Individual Activity Landing Pages

for

ACRP Research Report 202:

Developing Innovative Strategies for Aviation Education and Participation

Activity	Target Group	Title	Duration	Emphasis	Staff	Venue	Provider	Specialized Equipment	Cost/Person	Funding Source	Participants	Region
Class/ Workshop	E/M/ H	4-H Aerospace Activities	<3 hours	STEM	V	Classroom	Organization		$$	Self	M	
Class/ Workshop	E/M/ H	4-H National Youth Science Day: Mission Drone Discovery	<3 hours	STEM	V	Classroom	Organization	UAS	$	Self	S	
Camp	H	Academy of Model Aeronautics - Camp AMA	>3 days	STM	FT	Museum	Museum	UAS	$$$	Tuition	S/M/ L	GL
Camp	E/M/ H	Air Zoo Camps	3-8 hours, 1-3 days	STEM	FT	Museum	Museum		$$/$$$	Admission	S/M	GL
Class/ Workshop	E/M/ H/PS	Air Zoo Downloadable Lesson Plans	<3 hours	STEM	FT	Classroom	Museum		Free	Self	S/M	GL
Class/ Workshop	H	Apple Valley High School Aviation Courses	>3 days	STEM	FT	Classroom	School	UAS	Free	Grant	M	GL
Camp	H	Auburn University Aviation Camp	>3 days	STEM	V	Classroom/ Airport	University	Aircraft	$$$	Admission	M	SO
Club	PS	Auburn University Striped Wings Ambassador	None	STEM	V	Classroom/ Airport	University	Aircraft	Free			SO
Camp	H	Aviation Museum of Kentucky Summer Camp	1-3 days	STEM	V	Museum	Museum		$$$	Admission		SO
Class/ Workshop	H	Bismarck High School Aviation Courses and Flying Club	>3 days	STEM	FT	Classroom	School	Computers	Free		M	GL
Camp	E/M	Bismarck Public School Career Academy Drone Summer Camp	1-3 days	STEM	FT	Classroom, Hangar	School	Computers, UAS	$	Grant	M	GL
Camp/ Workshop	E	Blue Sky Aeronautical STEM Curriculum and Kit	<3 hours	STEM	FT	Classroom	Organization	Aircraft		Tuition		SO
Class/ Workshop	E/M/ H	Boy Scouts of America Aviation Merit Badge	>3 days	STEM	V	Classroom, Hangar	Organization		$	Self		
Class/ Workshop	M/H	Boy Scouts of America Exploring	<3 hours	STEM	V	Classroom, Airport	Organization		$	Self		
Class/ Workshop	M/H	Boy Scouts of America STEM in Scouting	3-8 hours	STEM	V	Classroom	Organization		$	Self		
Class/ Workshop	E/M/ H	BWI Summer Youth Initiative	>3 days	STEM	V	Airport	Airport	Aircraft, Simulators	Free	Donations, Self	M	EA
Club	H	Catholic Aviation Association - Cupertino Aviation Club	>3 days	STM	V	Classroom	Organization			Donations	S	GL
Internship	PS	CDOT Aero Airport Internship	>3 days	O	FT	Airport	State		Free	Grant	S	NW
Class/ Workshop	M/H	Celebrate Freedom Foundation's Student/School Opportunities and Rewards (SOaR) Program	1-3 days	STEM	V	Classroom	State	Aircraft	Free	Self	XL	SO

Activity	Target Group	Title	Duration	Emphasis	Staff	Venue	Provider	Specialized Equipment	Cost/Person	Funding Source	Participants	Region
Camp/ Class/ Workshop	H/PS	Central Indiana Soaring Society - Glider Training and Camps	1-3 days	STM	V	Airport	Organization	Aircraft	$$$	Tuition, Membership	S	GL
Class/ Workshop	E	Challenger Center Astronaut Academy	1-3 days	STEM	FT	Classroom, Laboratory	School		$$$	Admission	M	SO
Camp	M/H	Challenger Center Fischertechnik	3-8 hours	STEM	FT	Classroom, Laboratory	School		$$	Admission		SO
Camp	M/H	Challenger Center Introduction to Aviation	3-8 hours	STEM	FT	Classroom	School	Simulators	$$	Tuition		SO
Class/ Workshop	E/M	Challenger Center NASA Learning Experience	<3 hours	STEM	FT	Classroom, Laboratory	School		Free	Self		SO
Camp	M/H	Challenger Center RC Pilot Camp	3-8 hours	ST	FT	Classroom, Laboratory	School		$$			SO
Camp	E/M	Challenger Center Robotics Camp	1-3 days	STEM	FT	Classroom, Laboratory	School		$$$	Admission		SO
Camp	M	Challenger Center Rocket Camp	1-3 days	STEM	FT	Classroom, Laboratory	School		$$$	Admission	M	SO
Camp	E	Challenger Center Rocket Fundamentals Summer Camp	3-8 hours	STEM	FT	Classroom	School		$$	Admission	S	SO
Class/ Workshop	H	Chandler Gilbert Community College Private Pilot / Dual Enrollment	>3 days	O	FT	Classroom, Laboratory	University	Aircraft, Simulators	$$$	Tuition	S	WP
Class/ Workshop	E	Civil Air Patrol: 40 Curriculum Projects and STEM Kits	<3 hours	STEM	PT/V	Classroom	Organization		$$	Self	S/M	
Club	E/M/ HS/PS	Coleman A. Young International Airport Education Association		STEMO	V		Organization		Free	Self		GL
Class/ Workshop	H	Culver Summer School of Aviation	>3 days	STM	FT	Classroom, Airport	School	Aircraft	$$$	Tuition	S/M	GL
Camp	E	Dakota Territory Air Museum Aviation Camp Experience (ACE)	<3 hours	SM	PT/V	Classroom	Museum	Aircraft	Free	Grant	M	GL
Camp	E	Dakota Territory Air Museum Passport Aviation Camp Experience (PACE)	>3 days	SM	PT/V	Museum, Hangar	Museum	Aircraft	Free	Grant	M	GL
Class/ Workshop	H	Eagan High School Aviation Classes	>3 days	STEM	FT	Classroom	School		Free		M	GL
Class/ Workshop	PS	Eastern Kentucky University Aviation Program	>3 days	STEM	FT	Classroom, Airport	University	Aircraft, Computers	$$$	Tuition		SO
Class/ Workshop	E/M	Farnsworth Aerospace PreK-8 Lego Robotics	>3 days	STEM	FT	Classroom	School		$$$	Self	S	GL
Class/ Workshop/ Club	E/M/ H	Girl Scouts	<3 hours	STEM	V	Classroom	Organization		$	Self, Membership	S	

Activity	Target Group	Title	Duration	Emphasis	Staff	Venue	Provider	Specialized Equipment	Cost/Person	Funding Source	Participants	Region
Flight	H	Giving Kids Wings Flight Academy	>3 days	STEM	V	Classroom	Organization	Aircraft	$$$	Self, Donations	S	WP
Camp	H	Giving Kids Wings Glider Camp	>3 days	STEM	PT	Classroom, Airport	Organization	Aircraft	$$$	Self, Donations	S	WP
Scholarship	H/PS	Greater Pilots Association/Michigan Takes Flight					State	Aircraft	Free	Grant, Donations		GL
Class/ Workshop	H/PS	Idaho DOT Aviation Career Exploration (ACE)	>3 days	STEAM	FT/V/ Parent	Classroom, Airport	State	Aircraft, Simulators, UAS, Computers	$$		M	NW
Camp	E/M/ H	Iowa DOT Aviation Youth Camps	3-8 hours	STEM	V	Airport	State	Aircraft	Free	Donations	M	CE
Camp/ Class/ Workshop	H/PS	Kentucky Department of Transportation		STEM	V	Classroom/ Airport	State	Aircraft, Simulators, UAS, Computers		State		SO
Camp	M/H	LaPorte Airport Summer Aviation Camp	>3 days	STM	PT/V	Airport	Airport	Aircraft	$$	Donations, Admission	L	GL
Class/ Workshop	H	Liberty University After School Aviation Program	>3 days	STEM	FT	Classroom, Airport	University	Computers	Free	Grant	M	EA
Camp	M	Liberty University Junior High Day Camps	3-8 hours	SO	FT	Laboratory	University	Aircraft, Simulators	$$$	Self	M	EA
Camp	H	Liberty University New Horizons 30 Day Camps	>3 days	STEMO	FT	Classroom, Airport	University	Aircraft, Simulators	$$$	Self		EA
Camp	H	Liberty University New Horizons High School Camp	>3 days	STEMO	FT	Classroom, Airport	University	Aircraft, Simulators	$$$	Self	M	EA
Flight	H	Liberty University Solo Camps	>3 days	STEMO	FT	Classroom, Airport, Hangar	University	Aircraft, Simulators	$$$	Self	S	EA
Camp	H	Louisiana ACE Camps	1-3 days, >3 days	O	V	Airport	Organization	Aircraft	Free	Donations	S	SW
Internship	PS	Louisiana DOTD Internship	>3 days	O	V	Classroom	State	Simulators	Free	Self	S	SW
Contest	E/M/ H	MDT Art Contest	3-8 hours	Art	V	Airport	State		Free			NW
Camp	M/H	MDT Aviation Career Exploration (ACE) Academy	1-3 days	STEM	V	Airport	State	Aircraft	$$$	State, Donations	S	NW
Class/ Workshop	PS	MDT Science Workshop for Teachers	1-3 days	STEM	V	Classroom	State	Aircraft	Free	Self	S	NW

Activity	Target Group	Title	Duration	Emphasis	Staff	Venue	Provider	Specialized Equipment	Cost/Person	Funding Source	Participants	Region
Class/ Workshop	PS	Middle Tennessee K-12 Teacher Renewal	>3 days	STEM	FT/PT/ V	Classroom, Airport	University	Aircraft	Free	Grant	M	SO
Camp	H	Midland Aviation Camp	>3 days	O	V	Airport	Organization	Aircraft	$$	Admission	S	GL
Tours	E/M/ H/PS	Midland Community Aviation Discovery Area	<3 hours	STEM	V	Airport	Airport	Aircraft	Free	Donations		GL
Flight	E/M/ H	Midland EAA Young Eagles	<3 hours	O	V	Airport	Organization	Aircraft	Free	Donations	S	GL
Camp	H	Minnesota ACE Camp	>3 days	STEM	V	Classroom, Airport, Hangar	State	Aircraft, Computers	$$$	Self, State	S	GL
Class/ Workshop	H	Minot High School Aviation I and II Courses	>3 days	STEM	FT	Classroom	School	Computers	Free	State	S	GL
Camp	PS	MSP FAR Part 139 Boot Camp	>3 days	O	FT	Airport	Airport		Free	Self	S	GL
Internship	PS	MSU of Denver Aviation/Aerospace Internship	>3 days	O	FT	Laboratory	University		Free	Self	S	NW
Class/ Workshop	M	Museum of Flight - Amelia's Aero Club	>3 days	STEAM	FT/PT	Classroom	Museum	Aircraft	Free	Donations	S	NW
Class/ Workshop	M	Museum of Flight - Michael P. Anderson Memorial Aerospace Program	<3 hours	STEM	FT/PT/ V	Classroom	Museum	Aircraft	Free	Self		NW
Class/ Workshop	E/M	Museum of Flight - Traveling Flying Gizmo Show I & II	<3 hours	S	FT/PT	Auditorium	Museum		$$$	Self	XL	NW
Class/ Workshop	H	Museum of Flight - Washington Aerospace Scholars	>3 days	STEM	FT/PT/ V	Classroom	Museum		Free	Donation	S	NW
Camp	H	Nashville Pilot Camp	>3 days	STEM	PT	Classroom	Organization	Aircraft, Simulators	$$$	Self	S	SO
Camp	H	National Air & Space Education Institute (NASEI) Aerospace Summer Camps	>3 days	STEM	V	Hangar	School		$$$	Self		SO
Class/ Workshop	M/H	New Mexico Aviation Aerospace Association Annual Aviation Expo and Fly-In	3-8 hours	STEM	V	Airport, Hangar	Organization	Aircraft	Free	Grant	XL	SW
Camp	H	New York Student Aviation Expedition	>3 days	STEM	V	Classroom, Airport, Hangar	Organization		0	Donations	M	NW
Class/ Workshop	E/M/ H/PS	Ninety-Nines	<3 hours	STEM	V	Classroom, Hangar	Organization	Aircraft	$$	Membership	S	SW/ CE/ WP/ EA/ NE/ GL/ NW

Activity	Target Group	Title	Duration	Emphasis	Staff	Venue	Provider	Specialized Equipment	Cost/Person	Funding Source	Participants	Region
Internship	PS	North Dakota Aeronautics Commission Financial Support for Airport Internships	>3 days	STEM		Airport	State		Free	State	S	GL
Flight	PS	North Dakota Aeronautics Commission Flight Training Assistance Program	3-8 hours	STEM	PT	Airport	State	Aircraft				GL
Grant	E/M/ H	North Dakota Aeronautics Commission K-12 Aviation Education Grant Opportunity		STEAM			State	None				GL
Class/ Workshop	E/M	Pima Air and Space Museum Family Events	<3 hours	STEM	PT/V	Classroom, Hangar	Museum	Aircraft	$	Admission	XL	SW
Tours	E/M/ H/PS	Pima Air and Space Museum School and Youth Group Tours	<3 hours	STEM	FT/PT/ V/ Parents	Classroom, Hangar	Museum	Aircraft	Free	Self	S/M/ L/XL	SW
Class/ Workshop	E/M	Pima Air and Space Museum Soarin' Saturdays for Kids	<3 hours	STEM	PT/V/ Parents	Classroom, Hangar	Museum	Aircraft	$	Admission		SW
Camp	M	Purdue University - Technology Advances Girl Scouts	1-3 days	STEM	FT/V	Classroom	University		$$$	Self	L	GL
Class/ Workshop	E/M	Purdue University Girls in Aviation Day	3-8 hours	STEM	V	Airport	University	Aircraft	$	Donations	L	GL
Class/ Workshop	H	Red River High School Aviation I and II Courses	>3 days	STEM	FT	Classroom	School	Computers	Free	State	S	GL
Class/ Workshop	H	South Carolina Public High School Aerospace Engineering Program	>3 days	STEM		Classroom	State		Free	Grant		SO
Camp/ Class/ Workshop/ Tours	E/M/ H/PS	Spaceport Indiana	<3 hours, 3-8 hours, 1-3 days	STEAM	FT/PT	Classroom, Laboratory	Organization		$$/$$$	Donations, Grants, Self, Tuition	S/M/ L	GL
Class/ Workshop	M/H/ PS	Sporty's Pilot Shop - Next Stop Online Training	>3 days	STM		Online	Organization	Computers	Free	Self	S	
Camp	H	University of North Dakota Aerospace Aviation Camp	>3 days	STEM	FT/PT	Classroom	University	Aircraft, Simulators	$$$	Self	M	GL
Class/ Workshop	PS	University of North Dakota Aviation Experience K-12 Educators Workshop	1-3 days	STEM	V	Classroom, Airport, Hangar	University	Aircraft, Simulators, UAS	$$	Tuition	S	GL
Class/ Workshop	H/PS	Ventura County Air Academy	>3 days	STEM		Airport	State	UAS	Free	State		WP
Class/ Workshop	H	Ventura County Ninety-Nines Aviation Career Day	1-3 days			Airport	Organization, State		Free	Self	XL	WP
Class/ Workshop	H	West Fargo High School Aviation Courses	>3 days	STEM	FT	Classroom	School	Computers	Free	State	S	GL

Activity	Target Group	Title	Duration	Emphasis	Staff	Venue	Provider	Specialized Equipment	Cost/Person	Funding Source	Participants	Region
Class/ Workshop	H	West Michigan Aviation Academy	>3 days	STEM	FT	Classroom/ Airport	State		Free		XL	SO
Class/ Workshop	M/H	Western Mass Wright Flight	>3 days	STEM	V	Classroom/ Airport	Aviation Organization			Donations	S	NE
Camp	M	Wings Air & Space Museum Summer Camp	>3 days	STEM	FT/PT/ V	Classroom, Hangar, Auditorium	Museum	Aircraft, Simulators	$$$	Tuition	M	NW
Class/ Workshop	M/H	Wings Air & Space Museum Teacher Flight Program	>3 days	STEAM	FT/PT/ V	Classroom, Hangar, Airport	Museum	Aircraft, Simulators	Free	Donations	XL	NW
Class/ Workshop	M/H	Wings Air & Space Museum Wings Aerospace Academy	>3 days	STEAM	FT/PT/ V	Classroom, Online/ Hangar/ Laboratory	School, Museum	Aircraft, Simulators	Free	Self	M	NW
Class/ Workshop	E/M	Wings Air & Space Museum Wings Aerospace Science Program (WASP)	>3 days	STEM	FT	Classroom	Museum		Free	Grant	XL	NW
Camp	E/M/ H	WinnAero Aviation Career Exploration (ACE) Academies	>3 days	STEM	V	Classroom/ Hangar/ Airport	Organization	Aircraft, Simulators	$$$	Donations, Admission	L	NE
Class/ Workshop	PS	WinnAero Teacher Workshops	1-3 days	STEM		Classroom	Organization		$	Grant, Donations		NE
Class/ Workshop	E/M/ H	Women in Aviation International	3-8 hours	STEM	V	Classroom	Organization		$$	Self, Membership	S	
Class/ Workshop	E/M	Women in Aviation International - Aviation Fun Patch	<3 hours	STEM	V	Classroom	Organization		$$	Self, Membership	S	
Class/ Workshop	E/M	Women in Aviation International: Girls in Aviation Day	<3 hours	STEM	V	Classroom, Airport, Hangar	Organization		$$	Self, Membership	M	
Class/ Workshop	E/M	Women in Aviation International: Hands-On Aviation Education Materials	<3 hours	STEM	V	Classroom	Organization		$$	Self, Membership	S	

Activity:	Class/Workshop
Target Group:	Elementary, Middle, High
Title:	4-H Aerospace Activities
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$$
Funding Source:	Self
Participants:	Medium
Established:	
Region:	
Website:	www.4-H.org

Description of Activity (reprinted from website)

4-H lists the Aerospace Activities in their activity books. These can be purchased through their website for around $26.95. The activity books are separated by grade level. Here is a brief explanation of each of the books and activities:

Level 1 – Pre-Flight: Youth build a marshmallow rocket, learn about different careers in aviation and space, and explore how an airplane works. 4 activities total. Grades 1-3.

Level 2 – Lift-Off: Youth build a straw rocket, learn about weather conditions, make a paper hot air balloon, and learn the International Phonetic Alphabet. 13 activities total. Grades 3-5.

Level 3 – Reaching New Heights: Youth make a shuttle on a string, a Japanese kite, a hang glider, and learn about a control panel of an aircraft. 12 activities total. Grades 6-8.

Level 4 – Pilot in Command: Youth create an altitude tracker, determine fuel efficiency for a commercial aircraft, explore pilot certification, evaluate navigation systems, and learn about airport issues. 12 activities total. Grades 9-12.

Helper's Guide: Answers the questions in the activity guides as well as provides facilitators with discussion points and questions for youth.

Activity:	Class/Workshop
Target Group:	Elementary, Middle, High
Title:	4-H National Youth Science Day: Mission Drone Discovery
Duration:	<3 hours
Emphasis:	Science, Tech, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	UAS
Cost/Person:	$
Funding Source:	Self
Participants:	Small
Established:	2016
Region:	
Website:	www.4-H.org http://4-h.org/parents/national-youth-science-day/4-h-nysd-2016-drone-discovery/#!guides-and-toolkit

Description of Activity (reprinted from website):

This "Drone Discovery" activity was a part of the National Youth Science Day in 2016. 4-H has been participating in the National Youth Science day for some time and have experiments listed on their website since 2008. This specific activity is called Mission Drone Discovery and it requires participants to think like an engineer to design, build, and test drones. Other topics include flight dynamics, drone safety, drone operation, payload/remote sensing. In this experiment participants had to work as a team to complete the following steps in the challenge:

Take Off

1. Choose your drone adventure
2. Things that fly (Define the engineering problem and design a solution)
3. Design and fly a FPG-9 Glider

Foam Drone

1. Design a foam drone
2. Test remote sensing
3. Foam flight film festival

Code Copters

1. Code Copters IRL (In Real Life)
2. Code Copters

Landing: Take Action (this activity includes career exploration)

The experiment is designed to take approximately two hours and is suggested for student's grade four and above.

The website also includes the guidebooks for both the participant and facilitators. It also has videos, took kits and other great resources.

Contact Information:

Josh Kligman Director of Marketing, Field Operations, jkligman@4-H.org, 301-961-2955.
Griffin Schwed Integrated Marketing Manager (STEM) gschwed@4-H.org, 301-961-2819

Attachment: Simple - 4-H National Youth Science Day Checklist

4-H NYSD 2016: *Drone Discovery*

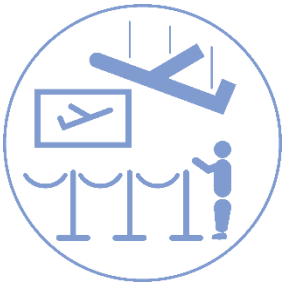
Supplemental Materials and Pre-Event Checklist

Your 4-H NYSD kit contains nearly everything you need to run a successful and fun 4-H NYSD event. However, since there are several different ways to administer the challenge, there are a few supplementary materials you may want to consider providing to make sure your event runs without a hitch. Consider the following:

- Computers – Having access to a computer or tablet with a USB port is required for the Foam Drone activity, although internet access is not. Having access to a computer with internet is required for Code Copters, however you can replace Code Copters with Code Copters (IRL).
- Masking Tape – It's always good to have tape on hand for repairs, especially when working with Styrofoam gliders. If you're planning to do Code Copters (IRL) instead of the Code Copters activity, you may also need tape to make a grid on the floor.
- Pennies – As part of the Take Off activity, you will need pennies to serve as nose weights for the FPG-9 gliders. They are also useful counter-weights for the glider in the Foam Drone activity.
- Scissors – You will need scissors to cut out the FPG-9 glider in the Take Off activity.
- Extra Velcro dots – The kit contains 10 pairs of Velcro dots (used to affix both the camera and counter-weights to the glider in the Foam Drone activity.) That should be plenty, but having more on-hand is never a bad idea since each Velcro dot has limited adhesive ability.

Since Drone Discovery is a multi-faceted challenge with several technology-related elements, there are a few things you should remember to prepare before your event. Consider the following:

- USB keychain camera
  - ☐ Remember to charge your camera for several hours before the event.
  - ☐ Make sure you plug the camera into your computer to ensure that your device is compatible and any necessary drivers are installed (they should install automatically once the camera is plugged in).
  - ☐ Test your camera! Make sure you familiarize yourself with the camera's controls, and even try shooting a test video or two. You'll want to be sure you can answer any camera-related questions during the event.
- Scratch – Online Coding Platform
  - ☐ Before your event, follow the instructions in your facilitator guide to create an account and log on to the Scratch platform. Locate the National Youth Science Day template.
  - ☐ Watch the instructional video about Scratch on the 4-H NYSD site.
  - ☐ Bookmark the Scratch page in our browser and write down your login information to ensure you're ready to go.
- Internet
  - ☐ If you are doing the Code Copters activity, make sure your space has internet connectivity during the day of your 4-H NYSD event.



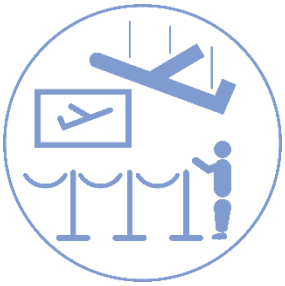
Activity:	Camp
Target Group:	High
Title:	Academy of Model Aeronautics – Camp AMA
Duration:	>3 days
Emphasis:	Science, Technology, Math
Staff:	FT
Venue:	Museum
Provider:	Museum
Specialized Equipment:	UAS
Cost/Person:	$$$
Funding Source:	Tuition
Participants:	Small, Medium, Large
Year Established:	
Region:	GL
Website:	http://www.amaflightschool.org/campama

Description of Activity:

At Camp AMA, participants learn and work on their remote controlled (RC) aircraft flying skills with "some of the best RC pilots in the world." Instructors assist campers with their flying techniques and conduct flight demonstrations. Instructors will use their expertise to train and teach the campers in all aspects of RC. The camp occurs at the National Model Aviation Museum and AMA Headquarters and also includes a tour of the museum. The week is spent learning about model aviation and building lifelong friendships with other RC pilots from all over the nation.

Contact Information:

Email application to: jessys@modelaircraft.org



Activity:	Camp
Target Group:	Elementary, Middle, High
Title:	Air Zoo Camps
Duration:	<3 hours, 3-8 hours, 1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Museum
Provider:	Museum
Specialized Equipment:	
Cost/Person:	$$, $$$
Funding Source:	Admission
Participants:	Small, Medium,
Year Established:	
Region:	GL
Website:	http://www.airzoo.org

Description of Activity:

Winter Break Family Fun Days!
Get out of the cold and join the fun at the Air Zoo during our Family Fun Days! Experience TONS of hands-on, wintery science thrills including building activities, experiments, crafts, robotics, animal science and more!

Overnight Camps
Spend a night at the museum and snooze under the SR-71 Blackbird! Choose from a space- or aviation-themed Overnight Camp!

Scouting Info
The Air Zoo works with Boy Scouts, Girl Scouts and Brownies to learn about aviation, space and science. We have a variety of special events and classes held throughout the year.

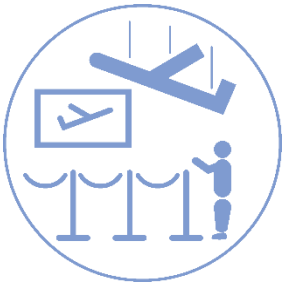
Summer Camps - http://www.airzoo.org/page.php?page_id=58
Our professional educators will share the thrill of science, technology, engineering, art, mathematics (STEAM), and aerospace science with campers through TONS of hands-on activities and interactive experiments. Campers will get an in-depth look at the Air Zoo, including the 4D theater, full-motion flight simulators and much more! Because some portions of the camp will take place outdoors, campers need to dress appropriately for the weather.

Contact Information:

http://www.airzoo.org/page.php?menu_id=5

Air Zoo
6151 Portage Road
Portage, MI 49002
269-382-6555

Activity:	Class/Workshop
Target Group:	Elementary, Middle, High, Post-Secondary
Title:	Air Zoo Downloadable Lesson Plans
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	Museum
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Self
Participants:	Small, Medium,
Year Established:	
Region:	GL
Website:	http://www.airzoo.org



Description of Activity:

Educator Resources:
The Air Zoo is working to provide educators with an array of resources including lesson plans, grants/funding, and professional development opportunities.

Educational Programs: http://www.airzoo.org/page.php?page_id=121
The Air Zoo's team of world-class educators are focused on creating affordable, interactive educational programs that not only stimulate and engage students during their presentation, but also inspire them to continue their exploration of science long after the program's conclusion. All programming is created by licensed Michigan teachers who utilize a unique approach of once-in-a-lifetime experiences coupled with dynamic lesson plans and "hands-on" activities. Each program is designed to encourage a student's innate curiosity and instill the fundamental scientific, technological, engineering, and mathematical tools needed to succeed in today's world. The Air Zoo's education team also brings the best of what they do into your community, and can travel to your location and conduct the same engaging, interactive programs offered at the Air Zoo. This option is a fun and exciting way to supplement your current lessons, or can be used as a reward to motivate your students towards an important goal.

You and your students are sure to have an unforgettable experience with the Air Zoo.
List of Programs**:** http://www.airzoo.org/page.php?page_id=62

Contact Information:

http://www.airzoo.org/page.php?menu_id=5

Air Zoo
6151 Portage Road
Portage, MI 49002
269-382-6555

Activity:	Class/Workshop
Target Group:	High
Title:	Apple Valley High School Aviation Courses
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	UAS
Cost/Person:	Free
Funding Source:	Grant
Participants:	Medium
Established:	2017
Region:	GL
Website:	https://stemavhs.com/ https://stemavhs.com/workshops-and-camps/

Description of Activity:

The Apple Valley School District in Minnesota received a Department of Labor Grant, E3 STEM. With this grant, Christopher Lee has been creating a drone course. Throughout this course students will construct small and larger drones. Once built the students will have the opportunity to fly and then modify them. They will be exposed to the manufacturing, electronics and coding side of the drone industry in addition to just simply flying them. Students will start with the small drones and then move on to a large size drone. The E3 STEM grant (https://stemavhs.com/) requires participation with industry. Christopher is planning to partner with a company that has cameras that can be installed/mounted onto the large drones.

Since this is a new course they planned to test it out during the summer of 2017. The plan is to then start the course approval process within the school district. The teachers and administrators hope to have the course approved and start teaching it on a regular basis in the Fall 2018.

During the summer trial, they were hoping to have between 10-12 students to try the course out. Once it becomes a regularly scheduled elective course they plan to have between 20-30 students in the class.

A lot of time has gone into developing this course as the class needs to meet state standards.

Contact Information:

Christopher Lee: Christopher.lee@district196.org

Activity:	Camp
Target Group:	High
Title:	Auburn University Aviation Camp
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	
Venue:	Classroom, Airport
Provider:	University
Specialized Equipment:	Aircraft
Cost/Person:	$$$
Funding Source:	Admission
Participants:	Medium
Established:	2010s
Region:	SO
Website:	www.auburn.edu/summercamps

Description of Activity:

Aviation Camp is week-long (Sunday through Friday) summer camp, offered twice per summer, for rising 9th through 12th grade students. The camp program is intended to introduce students to a variety of aviation careers though hand-on activities, tours, and speakers. The camp, now entering its third year, remains very popular, selling out all 24 openings for both sessions in the early spring. A third session is under consideration for future summers, as well as an expansion to include middle school students.

The camp is led by university staff and faculty, and assisted by undergraduate aviation students. The camp also benefits from a larger, organized effort by the university to host summer camps for a variety of different subjects, sports, and interests. Aviation Camp staff is responsible for campers during the day, while a dedicated university outreach division provides for supervision overnight.

At the Auburn campus, students fly one of the university's training aircraft, build a model rocket as part of an engineering and aerospace day, speak with a career panel who shares their experiences in the industry, and attend a seminar which provides an overview of aviation careers. In past years, a regional airline has visited the camp by flying in a spare aircraft and the Air Force Reserve has flown a C-130 military transport aircraft to the Auburn Airport.

Off campus, students visit the Atlanta Hartsfield-Jackson International Airport (ATL), which is located about 100 miles from the university. At ATL students get a behind the scenes tour of airport operations and visit a major airline's technical operations (maintenance) center. Near Atlanta, depending on availability, students may get to visit the Atlanta Air Route Traffic Control Center (ARTCC) or the National Weather Service. Other off campus visits include a trip to the Tuskegee Airmen historic site and a tour of a GE Aviation manufacturing plant.

The camp fee is $825 for the week which includes all activities, transportation, lodging, and meals. The cost for participants has been offset in the past by camp scholarships offered by a local EAA group and nearby school districts. In future years, the camp hopes to allow students to take advantage of camp scholarships offered by the university.

Planning for the camp was most intensive the first year, but is still required for subsequent camps. In the beginning a faculty member was given a stipend to organize the camp and events. Each year planning begins the summer prior because overnight accommodations are provided in university dorms, which must be reserved for the camp about nine months in advance.

Advertising for the camp is provided though handouts at career days and air shows, social media postings, and listed through the university's summer camp experience website (www.auburn.edu/summercamps). Outside of the printing of handouts, the advertising costs are almost none.

Contact Information:

Bill Hutto
Airport/Aviation Center Director
Auburn University
334-844-4606
huttowt@auburn.edu

Activity:	Club
Target Group:	Post-Secondary
Title:	Auburn University Striped Wings Ambassadors
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Airport
Provider:	University
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	
Participants:	
Established:	
Region:	SO
Website:	https://auburn.campuslabs.com/engage/organization/aviation_center

Description of Activity:

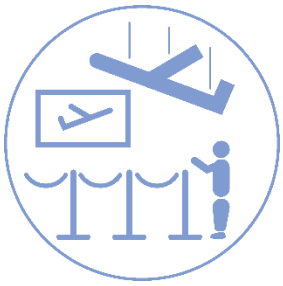
Striped Wings Ambassadors is an Auburn University student group that represents and provides outreach for the Auburn Aviation Center. This club is open to college students enrolled at Auburn, primarily in their aviation programs. The purpose of the organization is to help the public, and potential students, learn more about aviation. The Striped Wings Ambassadors do a great job of interesting younger students in aviation as a career and provide excellent one-on-one contact with the public.

They attend conferences, career fairs, airshows, and fly-in type events such as the EAA's AirVenture in Oshkosh, Wisconsin, which they are attending for the fourth year in a row. When traveling they are normally driving Auburn University vehicles for increased recognition. Also, the group may visit classrooms of K-12 students to speak about aviation, the science behind it, and possible career paths.

Contact Information:

Bill Hutto
Airport/Aviation Center Director
Auburn University
334-844-4606
huttowt@auburn.edu

Activity:	Camp
Target Group:	High
Title:	Aviation Museum of Kentucky Summer Camp
Duration:	1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Museum
Provider:	Museum
Specialized Equipment:	
Cost/Person:	$$$
Funding Source:	Admission
Participants:	
Established:	1990s
Region:	SO
Website:	https://www.aviationky.org/order/



Description of Activity:

These two-day summer camps are held at the Aviation Museum of Kentucky (5 sessions) and at four other locations across the state (1 session each). Camp attendees learn about aeronautics, navigation, space, aircraft design, aviation careers, participate in flight simulation and take a flight. This camp uses aviation to teach STEM concepts in a way that is interesting to students. This program has been running for 21 years and counting. Many attendees have built careers in aviation after participating in these camps, including military pilots, airline and corporate pilots, aerospace engineers, and many others.

Contact Information:

James McCormick, Chairman, The Aviation Museum of Kentucky: 859-317-2815

Attachment: Simple – Aviation Camps 2017 Flyer

Aviation Camps 2017 (ages 10–16)

Summer of 2017 at the Aviation Museum of Kentucky® in Lexington (located at Blue Grass Airport); and airports serving Bowling Green, Louisville, Hazard, and Pikeville.

Lexington camps at Aviation Museum of Kentucky®

Dates	Ages
June 12 – 13 – Level 1	10 and 11
June 15 – 16 – Level 2	12 and 13
June 19 – 20 – Level 1 – 3	10 to 16
June 22 – 23 – Level 1 – 3	10 to 16
June 26 – 27 – Level 3	14 to 16

Interested?

Register & pay online — download a camp application & calendar:
www.aviationky.org/camps

Email: camps2017@aviationky.org

Leave Voice Mail:
(859) 353–0467 (We'll respond.)

Help fly an actual airplane like this.

Get a camp T–shirt and flight log.

Lunch & snacks provided.

Learn about:

- Aeronautics
- Navigation
- NASA – Space
- Flight simulation
- Aircraft design
- Careers in aviation

Camps outside Lexington

Ages 10 – 16 all camps

City	Dates
Bowling Green Bowling Green – Warren County Regional Airport	July 6 & 7
Pikeville Pikeville – Pike Co. Regional Airport (Hatcher Field)	July 11 & 12
Louisville Bowman Field – at Hangar 7	July 20 & 21
Hazard Wendell H. Ford Regional Airport	July 25 & 26

Activity:	Class/Workshop
Target Group:	High
Title:	Bismarck High School Aviation Courses and Flying Club
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	Computers
Cost/Person:	Free
Funding Source:	
Participants:	Medium
Established:	2010
Region:	GL
Website:	https://www.bismarckschools.org/Page/2771 http://www.myndnow.com/news/bismarck-news/bismarck-public-school-career-academy-trains-future-aviators/814584602

Description of Activity (reprinted from website):

These are elective courses students can take in high school in Bismarck, ND:

Aviation Technology I - The class is to provide students with an exposure to the aviation industry. Topics covered in this class include: flight instruments, weather, navigation, unmanned aircraft and cross country planning. Students are also able to use X-Plane to practice some of the things they are learning in their classroom. Through a district grant the students are all able to go on an introductory flight from the Bismarck Airport.

Aviation Technology II – The class builds up skills learned Aviation Technology I. Students are also able to pick projects to work on throughout the course. Such projects include coding, RC Models, advanced flight, and assisting in the building of an RV 12. The high school works with Eagles Nest Projects http://www.eaglesnestprojects.org/ and receives the kit to build an RV 12 aircraft. The classroom has a workshop adjacent to it where they are able to work on the RV 12. They do have an A&P to come in occasionally to assist in the construction of the aircraft.

