

ALC Learning Lab



Program: ALC Learning Lab

Level 1: grds 5/6, Level 2: grds 7/8, Level 3: grds 9-12

Group Size: Max. 20 **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. Please refer to the ALC Pre/Post Activity Packets available online at lonestarflight.org under the Education/Teacher Resources tab for extension lessons on vocabulary and knowledge presentations.

The LSFM Education Department staff is here to help you. If you would like to walk through the center, staff is available on the second Saturday of every month for tours and to help prepare. Questions can also be emailed to education@lonestarflight.org.

OVERVIEW

Students will learn about the science of flight and the careers associated with aviation.

BIG IDEAS

- 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?

- Identify the preparations a pilot must undertake before flying.
- Appreciate the value of math and science skills in the real world.

VOCABULARY

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



For Teachers

PRIOR TO ARRIVING AT LONE STAR FLIGHT MUSEUM

- Your students will work with a partner. Teams can be selected before the visit, or students may be allowed to pick their partner as we start the activity. Most topics have multiple workstations to allow four students to study this topic, some topics only have a single workstation for two students.
- If your class has an odd number of students, a student may work alone or in a group of three.

In the Learning Lab, student pairs will work with one of six topics. Each team will become topic specialists and report back to the entire group at the end of their time in the lab. To extend this activity to creating formal presentations, find the [Post Visit Activity Learning Lab Presentation](#) file at lonestarflight.org under the Learn/Teacher Resources tab.



What to do before arriving at the Lone Star Flight Museum:

- Familiarize yourself with the different stations using the [Aviation Learning Center Learning Laboratory Workstations](#) description.
- Assign teams to a workstation using the [ALC Learning Lab Roster](#).

Assigning Teams

Use the following descriptions to assist as you assign students to Learning Lab Stations.

FLIGHT DYNAMICS

Through hands-on experiments, students explore the basic physics of flight and the four forces of flight and learn how these physical principles make flight possible.

INSTRUMENT FLIGHT

Students learn how flight instruments– the compass, altimeter, and attitude indicator-work, and how pilots utilize them to draw conclusions about an airplane’s position and motion.

NAVIGATION

Students explore the fundamental concepts of navigation- latitude, longitude, and compass directions, while they practice using a pilot’s chart and other navigation tools to plot a local flight.

WEATHER

Analyze the current weather conditions at Ellington Field to understand how weather affects flight and determine if it is safe to fly.

WEIGHT AND BALANCE

Working with a variety of model airplanes, students explore the concepts of load weight and center of gravity, and how they affect the flight of a Mooney Ovation.

WIND TUNNEL

Using a wind tunnel and wind tunnel app, students focus on basic aerodynamic theory and the mechanics of lift.



AVIATION LEARNING CENTER SUPPORTED STANDARDS L2

Overview Learning Lab:

Individual workstation supported standards available upon request

- Common Core State Standards- English Language Arts
 - Language: L.6.4, L.6.4.A, L.6.6
 - Reading Informational Texts: RI.6.4, RI.6.7
 - Speaking and Listening: SL.6.1, SL.6.1.D, SL.6.2, SL.6.4
 - Writing: W.6.4
 - Language: L.7.4, L.7.4.A, L.7.6
 - Reading Informational Texts: RI.7.4
 - Speaking and Listening: SL.7.1, SL.7.1.C, SL.7.1.D, SL.7.4
 - Writing: W.7.4
 - Language: L.8.1, L.8.1.A, L.8.6
 - Reading Informational Texts: RI.8.4
 - Speaking and Listening: SL.8.1, SL.8.1.C, SL.8.4
 - Writing: W.8.4
 - Reading Science and Technical Subjects: RST.6-8.3, RST.6-8.4, RST.6-8.7
- Common Core State Standards- Math
 - Number Systems: 6.NS.B.2, 6.NS.C.6.C
 - Expressions and Equations: 6.EE.A.2.C, 6.EE.C.9
 - Number Systems: 7.NS.A.2, 7.NS.A.3
 - Expressions and Equations: 7.EE.B.3

AVIATION LEARNING CENTER SUPPORTED STANDARDS L3

Overview Learning Lab:

Individual workstation supported standards available at upon request

- Common Core State Standards- English Language Arts
Language: L.9-10.6, L.11-12.6
Reading Informational Texts: RI.9-10.4, RI.11-12.4
Speaking and Listening: SL.9-10.4, SL.11-12.4
Writing: W.9-10.4, W.11-12.4
Reading Science and Technical Subjects: RST.9-10.3, RST.9-10.4, RST.9-10.7, RST.11-12.3, RST.11-12.4, RST.11-12.7
- Common Core State Standards- Math
Numbers and Quantity: Quantities: HSN.Q.A.1
Numbers and Quantity: Vector and Matrix Quantities: HSN.VM.A.3
Algebra: Creating Equations: HAS.CED.A.1
Algebra: Reasoning with Equations and Inequalities: HAS.REI.A.1
Statistics and Probability: Interpreting Categorical and Quantitative Data: HSS.ID.C.7

