ECE 445

SENIOR DESIGN LABORATORY

FINAL REPORT

Project #114

AN AWESOME PROJECT MADE BY AN AMAZING TEAM

Team #514

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Acknowledgement

Writing an acknowledgment section is a way to express your gratitude to individuals and organizations that have contributed to your project. Below are some tips on how to write an acknowledgment section:

Begin your acknowledgment section by expressing your gratitude to the individuals or organizations that have helped you with your project. This can include your faculty advisor, project sponsor, team members, family members, and friends.

Be specific about the contributions that each person or organization has made to your project. This can include providing technical guidance, financial support, or emotional support. It's important to keep your acknowledgment section concise. Try to limit your acknowledgments to one page or less. Keep in mind that your acknowledgment section is part of a formal report, so please use a professional tone and avoid overly casual language.

Abstract

The abstract is short (150 words or less) and provides enough of a summary of the report for the reader to decide whether to read the entire document. State very concisely what your device or system does, and the main findings and results of your project. Save background information (e.g., motivation, competitors) for the introduction and design details for the body of the report. Do not give an advertising pitch. Note that the abstract does not appear in the table of contents. (This is achieved by using \chapter* command instead of \chapter.)

Note that you can ignore the TOC because it is generated automatically by \tableofcontents below. Work on the body of the report, then compile the project using the following commands:

```
1  xelatex sample_general.tex
2  biber sample_general
3  xelatex sample_general.tex
4  xelatex sample_general.tex
```

Keywords   Keyword 1, keyword 2, keyword 3

Contents

1   Introduction

Briefly describe the science or engineering problem to be addressed in the report, as well as the purpose and usefulness of the device or system you have built. Summarize the contents of the upcoming chapters as well as the main conclusions of your project, to be elaborated in the last chapter.

1.1   Sample citation using IEEE

Here comes the citation. You can cite by using \cite which produces [1], [2], or by \textcite which produces Author7 and Author8 [3]. However, putting a citation at the end of a sentence is also acceptable [4].

1.2   Sample equations

$$EQI = \sum_{i=1}^{n} W_j * r_{ij} \tag{1.1}$$

$$EHI = L_1 \times ESI + L_2 \times EQI \tag{1.2}$$

$$EE/EHI = \beta_0 + \beta_1 PCG + \beta_2 RGP + \cdots + \beta_i X_i +$$
$$\cdots + \beta_9 ICWUR + \beta_{10} ECPG + \beta_1 1WCPG + \varepsilon_i \tag{1.3}$$

1.3   Sample listings

This is a sample listing.

```c
#include<stdio.h>
void fuzzy(int x){
    return x;
}
int main(){
    int a = 0, b, c;
    scanf("%d", &b);
    c = b;
    if (a == b)
        a = fuzzy(c);
    else
        b = fuzzy(a);
    printf("%d %d\n", a, fuzzy(c));
    return 0;
```

```
15  }
```

2   Design

Discuss general design alternatives. Give equations, simulations, and general circuits. Describe the design in detail, addressing each major component. Include schematics with components, drawings, flowcharts, etc. Some teams may wish to split this chapter in two: 2. Design Procedure, and 3. Design Details. This LaTeX template will automatically update numbering systems for chapters, sections, figures, tables, etc., yet you should still always keep track of them as you develop and revise the text.

2.1   Typesetting SI Units

This template allows you to typeset SI units in a standard format. The units should be typed like this: $10 \times 10^5 \, \mu m \cdot \Omega \cdot °$.

It also applies to equations,

$$X_t = 10 \times 10^5 \, \mu m \cdot \Omega \cdot ° \tag{2.1}$$

Visit https://www.ctan.org/pkg/siunitx for more details about package `siunitx`.
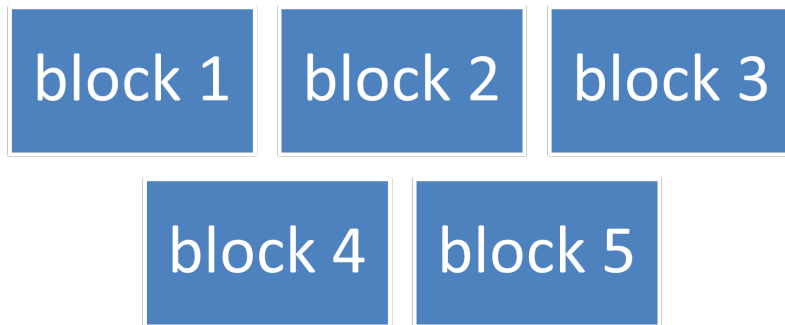
3   Design Verification

Figure 3.1   An example figure.

4   Discussion

4.1   A sample of table

Table 4.1   Example of a Table and Its Title

Part	Electricity	Magnetism
Field intensity	E	H
Flux density	D	B
Constitutive factor	ϵ^b	μ

4.2   An example of inserting code listings

An example piece of inserting code from an existing file:

```python
1  from numpy import *
2  from scipy import *
3
4  # plot some random plots of a random variable
5  def plot_random():
6      import matplotlib.pyplot as plt
7      plt.plot(random.randn(100))
8      plt.show()
9
10 # call the plotting function
11 plot_random()
```

5   Conclusion

$$F(x) = \begin{cases} 0, & x < a \\ \dfrac{x - a}{b - 1}, & a \leqslant x < b \\ 1, & x \geqslant b \end{cases} \tag{5.1}$$

5.1   Accomplishments

5.2   Uncertainties

5.3   Ethical Considerations

5.4   Future Work

Appendix A   Requirement and Verification Table

An appendix is a good place for the Requirement and Verification Table from your design review. Below is a starter table. Including these details here will help to avoid lengthy and tedious narrative descriptions in the main text, which may not be of immediate interest to your imagined audience of company managers and professionals. Any requirement that is not verified should be explained either in the main text or the appendix. Note that both the pagination and the numbering of figures, tables, and equations continue from the main text to the appendices.

Tab. A.1 is generated by Excel2LaTeX. See https://www.ctan.org/tex-archive/support/excel2latex/ for more details.

Table A.1   System Requirements and Verifications

Requirement	Verification	Verification status (Y or N)
1. Requirement a. Subrequirement b. Subrequirement c. Subrequirement	1. Verification a. Subverification b. Subverification c. Subverification	
2. Requirement a. Subrequirement b. Subrequirement c. Subrequirement	2. Verification a. Subverification b. Subverification c. Subverification	
3.	3.	
4.	4.	

A.1   Some Test Data

References

[1] F. Author1 and S. Author2, *Random Book*. Publisher, 2022.

[2] F. Author3 and S. Author4, "Random journal paper," *Journal of Randomness*, vol. 10, no. 2, pp. 100–120, 2021.

[3] F. Author7 and S. Author8, *New Book*. Publisher, 2023.

[4] F. Author5 and S. Author6. "Random webpage." (2020), [Online]. Available: https://www.example.com (visited on 01/01/2022).