Aviation Flying Club – The students wanted to do more outside of the classroom with aviation so they along with the teacher of the two aviation courses founded a Flying Club. Any student who is interested in aviation is welcome to join the Flying Club, they don't have to actually be in one of the two classes. Students often times run the meetings and choose the venues. The club participants go on field trips. One of their field trips was to a local airport where there is a C-172 full motion simulator. They have been able to use the simulator for free. The Aviation Technology I and II instructor Brad often times will try out new class material and activities with the club students first

Contact Information:

Brad Stangeland: brad_stangeland@bismarckschools.org

Activity:	Camp
Target Group:	Elementary**,** Middle
Title:	Bismarck Public School Career Academy Drone Summer Camp
Duration:	1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Hangar
Provider:	School
Specialized Equipment:	Computers, UAS
Cost/Person	$
Funding Source:	Grant
Participants:	Medium
Established:	2017
Region:	GL
Website:	

Description of Activity:

The first Aviation Drone Summer Camp was put on by Bismarck Career Technical Education Department (CTE) in 2017. The camp was held for 25 4th-6th grade students and was a 2-day camp where they learned about Drones. They used flight simulators, flew mini quadcopters, and watched larger drones fly around. This camp was made possible by a $75,000 Tesoro grant that was earmarked for STEM activities. The grant paid for the two teachers' time and the equipment to be used during the two-day camp.

Contact Information:

Brad Stangeland: brad_stangeland@bismarckschools.org

Activity:	Class/Workshop
Target Group:	Elementary
Title:	Blue Sky Aeronautical STEM Curriculum and Kit
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	
Funding Source:	Tuition
Participants:	
Established:	
Region:	SO
Website:	www.blueskyfoundation.org

Description of Activity (reprinted from website):

The flagship program for the Blue Sky Educational Foundation (BSEF) is the Aeronautical STEM Curriculum and Kit. The curriculum is based on research funded by the National Science Foundation (NSF) on key factors in effective and engaging STEM education. The studies found that early experiences and opportunities for students to engage in hands on, project based practices of science and mathematics is very important. The use of an aviation theme to teach STEM has shown to be a powerful motivational force for students and teachers.

Contact Information:

Dr. Lee Siudzinski: Lee@Blueskyfoundation.org
www.blueskyfoundation.org

Attachment: Simple – Curriculum and Kit Explanation

AERONAUTICAL STEM CURRICULUM AND KIT FOR UPPER ELEMENTARY GRADES

The flagship program for the Blue Sky Educational Foundation (BSEF) is the Aeronautical STEM Curriculum and Kit. The curriculum is based on research funded by the National Science Foundation (NSF) on key factors in effective and engaging STEM education. The studies found early experiences and opportunities for students to engage in hands on, project based practices of science and mathematics is very important. The use of an aviation theme to teach STEM has shown to be a powerful motivational force for students and teachers.

The Aeronautical STEM Curriculum and Kit is a comprehensive hands-on, project-based program for upper elementary students in grades 3-6, involving 6-8 weeks of instruction. All nine discrete lessons and 21 unique activities include background information for the teacher, pre and post assessments, and student rubrics. The curriculum includes cross-curricular lessons in language arts, history, as well as STEM. All student and teacher materials needed for all lessons and activities are included in the kit. The curriculum also includes a CD containing SMART Board connections for all lessons and enrichment.

The curriculum is correlated with the Next Generation Science Standards (NGSS) and Common Core Science Standards (CCSS). For implementation in Texas, the curriculum is correlated with the Texas Education Knowledge Standards (TEKS).

An individual classroom teacher can use the Aeronautical STEM Curriculum and Kit, as detailed instructions are included in the program, but our focus is on school district adoptions at a specific grade level based on a district's needs. When a district adopts the program, a personalized professional development plan that includes teacher training is developed to support implementation. In recent adoptions, the training has taken place at a local aviation museum or science center. This location also serves as a great place to take students for a hands-on learning experience following implementation. We also involve museum or science center staff in the training.

We work with other organizations to provide an optional teacher/student flight experience – all a no cost to the students, teachers, or district.

Additional information can be obtained by contact Lee@Blueskyfoundation.org

Activity:	Class/Workshop
Target Group:	Elementary, Middle, High
Title:	Boy Scouts of America Aviation Merit Badge Series
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Hangar
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$
Funding Source:	Self
Participants:	
Established:	
Region:	
Website:	www.scouting.org

Description of Activity (reprinted from website):

The Aviation Merit Badge requires the participant to accomplish a certain number of tasks to earn the merit badge. Some of these activities include explaining how an airfoil generates life, how the primary control surfaces affect the airplane's attitude, and how a propeller produces thrust. The participants are also required to build a model aircraft and research career opportunities within aviation. These activities may cost additional money besides the annual membership fees, however it depends on what options the participant chooses. Since not everyone will have access or the money to go on an aircraft flight the badge requirements have multiple options for the participant to choose from. Regardless of what the participant does for their options they will still have a thorough understanding of flight. Here is an example of the option:

Do TWO of the following:

a. Take a flight in an aircraft, with your parent's permission. Record the date, place, type of aircraft, and duration of flight, and report on your impressions of the flight.

b. Under supervision, perform a preflight inspection of a light airplane.

c. Obtain and learn how to read an aeronautical chart. Measure a true course on the chart. Correct it for magnetic variation, compass deviation, and wind drift to determine a compass heading.

d. Using one of many flight simulator software packages available for computers, "fly" the course and heading you established in requirement 2c or another course you have plotted.

e. Explain the purposes and functions of the various instruments found in a typical single-engine aircraft: attitude indicator, heading indicator, altimeter, airspeed indicator, turn and bank indicator, vertical speed indicator, compass, navigation (GPS and VOR) and communication radios, tachometer, oil pressure gauge, and oil temperature gauge.

f. Create an original poster of an aircraft instrument panel. Include and identify the instruments and radios discussed in requirement 2e.

The full list of the badge requirements can be found at:
http://www.scouting.org/filestore/merit_badge_reqandres/aviation.pdf.

Contact Information:

Bill Taylor, Director of Curriculum Program: William.taylor@lflmail.org

Activity:	Class/Workshop
Target Group:	Middle, High
Title:	Boy Scouts of America: Exploring
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Airport
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$
Funding Source:	Self
Participants:	
Established:	
Website:	http://www.exploring.org/

Description of Activity:

The Boy Scouts have a classification of activities called Exploring. The various activities included here are designed to help mentor youth looking to discover their future. Career and exploring fields include arts and humanities, aviation, business, communication, engineering and technology, fire and EMS, heath care, law and government, law enforcement, science, skilled trades and social services.

When looking at the aviation exploring activities they include:

- Advanced: Power Plants
- Introductory: Preflight
- Advanced: Preflight
- Advanced: Instrument Panel
- Introductory: FPG-9 Build and Fly
- Advanced: FPG-9 Build and Fly
- Introductory: Aerodynamics
- Advanced Aerodynamics
- Introduction to Careers in Aviation
- Advanced: Airport Operations
- Aviation – In the Know
- Air Traffic Control Tower Tour
- Preflighting an Aircraft
- Four Forces of Flight

Activity instructions include: objectives, supplies, advisor notes, activity (one or more), reflection questions, advisor and officer review and advanced activity guides if applicable.

Contact Information:

Bill Taylor, Director of Curriculum Program: William.taylor@lflmail.org,

Attachment: Simple – Exploring Activity: Preflighting an Aircraft

PREFLIGHTING AN AIRCRAFT

DESCRIPTION OF SESSION

This session gives Explorers hands-on practice in conducting the preflight inspection of an aircraft.

CATEGORY

- Higher-order Thinking
- Communication

OBJECTIVES

By the end of this session, participants will be able to:

- Successfully preflight an aircraft.
- Understand safety skills in ensuring safe flight.
- Demonstrate the acquired skills.
- Discuss consequences of an incomplete or inaccurate preflight inspection.

SUPPLIES

- A single-engine aircraft
- Operating manual for the aircraft
- Oil rag
- Fuel tester
- Ladder
- Certified flight instructor or commercial, instrument, or private pilot
- "How to Preflight a Cessna 172"—download from https://www.youtube.com/watch?v=C-yqLXZtkjA

ADVISOR NOTE: Text in italics should be read aloud to participants. As you engage your post in activities each week, please include comments, discussions, and feedback to the group relating to **Character, Leadership,** and **Ethics**. These are important attributes that make a difference in the success of youth in the workplace and in life.

ACTIVITY

Preflight Inspection

Begin by reviewing the preflight pages of the operating manual for the specific plane on which the preflight inspection will be demonstrated. You may also show Explorers "How to Preflight a Cessna 172" from GeneralAviationGuru.

In small groups of no more than three, have the certified flight instructor or pilot demonstrate the preflight inspection from beginning to end, allowing the Explorers to perform the hands-on tests.

After participants have had the chance to conduct the inspection, either switch to a different aircraft that has a number of things "wrong" with it or make some changes to the current aircraft that would make it fail a preflight inspection. Than see if participants can point out those items that would not pass an inspection. Running this as a contest is a fun and competitive way for participants to do their best.

Make sure you correct any issues you created to ensure a safe flight for the next pilot.

ADVISOR NOTE

Some sample questions are below. They are designed to help the participants apply what they have learned to their own interests. You are welcome to use these questions or develop your own questions that relate to your post or specific focus area.

REFLECTION

FOCUSING QUESTIONS

- *Who is responsible for preflighting an aircraft?*
- *What is one new thing you learned during today's discussion?*

ANALYSIS QUESTIONS

- *Now that you know how to complete a preflight, discuss how a successful preflight can prevent in-flight problems.*
- *How can incorrectly preflighting an aircraft adversely affect aircraft performance in flight?*

GENERALIZATION QUESTIONS

What can you do now, during your time as a student, to prepare yourself for this or a similar career in the aviation field?

Activity:	Class/Workshop
Target Group:	Middle, High
Title:	Boy Scouts of America STEM in Scouting
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$
Funding Source:	Self
Participants:	
Established:	Boy Scouts of America was founded in 1910
Region:	
Website:	www.scouting.org,

Description of Activity:

The Boy Scouts have created "activities that all young people to discover some of the basic principles of science, technology, engineering, and mathematics in fun and interesting ways." Scouting and Schools flyer. See attached. The Nova awards program was created to both excite and expand wonder in the scouts. The scouts need to complete various modules where they further explore STEM. The Nova awards can be found here, http://www.scouting.org/stem/Awards/AboutNova.aspx.

There is an aviation themed Nova activity for the Boy Scout rank, but not for the Cub Scouts or Webelos, http://www.scouting.org/stem/Awards/BoyScouts.aspx. The first module is titled Shoot! Here the scout must complete 6 tasks. Within each task there are a few options that the scout can choose from, for example,

Choose A or B or C and complete ALL the requirements.

A. Watch about three hours total of science-related shows or documentaries that involve projectiles, aviation, weather, astronomy, or space technology. Then do the following:
    1. Make a list of at least five questions or ideas from the show(s) you watched.
    2. Discuss two of the questions or ideas with your counselor.

    Some examples include—but are not limited to—shows found on PBS ("NOVA"), Discovery Channel, Science Channel, National Geographic Channel, TED Talks (online videos), and the History Channel. You may choose to watch a live performance or movie at a planetarium or science museum instead of watching a media production. You may watch online productions with your counselor's approval and under your parent's supervision.

B. Read (about three hours total) about projectiles, aviation, space, weather, astronomy, or aviation or space technology. Then do the following:
    1. Make a list of at least two questions or ideas from each article.
    2. Discuss two of the questions or ideas with your counselor.

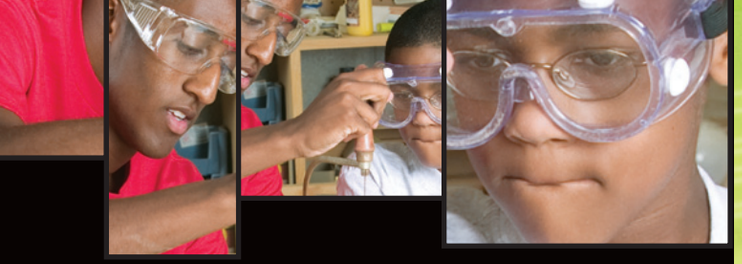
Examples of magazines include—but are not limited to—Odyssey, Popular Mechanics, Popular Science, Science Illustrated, Discover, Air & Space, Popular Astronomy, Astronomy, Science News, Sky & Telescope, Natural History, Robot, Servo, Nuts and Volts, and Scientific American.

C. Do a combination of reading and watching (about three hours total). Then do the following:
    1. Make a list of at least two questions or ideas from each article or show.
    2. Discuss two of the questions or ideas with your counselor.

Contact Information:

972-580-2000

Attachment: Simple **–** Scouting in Schools Nova flyer.



SCOUTING DEVELOPS CHARACTER

Scouting helps young people grow and develop leadership skills. For example, Cub Scouts learn how to follow instructions and directions with projects they do with their den and pack. Boy Scouts learn how to apply Scouting's Leading EDGE—Explain, Demonstrate, Guide, Enable—as they mentor younger Scouts and teach them new skills. They also take on leadership roles within their patrol and troop. Venturers have similar opportunities in their crews and through their Venturing officers' association, and debate ethical standards through ethics forums.

SCOUTING GROWS MODEL CITIZENS

Citizenship has always been a major part of Scouting. The tenets of the Scout Oath and the Scout Law have guided Scouts to enrich themselves, to think of others, and to make the world a better place. In so doing, young people learn more about their community, nation, and the world.

SCOUTING PROMOTES FITNESS

Being "physically strong, mentally awake, and morally straight" leads to a well-balanced individual, which is why Scouting emphasizes overall fitness. Through Scouting's outdoor activities, mentoring with adults, and learning how to be a good leader, young people learn how to be better prepared for growing up, taking on challenges, and being responsible—all while having loads of fun.

SCOUTING'S NOVA AWARDS PROGRAM

Scouting and the Nova Awards program nurture and help develop the natural curiosity of children and encourage their sense of wonder. The activities allow young people to discover some of the basic principles of science, technology, engineering, and mathematics in fun and interesting ways. Where else might they get exposure to such a wide variety of new experiences? From archery and aviation to robotics and welding, they can't help but enjoy themselves. Their enthusiasm will rub off on you, too.

Contact your local council for additional information on how to make Scouting available in your school.

Prepared. For Life.™

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Irving, Texas 75015-2079
www.scouting.org

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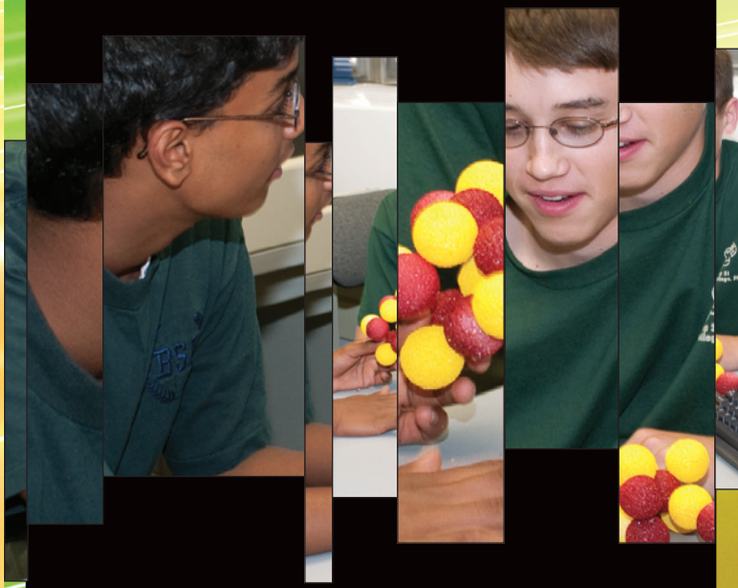

SCOUTING AND SCHOOLS

PARTNERS IN STEM

SCIENCE : TECHNOLOGY : ENGINEERING : MATHEMATICS

BOY SCOUTS OF AMERICA®

SCOUTING, SCHOOLS, AND EDUCATORS

The Boy Scouts of America has a long history of aligning with schools and educators through its character-based programs that help prepare today's youth to be tomorrow's leaders. Through hands-on activities and learning experiences, Scouting helps guide young people on the trail to a lifelong appreciation for self-improvement, community involvement, and the outdoors. Sharing the same goals makes Scouting, schools, and educators the ideal team.

SCOUTING GETS SCIENTIFIC

Scouting's advancement programs allow Scouts to explore science in many ways. Scouting takes young people outdoors and gives them hands-on time with science. Chemistry, astronomy, map and compass, ecology, environmental science, geology, aviation, and insect study are only a few topics of exploration.

SCOUTING GOES VIRAL WITH TECHNOLOGY

Scouting activities expose youth to technology galore. From archery, computers, forestry, and robotics to architecture, composite materials, and photography, Scouts have a clear advantage with exposure to stimulating experiences. Our programs give them opportunities to interact with adult mentors and subject experts like zookeepers and rocket scientists, to participate in hands-on activities like building robots and model rockets, and to take day trips to places like quarries and observatories.

SCOUTING BUILDS EXCITEMENT THROUGH ENGINEERING

Scouting has always used the outdoors as its learning environment. Construction of bridges, towers, and simple camp gadgets have helped thousands of youth begin to understand engineering. Drafting, electronics, engineering, and welding are all part of what Scouting can do to help young people grow, develop lifelong interests, and pursue meaningful careers.

SCOUTING AND MATHEMATICS = FUN

Math skills—algebra, geometry, statistics, and basic mathematics—are a part of nearly everything we do. Scouting brings math to life with activities like geocaching, chess, canoeing, and aviation. By participating in fun, stimulating activities, young people learn how math applies to everyday living and the world around them.

SCOUTING AND LITERACY GO HAND IN HAND

Scouting understands that reading gives young people the opportunity to strengthen their literacy and comprehension skills. From the Cub Scout handbooks to the *Boy Scout Handbook,* Venturing manuals, and *Boys' Life* magazine, our youth publications are created and produced specifically with youth members in mind. They are contemporary, engaging, and reflective.

Activity:	Class/Workshop
Target Group:	Elementary, Middle, High
Title:	BWI Summer Youth Initiative
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Airport
Provider:	Airport
Specialized Equipment:	Aircraft, Simulator
Cost/Person:	Free
Funding Source:	Donations, Self
Participants:	Medium
Established:	2010s
Region:	EA
Website:	

Description of Activity:

The Baltimore/Washington International (BWI) Thurgood Marshall Airport Summer Youth Initiative is a five day aviation-centered program aimed at youth between 10 and 15 years old who are involved with Baltimore City recreation centers. The initiative is entering its third year, and each year 50 youth are selected by the city's recreation staff to participate in the program. In future years they hope to expand the program to include youth from Washington. Participants who excel or are inspired by the program are invited back a second year as mentors. There is no application process, and grades are purposely not a factor in selection because the aim of the program is to introduce inner-city students, who are roughly middle school age, to aviation and technology related careers before they are pressured into criminal activity as young adults.

Planning begins in the spring by airport staff and the program occurs during August of each year. There is no cost for participants; instead the airport relies on airport resources, sponsors, and corporate partners to provide meals (breakfast, lunch, and snacks), transportation, and activities. A typical week introduces students to several aspects of airport and aviation operations and uses this exposure to introduce participants to other STEM and transportation related careers.

At BWI airport, students get a behind-the-scenes look at airline operations through Southwest Airlines, a ride on the airfield with the airport staff, and get to watch a live burn with the Aircraft Rescue and Firefighting (ARFF) crews. At Martin State Airport (a nearby general aviation airport) two flight schools donate aircraft and instructors to provide flights where students get to take the controls of a small airplane. Using aviation as a starting point, the program introduces participants to other related fields with activities that include visiting a maritime simulator where they have an opportunity to pilot a ship and meeting with engineers to learn more about design, transportation, and engineering related careers.

Contact:

Whitney Kidd
Maryland Aviation Administration
BWI Airport
410-859-7529
wkidd@bwiairport.com

Activity:	Club
Target Group:	High
Title:	Catholic Aviation Association – Cupertino Aviation Club
Duration:	>3 days
Emphasis:	Science, Technology, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	
Funding Source:	Donations
Participants:	Small
Year Established:	2013
Region:	GL
Website:	catholicaviation.org/

Description of Activity:

Catholic Aviation Association (CAA) is a startup organization with the goal of facilitating the establishment of a network of local clubs, known as Cupertino Aviation Clubs (CACs), to do the following:

- Create faith-based, aviation related communities
- Pass on the legacy of aviation
- Provide the opportunity for involvement in aviation related activities
- Provide affordable flying
- Encourage certificated pilots to continue flying
- Enable Certified Flight Instructors to gain experience and build flight time
- Provide free ground and flight instruction
- Grow the future pilot population
- Enjoy the camaraderie of flying with others

The Catholic Aviation Association (and its Cupertino Aviation Clubs) are a nonprofit organization with the ultimate goal of creating a build and fly center in the Carmel, Westfield, Noblesville areas of Indiana.

Contact Information:

Phone: (317) 622-4FLY (4359)
Email: caa@catholicaviation.org

Attachment: Simple – Organization Brochure

Prayer for the Growth of the Catholic Aviation Association

O God, we pray that You would gather together the People of God from all aspects of aviation into a fraternal association where we may encourage and support one another as we pursue our aviation hobby, interests and careers. Through the grace and power of your Holy Spirit, inspire and enable this association to be a witness to Your eternal plan and to Your Son, our Lord and Savior Jesus Christ, in the world of aviation. Amen.

Our Lady of Loreto
Patroness of Aviation

St Joseph of Cupertino
Patron of Aviation

The

Catholic Aviation Association

is a

Ministry

supporting

The People of God

in all phases of

Aviation

CAA is a new initiative started in
The Year of Faith
in response to the call for
The New Evangelization
of
Our Culture

Please join our Community
and

FLY TO HIM!!!

Become a member at:

www.CatholicAviation.org

Follow us on:

Facebook.com/catholicaviation

@CAA_Fly2Him

Catholic Aviation Association™

"FAITH, FLYING & FELLOWSHIP"

Going into all the world to proclaim the GOOD NEWS!

Catholic Aviation Association
P.O. Box 90230
Indianapolis, IN 46290-0230
317-662-4FLY (4359)

www.catholicaviation.org
caa@catholicaviation.org

Catholic Aviation Association
A non-profit 501c3 Corporation
Registered in the State of Indiana

Activity:	Internship
Target Group:	Post-Secondary
Title:	CDOT Aeronautics Airport Internship
Duration:	>3 days
Emphasis:	Operational
Staff:	FT
Venue:	Airport
Provider:	State
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Grant
Participants:	Small
Established:	1990
Region:	NW
Website:	www.cdot.gov

Description of Activity:

The Aeronautics Division is part of the Colorado Department of Transportation. The Aero Division operates under the direction of an Aeronautics Board, CAB, consisting of seven individuals appointed to three-year terms by the Governor. The division's revenues and operating expenses are derived totally from aviation fuel taxes collected on av-gas and jet fuel. The airlines pay the same taxes. Details of the funding, budget and expenditures can be found on their website. The discretionary grant program is managed by the staff at the direction and policy established by the CAB. Discretionary grant funds are used for airport projects, airport internships and STEM programs based on funding availability and priorities. Currently the airport internship program is considered as a high priority for funding.

The airport internship program has been very successful in providing students with hands-on learning opportunities in an airport environment. Many students of this program have become successful aviation professionals and cite this program as a major influence on their careers. This program is normally participated in by college graduating seniors. The interns work at an airport for a twelve-month period and are paid an hourly wage by the airport.

Airports can request an internship grant at any time of the year. Airports that submit grant requests are required to have an approved detailed syllabus of work assignments that the intern will follow through the 12-month time frame while working at that particular airport. Quarterly reports on the intern's progress are required for grant payments. The Aeronautics Division grant program provides funding for half of the intern's hourly pay rate. The division's share of costs is currently capped at $16,640 per each intern per the 12-month timeframe.

Contact Information:

David Ulane, Aeronautics Director
Colorado Division of Aeronautics
5126 Front Range Parkway
Watkins, CO 80137
david.ulane@state.co.us
303-512-5254 (Direct)
https://www.cdot.gov

Activity:	Class/Workshop
Target Group:	Middle, High
Title:	Celebrate Freedom Foundation's Student/School Opportunities and Rewards (SOaR) Program
Duration:	1-3 days
Emphasis:	Science, Tech, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	State
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Self
Participants:	X-Large
Established:	2016
Region:	SO
Website:	http://www.thecelebratefreedomfoundation.org/index.htm

Description of Activity:

The South Carolina Aeronautics Commission (SCAC) is passionate about supporting aviation education in the state. Each year the SCAC budgets for educational outreach efforts. This funding has historically been used for aviation summer camps and for hardware and flight simulation software funding. In 2016, the SCAC used their $35,000 educational budget to help support the Celebrate Freedom Foundation's Student/School Opportunities and Rewards (SOaR) Program to bring Army helicopters, pilots and aviation and aerospace instructors to ten schools across the state. At each visit, students were able to interact with the pilots and instructors to see what careers in STEM look like in the real world, especially in the aviation field. Students also learned about educational opportunities offered at colleges, technical schools, and the military. A total of 10,000 students participated in the ten events.

Contact Information:

James Stephens
Executive Director
South Carolina Aeronautics Commission
803-896-6272
jstephens@aero.sc.gov

John M. Lenti
Chairman and Chief Executive Officer
Celebrate Freedom Foundation
803-708-4752
info@cff-soar.org

Activity:	Camp, Class/Workshop
Target Group:	High, Post Secondary
Title:	Central Indiana Soaring Society - Glider Training and Camps
Duration:	1-3 days
Emphasis:	Science, Technology, Math
Staff:	V
Venue:	Airport
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	$$$
Funding Source:	Tuition, Membership
Participants:	Small
Year Established:	1960
Region:	GL
Website:	www.centralindianasoaringsociety.com

Description of Activity:

Central Indiana Soaring Society is a 501(c)3 corporation with a mission to engage in charitable, educational and scientific purposes including the following:

- Promoting the science of motorless flight
- Sponsoring and promoting education in flying safety and equipment care
- Providing facilities and equipment to test motorless aircraft for the public safety
- Financing educational programs to inform the general public of the science of motorless flight

They provide private pilot glider flight instruction from April to October with volunteers and club planes. They will provide 1-day or ½ day camps using the Youth Aviation Association flying material (see Youth Aviation Association Landing Page).

Contact Information:

Operations Director: dukekoelsch@hotmail.com

CISS Alexandria Airport (I99)
1577 E.900 N.
Alexandria, IN 46001

Activity:	Camp
Target Group:	Elementary
Title:	Challenger Center Astronaut Academy
Duration:	1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Laboratory
Provider:	School
Specialized Equipment:	
Cost/Person:	$$$
Funding Source:	Admission
Participants:	Medium
Established:	2011
Region:	SO
Website:	www.thechallengercenter.net

Description of Activity óŃŜLJŃŶýúŜŘ ŦŃϮY øŜōăŃúŜóY

As an astronaut preparing for your mission, you will explore robotics, rocketry and aviation as you prepare for your first mission! Campers will fly a full space mission, visit the e-Planetarium, and fly planes with our flight simulators. Campers will keep the robot they assemble and the rocket they construct.

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Camp
Target Group:	Middle, High
Title:	Challenger Center Fischertechnik
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Laboratory
Provider:	School
Specialized Equipment:	
Cost/Person:	$$
Funding Source:	Admission
Participants:	
Established:	2011
Region:	SO
Website:	www.thechallengercenter.net

Description of Activity ǾŊŜǇŊǍyǘŜŘ ŦŊϩY ǿŜōǎƛǘŜǿY

Learn how to automate! This camp teaches engineering design, programming, and automation. We use the Fischertechnik building platform which is easy for the students to construct different automated systems. Students will learn the basics of flowcharting and logic to write programs for their systems.

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Camp
Target Group:	Middle, High
Title:	Challenger Center Introduction to Aviation
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	Simulators
Cost/Person:	$$
Funding Source:	Tuition
Participants:	
Established:	2011
Region:	SO
Website:	www.thechallengercenter.net

Description of Activity ǀǁŜLJǁǁǇyǘŜŘ ŦǁϮY ǿŜōƐǘŜǀY

Taxi, Takeoff, Fly, and Land! Learn about the aviation industry and the basics of flight all in one. This camp focuses on hands-on learning how to fly through simulation. Students will also get an opportunity to learn about the history of flight, aviation careers, airplane structural designs and so much more. Students will gain a broad perspective of what the aviation industry can offer to them as a career choice.

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Class/Workshop
Age:	Elementary, Middle
Title:	Challenger Center NASA Learning Experiences - Return to the Moon, Rendezvous with a Comet, Voyage to Mars
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Laboratory
Provider:	School
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Self
Participants:	
Established:	2011
Region:	SO
Website:	www.thechallengercenter.net

Description of Activity (reprinted from website):

A Challenger Learning Center mission is far more than a school outing, unless you consider journeying beyond Earth's boundaries just another field trip. Our missions are completely immersive learning experiences based on the simulations used by NASA to prepare astronauts. It's as real as it gets without needing a spacesuit.

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Camp
Target Group:	Middle, High
Title:	Challenger Center RC Pilot Camp
Duration:	3-8 hours
Emphasis:	Science, Technology
Staff:	FT
Venue:	Classroom, Laboratory
Provider:	School
Specialized Equipment:	
Cost/Person:	$$
Funding Source:	
Participants:	
Established:	2011
Region:	SO
Website:	www.thechallengercenter.net

Description of Activity ;ǀŝĚĞŽ ͬƉŝĐƚƵƌĞͿ:

Fly virtually and in reality! Campers are given the opportunity to learn the basics of flight and work on their flying capabilities virtually through flight simulation and in reality using radio controlled airplanes. This camp teaches the fundamentals of pre-flight inspection and basic flight. (Students will *not* be allowed to keep the radio-controlled planes that are flown). Campers are encouraged to bring sunglasses to wear during the radio-controlled plane flight portion.

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Camp
Target Group:	Elementary, Middle
Title:	Challenger Center Robotics Camp
Duration:	1-3 Days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Laboratory
Provider:	School
Specialized Equipment:	
Cost/Person:	$$$
Funding Source:	Admission
Participants:	
Established:	2011
Region:	SO
Website:	www.thechallengercenter.net

Description of Activity ǁŝƚŚ ǀŝĚĞŽ ůŝŶŬ ŝĨ ĂǀĂŝůĂďůĞ:

Build a robot to keep every day! All camps will also work with Mindstorm EV3 robots (students will **not** be allowed to keep the robots constructed with the Mindstorm kits).

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Camp
Target Group:	Middle
Title:	Challenger Center Rocket Camp
Duration:	1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Laboratory
Provider:	School
Specialized Equipment:	
Cost/Person:	$$$
Participants:	Medium
Funding Source:	Admission
Established:	2011
Region:	SO
Website:	www.thechallengercenter.net

Description of Activity (reprinted from website):

Be a rocket scientist! Learn how to build and launch rockets! Campers will keep the rockets they construct; if your rocket goes too high and is not recovered, we will provide you with another rocket kit before you leave camp. Campers are encouraged to bring sunglasses to wear during rocket launches.

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Camp	
Target Group:	Elementary	
Title:	Challenger Center Rocket Fundamentals Summer Camp	
Time:	3-8 hours	
Emphasis:	Science, Technology, Engineering, Math	
Staff:	FT	
Venue:	Classroom	
Provider:	School	
Specialized Equipment:		
Cost/Person:	$S	
Funding:	Admission	
Participants:	Small	
Established:	2011	
Region:	SO	
Website:	www.thechallengercenter.net	

Description of Activity ǾǋŜLJǾƴŜŘ ŦǋƻY ǿŜōǎƛǘŜǀ:

As an astronaut preparing for your mission, you will explore robotics, rocketry and aviation as you prepare for your first mission! Campers will fly a full Space Mission, visit the e-Planetarium, and fly planes with our flight simulators while at the NASA Challenger Learning Center. Campers will keep the robot they assemble and the rocket they construct.

Contact Information:

Carolyn Donelan: Carolyn.donelan@richlandone.org
Richland School District (Columbia, SC) Challenger Center Website: www.thechallengercenter.net

Activity:	Class/Workshop
Target Group:	High
Title:	Chandler Gilbert Community College Private Pilot/Dual Enrollment
Duration:	>3 days
Emphasis:	Operational
Resources:	FT
Venue:	Classroom, Laboratory
Provider:	University
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Tuition
Participants:	Small
Established:	
Region:	WP
Website:	https://www.cgc.edu/Academics/Dual/Pages/Classes.aspx http://evit.sharpschool.com/cms/One.aspx?portalId=20222051&pageId=20598652 http://phoenix.aero.und.edu/

Description of Activity:

Local flight training organization (UND Aerospace) Part 141 flight school partners with local community college (Chandler Gilbert Community College or CGCC) to offer flight courses for college credit. Local high schools partner with CGCC. CGCC lecturer, who is also certified to teach high school courses, teaches high school students to meet high school requirements as well as college requirements.

CGCC also established an articulation agreement with the University of North Dakota allowing students who received credit from CGCC to transfer those credits directly into the University of North Dakota (UND). UND also provides curriculum to CGCC to ensure content is standardized. This is a unique method to involve local community colleges to provide dual enrollment to high schools while offering a direct pathway to go to a four year university specializing in aviation related topics.

Courses offered or planned to be offered are: Private Pilot, Introduction to Unmanned Aircraft Systems, Aviation Safety, Aviation Weather, Aircraft System, and Introduction to ATC.

The focus of this activity is to describe the unique potential for relationships between high schools, community colleges, and four year universities. East Valley Institute of Technology is an example of a school that has expanded their aviation influence in many aspects of their high school curriculum. The powerpoint attached is to illustrate the diversity and inpact of aviation and the related partnerships.

Contact Information:

Rex Ginder
Chandler Gilbert Community College/UND Aerospace
480-988-8221
ginder@aero.und.edu

Attachment: Complex – PowerPoint presentation from East Valley Institute of Technology (EVIT) high school. Presentation was given at AOPA Stem Symposium.

Activity:	Class/Workshop
Target Group:	High
Title:	Chandler Gilbert Community College Private Pilot/Dual Enrollment
Duration:	>3 days
Emphasis:	Operational
Resources:	FT
Venue:	Classroom, Laboratory
Provider:	University
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Tuition
Participants:	Small
Established:	
Region:	WP
Website:	https://www.cgc.edu/Academics/Dual/Pages/Classes.aspx http://evit.sharpschool.com/cms/One.aspx?portalId=20222051&pageId=20598652 http://phoenix.aero.und.edu/

Description of Activity:

Local flight training organization (UND Aerospace) Part 141 flight school partners with local community college (Chandler Gilbert Community College or CGCC) to offer flight courses for college credit. Local high schools partner with CGCC. CGCC lecturer, who is also certified to teach high school course, teaches high school students to meet high school requirements as well as college requirements.

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Courses offered or planned to be offered are: Private Pilot, Introduction to Unmanned Aircraft Systems, Aviation Safety, Aviation Weather, Aircraft System, and Introduction to ATC.

Contact Information:

Rex Ginder
Chandler Gilbert Community College/UND Aerospace
480-988-8221
ginder@aero.und.edu

Attachment: Complex – PowerPoint presentation from East Valley Institute of Technology (EVIT) high school. Presentation was given at AOPA Stem Symposium.

East Valley Institute of Technology

EVIT

=IS SUCCESS

Greetings from EVIT Aviation

EVIT is a public Career and Technical (CTE) High School

We are located next to Williams Gateway Airport in Mesa AZ

EVIT AVIATION

What is the purpose of the program?

- Industry has a vested interest in training new pilots and aerospace professionals

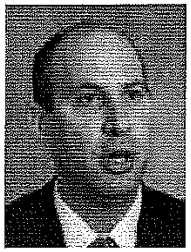
- We are like a Prep school for aviation

- EVIT students can get a head start
  - Dual enrollment (currently offered at $84 credit hr)
  - Industry familiarization
  - Internship opportunities
  - Flight training (cost incurred by students)
  - UAV Program (Future expansion of complete certification)

Boeing's Ganzarski: Training Profession Must Advance

Company Predicts 460,000 New Pilots Needed By 2030

If industry forecasts are correct, there's a severe pilot shortage coming. Boeing says 460,000 new commercial pilots will be needed by the year 2030, at the same time the military is moving wholesale into unmanned vehicles, pinching off a major traditional source of new jet pilots. On Tuesday, a Boeing exec explained what he thinks will be needed to close the gap.



Speaking at the Asia Pacific Airline Training Symposium in Bangkok, Roei Ganzarski, chief customer officer, Boeing Flight Services, said the industry must focus on adopting newer methods of instruction that have proven successful in other fields. It's not just a problem with pilots - Boeing forecasts a need for tens-of-thousands of new instructors, and 650,000 new commercial airline maintenance technicians over the next two decades.

Ganzarski commented, "We must advance the training profession in order to attract and retain the passionate and competent talent needed to train the vast numbers of aviation personnel required. We need to train them in a way that is adaptable to a generation steeped in mobile and on-line technology.

"It should no longer be about an instructor's number of flying hours. The next wave of professional instructors should place greater emphasis on student aptitude to ensure students reach their fullest potential."

To meet the demand for new pilots, Boeing estimates that the training industry will need a minimum of 1,200 new pilot instructors every year for the next twenty years.

