

# ALC

# Pilot Experience



**Program:** ALC Pilot Experience  
Level 1: grds 5/6, Level 2: grds 7/8, Level 3: grds 9-12  
**Group Size:** Max. 20 per hour  
**Length:** 1 hour  
**Location:** Lone Star Flight Museum

Thank you for choosing to bring your students to the Lone Star Flight Museum Aviation Learning Center. This packet contains basic instructions to prepare your students for the activity.

The LSFM Education Department staff is here to help you. If you would like to walk through the center, staff is available by appointment. To arrange a visit or ask questions email [education@lonestarflight.org](mailto:education@lonestarflight.org).

## OVERVIEW

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Students will learn about the science of flight and experience what it takes to be a pilot. They will perform a pre-flight safety inspection on a real airplane, create a flight plan, and fly the route in flight simulators.

## BIG IDEAS

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- Forces of Flight
- Navigation and Map Reading
- Parts of a Plane
- Flight Controls

## OUTCOMES - What will students know or be able to do by the end of the lesson?

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- Identify the preparations a pilot must undertake before flying.
- Appreciate the skill required to fly a plane.

## VOCABULARY

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- |            |                 |                        |
|------------|-----------------|------------------------|
| • Force    | • Rudder        | • Latitude & Longitude |
| • Aileron  | • Nautical Mile | • Simulator            |
| • Elevator | • Knots         |                        |



**For Teachers**

# PRIOR TO ARRIVING AT LONE STAR FLIGHT MUSEUM

- Your students will work with a partner. You may assign partners ahead of time or just let the students pick who they will work with as we start the activity.
- Note: for COVID social distancing, students will fly the simulators solo to stay apart. Talk to LSFM staff to arrange your program to stay safe.
- It is helpful if students understand the basic parts of an airplane.

Students conduct a preflight inspection on a Mooney Ovation airplane.



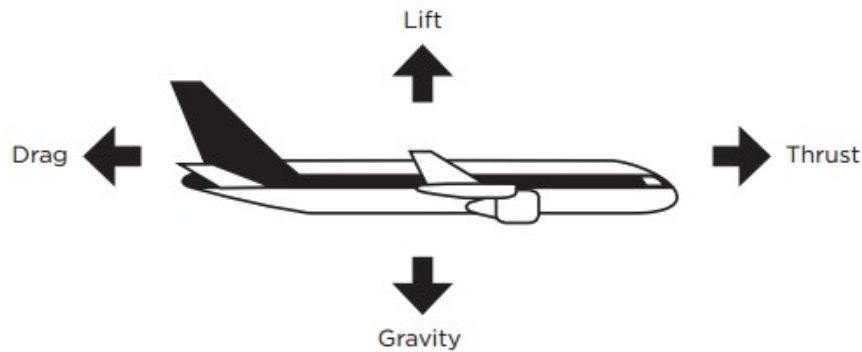
Students practice mapping their flight from Ellington Airport to Scholes Airport in Galveston and prepare a flight plan.



Students make their flight in the simulator bay.



## Getting Ready



## Balanced and Unbalanced Forces

Your students will experience balanced and unbalanced forces during their simulated flight.

There are four forces of flight - lift, weight or gravity, thrust, and drag. Lift opposes weight, and thrust opposes drag.

When an aircraft flies at a constant speed and constant altitude, all forces are **balanced**.

When a pilot increases or decreases the throttle, thrust and drag become **unbalanced** and the aircraft changes speed.

When a pilot makes a turn, the forces on the wings become **unbalanced** to create a change in direction. Because the wings also create lift, a turn also **unbalances** lift and gravity and the plane will decrease in altitude. To keep the lift and gravity forces **balanced**, the pilot also must pull the yoke to make nose go up and counteract the loss in lift.

### Overview **Mooney Hangar:**

- Common Core State Standards- English Language Arts  
Reading Informational Texts: RI.6.7  
Speaking and Listening: SL.6.1, SL.7.1, SL.8.1  
Reading Science and Technical Subjects: RST.6-8.4, RST.6-8.7
- Common Core State Standards- Math  
Number Systems: 6.NS.B.3, 7.NS.A.3  
Ratios and Proportional Relationships: 6.RPA.3.B, 6.RPA.3.D

### **Simulators:**

- 21st Century Skills  
Work Creatively with Others: 1.B.4 Collaborate with Others: 3.B.1  
Apply Technology Effectively: 6.A.1 Adapt to Change: 7.A.1, 7.A.2  
Be Flexible: 7.B.2  
Interact Effectively with Others: 9.A.2 Work Effectively in Diverse Teams: 9.B.2 Guide and Lead Others: 11.A.1  
Guide and Lead Others: 11.A.1

### Overview **Mooney Hangar:**

- Common Core State Standards- English Language Arts  
Reading Informational Texts: RI.11-12.7  
Reading Science and Technical Subjects: RST.9-10.4, RST.11-12.4, RST.11-12.7 Speaking and Listening: SL.9-10.1, SL.11-12.1
- Common Core State Standards- Math  
Number and Quantity: Quantities: HSN.Q.A.1, HSN.Q.A.3

### **Simulators:**

#### 21st Century Skills

- Work Creatively with Others: 1.B.4 Collaborate with Others: 3.B.1  
Apply Technology Effectively: 6.A.1 Adapt to Change: 7.A.1, 7.A.2  
Be Flexible: 7.B.2  
Interact Effectively with Others: 9.A.2 Work Effectively in Diverse Teams: 9.B.2  
Guide and Lead Others: 11.A.1