arial or Helvetica). Do not mix fonts in your report, but use the same font throughout.

4. **Editing.** Spelling errors are completely *unacceptable*. Poor language and grammar are *unacceptable*. It is a requirement that your report is language edited by someone who either writes very well (which may be yourself, or a friend or family member) or by a professional language editor. The language editor's name and signature must appear on the document, or a confirmation email should be attached.

5. **Style.** Write in formal style. You may *never* write in the first person. Do not write in a conversational style. Please don't give a chronological account of what you did. The

report should be factual and not bound to you as a person. *This is a technical report, not a personal narration of your experiences and ideas.* Give the facts in a brief, clear and professional manner.

You may *never* write in telegram style (or SMS style). Use full sentences throughout.

6. **Appendices.** No appendices are allowed in the first semester report.

7. **Footnotes.** No footnotes are allowed in the first semester report.

8. **Page layout.** Use the template provided on the Project website.

9. **Figures and tables.** These should have consistent formatting.
    o Tables and figures may not flow from one to the next A4 page, and A4 sized figures are preferred to larger figures.
    o All tables and figures should preferably have the same orientation as the rest of the text, or be placed with the bottom of the figure facing towards the outside edge of the page.
    o Under all circumstances, the caption should be upright.
    o Text in figures should be in the same language as the rest of the text and also in the same font. The <u>minimum text size</u> in tables or figures is 8-point font.
    o Number tables and figures separately from number 1.
    o Do *not* use frames around figures.
    o Captions appear *below* figures and tables. Figures and tables should each have a short description printed in the caption.
    o Print the figure or table number as well as the caption in bold. Below is an *example* of a caption.

    Figure 1. This figure shows the project schedule for the rest of the year.

    o All figures must be referred to in the text of your document.

* * * * *