FMI: www.boeing.com

FLIGHT (AET) PROGRAM

AIRWAY SCIENCE TECHNOLOGY-FLIGHT

Associate of Applied Science Degree Airway Science Technology
Typical Flowchart for Full-time Student

Prerequisite Semester 1	Semester 2	Semester 3	Semester 4	Semester 5
AET 107 PRIVATE PILOT GOUND SCHOOL 5 CR •	**AET207&217** ATTITUDE INSTRUMENTS-NAVIGATION INSTRUMENT PROCEDURES 4 CR •	**AET203&213** BASIC AIRPLANE SYSTEMS & AERODYNAMICS-PERF. 4 CR •	**AET237** MULTI-ENGINE PILOT GROUND SCHOOL 2 CR •	**AET227** CERTIFIED FLIGHT INSTRUCTOR GROUND 4 CR •
AET 110 PRIVATE PILOT FLIGHT LAB 2 CR •	**AET210** COMMERCIAL PILOT FLIGHT LAB 2 CR •	**AET220** COMMERCIAL PILOT FLIGHT LAB 2 2 CR •	**AET240** MULTI-ENGINE PILOT FIGHT LAB .5CR •	**AET230** CERTITIFIED FLIGHT LAB 1 CR •
CRE101 CRITICAL & EVALUATIVE READING OR TEST EXEMPT 0-3 CR •	**AET115** AVIATION METEOROLOGY 3 CR •	**AET215** AIRCRAFT POWERPLANTS 4 CR •	**AET225** ADVANCED AIRCRAFT SYSTEMS 4 CR •	**COM225** PUBLIC SPEAKING 3 CR •
MAT120 INTERMEDIATE ALGEBRA 5 CR •	**CIS105** SURVEY OF COMPUTER INFO SYSTEMS 3 CR •	**MAT 187** PRECALCULUS 5 CR •	**HUMANTIES** ANY APPROVED HUMANTIES COURSE 3 CR •	**ECN212** MICROECONOMICS 3 CR •
ENG101 FIRST-YEAR COMPOSITION I 3 CR •	**ENG102 OR ENG111** FIRST-YEAR COMPOSTION II OR TECHNICAL WRITING 3 CR •	**AET205** AIRCRAFT STRUCTURES,SYSTEMS AND MAINTENANCE 4 CR •	**PHY111** GENERAL PHYSICS 4 CR •	**AET257** READINGS IN AVIATION 3 CR •
12-18 CREDITS	12-15 CREDITS	19 CREDITS	13.5 CREDITS	14 CREDITS

What classes are available and what do they consist of?

- The first year for all students is an introductory curriculum known as **Aviation Spectrum.**

Dual Enrollment Classes

- Students have option to pay for college credit
- Grade will be based on college scale if seeking college credit
- Regardless of option, student will receive High School elective credits

Our “classrooms”

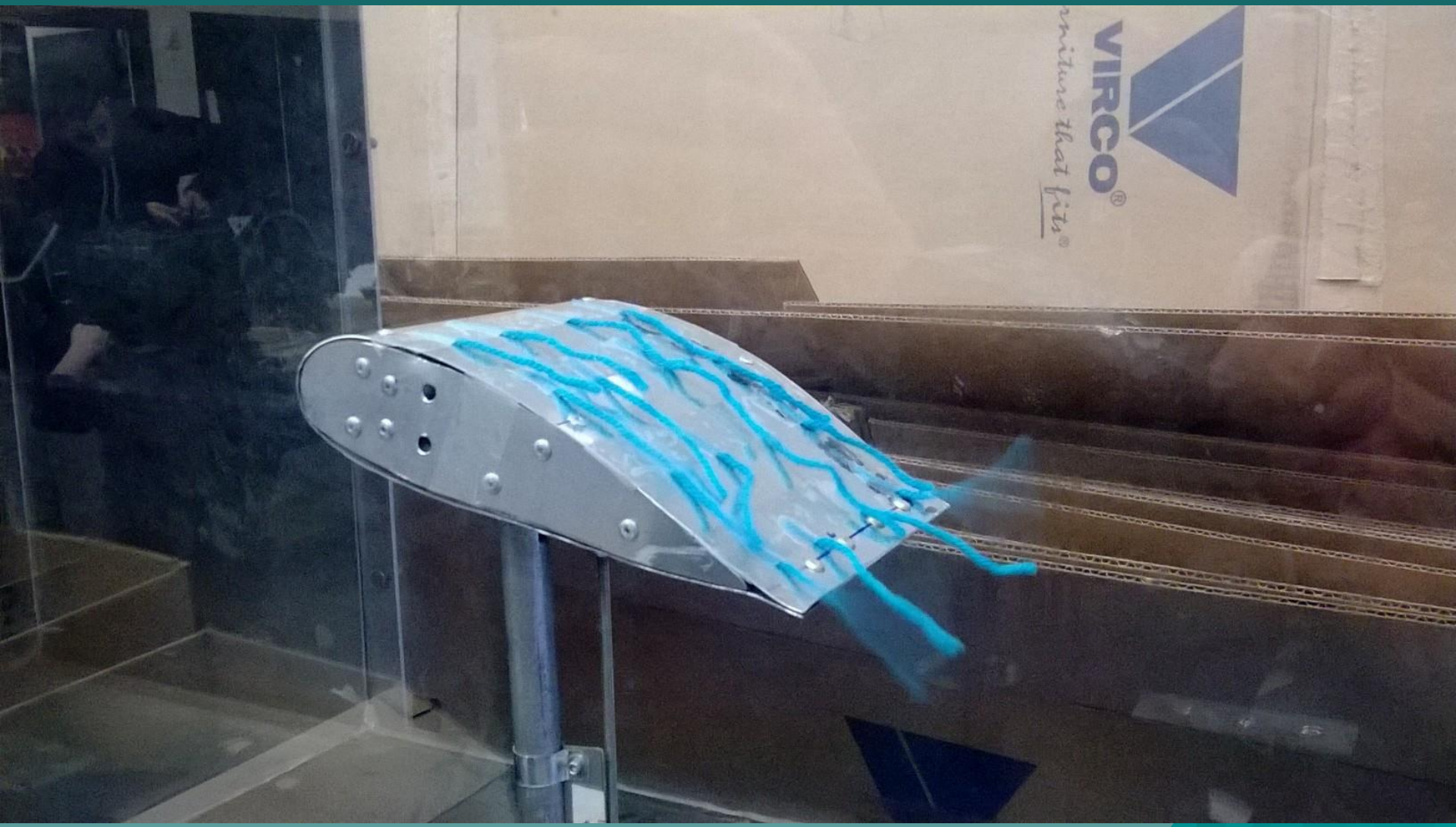
- Extensive use of flight training devices to gain a better understanding of everything from flight controls, aircraft instrumentation, communications, cross country navigation and instrument flying.

Learning how to rivet

Aircraft systems lab where students are exposed to powerplants and their related subsystems

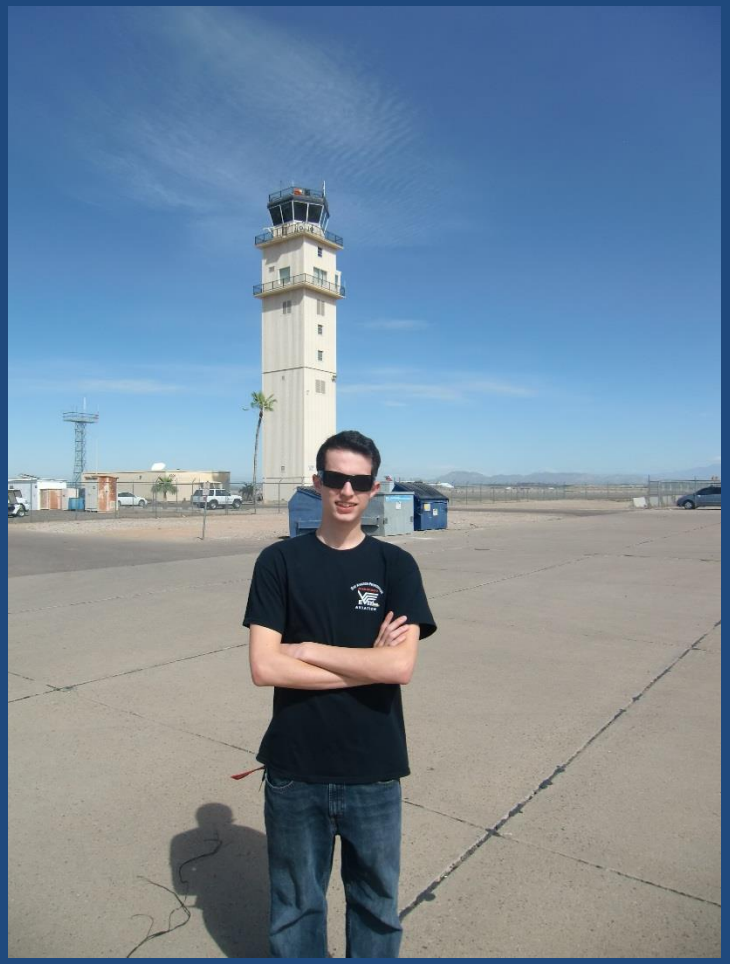

High School
AVIATION
PROGRAM
with
COLLEGE
CREDIT!

Student demonstrates wind tunnel to Mark Baker. All students build airfoil and fly in wind tunnel to visualize aerodynamic theories discussed in classroom


VIRCO®

Use of advanced technology for flight planning

EVIT has partnered with Arizona State University to provide interns from their Airport Operations, and Air Traffic control students



Air traffic control / airport operations

Students train in our ATC lab to gain an understanding of operations and communication procedure in a simulated airport environment.
Each student gets a chance to practice operations from both a pilot's and a controller's perspective.

Student pictured in front is an instrument rated commercial pilot currently working in Chicago as an Air Traffic Controller

Student teams build and fly RC aircraft

Events and activities

Visit to Cutter Aviation

SONEX Kit Plane Project
Kit donated from local EAA chapter
EVIT Aviation students hard at work (on a Saturday)

Dave and first year student Holt Bower

Its starting to look like an airplane

Other EVIT students working on the SONEX project
Kit donated from local EAA chapter
EVIT Aviation students hard at work (on a Saturday)

- Julia Donahue is an EVIT graduate who still helps. She is now enrolled in the A&P program at CGCC. She was the recipient of the “Extra Effort” Award last year

- Senior Derek Rasmussen (left) is now a maintenance intern at Chandler Aviation.
- Graduate Chris Parker (right) received a scholarship and is now attending Embry Riddle for engineering.


STAR WARS
Aero


sonex


EVIT @ Pima Air & Space Museum 2015
Flight Systems, Inc.
N40FS
EXPERIMENTAL


1594

Second Year

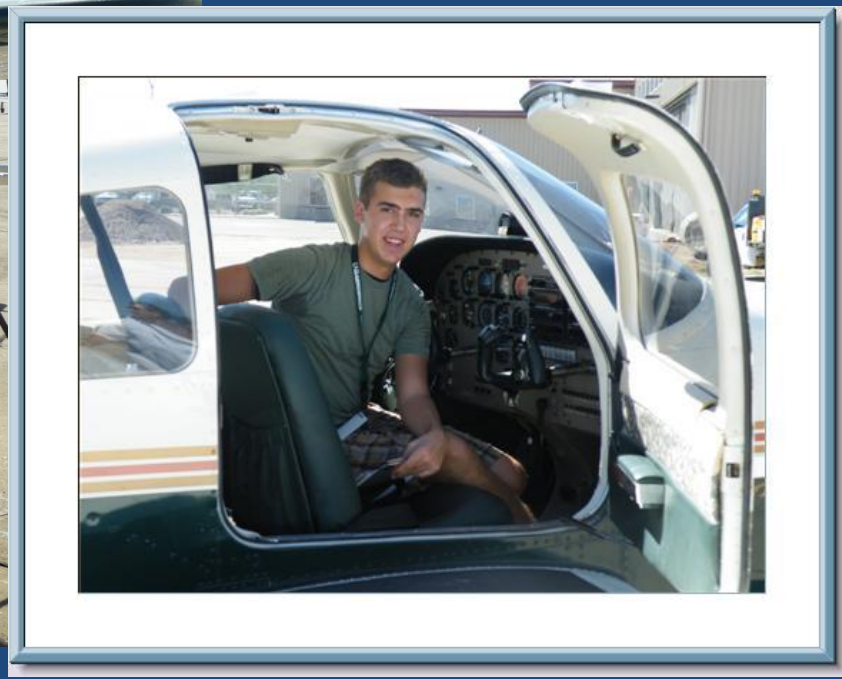
- Semester 1
  - *Advanced Aircraft Systems (4cr)*
  - *Aviation Meteorology (2cr)*
  - ***Prep for Semester 2***
    - Advanced flight planning
    - Combine flight and ATC scenarios
    - Brush up on Ground School

- Semester 2 (cont)
- Flight Training for PPSEL
- All “Program Completers” must complete FAA written exam
- Internships
  - We currently have 6 various internship opportunities.
  - Students will work in industry and receive HS credit
  - SELECTIONS WILL BE BASED ON CLASS PERFORMANCE AND INTERVIEW
  - Current positions
    - Maintenance, repair station
    - Airport Operations
    - Student generated


East Valley Insti of Technology

FIRST SOLO

- Congratulations to William on his first solo, his instructor is a prior EVIT aviation student



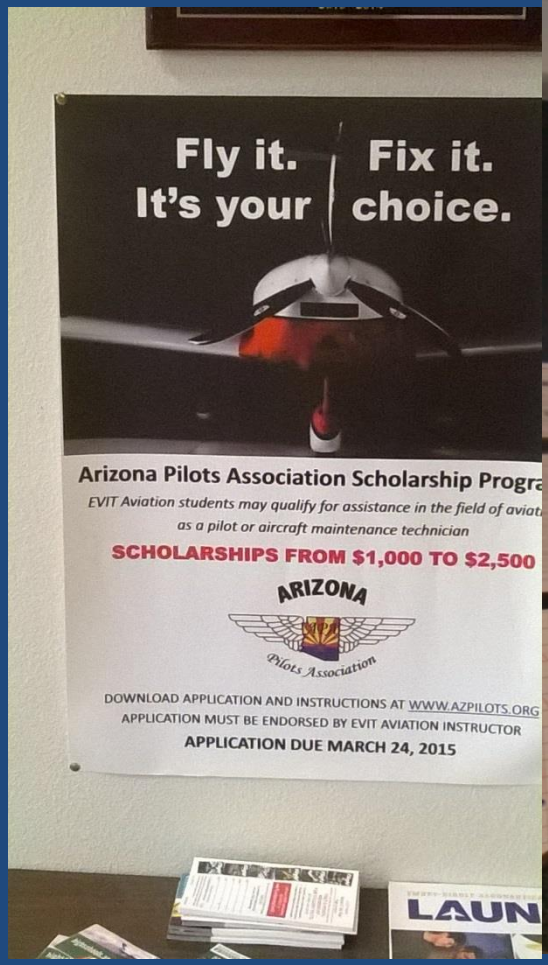
Donica Wolf and Emma Allinger made history this week for being EVIT's first two Aviation girls to solo an aircraft while still in high school over our East Branch Aviation Campus. Donica flew a Cessna 172 airplane & Emma flew a Robinson R44 helicopter. Congratulations- we are so proud of you!! Great job!

How did we get started??

Advisory Committee/ Support

- Guide and support your educational and financial needs
- Made up of local industry partners
  - Flight Schools
  - Collegiate programs
  - Repair centers
  - Airport Operations
  - Retired professionals
  - Industry related organizations
    - EAA, Young Eagles, AOPA, NBAA, local

Partnership with Arizona Pilots Association (APA)



Aircraft Owner's and Pilots Association President Mark Baker visits EVIT Aviation last Fall and congratulates Ephinee Zarogoza on receiving a scholarship from the Arizona Pilots Association.

Visit from Summer Aviation Camp

Scouting organizations

Great community service and recruiting opportunity

Visit to Cutter Aviation, local FBO catering to VIPs

Students support the Copper State Fly In

Taylor Izard and Naomi Castillo showing off their acceptance letter for a full scholarship from Copperstate Fly-In committee to attend the EAA Air Venture in Oshkosh Wisconsin

Jacob and Scott went on to complete their A&P

Future Women in Aviation

Supporting the local Chamber of Commerce at the Aviation Fascination event

Students participate in EAA Young Eagle Event

Second student from right, Matt Huerta, is a prior EVIT student currently working as a flight instructor

Relationship with our Aviation Universities

Aviation Day at State Capitol

February 26, 2015

Seniors Derek Rasmussen and Kyle Perry promote EVIT

Guest speakers

Where are they now?

Utilize your alumni, they are a great inspiration!

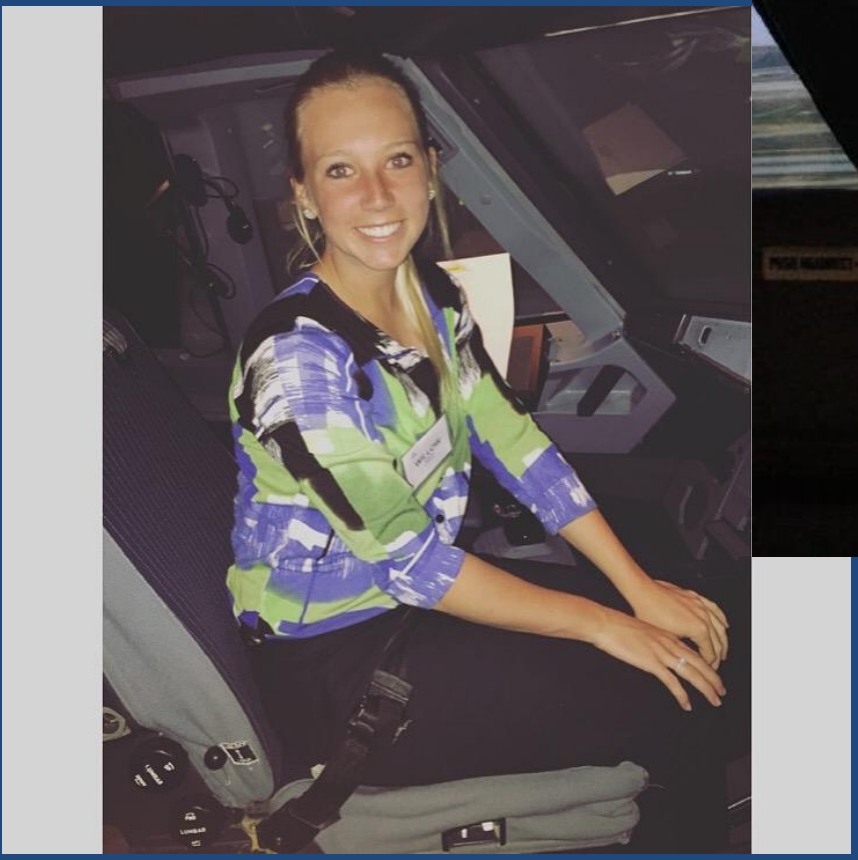
- Michael Charlton is currently working as a radar controller for Chicago Center. He is the youngest certified controller at his facility.

Our newest CFI

Halana Perkins, recently started as a Flight Instructor at the University of North Dakota. She is currently teaching other EVIT students.

Air Force Academy Cadet

Embry Riddle student



So what can you do to get started??

- Gather a support group
- Seek guidance from local aviation schools
- Contact COC for local companies
- Attend aviation related events
- Aviation organizations

Stop by for a visit

Questions ??

Activity:	Class/Workshop
Target Group:	Elementary
Title:	Civil Air Patrol: 40 Curriculum Projects, and STEM Kits
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	PT, V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$$
Funding:	Self
Participants:	Small, Medium
Established:	
Region:	
Website:	http://ae.capmembers.com/curriculum/ace_program_resources/

Description of Activity (reprinted from website):

Join as an Aerospace Education Member (AEM) of the Civil Air Patrol (CAP) and enjoy many free aerospace educational opportunities ranging from receiving lesson plans to participating in a teacher orientation flight aboard one of our Cessna aircraft. This unique membership category is designed for educators or others involved in promoting aerospace education in classrooms, museums, or other youth organizations. To learn more about membership and opportunities available to members, refer to the website above.

There is a one-time $35 membership fee. Each year, an educator member receives a free renewal if he/she wishes to continue using the CAP AE products.

There are currently over 27,000 elementary students involved in CAP curriculum through their educator and the Aerospace Connections to Education (ACE) program, and the CAP has issued approximately 9,000 STEM kits. CAP currently has 550 aircraft that are purchased by the US Air Force for use by the CAP.

The CAP has a myriad of programs for their member educators; see their website for curriculum resources for preschool through sixth grade.

CAP sponsors a national workshop each year at Wright State University open to Aviation Educators.

Contact Information:

Dr. Sherwood Williams, Regional Director of Aerospace Education – USAF Auxiliary Civil Air Patrol

Attachment: Simple – CAP Member Resources

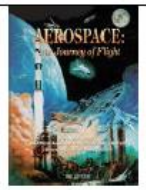
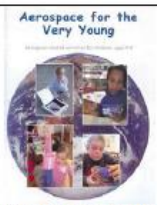
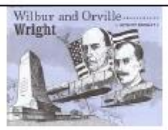
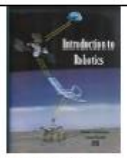
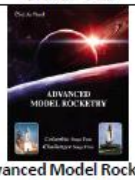
Civil Air Patrol Aerospace and STEM Education Products

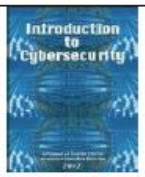
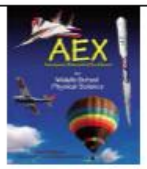
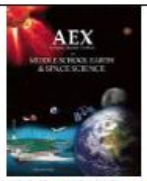
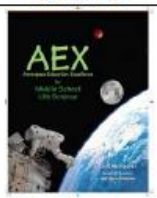
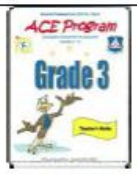
Available with Membership in Print and/or Online in CAP's eServices AE Download Section

Other Resources, to include a STEM Career Module, are found at

http://ae.capmembers.com

CIVIL AIR PATROL

 **Aerospace: The Journey of Flight** (With Teachers Guide) Grades 9-College	 Aerospace Dimensions (Six Modules & Teachers Guide) Grades 6-9	 Aerospace for the Very Young Grades K-3
 AEX- Advanced Aerospace Math Grades 10-college	 Wright Brothers Thematic Unit Grades 4-9	 Wright Brothers Activity Book Grades K-3
 Robotics Grades 6-12	 Amelia Earhart Thematic Unit Grades 4-9	 Amelia Earhart Activity Book Grades K-3
 Advanced Model Rocketry Grades 6-12	 Model Rocketry Grades 6-9	 4 in 1 Activity Books (Two books) Grades K-3

 Introduction to Cybersecurity Grades 6-12	 AEX- Middle School Physical Science Grades 6-9	 Uncle Wiggly Wings (The Candy Bomber from WWI) Activity Book Grades K-3
 Model Aircraft & Remote Control (MARC) Grades 6-12	 AEX- Middle School Earth & Space Science Grades 6-9	 Fun in Flight- Aerospace Careers Grades K-3
 CAP-TERS CD CAP Teaching Educational Remote Sensing Grades 6-12	 AEX- Middle School Life Science Grades 6-9	 Aerospace Connections in Education (ACE) 7 Grade Level Curriculum Guides Grades K-6
 Aerospace Education Excellence (AEX) Volumes I, II & Adult Grades 6-12 & Adult	 International Space Station Thematic Unit Grades 6-9	 Aerospace Education Excellence (AEX) Volumes I & II Grades K-5
 Satellite Took Kit (STK) CD, Instructions, and Activities Grades 6-12	 Astronomy Module and Astronomy Activity Book Grades 5-12	**Want to Know More?** **Contact** **ae@capnhq.gov**

Activity:	Club
Target Group:	Elementary, Middle, High
Title:	Coleman A. Young International Airport Education Association
Duration:	
Emphasis:	Science, Technology, Engineering, Math, Operational
Staff:	V
Venue:	
Provider:	Organization
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Self
Participants:	
Established:	
Region:	GL
Website:	http://www.supportkdet.org/

Description of Activity:

The organization has the mission of supporting the renewal of the airport and its neighborhoods through improvements to the existing aviation and educational infrastructure to boost the economic vitality of Detroit and the community.

This group is still in the early stages of planning, but has recognized the increased need for aviation professionals and is working to develop a pathway that provides aviation education and career opportunities in Michigan.

The first focus is to provide students of all ages with an awareness of aviation through events such as field trips, career days, and STEM-related activities. The intent is that building on this interest could lead to involvement in more focused programs such as Civil Air Patrol or Explorer Units. This would hopefully be followed by participants choosing to pursue aviation related education opportunities and later, careers.

Activity:	Class/Workshop
Target Group:	High
Title:	Culver Summer School of Aviation
Duration:	>3 days
Emphasis:	Science, Technology, Math
Staff:	FT
Venue:	Classroom/Airport
Provider:	School
Specialized Equipment:	Aircraft
Cost/Person:	$$$
Funding Source:	Tuition
Participants:	Small, Medium
Year Established:	1920
Region:	GL
Website:	www.culver.org/Aviation-School

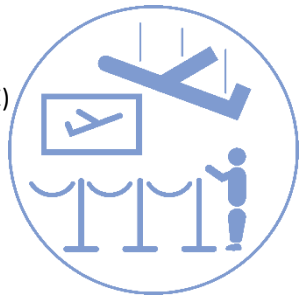
Description of Activity:

Culver has offered flight instruction since 1920 and became the first high school in America to own its own airport in 1972. Today, Culver offers an Aviation School summer camp for students age 14 or older (note: the FAA imposes certain age restrictions on aviation milestones that should be considered). During the camp students complete the Cessna Pilot Course Curriculum online on campus and complete flight simulation lessons and actual flight at the Starke County Airport in Knox, Indiana using JA Flight Training, an FAA Part 141 flight school. The maximum class size for this program is 50 students. In addition to the baseline cost for this summer program, Aviation School students must pay associated fees to JA Flight Training based on their experience level in their pursuit of their private pilot license.

Contact Information:

Email: culver@jaair.com
Phone: (630) 549-2152

Activity:	Camp
Target Group:	Elementary
Title:	Dakota Territory Air Museum Aviation Camp Experience (ACE)
Duration:	<3 hours
Emphasis:	Science, Math
Staff:	PT, V
Venue:	Classroom
Provider:	Museum
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Grant
Participants:	Medium
Established:	2014
Region:	GL
Website:	http://www.dakotaterritoryairmuseum.com/



Description of Activity:

ACE is an exciting aviation camp experience guided by aviation and education mentors. The ACE program introduces 30 students in 3rd or 4th grade to general aviation concepts involving fun, hands-on learning activities within the unique surroundings of the Dakota Territory Air Museum. Kids will enjoy up-close and personal tours of historical military and general aviation aircraft by famous aviators, Orville and Wilbur Wright, and Amelia Earhart and a museum scavenger hunt that is sure to educate and inspire!

Contact Information:

Dakota Territory Air Museum – Minot, ND
http://www.dakotaterritoryairmuseum.com/

Attachment: Simple – ACE Agenda

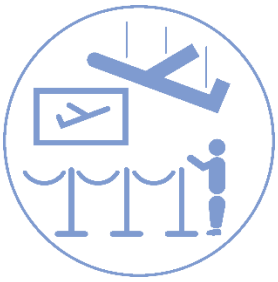
2016 ACE AGENDA

9:00 AM – NOON & 2:00 PM – 5:00 PM

8:30 – 9:00 & 1:30 – 2:00	**PREPARATION / SIGN-IN / KID WRANGLING** • Sign-in students, hang coats, seat kids at FBO • Mentors – ?
9:00 – 9:15 & 2:00 – 2:15	**WELCOME – MELESSA BOSCH, Education Coordinator** • Pledge, Rules & Expectations • Introduce Mentors • Anticipatory Set • Split kids into 4 groups and send to Education Stations

9:15 – 10:45 & 2:15 – 3:45	**3 STATION ROTATIONS** – (kids are split into 3 groups and rotate every 30 minutes)
	1. SCIENCE STATIONS – 30 Minutes
	• **KMOT** - Lift & Thrust Mentors – Blythe & Keith
	  • Ping Pong Exercises
	  • Balloon Jet Exercise
	• **KFAR** - Weight & Drag Mentors – Doug & ?
	  • Helicopter/Paperclip Exercise
	  • Paratrooper & Garbage Bag Exercise
	2. PREFLIGHT / PLAN TALK STATION – 30 Minutes
	• **KBIS** - Preflight Mentors – Michelle & ?
	  • Preflight with 150 & Plane Talk
	  • Rogallo Glider with Controls Exercise
	3. CAREER STATION – 30 MINUTES
	• **KDIK** - Career Mentors – Denise & Katy
	  • Amelia Book, Career Talk & Relay

10:45 – 11:15 & 3:45 – 4:15	**MUSEUM TOUR** (all kids participate) • Museum Tour Guide – ? (Narrator) • Actors - Glenn & Curt (Orville & Wilbur Wright) • Actress - Markita & ? (Amelia Earhart)
11:15 – 11:45 & 4:15 – 4:45	**SCAVENGER HUNT** (all kids participate) • Mentors – ?
11:45 – 12:00 & 4:45 – 5:00	**CLOSING** • Answers to Anticipatory Set – Melessa Bosch • Handout Wings, Balsa Planes, Mysteries of Flight Booklet and ping pong balls to all kids – Mentors • Handout Prize and ACE T-shirt to Scavenger Hunt Winner – Mentors • Dismiss Kids to Parents



Activity:	Camp
Target Group:	Elementary
Title:	Dakota Territory Air Museum Passport Aviation Camp Experience (PACE)
Duration:	>3 days
Emphasis:	Science, Math
Staff:	PT, V
Venue:	Museum, Hangar
Provider:	Museum
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Grant
Participants:	Medium
Region:	GL
Established:	2014
Website:	http://www.dakotaterritoryairmuseum.com/

Description of Activity:

Passport Aviation Camp Experience (PACE) is a 6-session program designed for 30 students in 5th or 6th grade with a strong curiosity for aviation! Tapping into the leadership of pilots and aviation mentors, kids will experience in-depth aviation concepts involving fun, hands-on activities focusing on one aviation topic each Saturday session. At the first session each child will be presented with a personalized museum Passport. For each Saturday session a child attends, their Passport will be stamped by the museum. Attending all five PACE camps will earn a child enough stamps in their Passport for a ride in an aircraft in July!

Contact Information:

Michelle Saari, Dakota Territory Air Museum – Minot, ND
http://www.dakotaterritoryairmuseum.com/

Attachment: Simple – PACE Agenda

PACE is a 6-session program designed for 5th and 6th graders with a strong curiosity for aviation! Tapping into the leadership of pilots and aviation mentors, kids will experience in-depth aviation concepts involving fun, hands-on activities focusing on one aviation topic each Saturday session. At the first session on _____ each child will be presented with a personalized museum Passport. For each Saturday session a child attends, their Passport will be stamped by the museum. Attending all five PACE camps will earn a child enough stamps in their Passport for a ride in an aircraft in July!

2016 PACE SCHEDULE

PACE camps are held at the Dakota Territory Air Museum on Saturday afternoons from 2:00 p.m. – 5:00 p.m.

PACE DATES

- Inspired Dreams - Science of Flight
- On the Wings of Giants - History of Aviation
- So You Want To Fly - Careers in Aviation
- Eye on the Sky - Weather and Navigation
- Honor & Courage - Military Aviation
- Up Up & Away Day!

GRADES – 5 & 6

CLASS SIZE – 30 students

LOCATION – Dakota Territory Air Museum – Flying Legends Wing – 100 34th Street NE - North of the Minot International Airport

COST - FREE

You haven't seen a tree until you've seen it's shadow from the sky. ~ Amelia Earhart

The ACE and PACE programs are made possible by the generous support of the North Dakota Aeronautics Commission, the Texas Flying Legends Museum, and the Dakota Territory Air Museum.

Activity:	Class/Workshop
Target Group:	High
Title:	Eagan High School Aviation Classes
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	
Participants:	Medium
Established:	
Region:	GL
Website:	http://www.eaganhs.portal.rschooltoday.com/page/4164

Description of Activity (reprinted from website):

Eagan High School District offers 2 different aviation classes through Career Development and Technology and Engineering. One is taught for Eagan High School students only and it is an Aviation Exploration course. The other class is for students from within the school district, so students from 5 different high schools are eligible for the course.

Aviation Exploration Course. This course is a single trimester long. It is a broad overview of the aviation industry. Students will make airfoils and then put them in a wind tunnel to see how they fly. Students also make gliders and then launch them off the roof of the school.

Aviation & Ground School. This course is an elective for students who are interested in aviation. There are two versions of this 2-hour year long course. It is the same course taught to two different student groups, one for Eagan students and the other is for students who have to travel from the other schools. These classes have two goals, one is to give the students an introduction to all the various careers in aviation. The other goal is to prepare students for the Private Pilot's Knowledge Exam.

Some topics and/or activities in this class include:

- Small UAS integration. They have 5 small drones and have been using them the past couple years. Next year they are planning to help students prepare for the UAS Knowledge Exam.
- Guest Speakers. They have a wide variety of guest speakers come into the class. They range from Pilots to Aviation Reporters (a pilot from Pilots N Paws and a Fox Aviation Journalist).
- Powered flight. Students get a chance to fly an aircraft through Thunderbird Aviation at Crystal Airport which has an air traffic control tower. Everything is donated to the students. The students are charged for fuel for the flight only.
- Glider flight. The students get an opportunity to fly a glider out of an uncontrolled airport, Osceola WI. The students are not charged for this opportunity either.
- Tours

- Minneapolis Center facility. Here they are able to talk to air traffic controllers.
- Crystal Air Traffic Control Tower. They are able to see a different part of the ATC job.
- Maintenance Facilities. Students were able to get a tour of the Sun Country Airlines maintenance facility.

Contact Information:

David Wren: David.wren@district196.org

Activity:	Class/Workshop
Target Group:	Post-Secondary
Title:	EKU Aviation Program
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Airport
Provider:	University
Specialized Equipment:	Aircraft, Computer
Cost/Person:	$$$
Funding Source:	Tuition
Participants:	
Established:	1991
Region:	SO
Website:	http://aviation.eku.edu/

Description of Activity:

Since 1991, EKU has been offering the only 4-year aviation program in Kentucky. The Bachelor of Science degree has concentrations in professional flight, aerospace management, and aerospace technology. The program's professional flight option is the only FAA-approved university flight program in the state. Students pursuing the professional flight option can attain FAA certification as a private pilot or commercial pilot with instrument ratings, certified flight instructor-instrument, and multi-engine ratings. In the aerospace management option, students are prepared for employment in aerospace business including airports, airlines, and government agencies. The aerospace technology concentration is geared toward students transferring from two-year community colleges that wish to pursue careers in aircraft maintenance, helicopter piloting, and more. Minors are also offered at EKU for aviation (flight) and aerospace management.

Contact Information:

Joe Marthaler, Assistant Professor at EKU: 859-622-7898

Attachment: Complex – Brochure and Programs Offered

EKU Aviation

We schedule our students for success

The Degree

The *ONLY* University aviation degree in Kentucky.

EKU Aviation is one of the fastest growing aviation programs in the nation.

Through carefully selected courses, the Bachelor of Science (B.S.) curriculum prepares students for careers in aviation by building experience, expertise and knowledge.

EKU Aviation graduates are prepared for positions of leadership in major and regional airlines. They serve as heads of safety, training, and operations.

How are we different?

Instructor certificates, multi-engine time, and a bachelor's degree are three of the **most important keys** that will open doors to the airlines.

The EKU Aviation Bachelor's Degree, Professional Flight Concentration, includes all commercial and instructor pilot ratings. Its centerpiece **multi-engine (MEL) track has over 100 hours of multi-engine flight time** that gives you the hours you need to become competitive.

"On August 23, 2013, EKU Aviation became one of the first US universities authorized by the FAA to certify their graduates as candidates for the new 1000-hour restricted ATP (Airline Transport Pilot) certificate. However, no other university offers 100 MEL hours in their commercial pilot curriculum. **Thus, "Not only is EKU aviation number one, we are the ONLY ONE in the US to place their graduates on a 1000-hour ATP pathway with 100 MEL hours**" states the EKU Director of Aviation.

Eastern Kentucky University

AVIATION

We schedule our students for success

Our Mission

To prepare students for careers in aviation, we strive to be a World Class Aviation academic and flight training Institution. **We schedule our students for success, to be job ready, two ways on day one after graduation**, i.e., as a flight instructor or as a commercial multi-engine on-demand air charter pilot.

Attention Veterans!

Save thousands of dollars using your Post 9-11 GI Bill benefits at EKU. As a public institution of higher learning (IHL), your Aviation degree is fully covered including ALL flight fees*. Plus, at EKU all Post 9-11 GI Bill eligible beneficiaries qualify for in-state tuition regardless of where you are from. If you are taking at least 7 hours you also qualify to draw the monthly Basic Allowance for Housing (BAH). For more on GI Bill benefits visit: www.gibill.va.gov

* Tuition, flight fees, BAH, and textbook stipends are pro-rated for Post 9-11 beneficiaries who have less than 36 months of qualifying service.

