



ECE 416

28th January 2019

Outline

- ECE 416 Schedule
- Comments on SDP Report
 - Figures and Tables
 - References
 - Equations
 - Table 1 (Specifications)
- Volunteer Teams for Open House Demos

Sun	Mon	Tue	Wed	Thu	Fri	Sat
3	4 MDR Report due Benchside Meetings	5	6 Benchside Meetings	7	8	9
10	11	12	13	14	15	16
17	18 Holiday	19 Benchside Meetings	20 Benchside Meetings	21	22	23
24	25 CDR	26 CDR	27 CDR	28 CDR	1 CDR	2

March 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
3	4 CDR	5 CDR	6 CDR	7 CDR	8 CDR	9
10	11 Spring Recess	12 Spring Recess	13 Spring Recess	14 Spring Recess	15 Spring Recess	16
17	18	19	20 Benchside Meetings	21	22	23
24	25 Benchside Meetings	26	27	28	29	30

April 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8 FPR	9 FPR	10 FPR	11 FPR	12 FPR	13
14	15 Holiday	16 FPR	17 FPR	18 FPR	19 FPR	20
21	22	23	24	25	26 SDP Demo Day ECE Picnic	27 SDP Demo Day
28	29	30				



29 days to CDR



Spring Break



70 days to FPR



90 days to Demo Day

February 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
3	4 MDR Report due Benchside Meetings	5	6 Benchside Meetings	7	8	9
10	11	12	13	14	15	16
17	18 Holiday	19 Benchside Meetings	20 Benchside Meetings	21	22	23
24	25 CDR	26 CDR	27 CDR	28 CDR	1 CDR	2

March 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
3	4 CDR	5 CDR	6 CDR	7 CDR	8 CDR	9
10	11 Spring Recess	12 Spring Recess	13 Spring Recess	14 Spring Recess	15 Spring Recess	16
17	18	19	20 Benchside Meetings	21	22	23
24	25 Benchside Meetings	26	27	28	29	30

Benchside Meetings (one pager)

- Problem Statement
- Requirements/Specs
- Block Diagram
- CDR deliverables
- Demo(s)

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Style

- Use correct person
- Use the active voice
- Put statements in positive form
- Use definite, specific concrete language
- Omit needless words

Use Correct Person/pronouns

	Singular	Plural	Possessive
1st Person	I 	we 	 mine/ours 
2nd Person	you 	you 	yours 
3rd Person	he/she/it 	they 	his/hers/its/theirs 

Use Active Voice

The active voice is usually more direct and vigorous than the passive.

I shall always remember my first visit to Boston.



This is much better than

My first visit to Boston will always be remembered by me.



Put statements in positive form



He was **not** very often on time.

They did **not** think that studying electronics was a sensible way to use one's time.



He usually came late.

They thought the study of electronics a waste of time.

Use definite, specific concrete language



A period of unfavorable weather set it.

They showed satisfaction as they took possession of their well-earned reward.



It was frigid every day for a week.

They grinned as they pocketed first place in SDP19's faculty vote.

Omit needless words



the question as to whether

whether

there is no doubt that

no doubt

used for fuel purposes

used for fuel

she is a woman who

she

this is a course that

this course

the reason why is that

because

Writing Style

- Use correct person
- Use the active voice
- Put statements in positive form
- Use definite, specific concrete language
- Omit needless words

Practice in composing emails!

Figures and Tables

> REPLACE THIS LINE WITH YOUR PAPER IDENTIFICATION NUMBER (DOUBLE-CLICK HERE TO EDIT) < 1

Preparation of Senior Design Project Report

First A. Author, EE, Second B. Author, CSE, Third C. Author, EE, and Fourth D. Author, CSE

Abstract—This is an editable template. You should follow the format of this template in writing your SDP MDR report. Your abstract goes here should be one paragraph.

I. INTRODUCTION

START with the statement of the problem. What is the problem that you are trying to solve? How big is this problem? Include citations that demonstrate that your problem is significant.

