



Welcome to **Project** Lead The Way! For this semester-long unit, we will apply the design process to solve problems and understand the influence of creativity and innovation in our lives.

**Flight & Space:** Students trace the history, development, and influence of flight they learn about the exciting world of aerospace. Students explore the science behind aeronautics and use their knowledge to design, build, and test an airfoil.

**Green Architecture:** Students learn how to apply green concepts to the fields of architecture and construction. They explore dimensioning, measuring, and architectural sustainability and apply what they have learned to design affordable housing units using Autodesk's® 3D architectural design software.

### Course Overview:

Lesson	Summary
<b>1. What is Engineering?</b>	In this unit, we will explore what technology, engineering, and STEM are and how they will be helpful tools in this course.
<b>2. Introduction To Design</b>	In this unit, we will use lessons to introduce the design process and skills essential to design and modeling. Students will participate in instant design challenges to find optimal solutions to given problems and apply what was learned to understand the importance of using the design process.
<b>3. Flight</b>	In this unit, students will be able to answer these questions: <ul style="list-style-type: none"> <li>● What engineering careers are needed by aerospace industry?</li> <li>● Why are different flight vehicles designed differently?</li> <li>● How do past technological achievements lead to the advancement of flight?</li> <li>● How do airplane flight and space flight differ?</li> </ul>
<b>4. Space</b>	In this unit, students will be able to answer these questions: <ul style="list-style-type: none"> <li>● What makes an space shuttles fly?</li> <li>● What is a propulsion system and how is it used to move an aircraft and a spacecraft?</li> </ul>



	<ul style="list-style-type: none"> <li>• How do the forces of lift, drag, gravity, and thrust interact during the flight of an airplane?</li> <li>• How does the shape of an airfoil impact the lift that it generates?</li> <li>• How do Newton's laws of motion affect flight?</li> </ul>
<p><b>5. Destination: Mars</b></p>	<p>In this unit, students will be able to answer these questions:</p> <ul style="list-style-type: none"> <li>• How is living in space different from living on Earth?</li> <li>• What are some technologies developed by engineers that help astronauts live comfortably in space?</li> <li>• How does the International Space Station benefit mankind?</li> <li>• Why would a robotic rover be used to explore the moon or Mars?</li> <li>• How do the research and experiments conducted in space benefit life on Earth?</li> </ul>
<p><b>6. Architectural Basics</b></p>	<p>In this unit, students will be able to answer these questions:</p> <ul style="list-style-type: none"> <li>• Why is knowledge of area and perimeter important when designing and constructing a building?</li> <li>• Describe a potential consequence if you do not pay attention to accuracy and precision when designing and constructing a building.</li> <li>• How do architects pay attention to both form and function when designing and constructing a building?</li> </ul>
<p><b>7. Introduction to Sustainable Architecture</b></p>	<p>In this unit, students will be able to answer these questions:</p> <ul style="list-style-type: none"> <li>• Where do the products that you recycle end up?</li> <li>• How does the air you breathe every day affect your health?</li> </ul>



	<ul style="list-style-type: none"> <li>• What can you do to make the environment better for future generations?</li> <li>• How can you remodel a house to make it more “green”?</li> </ul>
<p><b>8. Architectural Challenge</b></p>	<p>In this unit, students will be able to answer these questions:</p> <ul style="list-style-type: none"> <li>• What are the advantages and disadvantages of using repurposed materials, such as a shipping container, for constructing living or work space?</li> <li>• What materials are used in construction to improve the energy-efficiency of a building?</li> <li>• How is the environment affected by shipping containers sitting on the dock?</li> </ul>

**Course Information:**

**1. Grades**

a. We will use a standard grading system. The breakdown is as follows:

100%-90%	<b>A</b>
89%-80%	<b>B</b>
79%-70%	<b>C</b>
69%-60%	<b>D</b>
59% or lower	<b>F</b>

**b. Categories**

**i. Formative Assessment- 30%**

1. Class Participation
2. Activities
3. Class Homework

**ii. Summative Assessment- 70%**

1. Test
2. Quizzes
3. Project



iii. **Final Project**

1. Will result in double points as a normal project. See above for description

2. **Homework/Classwork**

- a. Anything considered “homework” in this class will be an assignment that wasn’t completed during class. There will be ample time to complete assignments in class. Due dates will be posted on the [Learning Management System](#). (Google classroom)
- b. Late work- Late work may be turned in up until the project is due. When the next project starts, late work will no longer be accepted.

3. **Extra Help**

- a. If help is needed, please make arrangements with me to be completed before or after school.
- b. For help during advisory, make arrangements with your advisory teacher and myself.

4. **Contact Information**

- a. Email: [bschumacher@ecsdnv.net](mailto:bschumacher@ecsdnv.net)
- b. School Phone: (775) 738-3375

5. **Classroom Materials**

- a. Each student will be given a classroom set of materials. Normal wear and tear is expected. Any student that **DELIBERATELY** damages or steals materials will be subject to a fine in order to replace damaged or missing goods.

**Classroom Expectations**

**Be Respectful**

- Be on time to all classes: *If you are not sitting in your assigned seat when the tardy bell rings, you will be marked tardy.*
- Be verbally respectful and considerate to all classmates and the teacher

**Be Responsible**

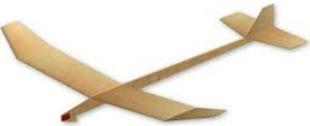
- Use time wisely
- Put forth best effort
- Complete all homework

**Be Ready To Learn**

- Bring materials- chromebook and pen/pencil



**PLTW Flight & Space  
&  
Green Architecture  
Brant Schumacher  
Adobe Middle School  
2020-2021**



Student Signature: \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_