Live like a Colonel

EKU Aviation students may live in preferred housing on the top floor of Clay Hall. On ***"The Flight Deck!"*** you will enjoy weekend activities, study sessions, and adventures worth sharing with fellow aviators. The advantages: endless, the cost: minimal, the experience: priceless.

FLIGHT DECK

See EKU Housing for details.

Three paths - One goal

Bachelor of Science – Concentrations in Professional Flight or Aerospace Management. Choose from:

- Aerospace Management
- Professional Flight – Multi-engine Land (MEL)
- Aerospace Technology

Transfer your community college aviation degree to complete EKU's Aerospace Technology (AT) Bachelor's concentration, online or on campus.

Or combine an Aerospace Management minor with a flight concentration. Common core classes allow you to do both economically and efficiently.

Find out more at www.aviation.eku.edu

The Cost

Using a military flight school model, with FAA-approved ground and flight syllabi, the associated structure keeps flight students and their instructors **on task** to keep costs to a minimum.

Contact EKU Aviation for current fee schedule. Financial aid, scholarships, and the GI Bill are all available. Compare and discover that our low-cost program will help you keep more of your own money to do more flying. A career in aviation begins with prudent planning - and a good plan will take you far. A mile of runway can take you anywhere you want to go. Your journey begins here.

**Flight fees are in addition to University tuition and include Private Pilot through Instructor Pilot - MEL and Instrument. Students may apply for scholarships after their freshman year.

EKU

EKU Aviation
521 Lancaster Avenue
Whalin 307
Whalin Complex Room 245
Richmond, KY 40475

Phone: (859) 622-1014
Fax: (859) 622-8138

fly@eku.edu

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Department of Applied Engineering and Technology
School of Applied Sciences and Technology
College of Business & Technology (2016-17)

Aviation B.S. Degree

Aerospace Technology (AT) Concentration

Aviation at EKU

EKU Aviation provides the aerospace industry with the safest, best trained, and most adaptable pilots and managers. The Bachelor of Science degree has concentrations in Professional Flight, Aerospace Management, or Aerospace Technology (AT). Besides a general aviation core, aviation students are required to take supporting courses in mathematics, statistics, physics, and business management. Graduates of the program are professionally prepared for all facets of the aerospace and aviation industry to include piloting, flight instruction, aviation management, and aerospace technology.

Professional Flight

The professional flight concentration is the only Federal Aviation Administration (FAA) approved university flight program in Kentucky. Students receive flight certification as Private, Instrument, Commercial, Instructor, and Multi Engine pilot. Very few U.S. aviation programs offer 100 multiengine hours as part of the commercial pilot certificate training, coupled with an aviation bachelor's degree. This advantage makes EKU aviation the premier choice for those interested in flying careers with the airlines, air charter companies, or military aviation.

Aerospace Management

Students prepare for careers at airports, airlines, corporate aviation, and government agencies such as the FAA, NASA and NTSB with hands-on training in operations, scheduling and dispatch for management professionals. Management graduates work in aviation marketing, public relations, human resources, safety and security at the local, national and international level. They also have the opportunity to receive certification as an AAAE Certified Member (AAAE CM) through the American Association of Airport Executives (AAAE).

Aerospace Technology (AT)

A leader in innovation, EKU Aviation is on the forefront of meeting market demands by offering a hard-to-find aviation degree-completion concentration. By adding upper division aerospace management and operations studies, the Bachelor's degree AT concentration is specifically designed to complete a 2-year community college degree with a heavy technical aviation course load. Examples of aviation technical degrees include Airframes & Power Plants (A&P), a 2-year helicopter and/or airplane proflight degree, or any 2-year career technical (CTE) degree partnered with a local flight school. Additionally, non-degreed airline pilots with the Airline Transport Pilot (ATP) certificate may complete their bachelor's degree. This concentration is designed to be offered online throughout Kentucky and the US or on-campus in Richmond.

Aviation Careers

The U.S. Department of Labor projects employment of aircraft pilots to increase nine to ten percent through 2014. The "Age 65 Rule," (Dec. 2007), will reintroduce the beginning of another pilot shortage in the next few years as the initial wave of already very senior pilots begin to retire. In the long run, demand for air travel is expected to grow along with the population and the economy. Median annual earnings of commercial pilots are around $50,000. Average entry level incomes for management are $30,000-$40,000. EKU aviation graduates have found positions with Delta, Chautauqua Airlines, Jet Blue, Continental, Kentucky Department of Aviation, U.S. Military, San Antonio International Airport, L-3, Kentucky State Police, Louisville Police Department, and through self-employment.

Department Facilities, Faculty and Student Organizations

The Department is located in the Ralph W. Whalin Technology Complex which includes approximately 100,000 square feet of classroom and laboratory space plus a simulator facility. The facilities are located in the central portion of campus, close to the library, classroom buildings and dormitories. Flight training is conducted primarily at the Madison County Airport (Identifier I39). Faculty in the aviation program have real world industry experience ranging from military to airlines to corporate aviation and Part 135 Operations. The new Flight Operations Office houses the very latest in flight locating, scheduling and dispatch. Flight students receive flight training in accordance with FAR Part 141, saving time and money. Aviation students may also participate in Alpha Eta Rho - an international professional co-ed fraternity.

For More Information

EKU Aviation
859-622-1014 | www.aviation.eku.edu | email: fly@eku.edu
Department of Applied Engineering and Technology
307 Whalin Complex, Room 245 | Eastern Kentucky University | 521 Lancaster Avenue | Richmond, KY 40475-3102

Eastern Kentucky University is an Equal Opportunity/Affirmative Action Employer and Educational Institution
Rev. 07/18/2016

Department of Applied Engineering and Technology
School of Applied Sciences and Technology
College of Business & Technology (2016-17)

Suggested Curriculum Guide for Aerospace Technology Concentration

Freshman (1st Semester) 17 hrs
- **BTO 100*** Academic Orientation (1 hr)
- **AVN Technical Elective**
- **AVN Technical Elective** (1 hr)**
- **TEC 161** Computer Applications in Technology
- **Wellness** (3 hrs)
- **E-1A** ENG 101* or 105* English Composition I
- **E-2** MAT 114 or higher

Freshman (2nd Semester) 18 hrs
- **AVN Technical Elective**
- **AVN Technical Elective**
- **E-1B ENG 102*** English Composition II
- **E-1C** CMS 100 Oral Communication
- **E-5A** Historical Perspective
- **E-4B** PHY 101 or higher

Sophomore (1st Semester) 18 hrs
- **AVN Technical Elective**
- **AVN Technical Elective**
- **E-5B ECO 230** Principles of Economics I
- **E-6A** Diversity of Perspectives & Experiences
- **E-4A** Laboratory Life Science
- **E-3A** Arts

Sophomore (2nd Semester) 18 hrs
- **AVN Technical Elective**
- **AVN Technical Elective**
- **AVN Technical Elective**
- **STA 215** Elementary Probability & Statistics or **QMB 200** Business Statistical I
- **E-3B** Humanities
- **E-6B** Diversity of Perspectives & Experiences

Junior (1st Semester) 13 hrs
- **AVN 150** Introduction to Aviation
- **AVN 192** Private Pilot Ground (4 hrs)
- **AVN 315** Aviation Safety Programs
- **AVN 325** Aircraft Systems

Junior (2nd Semester) 12 hrs
- **AVN 350** Air Transportation
- **AVN 360** Problems in Aviation Administration
- **BTS 300** Professional Skills Seminar (0 credit)
- **GEO 315** Intro to Meteorology or **AVN 335** Weather reporting/Analysis
- **MGT 301** Principles of Management (or MGT 300 if business minor/major)

Senior (1st Semester) 12 hrs
- **AVN 340** Airport Management
- **AVN 390** Aviation Administration Decision Making
- **AVN 402** Corporate & Business [Satisfies University Aviation *Applied Critical and Creative Thinking (ACCT)* requirement]
- **AVN 410** Air Traffic Control

Senior (2nd Semester) 12 hrs
- **AVN 370** Techniques: Aviation Supervisors
- **AVN 401** Airline Management
- **AVN 435** Turbine Aircraft Systems
- **AVN 460** Aviation Legislation
- **AVN 467** Aviation Exit Exam (0 credit)
- **BTS 400** College to Careers Seminar (0 credit)***

*Course must be taken in semester indicated.
**Transfer Students are not required to take BTO 100. Transfer student Senior 2nd Semester AVN Technical Elective is 2 credits instead of 1.
***Spring Only

UNIVERSITY GRADUATION REQUIREMENTS

General Education ..... 36 hrs
Student Success Seminar (BTO 100; waived for transfers with 30+ hrs) ..... 1 hr
Wellness ..... 3 hrs
Total Hours University Graduation Requirements ..... 40 hrs

College Requirements:
BTS 300 (CR only, no hours) and BTS 400 (CR only, no hours).

Core Courses ..... 34 hrs
AVN 150, 192 (4), 315, 325, 340 or 470, 350, 370 or 490, 401, 402, 410, 460, and 467 (0).

Major Requirements ..... 34 hrs
AVN 360, 390, 435, and twenty-five credit hours of aviation technical electives.

Supporting Course Requirements (not including those 9 hours also listed as Gen Ed) ..... 12-14 hrs
TEC 161
ECO 230 (GE Element 5B)
GEO 315 or AVN 335
MAT 114 or higher (GE Element 2)
MGT 301 (or MGT 300 only if business minor/major)
PHY 101 or higher (GE Element 4)
STA 215 or QMB 200

Total Curriculum Requirements ..... 120-122 hrs

Note: *Students must take an Aviation exit examination, AVN 467, before graduation. Also, one 3-credit course from the Gen Ed requirements must be a* ***Writing Intensive course with a suffix of "W."*** Aerospace Technology students must take ***AVN 340 and 370.*** AVN 470 and 490 are proflight concentration courses.

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Aviation B.S. Degree

Aerospace Management Concentration

Aviation at EKU

EKU Aviation provides the aerospace industry with the safest, best trained, and most adaptable pilots and managers. The Bachelor of Science degree has concentrations in Professional Flight, Aerospace Management, or Aerospace Technology (AT). Besides a general aviation core, aviation students are required to take supporting courses in mathematics, statistics, physics, and business management. Graduates of the program are professionally prepared for all facets of the aerospace and aviation industry to include piloting, flight instruction, aviation management, and aerospace technology.

Professional Flight

The professional flight concentration is the only Federal Aviation Administration (FAA) approved university flight program in Kentucky. Students receive flight certification as Private, Instrument, Commercial, Instructor, and Multi Engine pilot. Very few U.S. aviation programs offer 100 multiengine hours as part of the commercial pilot certificate training, coupled with an aviation bachelor's degree. This advantage makes EKU aviation the premier choice for those interested in flying careers with the airlines, air charter companies, or military aviation.

Aerospace Management

Students prepare for careers at airports, airlines, corporate aviation, and government agencies such as the FAA, NASA and NTSB with hands-on training in operations, scheduling and dispatch for management professionals. Management graduates work in aviation marketing, public relations, human resources, safety and security at the local, national and international level. They also have the opportunity to receive certification as an AAAE Certified Member (AAAE CM) through the American Association of Airport Executives (AAAE).

Aerospace Technology (AT)

A leader in innovation, EKU Aviation is on the forefront of meeting market demands by offering a hard-to-find aviation degree-completion concentration. By adding upper division aerospace management and operations studies, the Bachelor's degree AT concentration is specifically designed to complete a 2-year community college degree with a heavy technical aviation course load. Examples of aviation technical degrees include Airframes & Power Plants (A&P), a 2-year helicopter and/or airplane proflight degree, or any 2-year career technical (CTE) degree partnered with a local flight school. Additionally, non-degreed airline pilots with the Airline Transport Pilot (ATP) certificate may complete their bachelor's degree. This concentration is designed to be offered online throughout Kentucky and the US or on-campus in Richmond.

Aviation Careers

The U.S. Department of Labor projects employment of aircraft pilots to increase nine to ten percent through 2014. The "Age 65 Rule," (Dec. 2007), will reintroduce the beginning of another pilot shortage in the next few years as the initial wave of already very senior pilots begin to retire. In the long run, demand for air travel is expected to grow along with the population and the economy. Median annual earnings of commercial pilots are around $50,000. Average entry level incomes for management are $30,000-$40,000. EKU aviation graduates have found positions with Delta, Chautauqua Airlines, Jet Blue, Continental, Kentucky Department of Aviation, U.S. Military, San Antonio International Airport, L-3, Kentucky State Police, Louisville Police Department, and through self-employment.

Department Facilities, Faculty and Student Organizations

The Department is located in the Ralph W. Whalin Technology Complex which includes approximately 100,000 square feet of classroom and laboratory space plus a simulator facility. The facilities are located in the central portion of campus, close to the library, classroom buildings and dormitories. Flight training is conducted primarily at the Madison County Airport (Identifier I39). Faculty in the aviation program have real world industry experience ranging from military to airlines to corporate aviation and Part 135 Operations. The new Flight Operations Office houses the very latest in flight locating, scheduling and dispatch. Flight students receive flight training in accordance with FAR Part 141, saving time and money. Aviation students may also participate in Alpha Eta Rho - an international professional co-ed fraternity.

For More Information

EKU Aviation
859-622-1014 | www.aviation.eku.edu | email: fly@eku.edu
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School of Applied Sciences and Technology
College of Business & Technology (2016-17)

Suggested Curriculum Guide for Aerospace Management Concentration

Freshman (1st Semester) 16 hrs
- **AVN 150** Introduction to Aviation
- **BTO 100*** Academic Orientation (1 hr)
- **TEC 161** Computer Applications in Technology
- **Wellness** (3 hrs)
- **E-1A** ENG 101* or 105* English Composition I
- **E-2** MAT 114 or higher

Freshman (2nd Semester) 16 hrs
- **AVN 192** Private Pilot Ground (4 hrs)
- **E-1B ENG 102*** English Composition II
- **E-1C** CMS 100 Oral Communication
- **E-5A** Historical Perspective
- **E-4B** PHY 101 or higher

Sophomore (1st Semester) 15 hrs
- **Free Elective** (3 hrs)
- **AVN 315** Aviation Safety Programs
- **E-3A** Arts
- **E-4A** Laboratory Life Science
- **E-5B ECO 230** Principles of Economics I

Sophomore (2nd Semester) 15 hrs
- **Free Elective** (3 hrs)
- **GEO 315** Intro to Meteorology or **AVN 335** Weather reporting/Analysis
- **GBU 204** Legal and Ethical environments of Business
- **STA 215** Elementary Probability & Statistics or **QMB 200** Business Statistical I
- **E-3B** Humanities

Junior (1st Semester) 15 hrs
- **AVN 325** Aircraft Systems
- **MKT 301** Principles of Marketing
- **MGT 301** Principles of Management (or MGT 300 if business minor/major)
- **ACC 201** Introduction to Financial Accounting
- **E-6A** Diversity of Perspectives & Experiences

Junior (2nd Semester) 15 hrs
- **AVN 350** Air Transportation
- **AVN 360** Problems in Aviation Administration
- **AVN 460** Aviation Legislation
- **BTS 300** Professional Skills Seminar (0 credit)
- **ECO 231** Principles of Economics II
- **ACC 202** Introduction to Managerial Accounting

Senior (1st Semester) 15 hrs
- **AVN 340** Airport Management
- **AVN 390** Aviation Administration Decision Making
- **AVN 402** Corporate & Business [Satisfies University Aviation *Applied Critical and Creative Thinking (ACCT)* requirement]
- **AVN 410** Air Traffic Control
- **Free Elective** (3 hrs)

Senior (2nd Semester) 13 hrs
- **AVN 370** Techniques: Aviation Supervisors
- **AVN 401** Airline Management
- **AVN 467** Aviation Exit Exam (0 credit)
- **BTS 400** College to Careers Seminar (0 credit)***
- **Free Elective** (4 hrs)
- **E-6B** Diversity of Perspectives & Experiences

*Course must be taken in semester indicated. Transfer Students N/A.
***Spring Only

UNIVERSITY GRADUATION REQUIREMENTS

General Education ..... 36 hrs
Student Success Seminar (BTO 100; waived for transfers with 30+ hrs) ..... 1 hr
Wellness ..... 3 hrs
Total Hours University Graduation Requirements ..... 40 hrs

College Requirements:
BTS 300 (CR only, no hours) and BTS 400 (CR only, no hours).

Core Courses ..... 34 hrs
AVN 150, 192 (4), 315, 325, 340 or 470, 350, 370 or 490, 401, 402, 410, 460, and 467 (0).

Major Requirements ..... 34 hrs
ACC 201, 202; GBU 204; MKT 301; AVN 360, 390, ECO 231, and 13 hours free electives.
Note: selecting only lower division courses may result in additional course work being needed to meet the university requirement of 42 hours of upper division credits. Students are referred to DegreeWorks to check for course pre-requisites and monitor upper division course.

Supporting Course Requirements (not including those 9 hours also listed as Gen Ed) ..... 12-14 hrs
TEC 161
ECO 230 (GE Element 5B)
GEO 315 or AVN 335
MAT 114 or higher (GE Element 2)
MGT 301 (or MGT 300 only if business minor/major)
PHY 101 or higher (GE Element 4)
STA 215 or QMB 200

Total Curriculum Requirements ..... 120-122 hrs

Note: *Students must take an Aviation exit examination, AVN 467, before graduation. Also, one 3-credit course from the Gen Ed or Free Elective requirements must be a* ***Writing Intensive course with a suffix of "W."*** Management students must take ***AVN 340 and 370.*** AVN 470 and 490 are proflight concentration courses.

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Aviation B.S. Degree

Professional Flight MEL Concentration (100 MEL hours)

Aviation at EKU

EKU Aviation provides the aerospace industry with the safest, best trained, and most adaptable pilots and managers. The Bachelor of Science degree has concentrations in Professional Flight, Aerospace Management, or Aerospace Technology (AT). Besides a general aviation core, aviation students are required to take supporting courses in mathematics, statistics, physics, and business management. Graduates of the program are professionally prepared for all facets of the aerospace and aviation industry to include piloting, flight instruction, aviation management, and aerospace technology.

Professional Flight

The professional flight concentration is the only Federal Aviation Administration (FAA) approved university flight program in Kentucky. Students receive flight certification as Private, Instrument, Commercial, Instructor, and Multi Engine pilot. Very few U.S. aviation programs offer 100 multiengine hours as part of the commercial pilot certificate training, coupled with an aviation bachelor's degree. This advantage makes EKU aviation the premier choice for those interested in flying careers with the airlines, air charter companies, or military aviation.

Aerospace Management

Students prepare for careers at airports, airlines, corporate aviation, and government agencies such as the FAA, NASA and NTSB with hands-on training in operations, scheduling and dispatch for management professionals. Management graduates work in aviation marketing, public relations, human resources, safety and security at the local, national and international level. They also have the opportunity to receive certification as an AAAE Certified Member (AAAE CM) through the American Association of Airport Executives (AAAE).

Aerospace Technology (AT)

A leader in innovation, EKU Aviation is on the forefront of meeting market demands by offering a hard-to-find aviation degree-completion concentration. By adding upper division aerospace management and operations studies, the Bachelor's degree AT concentration is specifically designed to complete a 2-year community college degree with a heavy technical aviation course load. Examples of aviation technical degrees include Airframes & Power Plants (A&P), a 2-year helicopter and/or airplane proflight degree, or any 2-year career technical (CTE) degree partnered with a local flight school. Additionally, non-degreed airline pilots with the Airline Transport Pilot (ATP) certificate may complete their bachelor's degree. This concentration is designed to be offered online throughout Kentucky and the US or on-campus in Richmond.

Aviation Careers

The U.S. Department of Labor projects employment of aircraft pilots to increase nine to ten percent through 2014. The "Age 65 Rule," (Dec. 2007), will reintroduce the beginning of another pilot shortage in the next few years as the initial wave of already very senior pilots begin to retire. In the long run, demand for air travel is expected to grow along with the population and the economy. Median annual earnings of commercial pilots are around $50,000. Average entry level incomes for management are $30,000-$40,000. EKU aviation graduates have found positions with Delta, Chautauqua Airlines, Jet Blue, Continental, Kentucky Department of Aviation, U.S. Military, San Antonio International Airport, L-3, Kentucky State Police, Louisville Police Department, and through self-employment.

Department Facilities, Faculty and Student Organizations

The Department is located in the Ralph W. Whalin Technology Complex which includes approximately 100,000 square feet of classroom and laboratory space plus a simulator facility. The facilities are located in the central portion of campus, close to the library, classroom buildings and dormitories. Flight training is conducted primarily at the Madison County Airport (Identifier I39). Faculty in the aviation program have real world industry experience ranging from military to airlines to corporate aviation and Part 135 Operations. The new Flight Operations Office houses the very latest in flight locating, scheduling and dispatch. Flight students receive flight training in accordance with FAR Part 141, saving time and money. Aviation students may also participate in Alpha Eta Rho - an international professional co-ed fraternity.

For More Information

EKU Aviation
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Suggested Curriculum Guide for Professional Flight MEL Concentration (100 MEL hours)

Freshman (1st Semester) 15 hrs
- **BTO 100*** Orientation (1 hr)
- **AVN 150** Introduction to Aviation
- **AVN 192** (or 161) Private Pilot-SEL: Ground (4 hrs)
- **AVN 192A** (or 161A) Private Pilot-SEL: Flight I (1 hr)
- **E-1A* ENG 101** or 105
- **E-2 MAT 114** or higher

Freshman (2nd Semester) 14 hrs
- **AVN 193A** (or 162A) Private Pilot-SEL: Flight II (1 hr)
- **AVN 220** Instrument Pilot-SEL & MEL: Ground (4 hrs)
- **TEC 161** Computer Systems
- **E-1B* ENG 102**
- **E-4B PHY 101** or higher

Freshman (3rd Semester) 1 hr
- **AVN 221A** Instrument Pilot: Flight I (1 hr)

Sophomore (1st Semester) 14 hrs
- **AVN 222A** Instrument Pilot: Flight II (1 hr)
- **AVN 305** Multi-Engine Pilot-MEL: Ground (1 hr)
- **AVN 315** Aviation Safety programs
- **E-1C CMS 100** Oral Communication
- **E-5B ECO 230** Principles of Economics I
- **E-3B** Humanities

Sophomore (2nd Semester) 15 hrs
- **AVN 300** Commercial Pilot-SEL & MEL: Ground (2 hrs)
- **AVN 305A** Private Pilot Multi-Engine: Flight (1 hr)
- **AVN 330** Human Factors and Crew Resource Management
- **GEO 315** Meteorology **Or AVN 335** Weather Reporting/Analysis
- **STA 215** Intro to Statistical Reasoning **Or QMB 200** Business Statistical I
- **E-4A** Laboratory Life Science

Sophomore (3rd Semester) 1 hr
- **AVN 331A** Commercial Pilot-MEL: Flight I (1 hr)

Junior (1st Semester) 16 hrs
- **AVN 325** Aircraft Systems
- **AVN 332A** Commercial Pilot-MEL: Flight II (1 hr)
- **MGT 301** Principles of Management (or MGT 300 if business minor/ major)
- **Wellness**
- **E-3A** Arts
- **E-6A** Diversity of Perspective

Junior (2nd Semester) 14 hrs
- **AVN 333A** Commercial Pilot-MEL: Flight III (1 hr)
- **AVN 350** Air Transportation
- **AVN 425** Applied Aerodynamics
- **AVN 415** Instructor Pilot-SEL: Ground
- **AVN 460** Aviation Legislation
- **AVN 480** Glass Cockpit Technologies (1)
- **BTS 300** Bus & Tech Seminar (0 credit)***

Junior (3rd Semester) 1 hr
- **AVN 334A** Commercial Pilot-MEL: Flight IV (1 hr)

Senior (1st Semester) 15 hrs
- **AVN 470** National Airspace System
- **AVN 402** Corporate and Business Aviation
- **AVN 410** Air Traffic Control
- **AVN 421** Instrument & Multi-engine IP-Ground (2 hrs)
- **AVN 423A** Instructor Pilot Multi-engine: Flight (1 hr)
- **AVN 435** Turbine Aircraft Systems

Senior (2nd Semester) 13 hrs
- **AVN 401** Airline Management
- **AVN 416A** Instructor & Commercial Pilot-SEL: Flight (1 hr)
- **AVN 467** Aviation Exit Exam (0 credit)
- **BTS 400** Bus & Tech Seminar (0 credit)**
- **AVN 490** Jet Transition/Airline Flight Ops
- **E-5A** Historical Perspective
- **E-6B** Diversity of Perspective

Senior (3rd Semester) 1 hr
- **AVN 421A** Instrument Instructor SEL: Flight (1 hr)

*Course must be taken in semester indicated. Transfer Students N/A. *** Spring Only

UNIVERSITY GRADUATION REQUIREMENTS

General Education (**9 Supporting hours** are included within the 36 hrs of GE requirements) ..... 36 hrs
Student Success Seminar (BTO 100; waived for transfers with 30+ hrs) ..... 1 hr
Wellness ..... 3 hrs
Total Hours University Graduation Requirements ..... 40 hrs

College Requirements:
BTS 300 (CR only, no hours) and BTS 400 (CR only, no hours).

Core Courses ..... 34 hrs
AVN 150, 192 (4), 315, 325, 340 or 470, 350, 370 or 490, 401, 402, 410, 460, and 467 (0).

Major Requirements ..... 34 hrs
192A (1), 193A (1), 220 (4), 221A (1), 222A (1), 305 (1), 305A (1), 300 (2), 330, 331A (1), 332A (1), 333A (1), 334A (1), 415, 425, 435, 480 (1), and 416A (1), 421 (2), 421A (1), 423A (1), or AVN elective (5).

Supporting Course Requirements (not including those 9 hours also listed as Gen Ed) ..... 12-14 hrs
TEC 161
ECO 230 (GE Element 5B)
GEO 315 or AVN 335
MAT 114 or higher (GE Element 2)
MGT 301 (or MGT 300 only if business minor/major)
PHY 101 or higher (GE Element 4)
STA 215 or QMB 200

Total Curriculum Requirements ..... 120-122 hrs

Note: *Students must take an Aviation exit examination, AVN 467, before graduation. Also, one 3-credit course from the Gen Ed requirements must be a Writing Intensive course with a suffix of "W." Proflight students may elect to replace the flight instructor sequence with 5 AVN elective credits and still graduate. However, those interested in receiving the new 1000-hour power R-ATP certificate must take AVN 421, at least one flight lab, i.e., AVN 416A, and another 3 credit AVN elective course. Additionally, AVN 470 must be taken by proflight students seeking the new 1000-hour Restricted ATP certification. Finally, AVN 370 is for management students and AVN 490 is for proflight.*

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Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Farnsworth Aerospace PreK-8 Lego Robotics
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	
Cost/Person:	$$$
Funding Source:	Self
Participants:	Small
Established:	
Region:	GL
Website:	https://www.spps.org/domain/7677 https://www.firstinspires.org/robotics/fll?__hstc=208832909.77935641eb29967e3bc68d5b5bf6320b.1516068569821.1516068569821.1516068569821.1&__hssc=208832909.1.1516068569822&__hsfp=1900328990

Description of Activity:

Students at Farnsworth can choose to participate in a Lego Robotics program called the FIRST LEGO League. The program is designed for 4th through 8th grade students to research real-world engineering challenges, develop a solution, and compete with LEGO-based robots that they designed.

Students work in a team to come up with a solution to the yearly problem. The 2017/2018 challenge is called HYDRO DYNAMICS.SM The challenge, updates, and resources can be found at https://www.firstinspires.org/resource-library/fll/hydro-dynamics-challenge-updates-and-resources**.** Teams can participate in tournaments. The tournaments determine which teams earn spots at the *First* Championship. Tournaments are scheduled throughout the school year and the *First* Championship is scheduled for the end of April. There are also other events that the teams are able to participate in where they can work on strategies, perfecting their skills, try out new technology and work as a team and meet other people.

Contact Information:

David Barrett: David.barrett@apps.org and
Andrea Appel: Andrea.appel@apps.org

Attachments: Simple – FIRST LEGO League Team Flyer

FIRST® LEGO® League introduces young people, ages 9 to 16* (grades 4-8), to the fun and excitement of science and technology. Children program an autonomous robot (using a LEGO® MINDSTORMS® robot set) to score points on a thematic playing surface, create innovative solutions to a problem, all while being guided by the program's signature Core Values. *Ages vary by country.

Each year *FIRST*® LEGO® League releases a new Challenge to our teams based on a real-world theme. The Challenge has three parts.

- **Robot Game:** Build and program an autonomous LEGO MINDSTORMS robot.
- **Project:** Teams learn more about the science behind the Challenge theme and design a solution to solve a real-world problem.
- **Core Values:** The Core Values are part of what makes *FIRST* LEGO League so special, because kids compete like crazy but respect their teammates, Coaches, and their "competitors" — and they have FUN!

1 Learn about what we do

2 Form your team and register

You need:

- Up to 10 team members
- 2 Coaches
- Meeting space
- Computer with internet access

3 Order your materials

You need:

- Challenge Set (formerly known as Field Setup Kit)
- LEGO MINDSTORMS robot set

4 Begin work on the Challenge

Be in the know:

- The Challenge releases in August.
- Visit firstlegoleague.org for all of the needed information.

5 Apply for or attend a tournament

The tournament day is your deadline to complete the Robot Game and Project. Celebrate your season by attending one!

FOR INSPIRATION & RECOGNITION OF SCIENCE & TECHNOLOGY FIRST

firstinspires.org firstlegoleague.org

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Activity:	Class/Workshop, Club
Target Group:	Elementary**,** Middle, High
Title:	Girl Scouts
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$
Funding Source:	Self, Membership
Participants:	Small
Established:	
Region:	
Website:	http://www.girlscouts.org/en/about-girl-scouts/girl-scouts-and-stem.html www.girlscouts.org

Description of Activity (reprinted from website):

The Girl Scouts organization was founded in 1912 and has activities that the girls can work through to earn badges in STEM areas. In the It's Your Planet—Love It! series, girls can explore the natural world by learning about the water cycle, completing energy audits, assessing air quality, calculating their "food print" and learning kitchen science, and figuring out how much trash is created and how to reduce it.

 **Badges**

Recently refreshed to better reflect girls' interests and to focus on twenty-first-century skills, several badge categories make special use of STEM activities. For example:

- **Naturalist** badges invite girls to explore the outdoors.
- **Digital Art** badges help girls build valuable technology and computer skills.
- **Science and Technology** badges connect girls to favorite science topics like video game development, the physics of roller coasters, and the technology used to create new fabrics.
- **Innovation** badges encourage problem solving using scientific methods from fields like anthropology, engineering, graphic design, and business.
- **Financial Literacy** badges prepare girls for a financially sound future.

 **Partners in Inspiration**

Through partnerships, sponsorships, and various initiatives, we offer girls additional ways to learn while having fun applying STEM skills.

- Projects such as Imagine Your STEM Future (AT&T) and Imagine Engineering (National Science Foundation) offer girls from low-income and underserved communities the chance to experience STEM and plan for futures in STEM fields.
- Initiatives like the FIRST Robotics teams (Motorola, UTC, and Google) and Journey and Connect Through Technology (Dell) give girls access to materials and mentors to help them explore fields such as robotics and information technology.
- Partners like Ingersoll Rand and NASA provide content expertise and career exposure in energy conservation and aerospace.
- Institutions like the New York Academy of Sciences connect youth with STEM experts and inspire girls to pursue STEM careers.

The STEM Badges include:

Board Game Design Challenge	Design a Robot	How Robots Move	Model Car Design Challenge
Roller Coaster Design Challenge	What Robots Do	Bugs	Computer Expert
Designing Robots	Fling Flyer Design Challenge	Home Scientist	Inventor
Leap Bot Design Challenge	Making Games	Programming Robots	Race Car Design Challenge
Showcasing Robots	Animal Habitats	Designing Robots	Detective
Digital Photographer	Entertainment Technology	Programming Robots	Showcasing Robots
Digital Movie Maker	Netiquette	Special Agent	Woodworker
Game Visionary	Science of Style	Sky	Social Innovator
Truth Seeker	Website Designer	Photographer	Water

Aviation Related Badges:

Fling Flyer Design Challenge – Brownie (Grades 2-3)

Engineers use their imaginations to solve problems. They invent and build things. Work like an engineer to create a Fling Flyer, an airplane made with GoldieBlox, and explore what keeps it and other things, like birds, planes, and space ships, in the air.

- Learn about forces that affect flight
- Design and build a Fling Flyer
- Test your Fling Flyer
- Analyze and share your results
- Brainstorm ways to improve your design

When I've earned this badge, I will have learned about the forces that affect flight as I design, build, and test a Fling Flyer. I will know how to design an investigation—and fine-tune my design after testing it, just like engineers.

Sky – Senior (Grades 9-10)

The sky is a masterpiece. Every day it graces us with living art, whether through a glorious sunset, shifting cloud formations, or the stunning display of night stars. No wonder we take every opportunity to spend time outdoors. Our world is a stage, and the sky performs with beauty, wonder, and mystery.

- Watch the skies
- Investigate the science of the skies
- Explore the connection between people and flight
- Help clear sky pollution
- Create sky art

When I've earned this badge, I'll understand the sky -- from science to stars to stories.

Girls can also earn fun patches by participating in other activities. Two examples of this fun patch are the Women in Aviation Fun Patch (see Women in Aviation International, www.waiorg/education/resources/wai-aviation-fun-patch) and the University of North Dakota Women in Aviation Chapter holding a Girl Scout's Day every year. The university chapter works with the local Girl Scouts Organization to reach girls from across the state/region to participate in the day's activities. Activities include paper airplane contents, flights in an aviation training device and space shuttle simulator, aviation career exploration. At the completion of the day the girls do not earn an aviation specific patch, they earn a fun patch.

Contact Information:

Amy Twedell, Grand Forks Dakota Horizons Girl Scouts: atwedell@gsdakotahorizons.org, 701-772-6679

Activity:	Flight
Target Group:	High
Title:	Giving Kids Wings Flight Academy
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	$$$
Funding Source:	Self, Donations
Participants:	Small
Established:	2009
Region:	WP
Website:	http://givingkidswings.org/

Description of Activity:

The Giving Kids Wings Flight Academy offers intensive and effective flight training. The mission is to engage students in math and science, in the hopes of increasing the number of minorities and females in aviation related careers, and leading educational innovation in the public school system. Students enroll in the elective courses for both basic and advanced ground and flight training via PC-based flight simulators. Every student is given the opportunity to take their first flight lesson with a Certified Flight Instructor. Students who show interest and determination to pursue a career in aviation become eligible for flight training scholarships to help give them a head start in pursuing their dreams of flight.

In 2011, Giving Kids Wings Flight Academy partnered with Da Vinci Science High School in Southern California. The Da Vinci Science High School offers elective classes to all students; classes consist of ground training, computer flight simulator instruction, first flight, and professional training opportunities. Multiple field trips are scheduled throughout the Southern California area.

Contact Information:

Dan Mikkelsen: givingkidswings@gmail.com

Activity:	Camp
Target Group:	High
Title:	Giving Kids Wings Glider Camp
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	PT
Venue:	Classroom, Airport
Provider:	Organization
Equipment:	Aircraft
Cost/Person:	$$$
Funding Source:	Self, Donations
Participants:	Small
Established:	2009
Region:	WP
Website:	http://givingkidswings.org/

Description of Activity:

Campers go to the Santa Ynez-Airport in California where they have ground training for 2-3 hours a day. They then have up to 5 glider flights a day. It is the hope that the students will get to their first solo within the length of the camp or the 9th day.

If campers go their second year, they will work towards their private pilot's license in the glider.
Students try to raise money for scholarships. The Giving Wings Organization also does fundraisers to help cover the students cost. The campers do get a 10% discount in cost of the glider rental from the Santa Barbara Soaring Glider Club.

Contact Information:

Dan Mikkelsen: givingkidswings@gmail.com

Activity:	Scholarship
Target Group:	High, Post-Secondary
Title:	Greater Pilots Association/Michigan Takes Flight Scholarship
Duration:	>3 days
Emphasis:	Operational
Staff:	V
Venue:	
Provider:	Organization
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Donations
Participants:	Small
Established:	2016
Region:	GL
Website:	http://www.michigantakesflight.org/

Description of Activity:

The Greater Flint Pilots Association established a non-profit 501 (c)(3) charity in 2016 known as Michigan Takes Flight which administers flight training scholarships to students with an interest in aviation and are over the age of 16. Michigan Takes Flight promotes the expansion of, interest in, and understanding of private flying in aviation. This is accomplished by providing grants and gifts for scholarships, education, and instruction.
According to Scholarship Director Harry Hammond, the goal of this scholarship program is to provide qualified candidates the opportunity to begin training locally with financial assistance, then launching them into an accredited flight academy that will help complete their training.

