



# IOWA STATE UNIVERSITY

AEROSPACE ENGINEERING DEPARTMENT  
COMPUTATIONAL TECHNIQUES FOR AEROSPACE DESIGN  
AERE 361

PROJECT PROPOSAL  
TEAM NAME HERE

---

*Team Member Names :*

Last Name, First Name  
Last Name, First Name  
Last Name, First Name  
Last Name, First Name  
Last Name, First Name  
Last Name, First Name

# Contents

<b>I ABSTRACT</b>	<b>2</b>
<b>II INTRODUCTION</b>	<b>2</b>
<b>III FEATURES</b>	<b>2</b>
<b>IV PROBLEM STATEMENT</b>	<b>2</b>
<b>V PROBLEM SOLUTION</b>	<b>3</b>
<b>VI CONCLUSION</b>	<b>4</b>
References	5

# I ABSTRACT

The abstract is a summary of your proposal. Your abstract should have enough information so that if I were to copy and paste your abstract into a website, people would get a general idea of your proposal. It should not go into any heavy detail, just the basics of your project. The who, the what, and the why. You should keep your abstract to 200-400 words. Use this to “hook in” your reader.

# II INTRODUCTION

While the abstract and introduction may seem similar, remember that your abstract should have enough information to stand independently. The introduction is the actual start of your proposal. Here, you should introduce the project to the people involved and briefly explain why you are doing this. This should be 1-3 paragraphs.

# III FEATURES

Your Features section must list at least three key features that make your project unique. Each item needs to be backed up with a description of what it will do and why. Listing just three items is not enough; you need to describe those features and why your group feels they are needed. For that reason, your features should have a paragraph for each key item that describes that key feature. A key feature should be something significant to your project. For example, a key feature of an autopilot system is the ability to set an altitude, and the autopilot will automatically set the airspeed. That is a significant feature that has a large impact on that system.

# IV PROBLEM STATEMENT

Here, you will go into more detail on what problem you hope to solve or address. You should discuss the problem and why it is important to solve it. You need to be clear on the problem in this section, so do not think of this as a “light” section. It helps to define your project.

Your team needs to do some research into the problem at hand. Because of that, you should have *two to three references* you are pulling from. You can find references from many places, including the ISU library and Google Scholar. I would also suggest looking at Adafruit’s website, as you may find inspiration or looking to improve something already there. Remember to cite your sources if you find something online that can often be cited.

When you create your “ref.bib” file, don’t forget to follow the standards for a BibTex file. Certain things, like websites, require certain keywords to render properly. There are lots of sources online to help with this, and many places like the ISU Library and Google Scholar can also generate text that is compatible with a BibTex file. Once you have your Bib file ready, don’t forget to cite your citations in your proposal like this [2] or this [1].

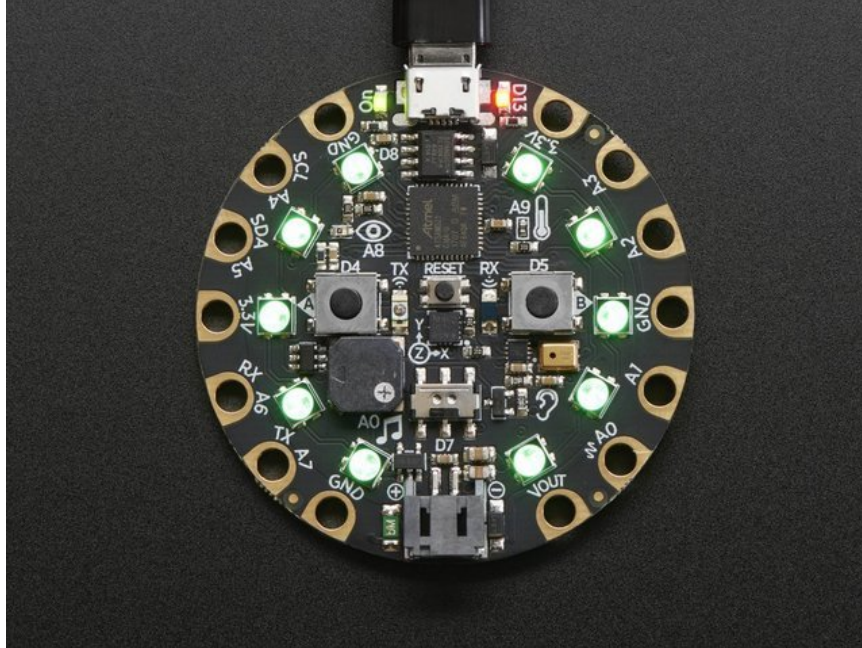


Figure 1: This is the Circuit Playground Express

## V PROBLEM SOLUTION

Here, go over your approach to your solution and what your solution is. You must include at least one image that shows your concept. This image can be a sketch, drawing, or some pictures showing your concept. Ensure you reference the image(s) like this - Figure 1. Finally, make sure you replace the stock image I included. You should also reference any sources you had from your problem statement.

You must also include a table listing all the parts you wish to have. As announced in class, you will have the parts listed in Table 1. We have plenty of two additional parts. Those are a conductive adhesive strip and a neopixel strip. I have some other parts, such as arcade buttons and additional sensors. You can certainly ask for something, and I will see what I can do. Change the table below to reflect the parts you are requesting.

Table 1: Parts available for teams

Part description	Qty
Adafruit Circuit Playground Express	1
AAA Battery Holder	1
USB Cable	1

Finally, you can include any pseudo code or snippets you have gathered so far. This is not required, but if you found some starter code or came up with some ideas for the code, put it here. If you want to embed code into  $\LaTeX$ , you can use the example below on how to do this in  $\LaTeX$ .

```

1 #include <Adafruit_CircuitPlayground.h>
2
3 void setup() {
4   CircuitPlayground.begin();
5 }
6
7 void loop() {
8   CircuitPlayground.clearPixels();
9
10  delay(500);
11
12  CircuitPlayground.setPixelColor(0, 255, 0, 0);
13  CircuitPlayground.setPixelColor(1, 128, 128, 0);
14  CircuitPlayground.setPixelColor(2, 0, 255, 0);
15  CircuitPlayground.setPixelColor(3, 0, 128, 128);
16  CircuitPlayground.setPixelColor(4, 0, 0, 255);
17
18  CircuitPlayground.setPixelColor(5, 0xFF0000);
19  CircuitPlayground.setPixelColor(6, 0x808000);
20  CircuitPlayground.setPixelColor(7, 0x00FF00);
21  CircuitPlayground.setPixelColor(8, 0x008080);
22  CircuitPlayground.setPixelColor(9, 0x0000FF);
23
24  delay(5000);
25 }

```

## VI CONCLUSION

Finally, wrap up your proposal. This only needs one or two paragraphs, but it should conclude with your plan and why and how. Yes, this may seem repetitive, but that is intentional. Do not forget to update your references, as those will appear below on a separate page.

## References

- [1] Paul Adrien Maurice Dirac. *The Principles of Quantum Mechanics*. International series of monographs on physics. Clarendon Press, 1981. ISBN: 9780198520115.
- [2] Albert Einstein. “Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies]”. In: *Annalen der Physik* 322.10 (1905), pp. 891–921. DOI: <http://dx.doi.org/10.1002/andp.19053221004>.