

AOPA FOUNDATION HIGH SCHOOL AVIATION STEM CURRICULUM  
MATERIALS LIST



9<sup>th</sup> GRADE - LAUNCHING INTO AVIATION - SEMESTER TWO

**Materials needed throughout the semester**

(included in 3 lessons)

- Poster board or rolled paper
- Markers
- Scissors
- Paperclips
- Clear tape
- Graph paper

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**Unit 7 – Exploring Careers in Aviation and Aerospace**

- *Unit 7.B Lesson 1 – Becoming an Aerospace Engineer*

Parachute Challenge Activity

Per Team

- 2 plastic bags
- Fabric or other materials to construct the parachute
- 5 feet of string
- 2 raw eggs
- Tape
- Cardboard or foam board
- Scissors
- Other materials determined by the teacher (paper plate, manila folder, etc.)

Per Class

- Hot glue gun and glue sticks
- Other materials determined by the teacher

Engineering Research Activity (per team)

- Access to PowerPoint (or other presentation software) to create a slide presentation

- *Unit 7.C Lesson 1 – Becoming an Air Traffic Controller*

ATC Simulation Activity (per class)

- Large flat area (parking lot, football field, gymnasium, wide hallway)
- Sidewalk chalk, masking tape, or spray paint
- Measuring tape

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## Unit 8 – Aviation Innovation and Problem Solving

- *Unit 8.A Lesson 1 – Improving Aviation’s Environmental Impact*  
Chevron Activity
  - Thunder drum (small or large ones will work for this activity). One needed, or, if possible, one per small group
  - Paper, cardstock, various building materials (i.e. aluminum foil)
  - Measuring devices – Decibel meter (real or smart phone app) ° There are many free decibel meter apps that are constantly changing. Simple app searches for “decibel meter” will show popular apps that include “Sound Meter,” “Decibel Meter” and “SPL Meter.”Safety
  - Actively supervise students during the lab or activity. Be ready to offer guidance in situations where safety could be compromised.
- *Unit 8.B Lesson 2 – Integrating Drones*  
Friday Night Drones Activity
  - Access to “Google Earth”
  - Graph Paper
  - Colored Pencils
- *Unit 8.C Lesson 1 – Supersonic Aircraft*  
Measuring the Speed of Sound Activity (per class) (GOING FURTHER)
  - Two blocks of wood (recommend using two 20-inch pieces of 2x4 boards)
  - Long tape measure
  - Colored Pencils
  - Multiple stopwatches (can use the stopwatch function on smartphones)
  - Clipboards
  - Calculators
  - Thermometer (to take outside temperature)
  - An open space several hundred feet from a building from which to bounce the sound
- *Unit 8.C Lesson 3 – Electric Aircraft*  
Build-your-own-battery Activity (per team)
  - 7-10 test leads with alligator clips
  - 4-6 lemons
  - Small electric motor with propeller
  - One AA battery
  - Small LED light
  - 4-6 galvanized nails/screws

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- 4-6 pieces of bare copper wire (about 2 inches long)
  - Ruler
  - 2-3 rubber bands
  - 4-6 drinking straws or small dowels
  - Safety glasses
  - Multimeter (shared among the class)
  - Wire cutters/strippers (shared among the class)
  - Digital scale (shared among the class)
  - *Unit 8.B Lesson 2 – Colonizing Space*
    - Welcome to Columbia Hills, Mars! Activity
    - Graph paper (per student)
    - Poster board or rolled paper (per team)
    - Markers (per team)
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## Unit 9 – Innovation Challenge

- *Unit 9.A Lesson 1 – “Peep Odyssey” Innovation Challenge*
    - Innovation Challenge
    - Three-ring binder (per team)
    - Several pieces of graph paper (per team)
    - 2-3 Peeps (per team)
    - One vacuum cylinder and pump (per class)
    - Safety glasses
    - Suggested materials that a teacher may provide to assist in building prototypes:
      - Pieces of plastic or plexiglass
      - Pieces of metal
      - Caulk
      - Duct tape
      - Rubber plugs
      - Hot glue gun and glue
      - Foam board pieces
      - Aluminum foil
      - Plastic wrap
      - Wax paper
      - Cardboard or cardstock
      - Any tools required to build the prototypes
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- *Unit 10.C Lesson 1 – Building a Career Portfolio*  
Portfolio Materials (Going Further activity - optional)
  - Three-ring binder
  - Tabs (as needed per student based on table of contents)
  - Plastic or vinyl sheet protectors

PROPRIETARY