The Michigan Takes Flight scholarship fund is dependent upon the generosity of its benefactors for support. Donations are expected from aviation-related businesses, local school systems, colleges & universities, aviation enthusiasts and the general public.

Scholarship applicants must meet the following criteria:

- Be a U.S. citizen
- Be at least 16 years of age at the time of application – no upper age limit
- Have parental approval if under the age of 18
- If in high school, carry at least a 3.0 cumulative grade point average (GPA) and provide contact information for two references including at least one school official
- Be eligible for an FAA student pilot certificate and an FAA medical certificate
- Be approved for membership in the Greater Flint Pilots Association
- Purchase and maintain, for duration of instruction, a $10,000 aircraft renter's insurance policy upon being awarded scholarship

Applications are then reviewed by the charity's seven-member board of directors. These applications will be accepted on a continuing basis, with the winner being announced periodically as new positions become available.

The scholarship will award $3,500 in flight training funding, as well as a temporary membership into the Greater Flint Pilots Association necessary for the use of the club's aircraft.

Contact Information:

Harry Hammond
Scholarship Director
Michigan Takes Flight
Telephone: (810) 629-5181
hhammond@gfpa.org

Activity:	Class/Workshop
Target Group:	High, Post-Secondary
Title:	Idaho DOT Aviation Career Exploration (ACE) Program
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math, Art
Staff:	FT, V, Parent
Venue:	Classroom, Airport
Provider:	State
Specialized Equipment:	Aircraft, Simulators, UAS, Computers
Cost/Person:	$$
Funding Source:	
Participants:	Medium
Established:	1991
Region:	NW
Website:	https://itd.idaho.gov/aero/

Description of Activity:

The ACE Program is a 3-4 day long summer program for high school students consisting of visits to the Air National Guard, the Boise Airport (behind-the-scenes and air traffic control), SkyWest, Western Aviation and the Warhawk Air Museum, along with hot air balloon demonstrations, engineering consultant presentations, virtual reality sessions, demonstration and presentations by Drone-Ology (racing drones), classes on aerodynamics, presentations by aviation colleges and aerial applicators, discussion panel of aviation professionals on career development, and flights by volunteer pilots to three backcountry air strips. Engagement activities (such as a scavenger hunt with prizes) are used to increase student engagement during program events. A new day has been added to the program to focus on STEM specifically, and will include an all-day session for teachers and students at Boise State University (BSU) using their wind tunnel to complete an assignment together.

The ACE program has been running for 26 years, with an average of 25 students per year. Over 600 students have participated in total. Students must complete the ACE application and provide an essay and letters of recommendation for acceptance into the program. More than ten Idaho Transportation Department staff are involved in the program from securing the school buses for transportation, to T-shirt design and mowing the backcountry air strips so volunteer pilots can fly students to them. One staff member oversees the entire program and spends 75-100 hours a year planning, preparing, and conducting the program. Costs for students remain low as numerous companies and industry partners sponsor the program through meals, scholarships, grants, and volunteering their time. The new STEM day is likely to be supported by a grant which will provide up to $15,000 in additional funding. Winners of the annual aviation art contest that are of age to attend the ACE program are offered a paid spot in that year's program. Fifteen volunteer pilots are used to transport students to backcountry strips on the last day of the program, called "Navigation Flights" (pilots and their aircraft are evaluated by ITD pilots before flight). Families in the Boise area volunteer to host students from out of town.
The ACE program is marketed through several channels, including social media (Facebook page), flyers (ITD pilots pin them on bulletin boards at airports they fly to), advertisements in industry group publications, ITD website, industry events, outreach to principals and superintendents of school districts, and notification to radio and TV stations.

The program's success has spurred interest in hosting an abbreviated version of the ACE camp at other locations across Idaho.

Contact Information:

Tammy Schoen
208-334-8775 or tammy.schoen@itd.idaho.gov
Idaho Division of Aeronautics
3483 Rickenbacker St.
Boise, Id 83705
http://itd.idaho.gov/aero/

Attachment: Complex – 2017 Program Schedule and Application

Aviation Career Exploration

ACADEMY

For Idaho Students
Grades 9-12
Ages 14-18

Calling All **TEACHERS**

Be part of our aviation-themed Living Lab on Wednesday, June 14th

Participate as a learner alongside our ACE Academy students in a fun, hands-on lab.

Complete the application form and return by the deadline. For information on scholarship and in-service credit opportunities, please contact rich@richstowell.com

For details on lab content as it develops, see:
www.aceacademyboise.weebly.com

Experience STEM through the lens of Aviation!

Hosted By:

With support from:

IDAHO STEM ACTION CENTER

Idaho Ninety-Nines

What is the "ACE" ACADEMY?

Hosted by the Idaho Division of Aeronautics, the Aviation Career Exploration ("ACE") Academy is a program designed to introduce high school students to aviation and space-related careers.

As a student-participant in the ACE program, your activities will involve field trips to places like the airport terminal, a flight school, a military aviation facility, and an air traffic control tower. Other activities include seminars on aviation careers and colleges and a flight in the local area.

Enrollment is limited. Tuition is $60 per student for four days, which includes some meals, tours, and field trip transportation. **The fee, however, is not due until you have been notified of your selection.** Limited scholarship assistance is available for students unable to meet the tuition requirements.

Some host families may be available for interested students who do not live in the Boise vicinity and who need lodging during the Academy. Further, accommodations may be made for those with special needs with advanced notice.

NEW in 2017 — Teachers Invited! Participate as a learner alongside our ACE Academy students in a hands-on lab on Wednesday, June 14th. Complete the application form and return by the deadline. Cost: $50. Ask about scholarship and equivalent in-service credit opportunities. Experience STEM through the lens of aviation!

The Academy home base will be the office of the Idaho Division of Aeronautics at 3483 Rickenbacker St., Boise. For more information, please contact us Monday through Friday between 8 a.m. and 5 p.m. at:

Idaho Division of Aeronautics
3483 Rickenbacker St.
Boise, ID 83705

Office: 208-334-8775
Email: tammy.schoen@itd.idaho.gov
Website: www.itd.idaho.gov/aero

Application must be postmarked by **May 12, 2017**. No late applications will be accepted.

Some comments from past ACE students:

- *"The ACE Academy has been a very rewarding experience. It has succeeded in expanding my knowledge of aviation."*
- *"I had no idea, until ACE, that there were so many careers in Aviation."*
- *"The ACE Academy was a thrill and the most fun of the summer."*

COME JOIN THE FUN!

APPLICATION FOR ACE ACADEMY

JUNE 12-15, 2017

I am a: ❑ Student ❑ Teacher

Name:_____ Preferred name for nametag:_____

Address:_____ Best email:_____

City:_____ State:_____ Best phone number:_____

Zip:_____

Name of school:_____ Grade you will be attending/teaching next year:_____

Students please complete this section

Parent/guardian:_____ Parent/guardian:_____

Contact Phone #:_____ Contact Phone #:_____

Work Phone #:_____ Work Phone #:_____

Email:_____ Email:_____

Emergency Contact:_____ Emergency Phone #:_____

Have you ever flown in a small aircraft? ☐ Yes ☐ No Gender: M / F T-Shirt Size_____

Birthdate:_____ In June, my age will be:_____ years old

Will you need a host family? ☐Yes ☐No

Would your family be willing to host a student? ☐ Yes ☐ No

Remarks:_____

_____

_____

_____

Tuition: Students - $60 Teacher - $50

Payment due upon notification of selection to attend.

Please complete the application and return no later than **MAY 1, 2017**.

STUDENTS ONLY:

- ❑ One-page essay: Why do you want to attend the ACE Academy? Please describe your aviation, science or other educational goals.
- ❑ One-page Letter of Recommendation from a teacher, who is not a family member.
- ❑ One-page Letter of Recommendation from someone other than a teacher or family member.

— APPLICATION CONTINUED ON BACK —

THE FOLLOWING MUST BE COMPLETED TO BE CONSIDERED FOR THE ACE ACADEMY

RELEASE AND INDEMNITY AGREEMENT

The undersigned parents or guardians and participants agree as follows:

a) Permission for my teenage child to attend and participate in all ACE Academy activities, without restriction, is hereby granted. I understand my child will receive an aircraft and/or balloon ride from a volunteer pilot who is not in the employment of the Division of Aeronautics.

b) It is agreed, on behalf of me and my personal representative, assigns, heirs and next of kin to discharge and not sue the Idaho Division of Aeronautics, Federal Aviation Administration and its divisions, and any of their officers, directors, agents, employees, paid or volunteer workers or co-sponsors of the activity ("released parties") for any loss or damage which may result from injury or death to any participant or property damage, including any loss, damage or costs resulting directly or indirectly from the released parties' negligence, while the participant is involved in the ACE Academy.

c) We agree to indemnify and hold harmless each of the released parties for any loss, damage, or costs they may incur, and for any liability that they may have to any other party, as a result of the participant's activities in the ACE Academy, including any loss, damage or costs resulting directly or indirectly from the released parties' negligence.

PERMISSION FOR MEDICAL TREATMENT

I believe I am/my child is physically and mentally capable of participating in all aspects of the ACE Academy. It is my duty to consult a physician to get approval if I/ my child had or now has an injury or illness that would limit or prohibit such activities. I hereby grant permission to take me/my child to any appropriate medical facility for emergency treatment.

Allergies/Medical Conditions:_____

CONSENT FOR PROMOTION

I/we hereby grant permission to photograph and/or interview participant for promotional purposes.

The undersigned hereby agree to follow the rules of conduct established for the ACE Academy. We have read this entire document and fully understand each term and condition set forth above.

Signature of participant:_____ Date:_____

Signature of parent/guardian:_____ Date:_____

Signature of parent/guardian:_____ Date:_____

Is applicant covered by health insurance? ☐ Yes ☐ No

Name of insurance company:_____

Policy #:_____

Group #:_____

Remarks:_____

_____

Return completed application and required documents to:

IDAHO DIVISION OF AERONAUTICS
3483 RICKENBACKER ST.
BOISE, ID 83705

Or email to:

tammy.schoen@itd.idaho.gov

ACE Program brought to you by:

Idaho Division of Aeronautics
3483 Rickenbacker St
Boise, ID 83705

Monday, June 12, 2017

Students arrive BY 8:00 am	
8:00 - 8:15 am	Ice Breaker
8:15 - 8:45 am	Welcome
8:45 – 9:00 am	Walk to Boise Airport
9:00 - 11:00 am	Boise Airport Tour
11:00 - 11:15 am	Walk to Aeronautics
11:15 - 12:15 pm	Lunch - *Sponsored by ISU Aircraft Technology*
12:15 - 12:30 pm	Walk to Jackson Jet
12:30 - 1:30 pm	Jackson Jet Tour
1:30 - 1:45 pm	Walk to Aeronautics
1:45 - 3:00 pm	Career Immersion & Virtual Reality
3:15 - 3:30 pm	Transport to Western Aviation *bus*
3:30 - 4:30 pm	Western Aviation Tour
4:30 - 4:45 pm	Transport to Phillippi Park *bus*
4:45 - 6:00 pm	Drones in Agriculture
6:00 pm	**Students Released (Pick up at Phillippi Park)**

Tuesday, June 13, 2017

Students arrive BY 8:00 am	
8:00 - 8:30 am	Review of the day
8:30 - 8:45 am	Transport to Air Traffic Control Tower *bus*
8:45 - 10:15 am	Boise Air Traffic Control Tower Tour
10:15 - 10:30 am	Transport to NIFC *bus*
10:30 - 11:45 am	NIFC Tour
11:45 - 12:00 pm	Transport to Aero *bus*
12:00 - 12:30 pm	Lunch - *Sponsored by IBAA*
12:30 - 1:30 pm	Paper Airplane Guy
1:30 - 1:45 pm	Transport to Guard *bus*
2:00 - 3:00 pm	Guard Tour - Army Aviation Tour
3:00 - 3:10 pm	Transport to 190th *bus*
3:15 - 4:30 pm	Guard Tour - 190th Division
4:30 - 4:45 pm	Transport to Aero *bus*
4:45 - 5:00 pm	Review of Next Day
5:00 pm	**Students Released (Pick up at Aeronautics)**

Wednesday, June 14, 2017

Students arrive BY 8:00 am	
8:15 am	Transport to Boise State University *bus*
8:45 am	Living Lab
12:00 pm	Lunch
1:00 pm	Lab Resumes
4:00 pm	Lab Ends
4:15 pm	Transport to Aero *bus*
4:30 pm	**Students Released (Pick up at Aeronautics)**

Thursday June 15, 2017

Students arrive BY am	
7:00 - 7:30 am	Breakfast - *Sponsored by Idaho 99's*
7:30 - 8:00 am	Crew Briefing
8:00 - 10:30 am	Flights Depart
10:30 - 12:00 pm	Warhawk Tour and Scavenger Hunt
12:00 - 12:10 pm	Walk to FBO Picnic Area
12:10 - 12:45 pm	Lunch
1:00 - 2:00 pm	CAP/EAA Tour
2:00 - 2:30 pm	Transport to Aero *bus*
2:30 - 3:30 pm	Drone Racing
3:30 - 4:30 pm	Engineering in Aviation - GDA
4:30 - 4:45 pm	Transport to Phillippi Park *bus*
5:00 - 6:30 pm	Picnic *Parents and Families are welcome to attend*
6:30 pm	**Students Released (Pick up at Phillippi Park)**

With special thanks to:

Lunch Sponsors
- Idaho State University
- IBAA

Chaperones
- Faith Keller
- Huy Le
- Brenda Lee Heckman

NASA Idaho Space Grant Consortium
BSU College of Engineering
Precision Aviation, Inc.
Idaho STEM Action Center
Idaho Aviation Foundation
Idaho Aviation Association
Idaho Business Aviation Association
Ag-Air Turbines
Art and Science of Flying Ground School

Aeronautics Staff
Rich Stowell
Sharki Kontra
Katie Baker
Bill Clark & Cheryl McCord
American Assoc. of University Women-Boise
Warhawk Air Museum
Idaho Aviation Hall of Fame
Jetstream Aviation
Boise Fire Fighters Local 149
Idaho Ninety-Nines
Kontra Accounting
Our awesome volunteer Pilots
Jerry Terlisner - Chief Cook
Speakers
Tour hosts

Activity:	Camp
Target Group:	Elementary, Middle, High
Title:	Iowa DOT Aviation Youth Camps
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Airport
Provider:	State
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Donations
Participants:	Medium
Established:	2000s
Region:	CE
Website:	http://flyiowa.org/education/

Description of Activity:

The Iowa DOT Office of Aviation seeded an idea for youth aviation camps and has been a key partner of the Iowa Aviation Promotion Group (IAPG) in improving and changing the camp to fit student needs. Since 2005/2006 the IAPG has been facilitating half-day camps at airports across the state. So far, over 3,000 students have participated in the camps (25-50 students per camp). The number of airports that host the half-day programs varies from year to year, historically ranging from 4-20. There is no fee for students to attend the camps; the IAPG, participating airports, and businesses sponsor the program. The IAPG uses Airport Owners and Pilots Association's (AOPA) PATH to Aviation book for camp curriculum. The PATH to Aviation book includes 11 modules that can be taught to campers – each participating airport chooses 4 of the modules to be taught at their half-day camp.

The Iowa DOT Office of Aviation provides supplies (brochures, activity books, balsa planes, etc.) and camp certificates to IAPG for distribution to camp attendees. Additionally, the Office of Aviation advertises the half-day camps in their periodic newsletters and at their annual airport conference.

Contact Information:

Iowa DOT Office of Aviation
800 Lincoln Way
Ames, IA 50010
515-239-1691
www.iowadot.gov/aviation

Iowa Aviation Promotion Group
Chuck McDonald – Executive Director
515-964-1398

Activity:	Camp, Class/Workshop
Target Group:	High, Post-Secondary
Title:	Kentucky Department of Transportation
Duration:	
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Airport
Provider:	State
Specialized Equipment:	Aircraft, Simulators, UAS, Computers
Cost/Person:	
Funding Source:	State
Participants:	
Established:	
Region:	SO
Website:	https://transportation.ky.gov/Aviation/Pages/home.aspx

Description of Activity:

The Kentucky Department of Aviation is passionate in supporting aviation education programs across the state. Specifically, the Department staff participate in aviation camps and courses offered by NASEI, EKU, and the Aviation Museum of Kentucky by making presentations and exhibiting at industry events. The Department also provides internship opportunities when able.

While the Department of Aviation does not provide funding to any of these entities specifically, Department staff volunteer time to assist the programs in any way they can. The Kentucky Department of Aviation provides support to EKU by funding airport development projects at the Central Kentucky Regional Airport which is used by the aviation program faculty and students from EKU. Recently they were able to extend the runway to 5,000 feet in length, construct a parallel taxiway, and add hangars. Future projects they plan to assist with include a new terminal building and additional apron space.

Specific information (ages, cost, etc.) on the activities offered by NASEI, EKU, and the Aviation Museum of Kentucky can be found on their individual landing pages.

Contact Information:

Steve Parker
Department of Aviation
Capital City Airport
90 Airport Road
Building 400
Frankfort, Kentucky 40601
Phone: (502) 564-0525

Activity:	Camp
Target Group:	Middle, High
Title:	LaPorte Airport Summer Aviation Camp
Duration:	>3 days
Emphasis:	Science, Technology, Math
Staff:	PT, V
Venue:	Airport
Provider:	Airport
Specialized Equipment:	Aircraft
Cost/Person:	$$
Funding Source:	Donations, Admission
Participants:	Large
Year Established:	2016
Region:	GL
Website:	https://laporteairport.com/

Description of Activity:

Aviation Camp has evolved over the last three years to include four classes, each made up of approximately 50 students in 6^{th} – 12^{th} grade. Instructors include local aviation experts who discuss aviation topics including drones, powered parachutes, aerodynamics, and space exploration. These experts typically include medical helicopter pilots, flight attendants, airline pilots, and Civil Air Patrol volunteers. Participants also receive flights from local pilots who spend about 45 minutes with two-three students at a time. The camp also includes the airport chartering buses to take students and chaperones to the Kalamazoo Air Zoo for a day of tours and more classes.

Contact Information:

Email: Diane Bos Schwarz at diane@laporteairport.com

Activity:	Class/Workshop
Target Group:	High
Title:	Liberty University After School Aviation Program
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Resources:	FT
Venue:	Classroom, Airport
Provider:	University
Specialized Equipment:	Computers
Cost/Person:	Free
Funding Source	Grant
Participants:	Medium
Established:	1971
Region:	EA
Website:	Liberty University: http://www.liberty.edu/academics/aeronautics/ Central Virginia Community College: https://cvcc.augusoft.net/index.cfm?method=ClassListing.ClassListingDisplay&int_category_id=5&int_sub_category_id=52&int_catalog_id=

Description of Activity:

This is a low time commitment but gets high school students introduced to the world of aviation. Liberty partners with high schools to provide King Schools curriculum after school at a local airport.

Contact Information:

Chris Cartwright
Camp Director
cmcartwright@liberty.edu
434-238-6467

Activity:	Camp
Target Group	Middle
Title:	Liberty University Junior High Day Camps
Duration:	3-8 hours
Emphasis:	Science, Operational
Staff:	FT
Venue:	Laboratory
Provider:	University
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Self
Participants:	Medium
Established:	
Region:	EA
Website:	Liberty University: http://www.liberty.edu/academics/aeronautics/

Description of Activity:

Junior High School day camp is a one day event to get students ages 10 – 13 years old interested in Aviation. Students who participate will get a day of aviation which includes 1 simulator flight and 1 aircraft flight. During the discovery flight 3 students are in each aircraft with an instructor. The focus of the flight is not instruction but discovery. This is a low time commitment but gets the students introduced to the world of aviation. Local schools could partner with flight schools in the area to provide this opportunity at a low cost.

Contact Information:

Chris Cartwright
Camp Director
cmcartwright@liberty.edu
434-238-6467

Activity:	Camp
Target Group:	High
Title:	Liberty University New Horizons 30 Day Camps
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math, Operational
Staff:	FT
Venue:	Classroom, Airport
Provider:	University
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Self
Participants:	
Year Established:	1971
Region:	EA
Website:	Liberty University: http://www.liberty.edu/academics/aeronautics/ http://www.liberty.edu/academics/aeronautics/index.cfm?PID=31189

Description of Activity:

Students who completed the solo camp and soloed in less than 10 hours in a Cessna 150 are invited back for the next level of intensity. Students are taken through a 30 day private pilot course over the summer to obtain their Private pilot's certificate.

Contact Information:

Chris Cartwright
Camp Director
cmcartwright@liberty.edu
434-238-6467

Activity:	Camp
Target Group:	High
Title:	Liberty University New Horizons High School Camp
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math, Operational
Staff:	FT
Venue:	Classroom, Airport
Provider:	University
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Self
Participants:	Medium
Year Established:	1971
Region:	EA
Website:	Liberty University: http://www.liberty.edu/academics/aeronautics/ http://www.liberty.edu/academics/aeronautics/index.cfm?PID=31189

Description of Activity:

High School camp starts on a Sunday and finishes up on Friday. Activities include aviation ground school, model rocket building/launching, building and launching model gliders, flying in flight simulators, 2 flights in an actual airplane, and hands on maintenance projects.

Contact Information:

Chris Cartwright
Camp Director
cmcartwright@liberty.edu
434-238-6467

Activity:	Flight
Target Group:	High
Title:	Liberty University Solo Camps
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math, Operational
Staff:	FT
Venue:	Classroom, Airport, Hangar
Provider:	University
Specialized Equipment:	Aircraft, Simulators
Cost:	$$$
Funding Source:	Self
# Participants:	Small
Established:	1971
Region:	EA
Website:	Liberty University: http://www.liberty.edu/academics/aeronautics/ http://www.liberty.edu/academics/aeronautics/index.cfm?PID=31189

Description of Activity:

Students are immersed in ground school, flight simulators, and flight training lessons for 12 days. The goal is to solo in under 10 hours. Last year 6 students conducted the flight training, all soloed in a Cessna 150 at an uncontrolled airport in under 10 hours ranging from 5.4 hours to 9.9 hours. Students who soloed in less than 10 hours are refunded $500 dollars for their hard work and diligence.

Contact Information:

Chris Cartwright
Camp Director
cmcartwright@liberty.edu
434-238-6467

Activity:	Camp
Target Group:	High
Title:	Louisiana ACE Camps
Duration:	1-3 days, >3 days
Emphasis:	Operational
Staff:	V
Venue:	Airport
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Donations
Participants:	Small
Established:	2000s
Region:	SW
Website:	

Description of Activity:

The Aviation Section of the Louisiana Department of Transportation and Development (DOTD) supports the Aviation Career Education (ACE) Camps for high school students across the state by volunteering staff time for planning and logistics and camp advertisement. This program has been in operation for about a decade and has recently been handed to the Louisiana Chapters of the Ninety-Nines (an international non-profit organization of licensed women pilots) to facilitate. The duration of the camps vary from year to year based on the anticipated schedule and curriculum and ranges from two days to a week long. Approximately 10-15 students participate in the camp each year which moves around the state to participating airports. The cost of attendance is free to students – due in part to the airport sponsor and other partners who help fund associated costs (meals, lodging, etc.).

Typically included in the program is a ground school class taught by college students in aviation programs (airport management students or pilots), flights with the local EAA chapter and volunteer pilots, and shadowing of airport managers. This program is on a temporary hold in 2017 and will resume in 2018 under new facilitation by the Ninety-Nines.

Contact Information:

LA DOTD Headquarters
1201 Capitol Access Road,
Baton Rouge, LA, 70802
Telephone: (225) 379-1232

Activity: Internship
Target Group: Post-Secondary
Title: Louisiana DOTD Internship
Duration: >3 days
Emphasis: Operational
Staff: V
Venue: Classroom
Provider: State
Specialized Equipment: Simulators
Cost/Person: Free
Funding Source: Self
Participants: Small
Established:
Region: SW
Website:

Description of Activity:

The Aviation Section of the Louisiana Department of Transportation and Development (DOTD) is dedicated to promoting aviation education and does so through several additional outreach opportunities, including exhibiting at industry events and career fairs with a flight simulator, making guest presentations to university classes, visiting K-12 schools during Transportation Week, and more. DOTD staff volunteer their time to present to students and exhibit at industry events.

In addition, the Aviation Section of the DOTD seeks at least two junior or senior level college students in aviation programs to intern in the Department each year. Interns must be a resident of Louisiana or be enrolled in an aviation program at a college in Louisiana to be eligible.

Contact Information:

LA DOTD Headquarters
1201 Capitol Access Road,
Baton Rouge, LA, 70802
Telephone: (225) 379-1232

Activity:	Contest
Target Group:	Elementary, Middle, High
Title:	MDT Art Contest
Duration:	3-8 hours
Emphasis:	Art
Staff:	V
Venue:	Airport
Provider:	State
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	
Participants:	Small
Established:	
Region:	NW
Website:	www.mdt.mt.gov/aviation/

Description of Activity:

The aviation art contest is open to students between Kindergarten and the 12th grade. There are three age divisions broken up by grade level: K-5, 6-8, and 9-12. First, second, and third place winners are chosen from each age bracket. The first place winner for each group is flown to Helena for the day to visit the capital and receive their award. Flight are provided by MDT aircraft and by aircraft charter.

Contact Information:

Harold Dramstad
Safety and Education Bureau Chief
Montana Department of Transportation
Aeronautics Division
P.O. Box 200507
Helena, MT 59620-0507
406-444-9568
hdramstad@mt.gov.

Activity:	Camp
Target Group:	Middle, High
Title:	MDT ACE Academy
Duration:	1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Airport
Provider:	State
Specialized Equipment:	Aircraft
Cost/Person:	$$$
Funding Source:	Donations
Participants:	Small
Established:	
Region:	NW
Website:	www.mdt.mt.gov/aviation/

Description of Activity:

The (Aviation Career Exploration) ACE Academy is a two-day camp held in Helena, Montana each summer which exposes participants to a variety of aviation careers and activities. The camp is limited to 12 students and is primarily for high school students, although late middle school students who express a serious interest may also be allowed to attend. The cost is $120 and includes both days of the camp plus overnight lodging. The Montana Pilot's Association, local chapters of the Experimental Aircraft Association (EAA), private individuals, and the Montana Chamber of Commerce all assist by providing some scholarship money to ease attendance costs.

The camp begins with career-centered activities which include aircraft rides on MDT aircraft, a tour of the Air Traffic Control Tower (ATCT), and a visit to a 1950s era USAF Lockheed Constellation surveillance airplane which is on display at the airport. Other events include a visit from the Montana National Guard to discuss aviation careers in the military and a visit to a nearby state of the art Boeing manufacturing plant. Students also get to talk with representatives from Helena College about their FAA Part 146 certified A&P mechanic program.

The camp also hosts a wide variety of other aviation related activities. A hang glider and paraglider club discusses aerodynamics with students and performs demonstration flights. New this year is a hot air balloon demonstration which will include a tethered balloon flight. A trip to a backcountry airstrip allows students to see vintage aircraft and explore amphibious aircraft at a nearby lake, and an aerobatic pilot narrates a routine during flight while the students watch from the ground.

The camp is gaining visibility, and industry groups are now requesting a chance to participate. A small budget (about $50) for ads on social media is used to spread the word about the camp to over 25,000 people. The overall budget for aviation education is less than $4,000 annually, so staff resources are used and a substantial amount of time is invested by MDT to put on this camp and other education related activities.

Contact Information:

Harold Dramstad
Safety and Education Bureau Chief
Montana Department of Transportation
Aeronautics Division
P.O. Box 200507
Helena, MT 59620-0507
406-444-9568
hdramstad@mt.gov.

Attachments: Simple – 2017 ACE Academy Registration

Montana Department of Transportation
Aeronautics Division
Aviation Career Exploration (ACE) Academy

MDT Aeronautics Division
2630 Airport Road
P.O. Box 200507
Helena, MT 59620-0507
Ph: 406.444.2506
Fx: 406.444.2519

2017 ACE Academy

Hosted by the MDT Aeronautics Division

Clinic Date: Monday, June 19 - Tuesday, June 20, 2017
Clinic Location: Helena, MT

FOR OFFICE USE ONLY
ACC-LTR_____
CHECK #_____
ACCT # 528830
ORG: 403042

Print Form

Attendee Information

◯ Female ◯ Male

Name:
Address:
City:
State: **Zip:**

Preferred name for name tag:
Birthday:
In June of 2017, my age will be:
My Grade level will be:

Name of School:

Parent/Guardian:
Contact Phone#:
Work Phone#:
Email:

Parent/Guardian:
Contact Phone#:
Work Phone#:
Email:

Emergency Contact(s):

Do you live in Helena, ◯ Yes ◯ No **If yes, will you need a hotel room during the ACE?** ◯ Yes ◯ No

Additional Comments:

Tuition is $120.00 per student and includes meals, lodging, and all activities. Enrollment is limited to 12 students, so please apply early. A limited number of scholarships will be available and awarded based on the personal essays that are submitted. We'll notify you by mail if you're essay is selected for a scholarship and your original payment will be refunded.

Please mail in the following items with this completed application:

1) A one-page essay on why you want to attend the ACE Academy, including your aviation or other career goals.
2) A letter of recommendation from an instructor/teacher or pilot.

APPLICATIONS MUST BE POSTMARKED NO LATER THAN **JUNE 2, 2017**.

Montana Department of Transportation
Aeronautics Division
Aviation Career Exploration (ACE) Academy

MDT Aeronautics Division
2630 Airport Road
P.O. Box 200507
Helena, MT 59620-0507
Ph: 406.444.2506
Fx: 406.444.2519

The following must be completed to be considered for the ACE Academy

The undersigned parents/guardians and participants agree as follows:

RELEASE OF LIABILITY

I, the undersigned, desire to voluntarily participate in the ACE Academy. I represent that I am knowledgeable of this activity and the risks of personal injury, death, damage to my property, or damage to myself and to others which may be associated with the activity. Notwithstanding there risks, I wish to assume them by voluntarily participating in the ACE Academy and in any travel associated with the ACE Academy.

I understand and agree that the State of Montana, MDT, Aeronautics Division accept no responsibility in the activity, the receipt and sufficiency of said consideration being hereby acknowledged, I hereby do release, relieve, discharge and hold harmless the State of Montana, Montana Department of Transportation, and MDT's Aeronautics Division, their officers, directors, staff and representatives from any and all liability to me and my personal representatives, heirs, successors and next of kin, whether for personal injury, death, property damage, or otherwise, arising out of or in connection with participating in the ACE Academy and any travel associated with the ACE Academy.

PERMISSION FOR MEDICAL TREATMENT

I believe my child is physically and mentally capable of participating in all aspects of the ACE Academy. It is my duty to consult a physician to get approval if my child had or now has an injury or illness that would limit or prohibit such activities. I hereby grant permission to take my child to any appropriate medical facility for emergency treatment.

Allergies/Medical Conditions:

Is the applicant covered by health insurance? ◯ Yes ◯ No

Additional Comments:

CONSENT FOR PROMOTION
We hereby grant permission to photograph and/or interview participant for promotional purposes.

The undersigned hereby agree to follow the rules of conduct established for the ACE Academy. We have read this entire document and fully understand each term and condition set forth above.

Applicant Name	Signature	Date
Witness Name	Signature	Date
Parent/Guardian Name	Signature	Date

Return Completed Application, Essay & Letter to:
MDT Aeronautics Division
PO Box 200507
Helena, MT 59620-0507

Activity:	Class/Workshop
Target Group:	Post-Secondary
Title:	MDT Science Workshop for Teachers
Duration:	1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	State
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Self
Participants:	Small
Established:	
Region:	NW
Website:	

Description of Activity:

The MDT Aeronautics Division recently revamped a long-standing Teacher Workshop program, and has partnered with a local learning center in Montana that provides education for middle and high school science teachers. The program shows how to bring aeronautical principles and aviation into the classroom to teach other STEM concepts. A budget of less than $5,000 is used to bring 18 teachers free of charge to the two-day camp, which in the past has had over 50 applicants. Teachers spend the night in cottages provided by the learning center. Fees are paid to the camp and a faculty member at Montana State to help facilitate the workshop. Future camps may have a sponsor to offset overnight rooming costs.

Activities include table-top wind tunnels provided by MDT, which allow teachers to explore aerodynamics. Also, a navigation problem, complete with flight planning tools and charts, is used to introduce aviation principles to the teachers. Study materials are provided to teachers with the idea that some might choose to become FAA certified ground instructors. Teachers are also given the opportunity for one hour of dual flight instruction. Attendees are able to use the workshop to obtain credits for required state continuing education requirements.

Positive outcomes have resulted in a previous workshop attendee bringing their class to Helena and getting airplane rides from the EAA Young Eagles program. Another teacher invited MDT to their classroom to do the navigation problem with students.

Contact Information:

Harold Dramstad - Safety and Education Bureau Chief
Montana Department of Transportation
Aeronautics Division
P.O. Box 200507
Helena, MT 59620-0507
406-444-9568
hdramstad@mt.gov.
www.mdt.mt.gov/aviation/

Activity:	Class/Workshop
Target Group:	Post Secondary
Title:	Middle Tennessee K-12 Teacher Renewal
Duration:	>3 days
Emphasis:	Science, Engineering, Technology, Math
Staff:	FT, PT, V
Venue:	Classroom, Airport
Provider:	University
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Grant
Participants:	Medium
Established:	1959
Website:	http://www.mtsu.edu/aerospace/workshops.php

Description of Activity:

This is a course offered through Middle Tennessee State University. The course is offered to 25-30 teachers who teach all grade levels. It meets from 8am -12pm the first two weeks of the course. The last week is a field trip. Participants have free tuition as long as they are a Tennessee teacher, this is offered through a state grant. Regardless of grade level the workshop teaches the participant aviation related activities and curriculum specific to their teaching. For example, when discussing a topic such as lift, if there is a teacher that primarily teaches 1st grade and another who teaches 9th grade, there would be activities and curriculum instruction handed out and discussed for both 1st grade and 9th grade classes.

Since it is a college course there are assignments (take and makes), quizzes, and a final exam. Participants are also graded on their attendance.

The course also involves guest speakers from various aspects of the aviation industry. The guest speakers range from pilots to engineers to astronauts to MTSU faculty members.

The last week of the course the participants go on a field trip. They tour museums, airports, and go on flights. During the summer 2017 workshop the participants went to Huntsville, Alabama. There the participants were able to go on a C-17 refueling mission.

Middle Tennessee State University also offers an advanced course. To be eligible participants have to have taken the first course. The cost is the same as the previous course. This course looks at topics such as map reading and cross country flight planning.

Contact Information:

Phyl Taylor: **phyl.taylor@mtsu.edu**

Attachment: Simple – Class information sheet for 2018,

MIDDLE TENNESSEE STATE UNIVERSITY
Department of Aerospace
Murfreesboro, TN

2018 AEROSPACE EDUCATION WORKSHOP WITH STEM

Refueling Mission - TN Air Guard

What?

Aerospace Education graduate courses conducted by the Aerospace Department at Middle Tennessee State University. These courses are designed to enable Tennessee Educators K-12 to utilize aviation/ Aerospace topics to teach STEM standards across the curriculum.

Where?

Middle Tennessee State University Campus
Business & Aerospace Building (BAS)

When?

Classes: June 11 - 22, 2018; 8:00 a.m. – 12:00 noon
Field Trip: June25 – 27, 2018; destination TBA.

Course Benefits	Instruction Includes
• Three (3) hours graduate credit **at no cost to you!** • Textbook, classroom materials, curriculum guides • One (1) session flight instruction on an aircraft desktop training device • Flight instruction in a MTSU Diamondstar DA-40 glass cockpit • aircraft • Tour of MTSU's Air Traffic Control simulation lab • Lectures by internationally recognized experts in aviation and space	• Basic aerodynamics and aircraft systems • Aircraft performance and weight and balance • Aeronautical charts (advanced course) • Cross country flight planning (advanced course) • Aviation weather factors (advanced course) • Airport operations • Introduction to Unmanned Aviation Systems (UAS) Operations • Introduction to careers in the aviation industry

The MTSU Aerospace Education courses are the nation's oldest continuing Aerospace program for Educators. Our goal is to familiarize Tennessee Educators K-12 with the ramifications of air transportation as the dominant form of transportation in this country and its impact on society as a whole. In return, the goal of the educators is to integrate aerospace into existing curricula. The interdisciplinary approach makes it instructionally valuable regardless of subject area or grade level. Aerospace subject matter is aligned with STEM standards across the curriculum.

Registration and Application Procedures*

1. Complete attached Scholarship Application form
2. Complete the on-line admission process to MTSU'sGraduate Studies program atwww.mtsu.edu/graduate. For assistance contact 615-898-2840 or email phyl.taylor@mtsu.edu
3. After admission to graduate school is completed, register on-line for one of the following courses: Basic Workshop – AERO 6100 or YOED 6100; Advanced Workshop – AERO 6700 or YOED 6700.

*Scholarship will be applied only after all of the above steps have been completed.