Put your problem in to context. How have people solved your problem in the past? Has the problem changed with time? What are the impacts on societal impacts of your problem? How does your problem effect individuals?

Summarize the requirements analysis that you performed. How big can your solution be? How much power can it use? How will someone use your solution? List the specifications in a Table as shown in Table 1.

II. DESIGN

A. Overview

How will you solve this problem? What technology will you use? Why do you expect that this technology will solve your problem? What other technologies did you consider? Why did you not choose these alternatives.

Include a block diagram as a figure. Describe each block in the diagram. What specifications will each block meet? How do these specifications collectively guarantee that the system will meet the overall specifications?

B. Block 1

Describe what this technical block will do. Explain what technology you will use to build this block. Detail which techniques from courses you will use to build this block. List what you need to learn in able to build this block. Explain an experiment you will perform to design or test this block. Explain how you will analyze the results of this test.

C. Block 2

Describe what this technical block will do. Explain what technology you will use to build this block. Detail which techniques from courses you will use to build this block. List what you need to learn in able to build this block. Explain an experiment you will perform to design or test this block. Explain how you will analyze the results of this test.

F. A. Author from Lexington, Ma (e-mail: author@boadler.nist.gov).

Specification	Value
Weight	<10kg
Height	<10cm
Length	<5cm
Width	<10cm
Battery Life	>5 hours

D. Block 3

Describe what this technical block will do. Explain what technology you will use to build this block. Detail which techniques from courses you will use to build this block. List what you need to learn in able to build this block. Explain an experiment you will perform to design or test this block. Explain how you will analyze the results of this test.

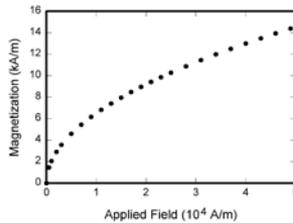


Fig. 1. Magnetization as a function of applied field. Note that “Fig.” is abbreviated. There is a period after the figure number, followed by two spaces. It is good practice to explain the significance of the figure in the caption.

E. Block 4

Describe what this technical block will do. Explain what technology you will use to build this block. Detail which techniques from courses you will use to build this block. List what you need to learn in able to build this block. Explain an experiment you will perform to design or test this block.

S. B. Author, Jr., from Auburn, Ma (e-mail: author@lamur.colostate.edu).
T. C. Author from Quincy, Ma (e-mail: author@trm.gov).

- Figures and tables are integral to a report
- Introduce and discuss all figures and tables in the text.

“In Figure 1, we show the magnetization curve for the solenoid coil. It shows that saturation occurs for an applied field above 5 A/m.”

- All figures and tables are numbered and have captions.

References

- Substantiate claims; e.g., those made in introduction.
- Reference alternative solutions/designs.
- Reference data sheets and technical specifications.

“We achieve wireless connectivity between the bot and smartphone using the Adafruit Bluefruit LE Shield [4].”

- Empathize with future SDP teams, as they use SDP reports.

[4] Adafruit Bluefruit LE Shield, Adafruit Industries <https://www.adafruit.com/product/2746>

Equations

Consider Newton's laws for rotational motion

$$T = J\alpha \quad (1)$$

where T is torque, J is moment of inertia and α is angular acceleration. In (1) ...

Table 1 (List of requirements and Specifications)

Requirement	Specification
Provide real-time feedback	Feedback given in less than 100ms
Provide accurate metric measurements	Within 10% error of Qualisys Oqus Motion Capture System measurements (in UMass Human Motion Lab)
Lightweight product	Sensor systems (sensors, PCB, and power supply) less than 1 pound Waist Clip (Raspberry Pi and power supply) less than 1 pound
Sufficient battery life	Battery life greater than 2 hours
User friendly mechanical design	User should be able to put on product easily with little to no added effort

Table 1: List of system requirements and specifications.

Courtesy of Team "Stride," J. Higgins, J. Menzie, J. Penney and R. Hartnett

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What does your project do?