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PROJECT FLITE MODULE: GREMLIN MICRO QUAD BASICS



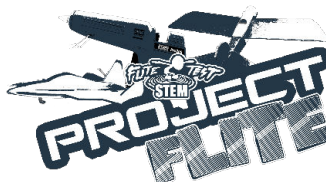
AUTHOR: FLITE TEST STEM

LEARNING STRAND: FT WORKBENCH

LEVEL: ALL SCHOOL LEVELS

LENGTH: 1 HOURS. LESSON FOCUSED ON THE PHYSICS AND COMPONENT PROPERTIES OF THE FT GREMLIN MINI QUADCOPTER.

STANDARDS ADDRESSED:



INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION STANDARDS
 TECHNOLOGY OPERATIONS AND CONCEPTS
 RESEARCH AND INFORMATION LITERACY
 DIGITAL CITIZENSHIP
 CRITICAL THINKING AND PROBLEM SOLVING
 COMMUNICATION AND COLLABORATION
 NATIONAL CTE STEM CLUSTER STANDARDS HS

INDEX

- OBJECTIVES
- MATERIALS NEEDED
- SUMMARY
- ACTIVITY
 - Step 1
 - Step 2

OBJECTIVES

STUDENTS WILL

- Understand the basic working components and physics behind the FT Gremlin.
- Completion of the "Understanding your FT Gremlin" worksheet.

MATERIALS NEEDED

Get 2 Know Your Gremlin UE/MS/HS Worksheet (See Attached)



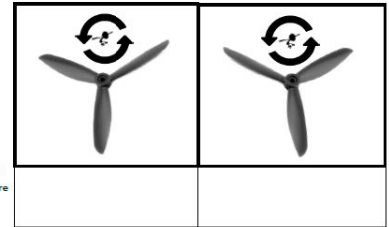
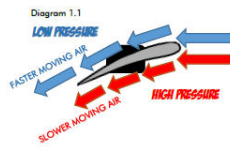
Name: _____
 Class: _____
 Date: _____

DIRECTIONS: Using the internet, lecture or past multicopter lessons, identify and explain what function the gremlin components perform.

COMPONENT	NAME	WHAT IS THE COMPONENTS FUNCTION?
	K4	
	K4	

UNDERSTANDING THE PROPELLER

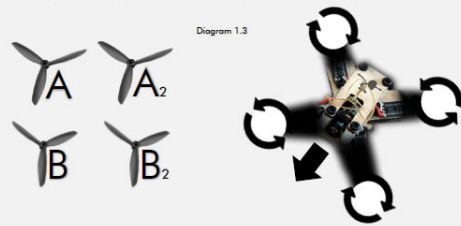
NOTE: Propellers use pitched airfoils to generate lift. Based on diagram 1.1, answer the following questions posed in diagram 1.2



DIRECTIONS: Based on the direction the props are spinning and their pitch angle, explain what happens and why?

MAKING CONNECTIONS

DIRECTIONS: Using the labeled propellers in diagram 1.3, place the correct propeller on the FT Gremlin quad.



UNDERSTANDING THE GREMLINS MOVEMENTS

DIRECTIONS: Using the internet, lecture or past multicopter lessons, identify the pitch, roll and yaw of the gremlin.



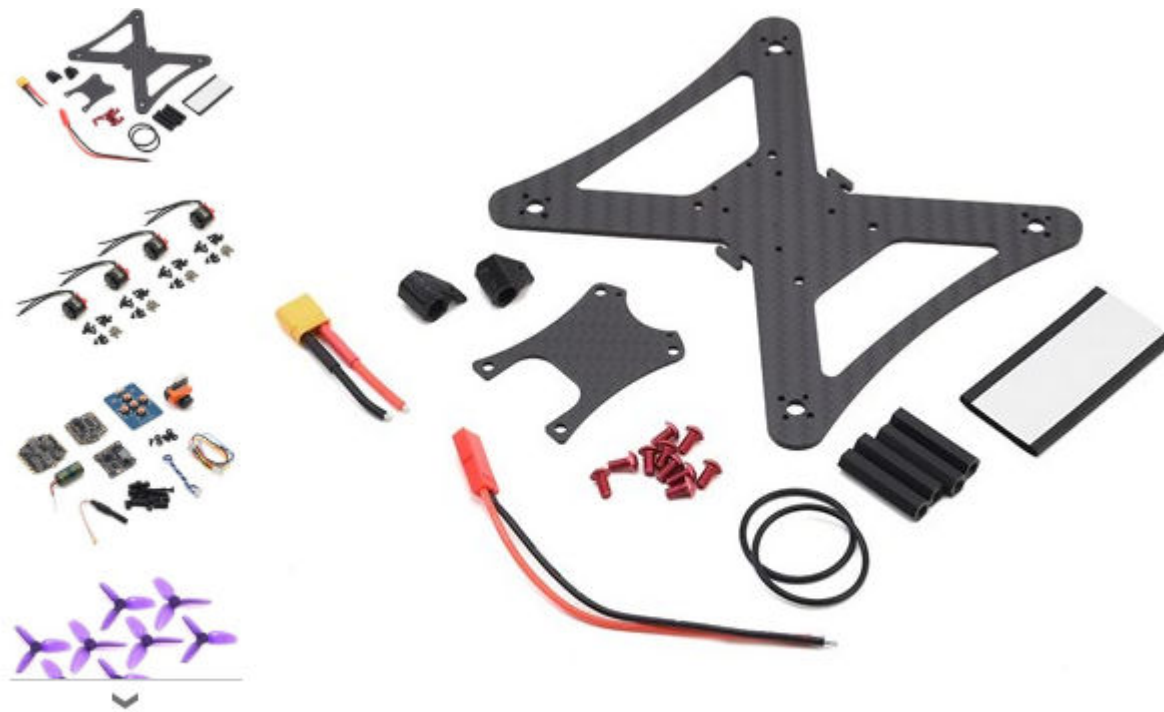
ENTERTAINING, EDUCATING, AND ELEVATING THE WORLD OF FLIGHT!