Funded by a Grant from
Tennessee Department of Transportation
Division of Aeronautics

Activity:	Camp
Target Group:	High
Title:	Midland Barstow Aviation Camp
Duration:	>3 days
Emphasis:	Operational
Staff:	V
Venue:	Airport
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	$$
Funding Source:	Admission
Participants:	Small
Established:	1992
Region:	GL
Website:	https://sites.google.com/site/avcampikw/

Description of Activity:

The Midland Barstow Aviation Camp is a weeklong camp hosted every June for 16 students entering 10^{th} – 12^{th} grades. Students are introduced to aviation history, careers in aviation, aerodynamics, weather, flight navigation, and airplane construction. At the end of the week, attendees are given the opportunity to participate in a flight with an experienced pilot.

Contact Information:

Linda Langrill, Midland Aviation Education Association

Activity:	Tours
Target Group:	Elementary, Middle, High, Post-Secondary
Title:	Midland Community Aviation Discovery Area
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Airport
Provider:	Airport
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Donations
Participants:	
Established:	2016
Region:	GL
Website:	

Description of Activity:

Midland Community Aviation Discovery Area adjacent to the airport terminal building with static display Cessna 150 airplane, educational boards describing parts of the airplane, airplane instruments, airport layout, pattern and radio communications, in-ground concrete compass rose, in-ground to-scale airport runways, covered picnic area with Unicom and AWOS frequencies broadcasting. Ideal for STEM classroom lessons and visits of all ages from pre-school to senior airport visits. Family friendly with fenced boundaries and plenty of space for kids to run and for everyone to watch the airplanes landing and taking off.

Contact:

Linda Langrill, Midland Aviation Education Association

Activity:	Flight
Target Group:	Elementary, Middle, High
Title:	Midland EAA Young Eagles
Duration:	<3 hours
Emphasis:	Operational
Staff:	V
Venue:	Airport
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Donations
Participants:	Small
Established:	
Region:	GL
Website:	

Description of Activity:

Young Eagles flights for youngsters ages 8 to 17 years are offered by Midland EAA (Experimental Aircraft Association) Chapter 1093 on the second Saturday of each month. The Young Eagle flight provides an introduction to aerodynamics and how the airplane flies, a pre-flight walk around, and a local flight with a certified pilot and EAA member.

Contact:

Linda Langrill, Midland Aviation Education Association

Activity:	Camp
Target Group:	High
Title:	Minnesota ACE Camp
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Airport, Hanger
Provider:	State
Specialized Equipment:	Aircraft**,** Computers
Cost/Person:	$$$
Funding Source:	Self, State
Participants:	Small
Established:	
Region:	GL
Website:	www.mnacecamp.org

Description of Activity:

This camp includes much community involvement over its week-long duration, and has activities across the Minneapolis St. Paul area. The camp includes private pilot ground school materials as well as tours to airports, maintenance facilities, flight departments, engineering facilities, air traffic facilities, and military bases. The students hear from various guest speakers throughout the week from all facets of the industry. Here is a sample schedule for the summer camps:

Sunday

- Tour of Signature FBO
- Mini private pilot ground school (4-5 hours)

Monday

- Tour Delta Airlines, talk with the Chief Pilot and other line pilots, and walk around the ramp and baggage areas
- Tour of the Ramp Tower at MSP
- Travel to South St. Paul Airport
- Visit a War Museum, talk with someone about the Civil Air Patrol, and check out the various float planes that are at the airport
- Work on a maintenance project
- Go on a flight hosted by the University of Minnesota, Mankato

Tuesday

- Tour of MSP Air Traffic Control Tower & Tracon, and get to use the ATC simulator
- Tour Sun Country Maintenance facility
- Tour of the Metropolitan Airport Commission
- Listen to guest speakers, (past speakers have included Astronauts and DNR pilots)

Wednesday

- Flights in both a glider through the MN Soaring Club as well as a Helicopter Flight in a Hummingbird Helicopter at Stanton Airfield in Cannon Falls, MN
- Tour MSP Center in Farmington
- Flight Attendant Training
- Fly simulators (Sun Country and Endeavor)

Thursday and Friday

- Go to the University of Minnesota and meet with the Aeronautical Engineering Department
- Go to the Downtown St. Paul Airport and tour the Army Guard Facilities
- Tour flight departments for 3M and the MN State Patrol
- A flight in a C-130 and C-130 simulators
- Tour AERO System Engineering and see a wind tunnel
- Talk with someone from Wings Financial
- Meet with the FAA and look at ground navigation equipment

Saturday

- Group presentations
- Launch hot air balloons that they made earlier in the week
- Graduation Ceremony with a keynote speaker

The cost of the week-long camp is $650 for in-state tuition and $750 for out-of-state. There is also a $50 application fee. There are opportunities for scholarships and if applicants register early there is a $50 discount. To run the camps a Director and Assistant Director, as well as 7 counselors per camp, are needed. Everyone volunteers their time for the camp. The MN Department of Transportation and the FAA ACE sponsor the camp. They do work with the Office of Aeronautics for funding to help keep the cost of the camp down for participants.

Contact Information:

Cheri Rohlfing: y02acrohlfing@aol.com, 507-469-0884
Diane D: Langer@faa.gov, 612-708-6840.

Attachment: Complex – Application form and information letter.

Minnesota Aviation Career Education Camp

EXPLORE YOUR FUTURE

WHY SHOULD YOU ATTEND?

You will:

- Visit a wide variety of aviation facilities and talk to engineers, pilots, maintenance technicians, college aviation program staff, air traffic controllers, security personnel, and others about what it is like to work in various aviation fields
- Fly an airplane, helicopter, and glider under the supervision of experienced pilots
- Tour corporate aircraft and facilities
- Experience hands-on demonstrations in air traffic control, pilot training, and aircraft maintenance
- Learn the basics of flight, aviation systems, aviation-related industries, and much more...
- Tuition includes all meals, lodging, activities and flights

WHO CAN ATTEND?

You must be entering grades **10-11-12** in the 2017-2018 school year. Minnesota students and students who have at least one parent or guardian living or working in Minnesota have priority in registering. Students from outside of Minnesota will be considered on a space-available basis.

WHAT DOES IT COST?

$650 ($50 Application fee included) for Minnesota students. Out-of-state tuition is $750.
Note: $50 discount for applications postmarked by **April 7, 2017**.

IS FINANCIAL ASSISTANCE AVAILABLE?

Yes, financial assistance is available based on individual need; please contact us for a scholarship application and answer question five on the camp application, or download an application from the website.
Please include the $50 application fee when you send in the application. This fee will be returned to you if you are not accepted. If you are applying for financial aid and can't pay the $50 application fee, please note this on your ACE camp application.

FOR APPLICATION STATUS, ADDITIONAL INFORMATION AND TENTATIVE CAMP SCHEDULE:

E-mail: Diane.D.Langer@faa.gov
Phone: 612-708-6840 • Fax: 612-713-4001

FOR FURTHER CAMP INFORMATION

www.mnacecamp.org

2017 Minnesota ACE Camp Application

From the dates below, indicate your first choice of camp dates, or either if applicable.

☐ **June 11-17** ☐ **July 16-22** ☐ **Either**

Participant's Name **(Ms. / Mr.) (circle one)**

_____

Last 4 digits of Social Security # (required for security clearance)

_____

School Name **Grade (Present)**

_____ _____

E-mail Address

_____

Shirt Size: ☐ **S** ☐ **M** ☐ **L** ☐ **XL** ☐ **XXL**

US Citizen ☐ **yes** **City** _____ **State** ____

☐ **no** **If no, Citizen of:** _____

Date of Birth _____

Driver's License _____

State _____

E-mail Address _____

Parent or Guardian

_____

Home Address

_____

_____

Home Telephone Number _____

(SEE REVERSE SIDE)

Office of Aeronautics, Aviation Education
222 E. Plato Blvd.
St. Paul. MN 55107
www.mndot.gov

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On separate sheets of paper,

please complete the following. You must either type or neatly print in blue or black ink.

1. Your name
2. List any extracurricular activities you participate in and list any awards or special recognition you have received.
3. List any work experience, current and past.
4. Where did you hear about the Minnesota ACE Camp?
5. If you need financial assistance, please explain why.
6. In addition to answering these questions, write a short essay (minimum 200 words) on why you should be selected to attend the 2017 Aviation Education Camp.
7. Also, have one teacher AND one non-relative adult write a letter of recommendation for you to attend the Minnesota ACE Camp.

All applications must include all of the above materials (Application questions, essay, two letters of recommendation) when submitted.

Applications should be postmarked by May 12, 2017. Late applications will be considered on a space-available basis.

APPLY EARLY. All applications postmarked by **April 7, 2017** will receive a $50 discount.

Make checks payable to “MN Aviation Career Education Camp”. Complete application materials and $50 application fee should be sent to:

Minnesota Aviation Career Education Camp
c/o Diane Langer
FAA/MSP ATCT
6311 34th Ave. S.
Minneapolis, MN 55450
612-708-6840

June 11-17 and July 16-22, 2017

SPONSORED BY THE FEDERAL AVIATION ADMINISTRATION AND THE MINNESOTA DEPARTMENT OF TRANSPORTATION, AERONAUTICS

Minnesota Aviation Career Education Camp

February 2017

Hello,

The Minnesota ACE Camp is an amazing aviation experience for high school students! I attended the first ACE camp 26 years ago which lead me to a very interesting, exciting career in aviation. Currently, I'm a First Officer for Delta Air Lines flying the A320 out of Minneapolis. I also volunteer my time as the ACE Camp Chairperson and Director. Please take a few minutes to read about this once-in-a-lifetime camp!

The MN Aviation Career Education (ACE) camp is a week long, overnight camp designed to introduce high school students to careers in aviation. It is sponsored by the Federal Aviation Administration and MnDOT, Office of Aeronautics. During the camp, we lodge at the 934th Air Force Reserve base at the Minneapolis International Airport – a very exciting location for the students!

Each student will get the opportunity to **pilot a glider, helicopter, airline simulators and GA aircraft** under the supervision of a Certified Flight Instructor. They will also tour the MSP air traffic control tower & the approach control radar room, Minneapolis Air Route Traffic Control Center, Metropolitan Airports Commission (an amazing bus tour of the MSP airport), MSP Fire Department, Delta Air Lines, Flight Attendant Training, Sun Country Airlines, TSA, Signature Flight Support, 3M's corporate hangar and G5s, Army Guard, Wipaire, Commemorative Air Force, Northwest Airlines & MN Air Guard museums, University of Minnesota Aeronautical Engineering and Aero Systems Engineering. In addition, they will hear from many industry speakers, build and fly tissue paper hot air balloons, participate in ground school and learn ways to pursue their aviation goals. They really have a terrific opportunity to experience the behind the scenes world of aviation that most people will never see!

Please let me know if you have any additional questions about ACE Camp. I have attached the application or your student may register online, www.mnacecamp.org. We are currently accepting applications for the 60 slots available this summer. The two camps are scheduled for June 11-17 & July 16-22 and the cost is $650 which includes all flights, lodging, transportation and meals while they are at camp. Please do not let the cost deter anyone interested in attending; we have a lot of scholarship opportunities.

Please feel free to contact me at 507-469-0884 if you have any questions.

Sincerely,

Cheri Rohlfing

Activity:	Class/Workshop
Target Group:	High
Title:	Minot High School Aviation I and II courses
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math,
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	Computers
Cost/Person:	Free
Funding Source:	State
Participants:	Small
Established:	2016
Region:	GL
Website:	http://www.minot.k12.nd.us/career-and-technical-education-9754a1d5 https://www.nd.gov/cte/programs/trades-industry/index.html

Description of Activity:

Aviation Technology I is a basic aviation course that covers the standards laid out by the state of ND whereas Aviation Technology II is a more advanced aviation course. Students go deeper into topics such as Air Traffic Control and Unmanned Aircraft Systems. Students are also given an opportunity to conduct job shadows. Two of the job shadows are with the Minot Air Traffic Control Tower and Pete's Flying Service (an FBO at Minot Airport). Students (only a few at a time) are allowed to go to the control tower or the FBO during class time to shadow at various times throughout the course. The job shadow is coordinated by the teacher of the class but the transportation must be provided by the student.

With the use of the X-Plane flight simulation program, the students in the Aviation II class have the opportunity to control traffic. The classroom computers and the smartboard are linked together so that some students are acting as ATC while others are the aircraft. Students are able to talk to each other through the use of an app on their phones called Zello.

Since Aviation II is a 2hr class period they are able to build and even fly remote controlled aircraft. Students have had the opportunity to fly both a Syma Quadcopter as well as a Sky King RC airplane. They have even built a balsa wood model aircraft. Due to the class size, next year they are looking into putting together a Gentle Lady Glider. This platform is one that more students will be able to work on at one time.

Since it is a high school course all of the materials have been purchased through the normal classroom budget. Both courses use the X-Plane software program to have students fly various maneuvers and practice radio calls. Guest speakers are also brought into both classes. The guest speakers include pilots, unmanned aircraft business owners, airshow pilots, university representatives and air traffic controllers. The students have also gone on various field trips to the Minot Air Museum and the ND Aeronautics Symposium. Students have also had the opportunity through the EAA Young Eagles Program to go on an introductory flight.

Contact Information:

Meric Murphy: meric.murphy@gmail.com

Activity:	Camp
Target Group:	Post-Secondary
Title:	MSP FAR Part 139 Boot Camp
Duration:	>3 days
Emphasis:	Operational
Staff:	FT
Venue:	Airport
Provider:	Airport
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Self
Participants:	Small
Established:	2012
Region:	GL
Website:	www.mspmac.org

Description of Activity:

The Minneapolis-St. Paul International Airport (MSP) hosts a 5-day CFR 14 Part 139 training course for a select group of 18 students majoring in aviation from colleges and universities including, Minnesota State University - Mankato, Metro State University, and the University of North Dakota. The course is held each May, and focuses on the real-world application of the FAA's Part 139 airport certification standards at an international airport utilizing both classroom and hands-on learning.

This hands-on course emphasizes the practical application of the different disciplines required to manage the day-to-day operations of an airport. Students will have the opportunity to attend actual airport training courses including: emergency management, driver's training, wildlife management, construction, and winter operations.

Students will perform real world activities such as surface inspections, collecting evidence of and reporting wildlife strikes, using pyrotechnics, issuing NOTAMs, Field Condition Reports, and firefighting. Airport staff will provide tours of the Airside Operations Center, fire stations, maintenance facilities, and airfield.

This course is designed around a team-based environment and is extremely fast paced and hands-on. Students can expect to participate in all phases of the course including individual and team competitions. All training activities will take place at the airport. This is your opportunity to network with fellow students and airport operations professionals and have fun doing it

Contact Information:

John Ostrom, Operations Manager at MSP: John.ostrom@mspmac.org

Attachment: Simple – Boot Camp Flyer and Schedule

MSP 139 BOOT CAMP

The Minneapolis-St. Paul International Airport (MSP) will be hosting a 5-day CFR 14 Part 139 training course for a select group of students majoring in aviation from colleges and universities including, Minnesota State University - Mankato, Metro State University and the University of North Dakota. The course will be held May 15-19, 2017 and will focus on the real world application of the FAA's airport certification standards at an international airport utilizing both classroom and hands-on learning.

WHY SHOULD YOU ATTEND?

This "hands-on" course emphasizes the practical application of the different disciplines required to manage the day-to-day operations of an airport.

Students will have the opportunity to attend actual airport training courses including: emergency management, driver's training, wildlife management, construction and winter operations.








WHAT CAN YOU EXPECT?

Students will be expected to perform real world activities such as surface inspections, collecting evidence of and reporting wildlife strikes, using pyrotechnics, issuing NOTAMs and Field Condition Reports and fire fighting.

Airport staff will also provide tours of the Airside Operations Center, fire stations, maintenance facilities and airfield.

This course is designed around a team based environment and is extremely fast paced and hands-on. Students will be expected to participate in all phases of the course including individual and team competitions.

All training activities will take place at the airport. This is your opportunity to network with fellow students and airport operations professionals and have fun doing it

WHAT DOES IT COST?

$0. There is no registration fee for attending the course. Students are responsible for their own lodging and meals.

BOOT MSP CAMP 139

FOR FURTHER INFORMATION

Contact John Ostrom at:
Phone: (612) 726-5780
Email: john.ostrom@mspmac.org

2017 MSP Part 139 Boot Camp

	Monday May 15, 2017	Tuesday May 16, 2017	Wednesday May 17, 2017	Thursday May 18, 2017	Friday May 19, 2017
0800	Welcome + Introductions	ARFF	Mid-Week Review	Winter Operations	Construction
0830	Airport 101	Fuller		Miller	Beltran
0900	Ostrom	(ARFF 1)	RSAT/Spring Forum	Beuning	Conklin
0930	Miller		(MAC General Office)	(Building 8)	
1000				Pavement Maintenance	
1030	139 + ACM			Beuning	
1100	Miller			(Building 8)	NOTAMs Part II
1130	Ostrom				Conklin
1200	Lunch - Potluck	Lunch	Lunch - Potluck	Lunch	Lunch
1230	Provided by Airside	On Your Own	Provided by Students	On Your Own	On Your Own
1300					
1330	Wildlife	Self-Inspection	AEP	Driving/AOA Tour	Field Day/Olympics
1400	Schumacher	Harken	Ostrom	Miller	Ostrom
1430	Paurus	Miller		Scapple	Miller
1500	Ostrom	Conklin		Frase	Beltran
1530			Emerging Trends		Johnson
1600		NOTAMs Part I	Ostrom		Scapple
1630		Conklin	Miller		Frase
1700		Miller			Whoever Else
		Night Inspections	Night Inspections		Awards Banquet
		Precup - Oesterreich	Anderson - Precup		

Activity:	Internship
Target Group:	Post-Secondary
Title:	MSU Denver Aviation/Aerospace Internship
Duration:	>3 Days
Emphasis:	Operational
Staff:	FT
Venue:	Laboratory
Provider:	University
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Self
# Participants:	Small
Established:	10+ Years
Region:	NW
Website:	www.msudenver.edu

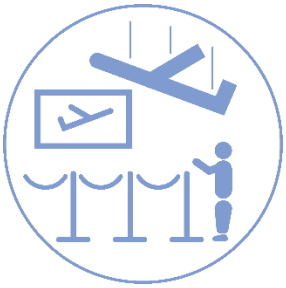
Description of Activity:

The Aviation and Aerospace Science Department (AVS) at Metropolitan State University of Denver is one of the largest and most advanced collegiate aviation programs in the country. MSU offers a Bachelor of Science degree with a variety of majors and professional certifications designed to help you succeed in the exciting and rapidly evolving industries of aviation and aerospace. MSU administers the internship program. Internships last one semester and are prequalified by MSU to ensure the work syllabus meets the goals and curriculum to qualify for college credit. MSU maintains a list of prequalified employers in the area. Employers must have a learning agreement in place with MSU. The program is very open to any employer that matches the students' desired job in the aviation/aerospace industry. Employers can vary from airports, corporations, to public/private entities. Students can be paid but if they are not paid the program must meet qualifications to ensure the student gets college credit.

Contact Information:

Jeffrey Forrest - Professor and Department Chair
Aviation and Aerospace Science Department
Seventh Classroom
1250 - 7th Street, Room 102
Campus Box 30, PO Box 173362
Denver Colorado 80217-3362
303-556-4380 - phone
303-556-6331 - fax
forrestj@msudenver.edu

Activity:	Class/Workshop
Target Group:	Middle
Title:	Museum of Flight - Amelia's Aero Club
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT, PT
Venue:	Classroom
Provider:	Museum
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Donations
Participants:	Small
Established:	
Region:	NW
Website:	http://www.museumofflight.org/Education/Explore-programs/Amelias-Aero-Club



Description of Activity:

Amelia's Aero Club is an educational initiative of The Museum of Flight designed to inspire and nurture middle school girls from across Washington State in the exploration of STEA^{2}M: Science, Technology, Engineering, Aviation, Art & Mathematics.

Through hands-on activities and social meet-ups, Amelia's members:

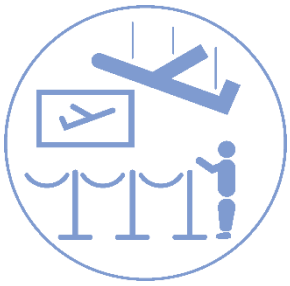
- Delve into the history of women in aeronautics
- Interact & build relationships with peers & industry leaders
- Explore future career aspirations
- Develop leadership skills
- And most importantly, have fun!

Activities include book clubs, sleepovers, Meet 'N Greets with industry professionals, field trips, engineering & robotics competitions, special events at the Museum, and so much more!

Contact Information:

Stacy Harbour-Van Hoy: 206-764-5864, sharbour-vanhoy@museumofflight.org

Activity:	Class/Workshop
Target Group:	Middle
Title:	Museum of Flight - Michael P. Anderson Memorial Aerospace Program
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT, PT, V
Venue:	Classroom
Provider:	Museum
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Self
Participants:	
Established:	
Region:	NW
Website:	www.museumofflight.org



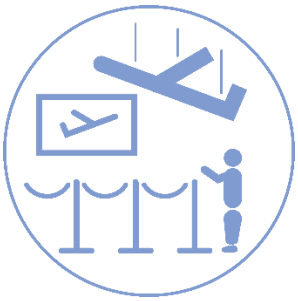
Description of Activity:

The Michael P. Anderson Memorial Aerospace Program teaches students about science, engineering, flight dynamics, and navigation in hands-on, state-of-the-art labs and simulators. Additionally, students are mentored by aerospace professionals including Alaska Airlines pilots, military aviators, Organization of Black Aerospace Professionals (OBAP), Tuskegee Airmen, and Museum of Flight staff—taking them to new places, exposing them to new opportunities, and creating dreams many had never even considered before.

In 2003, Washington native Lt. Col. Michael P. Anderson was one of 7 American heroes who perished aboard the Space Shuttle Columbia as it hurtled towards Earth. From his blue-collar foundations, Michael P. Anderson aspired to fly and explore the universe and his dreams came true, he said, through hard work, dedication and a commitment to achievement. Anderson tirelessly talked about those same qualities to every child he spoke with during his many school and community presentations in Washington and around the country, which inspired the Michael P. Anderson Memorial Aerospace Program at The Museum of Flight.

Contact Information:

Stacy Harbour-Van Hoy: sharbour-vanhoy@museumofflight.org



Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Museum of Flight - Traveling Flying Gizmo Show I & II
Duration:	<3 hours
Emphasis:	Science
Staff:	FT, PT
Venue:	Auditorium
Provider:	Museum
Specialized Equipment:	
Cost/Person:	$$$
Funding Source:	Self
Participants:	X-Large
Established:	
Region:	NW
Website:	http://www.museumofflight.org/Education/Explore-programs/flying-gizmo

Description of Activity:

This fun assembly-style program is designed to help participants discover the science and history of flight with flying toys and models. Our toy collection includes a flapping-winged bird, kites, parachutes, gliders, stomp rockets and many others.

Contact Information:

Museum of Flight, Seattle, Washington
To arrange times, contact 206-768-7175 or outreach@museumofflight.org

Attachment: Simple – Flying Gizmos Show Objectives & Standards

THE PERIODIC TABLE OF **EDUCATION**

Gz

FLYING GIZMO

Program: Flying Gizmo Show I, II
Grade Level: K - 8
Group Size: Max. 300
Length: 50 minutes
Location: At your site

OVERVIEW

Students learn the history and science of flight in this interactive, assembly-style program using flying toys and models.

BIG IDEAS

- In order to fly, an object must overcome gravity
- Four forces of flight: gravity, lift, drag, and thrust
- Flying machines have changed and evolved over time

OUTCOMES – What will the students know or be able to do at the end of the lesson?

- List and understand the four forces of flight

VOCABULARY

- Four forces of flight: gravity, lift, drag, thrust
- Ornithopter
- Angle of attack
- Airfoil
- Bernoulli's principle

EXTENDED LEARNING

In your classroom:

- Research some of the inventors discussed in the show: Leonardo da Vinci, Joseph and Étienne Montgolfier, Otto Lilienthal, Wilbur and Orville Wright

RESERVATIONS

For reservations, please call **206-768-7175** or email: outreach@museumofflight.org.
For grant assistance, please visit www.museumofflight.org/education/grant-assistance.

STANDARDS SUPPORTED – NGSS/CCSS/21ST CENTURY SKILLS

Next Generation Science Standards (NGSS)

- Engineering Design: K-2-ETS1-1, K-2-ETS1-3
- Motion and Stability: 5-PS2-1

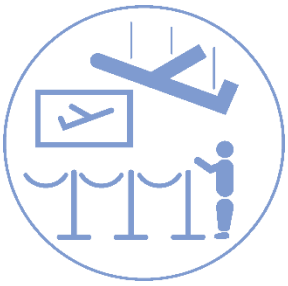
Common Core State Standards (CCSS)

- ELA: Speaking & Listening: CCSS.ELA-Literacy.SL.K.1, CCSS.ELA-Literacy.SL.K.1a, CCSS.ELA-Literacy.SL.K.3, CCSS.ELA-Literacy.SL.K.6, CCSS.ELA-Literacy.SL.1.1, CCSS.ELA-Literacy.SL.1.1a, CCSS.ELA-Literacy.SL.1.3, CCSS.ELA-Literacy.SL.2.1, CCSS.ELA-Literacy.SL.2.1a, CCSS.ELA-Literacy.2.3, CCSS.ELA-Literacy.SL.3.1(b-d), CCSS.ELA-Literacy.SL.3.3, CCSS.ELA-Literacy.SL.4.1, CCSS.ELA-Literacy.SL.4.1(b, c), CCSS.ELA-Literacy.SL.5.1, CCSS.ELA-Literacy.SL.5.1b, CCSS.ELA-Literacy.SL.6.1, CCSS.ELA-Literacy.SL.7.1, CCSS.ELA-Literacy.SL.8.1

21st Century Skills

- Creativity and Innovation
- Communication and Collaboration

Activity:	Class/Workshop
Target Group:	High
Title:	Museum of Flight - Washington Aerospace Scholars
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT, PT, V
Venue:	Classroom
Provider:	Museum
Specialized Equipment:	
Cost/Person:	Free
Funding:	Donation
Participants:	Small
Established:	
Region:	NW
Website:	http://www.museumofflight.org/Education/Explore-programs/was



Description of Activity (reprinted from website):

Washington Aerospace Scholars (WAS) is a dual-phase program specifically designed for high school juniors. This program focuses on topics related to the history and future exploration of space by NASA as well as topics in Earth and space science. The Washington Aerospace Scholars gives high school juniors a chance to earn UW college credits—giving them an academic edge when applying for colleges. The experience also exposes them to the opportunity to work face-to-face with professional engineers, NASA scientists, university students, and educators.

Beyond education, this program will help students build their confidence, maturity, and independence while having fun learning about the universe in which we live, meeting other students with similar interests, and challenging themselves to design realistic future space missions.

WAS Video: https://www.youtube.com/watch?v=GRgwcEed32U

Curriculum & Requirements

Phase I is a 5-month distance learning course created in partnership with NASA and the University of Washington, which provides students the opportunity to earn 5 college credits. Phase II is a 6-day residency experience based at The Museum of Flight, in which students plan a human mission to Mars.

Scholar Requirements:

- You must have Internet accessibility to participate in Phase I.
- You must be a US citizen and Washington State resident to participate in Phase II.
- You must currently be a junior in high school

Attention High School Sophomores!

WAS is offering a special program that allows high school sophomores in Washington, Oregon, and Montana the opportunity to begin WAS in the spring of their sophomore year! Sophomore Washington Aerospace Scholars (SWAS) is:

- An online program consisting of two WAS lessons beginning in March 2017
- Focused on NASA history & Earth & Space Science
    - Each lesson has a two-week deadline and contains:
    - A reading assignment and a quiz
    - A 500-word essay
- A space related math problem and design activity
- Each lesson is two-weeks long (4 weeks total)
- Successful completion of sophomore WAS guarantees acceptance in the junior WAS program and an invite to participate in a 3-day workshop in Summer of 2017

Contact Information:

Applications: http://www.museumofflight.org/Education/Explore-programs/was

Attachment: Simple **–** WAS Flyer

WAS WASHINGTON AEROSPACE SCHOLARS

KNOW YOURSELF KNOW YOUR WORTH.

STEM COMPANIES WANT YOU.

EARN COLLEGE CREDIT.

APPLY AT MUSEUMOFFLIGHT.ORG/WAS

THE MUSEUM OF FLIGHT

Activity:	Camp
Target Group:	High
Title:	Nashville Pilot Camp
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	PT
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	Aircraft, Simulator
Cost/Person:	$$$
Funding Source:	Self
Participants:	Small
Established:	
Region:	SO
Website:	http://www.nashvilleflighttraining.com/nashville-pilot-camp/

Description of Activity:

Specially designed for ages 13-18, Nashville Pilot Camp offers the opportunity to find out what it really takes to learn to fly. During our one week summer camp, 20 students will learn through hands-on participation as they gain valuable aviation experience. Participants also learn disciplines of aviation through science, technology, engineering and math (STEM) and meet like-minded aviation enthusiasts their own age. Imagine your teenager telling their friends that they got to fly a plane this summer! The memories and friendships made during Nashville Pilot Camp will last a lifetime.

Every participant receives up to two full hours of FAA certified flight instruction in an actual airplane, one hour of flight training in an FAA certified flight simulator, as well as books, maps, and a camp t-shirt.

Website Information: http://www.nashvilleflighttraining.com/nashville-pilot-camp/

Attachment: Simple – Camp Schedule

Monday
Introductory ground school. Engines, instruments and aerodynamics.

Tuesday
Communications and radio procedures. Discover Nashville Air Traffic Control.

Wednesday
Weather ground school. Discussion of aviation maps. Flight on FAA certified flight simulator.

Thursday
Safety Ground School. Airplane flight.

Friday
Airplane Flight.

Activity: Camp
Target Group: High
Title: NASEI Aerospace Summer Camps
Duration: >3 days
Emphasis: Science, Technology, Engineering, Math
Staff: V
Venue: Hangar
Provider: School
Specialized Equipment:
Cost/Person: $$$
Funding Source: Self
Participants:
Established: 2010
Region: SO
Website:

Description of Activity:

The National Air & Space Education Institute (NASEI) is a non-profit organization that partners with 37 school districts in Kentucky to provide an aviation education program (Air + Space Academy) that can be incorporated as elective courses into existing high school curriculum. Students who participate in the Air + Space Academy are eligible for participation in the Aerospace Summer Camps put on by NASEI. These camps are one week in length and cover flight/aeronautics and aircraft maintenance:

Flight Camp I – Pre-solo Flight Maneuvers (5-10 hours)
$500

Students that have finished their second year (Sophomore) in the Air + Space Academy program are eligible for this camp. Students will learn pre-flight operations and inspection, taxi, run-up, takeoff, landings, traffic pattern operations, ground reference maneuvers, and performance maneuvers.

Flight Camp II – Solo/Cross Country (4-10 hours)
$500

Students that have completed Flight Camp I, Advanced Aeronautics Science, passed the Private Pilot Written Examination with at least an 80%, and maintained flight currency in their local environment are eligible to participate in this camp. Students will review all pre-solo concepts and procedures, develop consistency in take-off and landings, possibly solo, and complete flight plan/cross country flight.

Flight Camp III – FAA Checkride Prep (10 hours)
$500

After completing Flight Camp II, the senior level aeronautics course, and maintaining flight currency in their local environment, students are eligible to participate in Flight Camp III where they will review all flight processes and procedures while preparing for their checkride.

Aircraft Maintenance Camp I

$250

Students following the aviation maintenance technician path will learn about aviation safety, hardware/fasteners, inspection techniques, weight/balance, riveting, aircraft restoration, and many other skills/processes needed to become an aircraft maintenance technician.

Activity:	Class/Workshop
Target Group:	Middle, High
Title:	New Mexico Aviation Aerospace Association Annual Aviation Expo and Fly-in
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Airport, Hangar
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Grant
Participants:	X-Large
Established:	2012
Region:	SW
Website:	www.NMAAA.net

Description of Activity (reprinted from website):

The Alamogordo White Sands Regional Airport in corporation with the New Mexico Aviation Aerospace Association (NMAAA) is extremely proud to announce the fifth annual Science, Technology, Engineering, and Mathematics (STEM) Aviation Exposition to expose middle and senior high school students to all aspects of aviation.

This spectacular event will be held at the Alamogordo airport on October 5th, 2017 from 0900 to 1500 (that is 9:00AM to 3:00 PM for those non-aviation 24-hour clock folks). The past four years this expo was held on Kirtland and Holloman Air Force Bases (AFB). Due to security issues, these locations limited the number of students and civilian aircraft able to participate. In 2017, it will be wide open to more aircraft and students because the location is at a public civilian airport!

The Exposition drew over 2400 students in 2016 to Holloman AFB accompanied by 500+ adults. They had the opportunity to view 82 exhibits and see over 28 different aircraft including sailplanes. What to expect in the 2017 Exposition? There are over 144 Middle and High schools invited with an expected attendance of between 2,500 and 3,000 students along with 500 adult chaperones. There is no gate fee, but feel free to donate any amount to the NMAAA for expenses and/or sponsor a busload of kids for lunch. The NMAAA strives to pay for the fuel for the busses to bring the students to the event, and that alone runs into tens of thousands of dollars. Any financial help is greatly appreciated. As in past years, this has been by far the largest exposition of its kind in the country!

Exhibitors are adding up fast to exceed last year's numbers and we anticipate having over 40 aircraft. A catered lunch will be provided at a nominal cost and the Alamogordo Squadron of the Civil Air Patrol Cadets will be providing lots of the service labor. One of the many stars of the show will be the Neptune Aviation P2V fire-fighting slurry bomber.

Who is NMAAA:

Our vision is to ensure the constant growth of New Mexico's aviation and aerospace sectors. Our membership includes representation from federal agencies, academic institutions, the military, non-profit and for-profit organizations as well as individuals.

NMAAA was formed in 2012 to strengthen New Mexico's global competitiveness in aviation and aerospace. We providing a forum for cooperation between thought leaders and industry representatives to define aviation and aerospace initiatives that will grow New Mexico's economy.

Contact Information:

Anyone interested in being an exhibitor, sponsoring lunches, needing more information or anything else related to this Exposition, you may contact Jim Talbert at the Alamogordo Airport, 575-551-6245, or Mr. Bill Schuert at NMAAA at 505-414-5548. For additional information and a history of the exposition, you can visit the NMAAA web site at www.NMAAA.net

Attachment: Simple – Expo Flyer

Activity:	Camp
Target Group:	High
Title:	New York Student Aviation Expedition
Duration:	>3 Days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Hangar, Airport
Provider:	Organization
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Donations
Participants:	Medium
Established:	2015
Region:	NW
Website:	http://aviation-community.org

Description of Activity:

The Aviation Community Foundation (ACF) connects and supports the nation's foremost aviation educators dedicated to the development of high school students creating a career path for life. ACF's mission is achieved by providing resources centered around leadership structure, strategic planning, collaboration, mentorship, and grants. The Foundation's plan is to continually identify exceptional educators and/or institutions that operate successful aviation programs at the high school level. Periodic programs are conducted throughout the year to support educators and provide learning experiences for students. Events are hosted periodically for students to experience unique aviation educational programs.

Flightpath for Change:

In 2015 ACF identified a need to bridge the hardships facing the aviation industry with the future leaders of tomorrow. Propelled with a grant of $20,000, the ACF team spent three months researching over 30 aviation education programs and identified the following recurrent themes:

1. A strong leadership team is critical for a successful program. Top programs include both a lead educator and a social entrepreneur/executive servicing as the board chair.

2. There is significant opportunity for these programs to truly excel through collaboration techniques such as peer group development, shared experiences and shared resources.

3. Programs that use metrics are better able to explain the benefits of their program and continuously improve their offerings.

4. Incorporating new technologies such as drones and robotics excites and engages students and educators.

5. Students struggle with finding a clear career pathway in aviation and could benefit greatly from a mentorship and hands-on internship program as well as better post-graduation resources.

Armed with this research, ACF identified aviation educators as the nexus to move the needle and propel the aviation forward. Within 12 months, ACF was incorporated as a 501(c)3 and launched a game changing strategy to engage and nurture the next generation of talent.

Educational Offerings:

New York Student Aviation Expedition - In May 2017 ACF launched a ground-breaking pilot program to provide an experience based learning opportunity to high school students from underserved communities around the nation. 40 students were selected to attend a three-day program in New York that combined STEM subject matter with experiential learning to create a powerful way to engage and inspire students. The program featured:

- Hands-on drone demonstrations through Vaughn college
- Behind the scenes with JetBlue including a visit to their tower and one-on-one with the chief pilot in the cockpit of an aircraft
- A STEM competition project, with a prize of a helicopter ride around the city
- TED style talks with industry experts

This transformational opportunity allowed students to connect with peers from across the country and form new friendships, while being exposed to the many options in aviation and aerospace.

Each year ACF invites a select number of top aviation education programs (both schools and nonprofits) from across the country to participate in two Elevate workshops to collaborate on key industry topics and trends such as:

- Funding opportunities
- Best practice implementation
- Board creation and leadership
- Technology

This type of collaboration improves the quality of all programs and significantly shortens the time needed to launch new initiatives. Students benefit from higher graduation and program success rates. Participants in the program can expect the following outcomes:

- Introductions to and inspiration from peers
- Freely exchanged best practices between programs with similar missions
- Mentoring and Coaching
- Access to proven tools to improve your team's communication and implementation
- Unique content that is taught by subject matter experts from all industries

In addition, Elevate serves as a testing environment to develop new and better education programs. The learnings from these experiments can then be applied on a larger scale to aviation programs nation-wide.
Through the dedication of ACF's small core team and passionate volunteers, the Foundation conducts ongoing outreach to identify funding sources from corporate and individual contributions. ACF's business model is scalable to any level of operating budget. ACF relies on contributions to continue its mission and to offer educational offerings at no cost to the students or educators (public or private) who attend or participate in any of the Foundation events.

Contact Information:

Aviation Community Foundation
Ethan Martin-Founder & CEO
Lafayette, Colorado
emartin@aviation-community.org
720-295-4888
http://aviation-community.org

Activity:	Class/Workshop
Target Group:	Elementary, Middle, High, Post-Secondary
Title:	Ninety-Nines
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Hanger
Provider:	Organization
Specialized Equipment:	Aircraft
Cost/Person:	$$
Funding Source:	Membership
Participants:	Small
Established:	1929
Region:	SW, CE, WP, EA, NE, GL, NW
Website:	https://www.ninety-nines.org/ http://www.scs99s.org/AerospaceEd/GirlScouts/STEM.htm

Description of Activity (reprinted from website):

Background of the Ninety-Nines

The Ninety-Nines, Inc., is an international organization of licensed women pilots from 44 countries - we currently have thousands of members throughout the world. We are a non-profit, charitable membership corporation holding 501(c)(3) U.S. tax status. Our International Headquarters is located in Oklahoma City, Oklahoma. Although there are other female pilot organizations in various states and nations, virtually all women of achievement in aviation have been or are members of The Ninety-Nines.

Today Ninety-Nines are professional pilots for airlines, industry and government; we are pilots who teach and pilots who fly for pleasure; we are pilots who are technicians and mechanics. But first and foremost, *we are women who love to fly!*

Advancing Women Pilots

The core of our organization's activities is at the Chapter and Section level. With over 150 chapters in the United States and Canada and another 17 offshore Sections located on five continents, nearly every member can feel connected to a nearby group. These groups work with their local communities to support the mission of The 99s: promote the advancement of aviation through education, scholarships and mutual support. Fittingly, with a history that reaches back to 1929, we continually honor our unique history and share our passion for flight.

Chapters and Sections sponsor and teach educational sessions for youth and adults. With youth, they use aviation to bolster STEM (Science, Technology, Engineering, Mathematics) classes for youth, interesting them in the possibilities that STEM fields offer, for adults, they offer seminars for the companions of light aircraft pilots. We also sponsor instructor revalidation clinics and safety seminars for pilots.

Another local activity is painting compass roses at airports to offer a location to confirm compass accuracy and of course advertise the organization to aviators.

Our two museums offer a unique and detailed history of women in aviation, the Amelia Earhart Birthplace Museum in Atchison, Kansas and the Museum of Women Pilots at our headquarters in Oklahoma City, Oklahoma. We hope every 99 will find an opportunity to visit these during her lifetime and of course bring her friends and family to take in the many aspects and stories of our history.

The Ninety-Nines organization was first established on November 2, 1929. To become a member of this organization, one must be at least a student pilot. There is a member fee and it ranges from $30-65 depending on the level of pilot and where one lives. They also have lifetime membership options. The prices can be found on their website. The Ninety-Nines website also includes links to various activities and aviation curriculum. Some of these resources include:

- Links to other organizations
    - The New England Air Museum
    - Girls with Wings
    - Civil Air Patrol (CAP)
    - NASA
- Science Projects
- Coloring Books
- Build an Airport Activity

They also provide information on a Junior Girl Scout STEM Seminar that was established in 2008. They do warn that there may be a need to consult with a local Girl Scout Council as the requirements may vary. More information about the Girl Scout seminar can be found at https://www.ninety-nines.org/aeroed-girl-scouts.htm.

Girl Scout STEM Seminar Guide and Materials: A Girl Scout Aviation STEM Seminar Guide and repository for seminar presentations and materials are available for all to use on the South Central Section website, www.scs99s.org. The target audiences are Junior and Cadette Girl Scouts. This will be a continually evolving collection and will include contributions from any chapter interested in providing input.

The site includes these elements:

- A Seminar Guide with information intended to be helpful for chapters that have never held a seminar, or for those looking for new ideas
- Example flyers for promoting a seminar
- PowerPoint slide presentations
- Example agendas, registration forms, and evaluations
- Example handouts
- Work session materials and visuals
- Ordering information for a patch designed by the Dallas Chapter for all to use

99s Aviation STEM Patch

Contact Information:

1-844-994-1929 or (405) 685-7969, 99s@ninety-nines.org

Activity:	Internship
Target Group:	Post Secondary
Title:	North Dakota Aeronautics Commission Financial Support for Airport Internships
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	
Venue:	Airport
Provider:	State
Specialized Equipment:	
Cost/Person:	Free
Funding:	State
Participants:	Small
Established:	2010
Region:	GL
Website:	https://aero.nd.gov/image/cache/Policy_-_GEN-3_-_Intern_Policy.pdf

Description of Activity:

Students and recent graduates of an airport management degree program may participate in the internship program available at the commercial service airports in North Dakota. The North Dakota Aeronautics Commission supports this effort by providing financial support for 12 month internships, to participating airports. Further information can be found in the Airport Intern Policy.

Contact Information:

Mike McHugh, Aviation Education Coordinator: 701-328-9653, e-mail: mmchugh@nd.gov

Attachment: Simple – State Policy

NORTH DAKOTA AERONAUTICS COMMISSION
POLICY #: GEN – 3
POLICY: Airport Intern Policy
PURPOSE: To clarify the intent and funding eligibility for airport intern program

GOALS:
To provide internship opportunities for college students in, and recent graduates of, airport management degree programs through financial assistance to the commercial service airports in North Dakota. The goal of this program is to expose the student, at a minimum, to the 1) organization and administration of airports; 2) components of the airside and landside; 3) airport operations pertaining to Federal Aviation Administration's Federal Aviation Regulation Part 139; and 4) airport security in congruence with the Transportation Security Administration.

FUNDING:
This program is budgeted through an educational grant and allows each of the eight commercial airports to be reimbursed for 80% of the salary, not to exceed $5000 per calendar year.

REIMBURSEMENT:
NDAC will reimburse the commercial airport for 80% of the gross salary of the intern(s) up to a maximum of $5,000 per calendar year. Reimbursement will be provided upon receipt of the following:
1) Payroll and work verification submission by the airport representative; and

2) A summary statement from the intern outlining the educational opportunities and work experience that was gained by the program

Adopted: July 1, 2010
Reviewed and Approved: May 26, 2016
Next Review Date: May, 2018

Activity:	Flight
Target Group:	Post Secondary
Title:	North Dakota Aeronautics Commission Flight Training Assistance Program
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	PT
Venue:	Airport
Provider:	State
Specialized Equipment:	Aircraft
Cost/Person:	
Funding Source:	State
Participants:	
Established:	2007
Region:	GL
Website:	https://aero.nd.gov/education-programs/flight-training-assistance-program/

Description of Activity (reprinted from website):

The intent of the Flight Training Assistance Program (FTAP) is to help defray additional student costs as a result of the direct transportation expenses incurred by commuting flight instructors. FTAP will be offered to public use airports that meet the following criteria:

- The airport is currently not adequately served by an active flight instructor, AND/OR
- The airport does not have an aircraft available for instructional purposes.

Commuting flight instructors are not required to be North Dakota residents, but primary instruction must be performed at a North Dakota public use airport. Instructors are eligible for reimbursement of transportation costs incurred while traveling to and from their based airport (via aircraft or motor vehicle) as well as meal and lodging expenses. These expenses are limited to the amounts authorized by state law.

In order for an airport to comply with the FTAP program requirements, the following must be in place before a state reimbursement is processed:

- A written agreement is formulated between the airport and the flight instructor. This agreement will request the local airport to pay 100% of transportation, meal, and lodging costs incurred by the commuting flight instructor. The Aeronautics Commission will reimburse the airport for 75% of eligible costs.
- A submission of the FTAP application form. Participating airports must complete and re-submit the application form on a yearly basis.
- A minimum of 3 hours of flight instruction per instructional visit must be attained. This minimum instruction time is not limited to 1 student.

The North Dakota Aeronautics Commission (Commission) has determined, from pilot statistics compiled by the Federal Aviation Administration (FAA), that in the past three decades, the number of licensed pilots in North

Dakota (ND) has declined from 4,095 to 3,207, a percentage decrease of 22%. The FAA statistics further indicate a disproportional decrease of licensed pilots between rural and urban areas of ND.

The Commission is advised that at least some of the explanation for the disproportionate decline of licensed pilots in rural areas is the lack of availability of flight instruction at a cost comparable to the rates offered in urban areas. The higher price can be attributed largely to the cost of transportation incurred by the flight instructor while commuting to and from a rural airport.

Authority:

The North Dakota Century Code states, in part, that the Commission shall "Cooperate with and assist … the municipalities of this state … in the development and coordination of all aeronautical activities," which has been interpreted to include the making of grants for educational purposes. The Commission finds that grants that would facilitate the availability of flight instruction in rural areas of North Dakota is a proper and appropriate function of the Commission in the administration of its educational grants.

Contact Information:

Mike McHugh, Aviation Education Coordinator: 701-328-9653, mmchugh@nd.gov

Attachment: Simple - Grant Application

The Commission will make available to the governing body of all eligible airports the grant application, which outlines the details of FTAP. Once submitted and approved, requested grant payments should be submitted via a grant payment voucher and will be computed at a rate of 75% pursuant to state guidelines. Grant checks will be made payable to the airport and mailed to the airport's designated representative. Click here to see an example of an airport-instructor agreement (required for your application).

FLIGHT TRAINING ASSISTANCE PROGRAM (FTAP) APPLICATION

NORTH DAKOTA AERONAUTICS COMMISSION

SFN 60651 (5-2014)

	Date of Application

Name of Airport		Managing Body		
Designated Airport Representative (Contact Person)		Title of Contact Person		
Address		City	State	ZIP Code
Telephone Number	Fax Number	Email Address		

As a recipient of FTAP funding, the airport agrees to the following conditions:

1. The airport will enter into a written agreement with each participating CFI regarding compensation to the CFI, such as cost of overnight stays, meals, etc. A copy of the agreement shall be provided to the Aeronautics Commission office, attached to application.

2. The airport will keep such records as are necessary to verify the travel to and from their airport by a CFI and the FTAP.

3. The airport will certify to the Commission that such travel is eligible for grant reimbursement pursuant to FTAP. With all requests for payment, such as travel costs, the names of the student pilots and the nature of the flight instruction resulting from such travel, shall be recorded.

4. All grant monies shall flow through the airport's accounting system and be a part of any audit thereof.

5. Flight instruction includes, but is not limited to, public informational meetings regarding the availability of flight instruction, any flight instruction for any pilot rating, proficiency flying and ground school, including preparation for any FAA required flight reviews.

6. Approval of any flight instruction not referenced herein is eligible for grant payment if approved by the Commission's Contact Person.

The undersigned, being a duly designated representative of the airport by authorization of the governing body of the airport, does hereby certify that flight instruction by an active local Certified Flight Instructor (CFI) is not available at the airport and/or the airport does not have an aircraft available for instructional use as of the date of this application.

Authorized Airport Representative

Name	Title
Signature of Authorized Representative	Date Signed

ND Aeronautics Commission Staff

Name	Title
Signature of Commission Staff	Date of Commission Approval

This application is effective for one year. Approval will be sent to the applicant.

Activity:	Educational Grant
Target Group:	Elementary, Middle, High
Title:	North Dakota Aeronautics Commission K-12 Aviation Education Grant Opportunity
Duration:	
Emphasis:	Science, Technology, Engineering, Math, Art
Staff:	
Venue:	
Provider:	State
Specialized Equipment:	
Cost/Person:	
Funding Source:	State
Participants:	
Established:	
Region:	GL
Website:	https://aero.nd.gov/education-programs/aviation-education-grants/

Description of Activity:

The North Dakota Aeronautics Commission has approved educational grants for a number of purposes, ranging from $120 to $20,000. We are open to any ideas you may have that incorporate aviation education. Our grant process is easy with the educational grant application form and is not limited to any age, size of group, duration, or format. The Aeronautics Commission meets monthly to consider requests. In order to have time to review, we ask that you have any requests sent to ndaero@nd.gov prior to the last day of the month. Please contact us to discuss how this can apply to your endeavor and increase its success!

Contact Information:

Mike McHugh, Aviation Education Coordinator: 701-328-9653, mmchugh@nd.gov

Attachment: Simple – Grant Application

REQUEST FOR AVIATION EDUCATION GRANT

NORTH DAKOTA AERONAUTICS COMMISSION

SFN 60224 (Rev. 9-2013)

NO:

INSTRUCTIONS:
Please complete and sign page one.
Complete a separate application for each project.
Incomplete applications will not be considered.
Return all pages and attachments to:

ND Aeronautics Commission, PO Box 5020, Bismarck, ND 58502
Telephone: (701) 328-9650 Fax: (701) 328-9656 Email: ndaero@nd.gov

Applicant Information

Name of Requesting Entity	Type of Organization		
Name of Authorized Representative	Title		Telephone Number
Mailing Address	City	State	ZIP Code
Email Address	County	Application Date	

Sponsor's Project Certification

I certify that the information contained in this application and supporting documentation is accurate and complete to the best of my knowledge. Upon approval of the submitted grant by the members of North Dakota Aeronautics Commission, I agree to use the funds for aviation education as specified in this grant request and to provide such additional information as may be required, including proof of expenditures related to this grant.

Signature of Authorized Representative	Title	Date

Project Information

Please complete this page for each project.

Project Title	Total Estimated Cost	Amount Requested	Estimated Completion Date

Type of Funding Request

☐ First-Time Request ☐ Repeat Request ☐ Supplemental Request

Project Description, History (if any), and Partners

Describe the Need or Justification for this Project and Its Educational Value in Aviation

Name of Contact Person for Project		Title
Telephone Number	Fax Number	Email Address

Provide a summary of the estimated cost of the project, including the source of all funding and in-kind support.

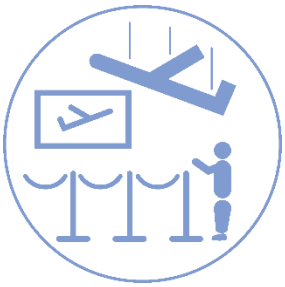
Source of Funding	Estimated Dollar Funding	Estimated Percent of Total Funding
State Aeronautics Commission Grant Request Amount	$	%
Requesting Entity	$	%
Other:	$	%
Other:	$	%
Project Totals	$	100%

Supporting Documentation

If possible, please provide the following documentation as attachments to the grant submittal if applicable:

1. A detailed budget, including cost estimate or accepted bid.
2. Supporting documentation (such as letters of support, plans, itinerary, invoices, etc.)

Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Pima Air & Space Museum Family Events
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	PT, V
Venue:	Classroom, Hangar
Provider:	Museum
Specialized Equipment:	**A**ircraft
Cost/Person:	$
Funding Source:	Admission
Participants:	X-Large
Established:	
Region:	SW
Website:	http://www.pimaair.org/edu/museum-program



Description of Activity (reprinted from website):

Great Paper Airplane Events

The Great Paper Airplane Fly-Off is our exclusive competition for kids ages 6 to 14 awarding a 60-minute introductory airplane flight over Tucson and a tablet for the longest throw for a paper airplane in each age group. It is a fun-filled day featuring:

- paper airplane folding with tips and a demonstration from Ken Blackburn (a Guinness World Record holder for a paper airplane throw),
- pilot "training" including fun on an inflatable obstacle course,
- a NASCAR race car simulator, lunch, snacks, a prize wheel sponsored by Mars Chocolate North America, and more.

Entrants receive a free t-shirt and drawstring backpack. Each entrant can bring 4 guests. Everyone at the event is eligible for great door prizes including another Double Eagle Aviation introductory flight above Tucson; NASCAR race tickets; Mars Chocolate North America candies and more. Advanced registration is required (register early, it fills up!). More information and registration is available at http://www.greatpaperairplane.org/education/

Night Wings

The museum stays open late for this summer-evening program filled with fun aviation activities for kids. Night Wings occurs on the 4th Saturday of June, July, and August, and the museum stays open till 9:00pm. Adults only pay $10. Kids 12 & under are FREE. The fun begins at 5:00pm.

Each Night Wings evening features one "main attraction." Main attractions in the past have been radio-controlled jets, LEGO® Robotics, and a fan favorite, the Physics Factory. Refer to our website's online event calendar for the special attractions of upcoming Night Wings events close to the event.

There are also 12 to 15 different aviation-related activity stations that will engage children as they learn about flight. In 2014, 174 attendees completed the NASA Exploration Design Challenge earning the official designation of virtual crew on board the Orion EFT-1. Other past programs have included:

- Coloring/drawing contests (a great way to win a family membership)
- Aviation-themed puzzles and games
- Impact craters exploration
- Space food samplings (including ice cream, YUM!)
- Photo ops in the cockpit of the T-33 Shooting Star high-speed jet trainer
- Plane spotting (just like during WWII!)
- Memory game, large scale and aviation-style
- Paper airplanes
- Kite building
- Seltzer-rocket launching
- Straw-rocket creation and launch

The Flight Grill restaurant is open until 8:30pm offering dinner specials, such as burgers, salads, pizza and ice cream.

This is also a great opportunity to see some of the museum's fantastic planes against a sunset backdrop. It's a majestic sight that provides unique photo opportunities. For only $4 more you can ride the tram and breeze around the 150 outdoor planes.

Night of Fright

Kids! Costumes! Candy! Crafts!

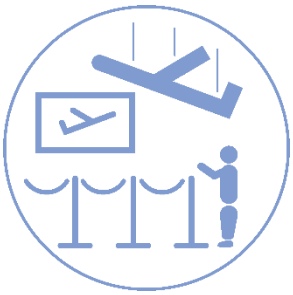
This is "non-scary" Halloween carnival fun for the whole family. The admission price is $10 for ages 13 & older; members and children ages 12 & under is free. We encourage costumes and offer family-friendly Halloween activities. In the past, activities included:

- Trick or treating
- Pony rides
- Temporary tattoos
- Twix & Wrigley's gum stick bi-plane craft
- Fishing for prizes
- Baked goods walk
- "Ghoulish" games:
    - Eyeball Mini Putt-Putt
    - Mummy Bowling
    - Halloween "Twister"

The Flight Grill restaurant transforms into the "Fright Grill" for the evening, offering Halloween-themed dinners. Plus, the aircraft and exhibits in the Main Hangar are open for viewing under ghoulish lights.

Contact Information:

Mina Stafford, Education Curator: mstafford@pimaair.org
http://www.pimaair.org/edu/museum-program



Activity:	Tours
Target Group:	Elementary, Middle, High, Post-Secondary
Title:	Pima Air & Space Museum School and Youth Group Tours
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT, PT, V, Parents
Venue:	Classroom, Hangar
Provider:	Museum
Specialized Equipment:	Aircraft
Cost/Person:	Free
Funding Source:	Self
Participants:	Small, Medium, Large, X-Large
Established:	1970
Region:	SW
Website:	http://www.pimaair.org/edu/museum-program

Description of Activity (reprinted from website):

School/Youth Group Tours Of The Pima Air & Space Museum

The Pima Air & Space Museum is one of the premier aviation museums in North America—don't let your students miss this opportunity. **We waive the admission fee (i.e., it's FREE!) for K-12 school and youth groups** (Girl Scouts, Boy Scouts, Campfire Girls, home-school groups, 4H, Junior Achievement, etc.) **with advanced reservations including the recommended number of chaperones** (additional chaperones pay the regular prices).

Tour Options include:

Self-guided Exploration of 3 aviation hangars, the Space Gallery, and outdoor aircraft displays. Available 9:00am-4:00pm everyday except Thanksgiving and Christmas. Reservations required. A school scavenger hunt is available to download (plus answers).

- **Docent-led General Aviation Tour**—Grades K-5
- **Docent-led History of Aviation Tour**—Grades 6-12
- **Docent-led World War II Aviation Tour**—Grades 7-12 (maximum of 60 students)

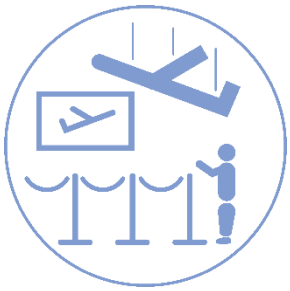
Docent-led tours are only offered Thursday and Friday mornings at 10:00am. All school/youth tours must be scheduled at least 30 days in advance. The tours feature an introduction to the 4 forces of flight and a docent-guided tour of our exhibition hangars.

Often the cost of transportation makes it more efficient to bring 2 or more classes at once. We can accommodate up to 120 students at any one time. If you are interested in this, ask our tour scheduler about special considerations for large groups."

Our Student/Teacher Activity Guide provides you with many tools to teach the wonders of aviation. To download the activity packet: http://www.pimaair.org/pdf/StudentTourGuide.pdf

Contact Information:

Mina Stafford, Education Curator: mstafford@pimaair.org
http://www.pimaair.org/edu/museum-program



Activity:	Class
Target Group:	Elementary, Middle
Title:	Pima Air & Space Museum Soarin' Saturdays for Kids
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	PT, V, Parents
Venue:	Classroom, Hangar
Provider:	Museum
Specialized Equipment:	Aircraft
Cost/Person:	$
Funding Source:	Admission
Participants:	
Established:	
Region:	SW
Website:	http://www.pimaair.org/edu/museum-program

Description of Activity (reprinted from website):

Soarin' Saturdays For Kids (And 1 Wednesday Program Too)
Do your kids like to build model airplanes, experiment with rockets, learn about flight, or explore aviation and aerospace? If so we have the STEM program for you! If not, these STEM programs may inspire them!
Soarin' Saturdays repeat monthly and are free with paid or member admission. All programs, approximately 90-minutes in length, are held in the Space Gallery Classroom and parent participation is required.

Model Airplane Make N' Take
1st Saturday of the Month - for ages 5 and up, 1:00pm
Introduce your young aviator to the hobby of model building with the Sonoran Desert Model Builders. Each child will be given a snap-together model airplane to assemble and take home.

Parent participation is required.

Imagine Rockets
2nd Saturday of the Month - for ages 8 and up, 1:00pm
introduce your young rocket scientist to the fundamentals of rocketry in this fun hands-on experiential program. Each child will build and test experiments while learning about the laws of motion.

Parent participation is required.

How Things Fly
3rd Saturday of the Month - for ages 8 and up, 1:00pm
Introduce your young aeronautical engineer to the fundamentals of flight in this fun hands-on experiential program. Each child will build and test experiments that demonstrate the principles of aerodynamics.

Parent participation is required.

LEGO® Robotics Experience
4th Saturday of the Month - for ages 8 and up, 1:00pm
This 90-minute adventure explores robots and uses computer programing to make a LEGO® MINDSTORM® NXT robot accomplish preset tasks. Space is extremely limited so reservations are required. This program does not occur in June, July, & August.

Parent participation is required.

Young Flyers Fun
4th Saturday of the Month - for ages 4 through 7, 3:00pm
introduce your young flyer to the fun of aviation museums through gallery tours, story time and hands-on craft activities. Each month there is a different topic (the same topics are covered on both Wed. and Sat.). Everything from jet airplanes to exploring the solar system. Space is limited so reservations are requested. This program does not occur in June, July, & August.

Parent participation is required.

Young Flyers Fun Encore Performance
4th Wednesday of the Month - for ages 4 through 7, 10:00am
introduce your young flyer to the fun of aviation museums through gallery tours, story time and hands-on craft activities. Each month there is a different topic (the same topics are covered on both Wed. and Sat.). Everything from jet airplanes to exploring the solar system. Space is limited so reservations are requested.

Parent participation is required.

Contact Information:

Mina Stafford, Education Curator**:** mstafford@pimaair.org
http://www.pimaair.org/edu/museum-program
Educator Resources: http://www.pimaair.org/edu/educator-resources

Activity:	Camp
Target Group:	Middle
Title:	Purdue University Technology Advances Girl Scouts
Duration:	1-3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT, V
Venue:	Classroom
Provider:	University
Specialized Equipment:	
Cost/Person:	$$$
Funding Source:	Self
Participants:	Large
Established:	
Region:	GL
Website:	http://www.purdue.edu/summercamps/camps/science.html

Description of Activity:

Campers explore the world of technology through hands-on activities and tours by faculty, staff and graduate students of the Purdue Polytechnic Institute in each of the nine technology areas including aviation.

Contact Information:

Jessica Taylor: 765-796-0096

Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Purdue University Girls in Aviation Day
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Airport
Provider:	University
Specialized Equipment:	Aircraft
Cost/Person:	$
Funding Source:	Donations
Participants:	Large
Established:	
Region:	GL
Website:	https://polytechnic.purdue.edu/schools/aviation-and-transportation-technology/girls-aviation-day

Description of Activity:

Purdue Girls in Aviation Day is a STEM educational event hosted by Purdue University Airport for girls in the grades 3 to 8 where participants explore Purdue aircraft, learn about Amelia Earhart, and participate in aviation related activities.

Activity:	Class/Workshop
Target Group:	High School
Title:	Red River High School Aviation I and II courses
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	Computers
Cost/Person:	Free
Funding Source:	State
Participants:	Small
Established:	2013
Region:	GL
Website:	https://www.gfschools.org/Page/223 https://www.nd.gov/cte/programs/trades-industry/index.html

Description of Activity:

Aviation Technology I is a basic aviation course. It covers the standards laid out by the state of ND. This course is offered to all high school students within the Grand Forks Public School District. Students can either provide their own transportation to Red River High School or they can follow along via ITV.

Subjects are laid out in the ND standards for all Avit Tech I courses. Topics include aircraft systems, weather products, air traffic control operations navigation. The class room is set up with approximately 14 computer stations with rudder pedals, control panel, control yokes and throttle quadrants. The class utilizes both Microsoft Flight Simulator as well as X-Plane to have the students practice flight maneuvers and landings. The class also follows the curriculum laid out in General Aviation Manufacturers Association's (GAMA) Fly to Learn course. It teaches aerodynamics while having the students change their aircraft in Plane Maker and then they are able to fly it in X-Plane. GAMA Aviation Challenge http://flytolearn.com/aviation-challenge/

Guest speakers are brought into class throughout the year. Some have included: Air Traffic Controllers (Tower, Radar and Military), Aviation Lawyers, A&P's, Military fixed and rotor pilots, airline pilots (regional and majors), bush pilot, airline safety analysts and UAS pilots.

The class also goes on a variety of field trips. One day long trip includes the class visiting three different airports. Two of the airports have ATC towers and the other does not. Students have the opportunity to see the Airport Operations Center along with the fire and maintenance facilities. They also see the behind the scenes at an airport terminal, talk with Airport Managers, visit two FBO's and maintenance facilities. They also get the opportunity to tour the Fargo Air Traffic Control Tower. Here they see both Approach Control and Tower Operations.

Other field trips include tours of the University of North Dakota's Flight Operations center and aircraft as well as fly UND's Flight Training Devices and students even have the opportunity to control traffic in the Radar and Tower Air Traffic Control Simulators. If time allows we have also toured the Grand Fork Airport's Air Traffic Control Tower.

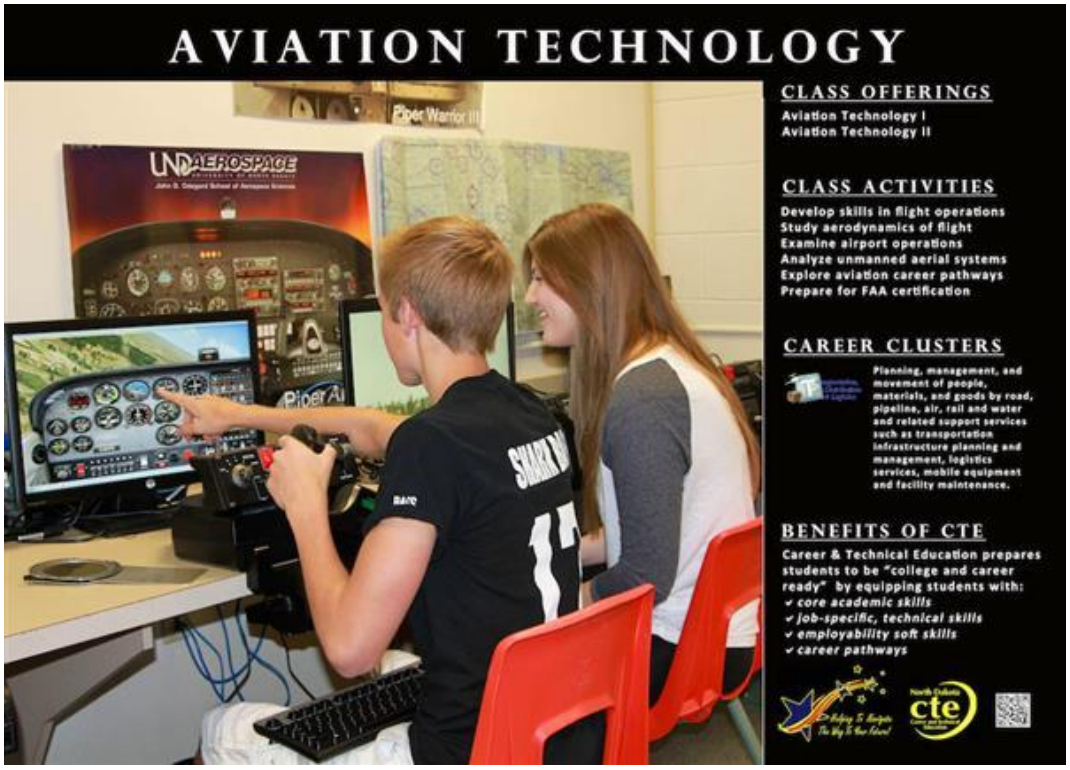
Other projects the class is involved with is making hot air balloons when discussing Aviation History. Instructions are similar to this: http://www.msichicago.org/experiment/hands-on-science/hot-air-balloon/ . For an end of the year fun project the class makes stomp rockets. www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Pop_Rocket_Launcher_Directions.html

Aviation Technology II is a more advanced aviation course. Students spent the first part of the course preparing for the Private Pilot Knowledge Exam. If students score high enough on the practice exams they may receive an endorsement for the actual exam. The second half of the school year the class studies Unmanned Aircraft Systems operations. Other activities include building a wind tunnel and participating in an Unmanned Aircraft Systems competition.

Contact Information:

Leslie Martin, lmartin210@mygfschools.org

Attachment: Simple – Flyer for Aviation Technology Courses, https://www.gfschools.org/domain/25



Activity:	Class/Workshop
Target Group:	High
Title:	South Carolina Public High School Aerospace Engineering Program
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	
Venue:	Classroom
Provider:	State
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Grant
Participants:	
Established:	2017
Region:	SO
Website:	

Description of Activity:

The South Carolina Aerospace Education Working Group was formed a few years ago to support aviation education endeavors across the state. Members of the working group include universities, technical schools, the South Carolina Aeronautics Commission, South Carolina Aviation Association, Department of Commerce, Boeing, Lockheed Martin, and more. In 2017 the group was successful in establishing and identifying funding to support aviation education programs at six high schools across the state.

This was accomplished with the help of the Southern Regional Education Board (SREB) that had developed high school curriculum for an aerospace engineering pathway and the South Carolina Department of Education that gave $50,000 grants to ten schools across the state for new curriculum introduction. The Department of Education grants were first come, first served. Six of the ten schools that received grants are implementing the aerospace engineering curriculum from the SREB (the remaining four schools are implementing other curricula). The grant funding supports the purchase of equipment needed for the aerospace engineering curriculum, along with the instruction for teachers that will be teaching the new courses. A total of four aerospace engineering classes are included in the program for high school students which can be taken one per year for all four years or two per year for two years. Each program year builds on the previous of the four-year curricula.

Currently, the South Carolina Aerospace Education Working Group and the six participating schools are researching dual credit opportunities with universities and tech schools.

Contact Information:

James Stephens
Executive Director
South Carolina Aeronautics Commission
803-896-6272
jstephens@aero.sc.gov

Activity:	Camp, Class/Workshop, Tours
Target Group:	Elementary, Middle, High, Post-Secondary
Title:	Spaceport Indiana
Duration:	<3 hours, 3-8 hours, 1-3 days
Emphasis:	Science, Technology, Engineering, Math, Arts
Staff:	FT, PT
Venue:	Classroom, Laboratory
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$$, $$$
Funding Source:	Donations, Grants, Self, Tuition
Participants:	Small, Medium, Large
Established:	
Region:	GL
Website:	http://www.spaceportindiana.com

Description of Activity:

Spaceport Indiana is a Science, Technology, Engineering, Arts, and Math (STEAM) educational program initiative which offers programs and curriculum that seek to prepare students for careers that are critical to the long range goals of the United States. They offer classroom activities as well as activities at their own facility including after school, summer, camps, in-class projects, and educator workshops. Topics include space camp, rocket launches, balloon launch with payload, high altitude research, solar workshop, mission control, space station, space lab, drones, etc. They either visit the class room or the students visit the Spaceport.

Contact Information:

Phone: (765) 606-1512
Email: ContactUs@spaceportIndiana.com

Activity:	Class/Workshop
Target Group:	Middle, High, Post-Secondary
Title:	Sporty's Pilot Shop - Next Step Online Training
Duration:	>3 days
Emphasis:	Science, Technology, Math
Staff:	
Venue:	Online
Provider:	Organization
Specialized Equipment:	Computers
Cost/Person:	Free
Funding Source:	Self
Participants:	Small
Established:	
Region:	
Website:	https://www.sportys.com/pilotshop/nextstep/

Description of Activity:

The Next Step is Sporty's venture with EAA to capitalize on the excitement achieved after a student's first flight. For Young Eagle® participants, Sporty's provides free and unlimited access to Sporty's Complete Pilot Training Course online.

Contact Information:

Phone to Order: 800.776.7897
Phone for Customer Service: 513.735.9000

Activity:	Class/Workshop
Target Group:	Post Secondary
Title:	University of North Dakota Aviation Experience K-12 Educators Workshop
Duration:	1-3 days
Emphasis:	Science, Engineering, Technology, Math
Staff:	V
Venue:	Classroom, Hangar, Airport
Provider:	University
Specialized Equipment:	Aircraft, UAS, Simulators
Cost/Person:	$$
Funding Source:	Tuition
Participants:	Small
Established:	2010
Website:	http://und.edu/academics/extended-learning/professional-development-for-educators/

Description of Activity:

Educators sign up for the 1 credit course that counts towards their Teaching License requirements. It is typically held towards the end of June or early July.

The 2 day workshop is geared towards providing the participants with opportunities to learn about the aviation industry. The workshop has been held for the past 7 years. Topics have included (some have not been covered every year):

Human factors	Aircraft systems	Weight and balance	Aviation management
Threat and error management	Unmanned aircraft introduction	Aviation math	Industry outlook and career opportunities
Fundamentals of flight	Aerodynamics	Helicopter operations	Aviation History
Airport operations	Aerobatic flight	Air traffic control	Aviation Maps

The workshop is put on by volunteers who are aviation faculty members from the University of North Dakota. They volunteer to talk to the participants for 1-2 hours in their area of expertise. Since it is a workshop where they are supposed to be able to learn about aviation and bring material back to their own classes a lot of hands on activities are used. Here are some examples:

1. After learning about the fundamentals of flight, the participants have an opportunity to fly in one of UND's flight simulators.
2. After learning about air traffic control (ATC), they are able to go into the ATC simulators to control traffic.
3. When learning about aircraft weight and balance they are given a sample of an aircraft operating handbook and they are able to calculate the takeoff and landing weight of an aircraft to see if it is within its limits.
4. After learning about unmanned aircraft systems the participants are able to fly a small UAS.
5. Depending on the budget, participants have even had an opportunity to take what they have learned in the workshop and apply it to a 1 hour flight in a UND single engine aircraft.

The facilitators of the workshop also coordinate with the Grand Forks Airport Operations and the ATC control tower for tours of the airport and control tower. Here participants are applying what they have learned in the classroom to actually seeing it. There are so many opportunities in aviation outside of being a pilot and this tour shows them some of those not as well publicized opportunities.

At the completion of the workshop the participants have to write a paper on what they learned throughout the workshop and how they are going to apply the content to their own classes.

The content of the workshop has changed over the years because some of the volunteers have been different as well as the participants have been different. If the participants are science and math teachers the facilitators might go more in depth with the STEM topics and not go as in depth in the softer sciences such as aviation history.