ENTERTAINING, EDUCATING, AND ELEVATING THE WORLD OF FLIGHT!

FT Gremlin Power Pack Plus Kit (See Store For Options)

NOTE: This lesson doesn't require the use of the Power Pack, however, have visuals to make those component connections with the students would be helpful



SUMMARY

ACTIVITY

STEP 1

UNDERSTANDING THE FT GREMLIN COMPONENTS

TIME: Half a period or 15–30 minutes

Prior to building, flying and engineering an FT Gremlin, it is important for the students to understand the different basic components and physics of the mini quadcopter. Students do not need the Power Pack to complete this lesson, however, seeing the components could make for visual connections. Each student should have the following worksheet, see attachment for download and printing.

GET 2 KNOW YOUR GREMLIN

Name: _____
 Class: _____
 Date: _____

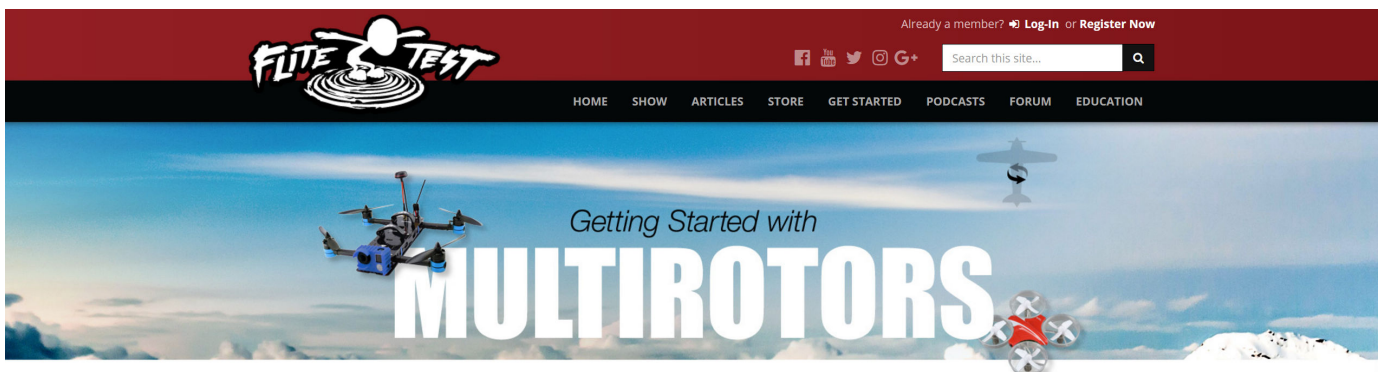
DIRECTIONS: Using the internet, lecture or past multicopter lessons, identify and explain what function the gremlin components perform.

COMPONENT	NAME	WHAT IS THE COMPONENTS FUNCTION?



Using the internet, past lectures, etc. students are to conduct research to identify and explain the components that make up the FT Gremlin. Teachers! Use the "Get 2 Know Your Gremlin Answer Guide" for grading/lecture purposes. (See Teacher Resources for Download)

See the following Flite Test Getting Started Multirotor Resource



*There are multiple ways of how to deliver this lesson;

- Teachers can work through this first page along with the students
- Students can work independently or in a group with a computer and internet to complete worksheet.
- Hands on approach, students can use another quad to reference and guide their learning through the FT Gremlin unit.

STEP 2

UNDERSTANDING HOW THE FT GREMLIN WORKS

Time: Half a period, 15-30 minutes

In the same approach taken to complete Step 1, guide the students through the understanding and completion of second half of the worksheet. Each student should have the following side of the worksheet, see attachment for download and printing.

UNDERSTANDING THE PROPELLER

NOTE: Propellers use pitched airfoils to generate lift. Based on diagram 1.1, answer the following questions posed in diagram 1.2

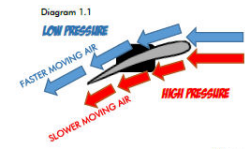




Diagram 1.1

Diagram 1.2

DIRECTIONS: Based on the direction the props are spinning and their pitch angle, explain what happens and why?





MAKING CONNECTIONS

DIRECTIONS: Using the labeled propellers in diagram 1.3, place the correct propeller on the FT Gremlin quad.

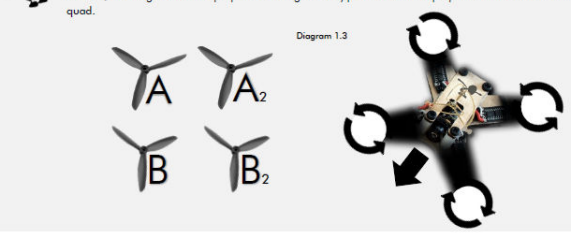
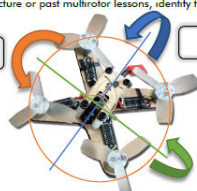
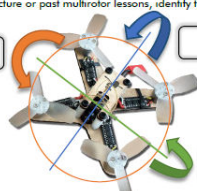



Diagram 1.3

UNDERSTANDING THE GREMLINS MOVEMENTS

DIRECTIONS: Using the internet, lecture or past multirotor lessons, identify the pitch, roll and yaw of the gremlin.



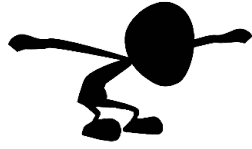




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THIS LESSON IS COMPLETED! PLEASE MOVE TO LESSON "BUILDING YOUR GREMLIN"

Your done!



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