Contact Information:

Leslie Martin: 701-777-4760, lmartin@aero.und.edu

Attachment: Simple – 2017 workshop schedule and brochures sent out to K-12 educators by UND

The Aviation Experience 2017

This interactive workshop will introduce educators to the world of aviation: past, present, and future. Topics to be explored will be history, human factors, air traffic control, airport operations, unmanned aircraft systems and hands on training in various simulators and an actual aircraft flight, weather permitting. Participants will also be exposed to topics that will enhance their math, science and technology curriculum.

Monday, June 26	**Topic**	**Instructor**	**Location**
8:30-8:35	Course Introduction		Ryan Hall 207
8:35-10:30	Threat and Error Mgmt	Gary Ulrich	Ryan Hall 207
10:30-12:00	Tour of Airport	Leslie Martin	UND Flight Ops Airport 12:00-1:00 Lunch
1:00-2:00	Intro to UAS	Amanda Brandt	Robin Hall
2:00-3:00	Flying Fundamentals of UAS	Amanda Brandt	Robin Hall
3:00-4:00	Fundamentals of Flight	Leslie Martin	Ryan Hall 207
4:00-5:00	Aircraft Simulators	All	Ryan Hall

Tuesday, June 27	**Topic**	**Instructor**	**Location**
8:30-9:30	Aviation History	Leslie Martin	Ryan Hall 207
9:30-11:00	Industry Update	Kent Lovelace	Ryan Hall 207
11:00-12:00	Air Traffic Management	Bill Schroeder	Ryan Hall 207
12:00-1:00	Working Lunch Air Traffic Management		
1:00-3:00	Advanced Concepts of UAS	Amanda Brandt	Robin Hall
2:00-3:00	Advanced UAS Flight Mans	Amanda Brandt	Robin Hall
3:15-4:00	Helicopter Operations	Leslie Martin	Airport Ramp
4:00-5:00	Aircraft Preflight	Leslie Martin	Airport Ramp

Activity:	Camp
Target Group:	High
Title:	University of North Dakota Aerospace Aviation Camp
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Resources:	FT, PT
Venue:	Classroom
Provider:	University
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Self
Participants:	Medium
Established:	1980
Region:	GL
Website:	www.und.aero.und

Description of Activity (reprinted from website):

The University of North Dakota's International Aerospace Camp is a full week of aviation adventure! This "college seminar" is similar to attending a week of actual college. Additionally, what makes this seminar unique is the amount of flight training each of the 28 students receives. We are very interested in students who truly want to experience collegiate aviation.

Your counselors, flight instructors and professors are leaders in aerospace education. You'll start with the basics of flying, experience new and exciting technology and explore career opportunities in flight, air traffic control, aviation management, and unmanned aircraft systems (UAS).

UND Aerospace

The John D. Odegard School of Aerospace Sciences at the University of North Dakota in Grand Forks is one of the most highly respected collegiate aviation programs in the world and a leader in atmospheric research. Every day, throughout the world, our graduates keep the aerospace industry moving.

UND Aerospace is proud of its status as one of the most technologically advanced centers for aerospace education in the world. Our aerospace complex features an altitude chamber for flight physiology training, unique air traffic control tower and radar simulation labs, computerized multi-media instructional classroom facilities and over 100 aircraft (fixed wing and helicopter) and advanced flight training devices including a Canadair Regional Jet FTD.

At the Annual International Aerospace Camp, you will take advantage of our state-of-the-art flight simulators, classrooms, and aircraft fleet. You'll find out firsthand why more than 1,800 students are enrolled right now to get their aerospace careers off the ground.

Contact Information:

www.aero.und.edu

Attachment: Simple **–** Camp Highlights from Application

Seven Days of Non-Stop Aviation

FLIGHTS:

- Experience the basics of flying in a flight training simulator device (FTD)
- Take the controls on an introductory flight lesson
- Learn about and fly a cross-country flight
- Discover the art of instrument navigation and approaches during an IFR (instrument flight rules) flight
- Apply all you have experienced during a night flight

ACTIVITIES:

- Discover how flight instruments work and how to interpret them
- Learn how to preflight an aircraft
- Interact with advanced technology on the ground and during flight
- Attend classroom ground schools before each flight lesson
- Receive an introduction to the altitude chamber
- Control pseudo-aircraft on the air traffic control simulators and a 360-degree tower simulator
- Find out how collegiate aviation can build a foundation for your future career in aerospace
- Develop new friendships
- Learn what it takes to succeed in college and an aerospace career
- Learn about a new segment of aviation — unmanned aircraft systems (UAS)
- Plus more!

Activity:	Class/Workshop
Target Group:	High, Post-Secondary
Title:	Ventura County Air Academy
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	
Venue:	Airport
Provider:	State
Specialized Equipment:	UAS
Cost/Person:	Free
Funding Source:	State
Participants:	
Established:	
Region:	WP
Website:	http://www.vcoe.org/cec

Description of Activity:

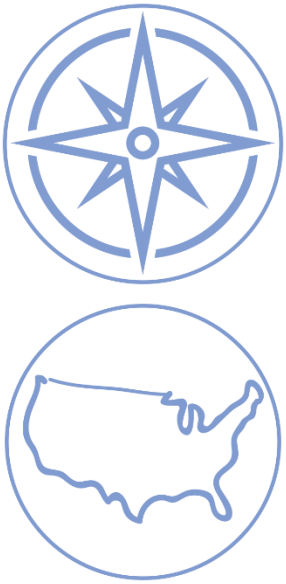
The Ventura County Office of Education's Career Education Center (CEC) is an alternative public education service that provides career preparation focused on high school juniors and seniors. CEC provides students with the technical skills required for particular jobs. Courses are open to all high school juniors, seniors, persons 16 years of age or older, and to adults. Priority is given to high school seniors then juniors, and then adults. Ventura County CEC is a state funded educational program; therefore, there is no tuition for high school students.

Over the last couple of years, a new curriculum program was added at the CEC called Air Academy that focuses on Unmanned Aerial Systems (UAS). The local flight school at the Camarillo Airport provides ground school education for the students and the CEC provides two courses: Introduction to Aviation and Honors Advanced Unmanned Aerial Systems. Each course is one year in length and taught at the CEC at the Camarillo Airport. The Ventura County Department of Airports was instrumental in the addition of the Air Academy program to the CEC by connecting the Office of Education with local flight schools and other stakeholders necessary to develop the program.

Contact Information:

Todd McNamee
Ventura County Division of Airports
555 Airport Way, Suite B
Camarillo CA, 93010
805-388-4211

Activity:	Class/Workshop
Target Group:	High
Title:	Ventura County Ninety-Nines Aviation Career Day
Duration:	1-3 days
Emphasis:	Operations
Staff:	V
Venue:	Airport
Provider:	Organization, State
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Self
Participants:	X - Large
Established:	2014
Region:	WP
Website:	https://www.facebook.com/vcaviationcareerday/



Description of Activity:

The Ventura County Ninety-Nines, along with the Ventura County Department of Airports and Office of Education host an annual Aviation Career Day at the Camarillo airport. 300-500 high school students are bussed to Camarillo Airport each October for this one-day event. Students are greeted by air traffic controllers, airport managers, operation staff, Unmanned Aerial Systems (UAS) manufacturers, Navy personnel, airline pilots and others to discuss a wide variety of aviation career paths.

The Ninety-Nines plan the event each year and Ventura County hosts and facilitates the event. Other costs of the program are covered by sponsors, including food and beverages and transportation. Several demonstrations are conducted at the event, including aircraft firefighting and World War II aircraft operations.

Contact Information:

Todd McNamee
Ventura County Division of Airports
555 Airport Way, Suite B
Camarillo CA, 93010
805-388-4211

Activity:	Class/Workshop
Target Group:	High School
Title:	West Fargo High School Aviation Courses
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	School
Specialized Equipment:	Computers
Cost/Person:	Free
Funding Source:	State
Participants:	Small
Established:	2014
Region:	GL
Website:	https://www.west-fargo.k12.nd.us/Page/1756 https://www.nd.gov/cte/programs/trades-industry/index.html

Description of Activity:

These are elective courses that West Fargo High School students can take.

Aviation Technology I - The class is to provide students with an exposure to the aviation industry. Topics covered in this class include: flight instruments, weather, navigation, unmanned aircraft and cross country planning. Students are also able to use X-Plane to practice some of the things they are learning in their classroom. Field trips are built into this course. First year students will tour the Fargo Air Museum, the Fargo Hector International Airport Terminal and Operations, the Fargo Air Traffic Control Tower and Fargo Jet Center the local FBO as well as touring the Aviation Department at the University of North Dakota. Through the Young Eagles Program the students will have an introductory flight.

Aviation Technology II – The class builds up skills learned Aviation Technology I. Students will learn more specifics on flight planning as well as take a look at all of the aviation related careers. These students also get the opportunity to tour Flight Operations at The University of North Dakota. Future plans include touring a smaller uncontrolled airport just south of Fargo as well as touring Grant Skies Unmanned Aircraft Park near the Grand Forks Air Force Base.

West Fargo Course Descriptions (https://www.west-fargo.k12.nd.us/Page/1756):

Aviation Technology I

To prepare students for employment in the aviation field. The course covers fundamentals of flight, flight operations, aviation weather, performance, and navigation. The course also explores careers in air traffic control, flight dispatching, and airport management. Units of instruction include; safety of flight, airport layout, aeronautical charts, radar, radio, procedures, airplane power plant, aerodynamics, weather patterns and hazards. Emphasis on applied academics in math and science are integrated throughout the curriculum along with decision-making principles as it applies to flight-related factors. Offered at Sheyenne High School.

Aviation Technology II

Students will be preparing to pass the Federal Aviation Administration (FAA) private pilot written exam. This course will cover advanced flight topics as well as expanding on topics covered in Aviation I to an advanced level. Successful completion of Aviation I is a prerequisite. Offered at Sheyenne High School.

Contact Information:

Dave Gravdahl: gravdahl@west-fargo.k12.nd.us

Activity:	Class/Workshop
Target Group:	High
Title:	West Michigan Aviation Academy
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom, Airport
Provider:	State
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	
Participants:	X-Large
Established:	2010
Region:	SO
Website:	http://www.westmichiganaviation.org/

Description of Activity:

The West Michigan Aviation Academy (WMAA) is a tuition-free public charter high school. The school was constructed on the grounds of the Gerald R. Ford International Airport under a long-term property lease and opened its doors in the fall of 2010. Each year about 250 students apply to the WMAA for the 155 available seats. Students are accepted at random using a lottery system. The four-year plan for each student is developed from the beginning, and includes the requirements established in the Michigan Merit.

Curriculum plus a four-year aviation curriculum exposing all students to the many aspects of the broader aviation field. The State of Michigan provides funding for the traditional high school curriculum, and fundraising events throughout the year fund the aviation portion of the curriculum. As a niche school, the WMAA does not offer traditional elective courses for students, rather the aviation courses serve as their electives. By junior year students are prepared to select the pathway of their choice: flight science, engineering, aviation business, aviation maintenance technology, or avionics (aviation electronics). The WMAA has a graduation rate of 85% with a significant number of students pursuing careers in the aviation industry. The WMAA partners with Western Michigan University, Northwestern Michigan College, and Embry Riddle Aeronautical University to transition students into undergraduate aviation programs. These schools offer college credit (or waive classes) for courses taken at WMAA which provides a financial benefit to WMAA graduates.

Contact Information:

Pat Cwayna, CEO
West Michigan Aviation Academy
5363 44th Street SE, Grand Rapids, MI 49512
Phone: 616.446.8886
http://www.westmichiganaviation.org/

Activity:	Class/Workshop
Target Group:	Middle, High
Title:	Western Mass Wright Flight
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Airport
Provider:	Organization
Specialized Equipment:	
Cost/Person:	
Funding Source:	Donations
Participants:	Small
Established:	1988
Region:	NE
Website:	http://wmawf.org/

Description of Activity:

Western Mass Wright Flight introduces students in grades 7 through 12 to the field of aviation, its history, the principles of flight, and the many career opportunities available in the aviation industry. The program emphasizes the relationship between a strong educational program in Science, Technology, Engineering and Math (STEM) and a successful career. The Aviation STEM Program is provided to students in Westfield, Southwick, Granville, and Tolland, MA and supports the STEM goals of the local middle and high schools. A volunteer organization based out of Barnes Airport in Westfield, MA, they are the educational unit of the Barnes Airport Support Group, a 501 (C) (3) organization.

By grooming an interest in aviation at an early age, and providing educational opportunities for students from middle school to college, the program contributes to the development of a larger educated work force for companies seeking highly qualified employees. This cycle of a large educated work force attracting more businesses, which hire more people, who improve the economic foundation of the region is good for everyone.

Contact Information:

David V Dinneen
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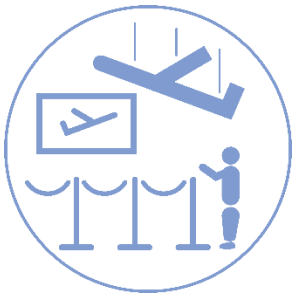
executivedirector@massairports.com

Activity:	Class/Workshop
Target Group:	Middle, High
Title:	Wings Air & Space Museum Wings Aerospace Academy
Duration:	>3 Days
Emphasis:	Science, Technology, Engineering, Math, Art
Staff:	FT, PT, V
Venue:	Classroom, On-Line, Hangar, Laboratory
Provider:	School, Museum
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	Free
Funding Source:	Self
Participants:	Medium
Established:	2014
Region:	NW
Website:	http://www.wingsmuseum.org



Description of Activity:

The Academy is a program that partners with an online charter school (Elevate Academy), and is accredited through a local school district. Students attend on-line classes 4 days per week and hands-on, experiential learning occurs one day a week, on-site at the museum. Students are currently in grades 6 through 10. Next year (2018) they will add grade 11 and then grade 12 the following year. Funding primarily comes from per student funding from the state. Every student has an assigned mentor at the museum to assist them at the museum and with their classroom work. For students who need a space to complete their online schooling, a computer lab is open to students Monday-Friday and is monitored by volunteers. There are 50 students currently enrolled for 2017. Student fees are $25/year. A local corporate donor gave $25,000 to help purchase an RV12 kit aircraft that the students will build. They will sell the plane once completed and repeat the aircraft build process.

Elevate Academy Provides:

- Proven Online Core Curriculum for 6th, 7th and 8th Grade via Florida Virtual Global Services (FVGS)
- A Licensed & Experienced Teaching Staff
- All required student services, including Sped and GT
- 4 Days/Week of Online Classes
- Rigorous Online Core Curriculum
- CO K-12
- Teacher-Driven Instruction Focused on Differentiation with Multiple Learning Modalities
- Licensed & Experienced Teaching Staff
- Special Education & Gifted and Talented Courses Available
- Family Support Services
- Middle School General Education Offerings:
- English
- Health & Physical Education
- Mathematics
- A persistent focus on STEM
- Science

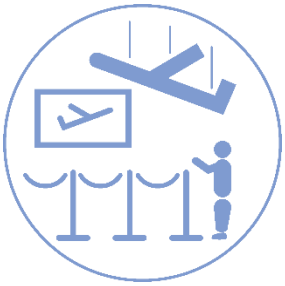
- Social Studies
- World Languages
- Electives:
- Business Keyboarding
- Career Research and Decision Making
- Creative Photography
- Critical Thinking, Problem Solving and Learning
- Careers in Fashion and Interior Design

Wings Over the Rockies Air & Space Museum Provides:

- Support & Intervention for Core Curriculum
- 1 Day/Week Experiential Learning
- A mentor for every student
- Two-Track Planning (Engineer or Technician)
- A persistent focus on STEM
- Field Trips and Activities related to a career in Aerospace
- Experiential Learning related to Aerospace using the resources of the WOTR Family
- Weekly Lab Time in:
- Mechanics and Fabrication
- Basic Electrical Skills
- Software/Programming
- Museum Cultural Events & Membership
- Student Flight Program
- College & Trade School Alignment/Advanced Placement
- A persistent focus on STEM
- Field Trips and Activities related to a career in Aerospace
- Partnerships with Colorado and National Aerospace firms

Contact Information:

April Lanotte, Director of Education
7711 East Academy Boulevard
Denver, CO 80230-6929
alanotte@wingsmuseum.org
303-360-5360
www.wingsmuseum.org



Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Wings Air & Space Museum Wings Aerospace Science Program (WASP)
Duration:	>3 Days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT
Venue:	Classroom
Provider:	Museum
Specialized Equipment:	
Cost/Person:	Free
Funding Source:	Grant
Participants:	X-Large
Established:	2010
Region:	NW
Website:	www.wingsmuseum.org

Description of Activity

The Wings Aerospace Science Program (WASP) was discontinued in 2016 due to its loss of the primary funding source from the Colorado Aeronautics Division. Prior to discontinuance, the program had developed a very strong curriculum and resource book used by teachers. The resource book is extensive and worthy of reviewing it even though the program has been suspended.

The WASP program engaged elementary and middle school students in STEM subjects. WASP was developed by teachers and contains the "best of the best" of the most effective lessons from a year-long aerospace curriculum which were statistically proven to increase student scores in math and science. The educators who collaborated in designing the kit added subject matter and activities to ensure the lessons met or exceed National academic content standards. WASP was free to the educators throughout Colorado for use in third through eighth grade classes and after school programs.

Upon completion of the WASP training taught by Wings' staff, teachers received the WASP trunk of resources that was valued at nearly $600. It was comprised of more than 500 items, including the curriculum manual, and the books and material needed for 30 students to learn through interactive activities. For example, the kit teaches the four forces of flight using balsa planes, foam rockets, and putting effervescent antacid tablets into film canisters to demonstrate "thrust."

A resource book was developed by Wings to support development of the WASP program and other education programs. This binder includes: education resources and national aerospace organizations; list of internships and scholarships; careers in education; and K-12 aerospace curriculum.

Contact Information:

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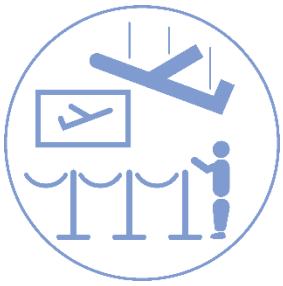
7711 East Academy Boulevard
Denver, CO 80230-6929
alanotte@wingsmuseum.org
303-360-5360
www.wingsmuseum.org

Activity:	Camp
Target Group:	Middle
Title:	Wings Air & Space Museum Summer Camp
Duration:	>3 Days
Emphasis:	Science, Technology, Engineering, Math
Staff:	FT, PT, V
Venue:	Classroom, Hangar, Auditorium
Provider:	Museum
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Tuition
Participants:	Medium
Established:	
Region:	NW
Website:	http://www.wingsmuseum.org



Description of Activity:

Air and Space Summer Camp Air & Space Summer Camp is for students between the ages of 8 -12. Camp activities will include aviation and space activities inside the museum's WWII-era Air Force hangar that is filled with over 50 types of aircraft and space vehicles. Activities range from designing water rockets, a Martian settlement, and gliders and include how to troubleshoot some of the challenges tackled by aerospace engineers. Cost is $295 per student for the week.

Weekly camps run from early June through mid-August, Monday through Friday. Camp Hours are: 9:00am – 4:00pm

Activities Include:

- Flying drones with our RC expert
- Water Rockets
- Airplane Golf
- Build a Martian Settlement
- Glider build and construction
- Egg Drop competition
- Cool Science Demonstration
- Four Forces Experiments

Contact Information:

April Lanotte, Director of Education
7711 East Academy Boulevard
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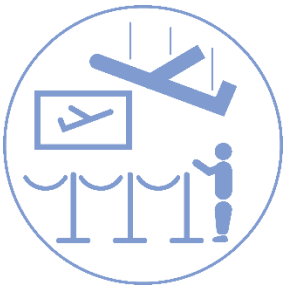
alanotte@wingsmuseum.org
303-360-5360
www.wingsmuseum.org



Activity:	Class/Workshop
Target Group:	Middle, High
Title:	Wings Air & Space Museum Teacher Flight Program
Duration:	>3 Days
Emphasis:	Science, Technology, Engineering, Math, Art
Staff:	FT, PT, V
Venue:	Classroom, Hangar, Airport
Provider:	Museum
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	Free
Funding Source:	Donations
Participants:	X-Large
Region:	NW
Established:	2013
Website:	http://www.wingsmuseum.org

Description of Activity:

The Teacher Flight Program is one of the most significant educational outreach initiatives the Museum has ever undertaken. It is directed at any professional educator who wants to bring aviation/aerospace education elements into the classroom. At the end of the program each teacher is given a flight in an open-cockpit Stearman. The ultimate goal of the Teacher Flight Program is to provide a personal flight experience to one teacher in every school along Colorado's front range by the year 2020. That group of more than 1,500 teachers — one volunteer from every public and private school — will then serve as a powerful source of connectivity between the Museum, STEM based course work, and a growing population of more than 700,000 students. The museum started the program in 2013 and a total of 440 teachers have completed the program through 2017. Along the front range of Colorado there are 66 school districts and 1,600 teachers. On average, there are 450 students in each school. Teachers who complete the program will benefit in the following ways:

- Serve as an official Wings Museum ambassador at their school.
- Make one-on-one and group presentations to students on the resources and attractions of the Museum.
- Distribute free-admission Museum passes to encourage student visits.
- Attend periodic Teacher Envoy meetings or events.
- Provide timely information on educational and career opportunities in aviation/aerospace.
- Utilize the packet of teaching materials to aide in presenting aviation related STEM topics

Contact Information:

April Lanotte, Director of Education
7711 East Academy Boulevard
Denver, CO 80230-6929
alanotte@wingsmuseum.org
303-360-5360
www.wingsmuseum.org

Activity:	Camp
Target Group:	Elementary, Middle, High
Title:	WinnAero ACE Academies
Duration:	>3 days
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Hangar, Airport
Provider:	Organization
Specialized Equipment:	Aircraft, Simulators
Cost/Person:	$$$
Funding Source:	Donations, Admission
Participants:	Large
Established:	2010s
Region:	NE
Website:	http://www.winnaero.org/ace-academies-c6sy

Description of Activity:

WinnAero hosts the ACE Academies, a one-week camp which exposes students to a wide range of aviation and aerospace activities. The goal of WinnAero, a non-profit all volunteer organization, is to introduce aerospace and aviation as a starting point to promote STEM concepts. The organization is active throughout the year planning for the camps. Time is also spent advertising the program through mailings, bulletin board postings, social media, and classroom presentations.

The camps, entering their sixth year, each run one week and are divided by grade level: elementary school (3-5), middle school (6-8), and high school (9-12). The camp for grades 3-5 is offered twice during the summer, and the camps for middle and high school students are each offered once. Camp capacity for all camps combined is about 80 students. However, the typical total number of campers is between 50 and 60 students. The goal for the camps each year is to hit at least 60 total participants. Camp instructors are usually technical education or science teachers, who are paid for their time.

Cost for the camp ranges from $200 (grades 3-5) to $400 (middle and high school). Local organizations and companies typically donate funds to provide scholarships. Some scholarships cover the full cost the camp, and others are able to cover half of the fee.

Several on- and off-site activities are part of the camp experience. WinnAero, based at the Laconia Municipal Airport (LCI), uses a hangar and classrooms for their on-site events, which also affords students a great view of airport activities such as aircraft landing and take offs. Materials developed by the Civil Air Patrol (CAP) are used to provide a basic aviation introduction to the participants. Additionally, students build model rockets, fly desktop computer flight simulators, and pilots volunteer to give students demonstration flights.

Off-site trips usually include a tour of the Manchester-Boston Regional Airport (MHT) tower and radar air traffic control facilities and a visit to the Portsmouth International Airport at Pease (PSM) for a visit with an Air National Guard Blackhawk helicopter squadron. Other activities include tours of factories where aerospace components are

manufactured and an opportunity to interact with guest speakers who range from military and commercial pilots to air traffic controllers.

Contact Information:

Scott Davis
President
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65 Aviation Way
Gilford, NH 03249
603-455-4725
sdavisnh@gmail.com
http://www.winnaero.org/

Attachments: Simple – WinnAero ACE Academies Brochure

Registration Information

Each academy is designed to accommodate 10 students. Registration is open until an academy is filled. Tuition for full day middle and high school academies is $400. Tuition for half day elementary academies is $200.

Pictures and testimonials from past participants are on the WinnAero web site under the **Education** pull down menu.

Applications and Tuition information is available at http://www.winnaero.org/

We begin assigning Financial Assistance on May 31, 2017 and continue accepting requests until all funds are assigned.

Return Applications to:

WinnAero ACE Academies
Laconia Airport
65 Aviation Way
Gilford, NH 03249

Our 2016 Supporters & Sponsors

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American Radio Relay League - AST Precision
BG Harrison Thyng Chapter # 249, AFA
Civil Air Patrol, NHQ & NH Wing
Columbia Realty, LLC
Concord Municipal Airport - CR Helicopters, Inc.
Dartmouth/Hitchcock Advanced Response Team
Diane K Kline Memorial Scholarship Fund
Emerson Aviation - Eptam Plastics
Federal Aviation Administration, AVSED & ATC
Gilford Fire Department - Gilford Public Library
Granite State Airport Managers Association
Granite State Flight #53, Order of Daedalians
Hoyle, Tanner and Associates, Inc. - Jacobs Engineering
Katahdin Wings, The 99's - Laconia Airport Authority
Maltempo Family Trust
Manchester/Boston Regional Airport
McAuliffe-Shepard Discovery Center
Naples Seaplane Services, LLC - NASA
Nashua Community College
National Air Traffic Control Association
National Association of Rocketry
National Aviation Academy
National Business Aviation Association
NH Aviation Historical Socieety
NH Department of Safety
NH Department of Transportation
NH National Guard - PlaneSense
Plymouth State University
Safran Aerospace Composites
Samuel P Pardoe Foundation - Scotia Technology
Sky Bright Aviation - Technology Education Concepts
Titeflex Aerospace - Tony Sakowich Foundation
University of New Hampshire - US Coast Guard
WinnAero

WinnAero

ACE Academies

Aerospace Career Education
for grades 3 through 12
July 10-14, 2017
July 17-21, 2017

See inside panels for further information

Financial Assistance available

Class of 2016, Week 1
Laconia Airport, NH

Welcome

Welcome to WinnAero's ACE Academies, co-sponsored by WinnAero. The purpose of the Academies are to make students aware of the variety of careers avialable in the aerospace industry. These activities can only be made possible with strong support and encouragement from the aerospace community throughout New Hampshire. Please let our supporters and sponsors know that their support of youth in aerospace is greatly appreciated.

The Big Idea

When students hear the words "Aviation and Aerospace" they think of pilots and astronauts. The career fields of Aviation and Aerospace include hundreds of careers beginning on the surface of the Earth, extending into the atmosphere and reaching through the solar system to the edge of the universe.

Goals

- To use aerospace activities as the vehicle to demonstrate the interelationships of STEM subjects: science, technology, engineering and math,
- To develop an awareness of the variety of careers in the aerospace field,
- To encourage students to explore a variety of aerospace careers,
- To provide hands-on experiences for students as they use technology related to aerospace careers.

ACE Academies for 2017

All academies offer a mix of hands-on work, speakers, field trips, flight simulation and orientation flights. Groups this year will be divided by career strands. Activities are subject to change due to availability and/or weather.

Two Elementary Aerospace Academies

Grades 3-5; July 10-14; 8:30-12 noon
Grades 3-5; July 17-21; 8:30-12 noon
Students meet for five mornings. Activities at this level are geared to interest students in aviation & space science and technologies.

Three Middle School Aviation Academy Strands

Grades 6-8; July 17-21; 8:30-4
Students meet for five days. Activities highlight aviation and related careers.
The following career strands will be offered:
Pilot and air traffic control
Pilot and search/rescue & emergency services
Pilot and aerospace engineering/manufacturing

Two High School Aviation Academy Strands

Grades 9-12; July 10-14; 8:30-4
Students meet for five days. Activities highlight aviation and related careers.
The following career strands will be offered:
Pilot, aerospace engineering/manufacturing & UAS
Pilot, air frame and power plant & UAS

Middle School Space Academy

Grades 6-8; July 10-14; 8:30-4
All activities highlight aerospace and related careers. Topics include model rocketry, astronomy and the space environment, spacecraft & space station design.

WinnAero ACE Faculty

All faculty members are NH certified educators serving the roles of Director and Instructors. Licensed pilots, Civil Air Patrol educators and other aerospace professionals round out the instructional staff.

Dan Caron, Director; Technology/Engineering teacher Gilford HS; 2004 AFA Teacher of the Year, 2014 CAP Teacher of the Year

Paul Gelinas, Instructor; Technology Education teacher at Woodbury MS, in Salem; 2014 NHAFA Teacher of the Year

Christine Landry, Instructor; Technology Education teacher at Woodbury MS in Salem; 2014 NHTEA Teacher of the Year

Karen Mitchell, Instructor; Science/Math teacher at Laconia Christian Academy

Robert Rotier, Instructor; Engineering/Physics teacher (retired); 2012 NHAFA Teacher of the Year

Julie Sicks-Panus, Instructor; STEM teacher at Plymouth Elementary School; 2001 NHTEA Teacher of the Year

Gena Adams, Lead Flight Instructor; Flying for 16 years with 4700+ hours flight time; Airline Transport pilot certificate (ATP) with 3 flight instructor certificates; First officer for NetJets.

Activity: Class/Workshop
Target Group: Post-Secondary
Title: WinnAero Teacher Workshops
Duration: 1-3 days
Emphasis: Science, Technology, Engineering, Math
Staff:
Venue: Classroom
Provider: Organization
Specialized Equipment:
Cost/Person: $
Funding Source: Grant, Donations
Participants:
Established: 2010s
Region: NE
Website: http://www.winnaero.org/teachers-workshops

Description of Activity:

The teacher workshops sponsored by WinnAero are part of their professional development programming. The workshops, ordinarily held on Saturdays for very low costs, are aimed at middle and high school teachers. At times grant funding is used to keep the costs low for participating teachers. The workshops allow teachers to gain an understanding of aviation principles and aeronautical knowledge such as aircraft propulsion and weather. The workshop also demonstrates how aviation can be used to promote STEM education. WinnAero works closely with the Civil Air Patrol (CAP) so that after completion of the workshop the participating teachers are provided access to the CAP's large collection of aviation educational materials.

Contact Information:

Scott Davis
President
WinnAero
65 Aviation Way
Gilford, NH 03249
603-455-4725
sdavisnh@gmail.com
http://www.winnaero.org/

Activity:	Class/Workshop
Target Group:	Elementary, Middle, High
Title:	Women in Aviation International
Duration:	3-8 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$$
Funding Source:	Self, Membership
Participants:	Small
Established:	1990
Region:	
Website:	https://www.wai.org/

Description of Activity:

Women in Aviation International is a national organization where you can choose to become a member ($45 for a year's membership) of the national organization as well as local organizations. This organization does a lot to promote women pursuing career fields in aviation. Here is just a sample of the benefits of being a Women in Aviation member:

- Scholarships. These include everything from maintenance tools to type ratings. In 2017, they awarded 120 scholarships totally $643,274!
- Mentorship with those seeking advice on the aviation industry.
- Educational outreach programs.
- Educational activities including:
    - Conferences. The yearly International Women in Aviation Conference attracts women and men from all over the world in all stages of their career. In 2017 the conference had 4,500 people attend from 19 different countries. Attendees can walk through the exhibit hall and talk with different companies from all aspects of the aviation industry. In 2017, 165 different companies participated in the exhibit hall.
    - Aviation for Women Magazine. This magazine has a lot of inspirational success stories from women within the aviation industry as well as professional development advice as well as chapter updates from across the world.

Contact Information:

https://www.wai.org/.

Attachment: Simple – Conference Information Sheet

Education ▸ Workshops ▸ Training ▸ Seminars

Aerospace Educators Workshop

Presented by FAA AVSED Team

Thursday, March 22 • 9 a.m.-noon

With a predicted shortage of skilled employees for the growing number of aerospace jobs it is important that we develop programs that inspire students to pursue aviation careers. Join us in this interactive workshop where we will share with attendees simple, hands-on activities that can be brought into the classroom to teach aviation STEM skills. You will also hear from VIP guest speakers in the aerospace community.

Tapping Into the Drone Market

Friday, March 23 • 7-8:30 p.m. *(open to the public)*

Are you a certified remote drone pilot looking to network with other female drone pilots? Or are you considering entering the fast-growing industry of unmanned aviation? This session, led by industry experts, is designed to answer those questions and many more from safe and responsible operations, rating requirements, best business practices and how to recruit and retrain top talent in this exploding segment of the industry.

Ask the Experts

Bring your questions! The WAI Membership Booth in the exhibit hall will host, at various times each day, experts in the following areas:

Résumé Drafting
Financial Advisors
Legal Advisors

Professional Development Seminars

Foundations of Accomplishment

Presented by Amy Noland, Tracy Cotton, and Julie Spencer of The Boeing Company

Thursday, March 22 • 8:30-10:30 a.m. • Cost: $30

This workshop focuses on discovering the true foundations of accomplishment and concentrates on predictive elements of an individual's success. It shows why connections are so important and provides creative ways and tools on how to build solid relationships. You will learn how to strategically cultivate meaningful connections to accomplish more. The workshop utilizes fun, hands-on activities, group discussions, informative videos, quizzes, and storytelling.

Leading With a Coach Approach

Presented by Kris Palcho, Vanessa Blacknall-Jamison, Angelique Talbot, and Heather Thorson

Thursday, March 22 • 11 a.m.-1 p.m. • Cost: $30

Whether you're a CFI, floor supervisor or company CEO, your journey in leadership can reach new heights by leading with a coach approach. Successful managers and leaders today are developing their coach skills in order to support and enhance employee performance and development, increase decision making skills, and build leadership bench strength within the organization. Leading with a coach approach promotes employee creativity, breakthrough performance and resilience, which gives organizations a real competitive edge. In these times of continuous change, coaching has never been more necessary. This hands-on workshop will provide an introduction to leading with a coach approach. We'll explore the neuroscience behind basic coaching concepts, share fundamental tools used in leading with a coach approach, and practice key skills to build your coaching competency and foster a more positive attitude in the workplace.

Résumé Writing and Interview Prep, from an Aviation Recruiter

Presented by Jennifer Potts

Thursday, March 22 • 2:30-4:30 p.m. • Cost: $30

Acing an interview for your dream job at your ideal company is a lot of pressure. What do you wear, what do you say, how do you act? But first, you must land the interview with a compelling résumé. Let an aviation recruiter, with industry knowledge, help you succeed! During this presentation, attendees will be provided examples of professional résumés, including formatting, verbiage, and do's and don'ts. We'll have a transparent, interactive discussion on how to dress, act, and present oneself during an interview. Even if you aren't actively searching, come join us!

Follow Your Interests!

PROPOSED EDUCATION SESSION TOPICS *(See website for a detailed list.)*

CAREERS
- Corporate Aviation
- General Aviation
- Airline Pilot
- Non-flight
- Maintenance
- Military Pilots
- FBO Operations

HISTORY
- WASP
- Early Pioneers

DRONES & UAV/UAS
- Safe Operations
- Recruiting and Retaining Talent
- Certification and Training
- Developing Careers

LEADERSHIP
- Human Factors in Aviation
- Young Professionals
- Job Performance Enhancement
- Leading and Managing

GENERAL AVIATION
- Aviation Weather
- ADS-B
- Advanced ATC
- Airman Certification Standards
- Legal Issues
- Flight Training
- Float Planes
- Flying Pregnant
- Air Race Classic
- Space
- Finance

MAINTENANCE
- Aircraft Health
- Troubleshooting Tips for Aviation Techs
- Career Opportunities

MILITARY
- Transition from Military to Commercial
- Surviving the Air Force Application Process

PERSONAL DEVELOPMENT
- Balancing Family and Career
- Airline Interview Tips
- Achieving your Goals
- From Planes to Publications
- Personal Safety
- Communications Skills
- Stress Management

Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Women in Aviation International - Aviation Fun Patch
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$$
Funding Source:	Self, Membership
Participants:	Small
Established:	
Region:	All
Website:	https://www.wai.org/ https://www.wai.org/education/resources/wai-aviation-fun-patch https://www.wai.org/education/resources/hands-aviation-education-materials

Description of Activity:

Women in Aviation International has created various hands on activities for girls age 4-12 where they can learn about aviation and then earn the Aviation Fun Patch. The activities can be found at https://www.wai.org/education/resources/hands-aviation-education-materials.

Each activity contains an objective, problem as well as background information needed for the activity, lists the materials needed, states how much time is needed, gives instructions as well as discussion questions. There are also extension activities and culminating activities so the activities can be adapted for various age groups. Here is a sample of some of the topics: Four Forces of Flight, Aviation Terminology, Fluid Mechanics.

> *Women in Aviation International has a lot of resources available. Some of the information is available to the public and other information requires you to be a member or apart of another organization. The information related to the Aviation Fun Patch is available to WAI Chapters, Girl Scouts, World Association of Girl Guides, American Heritage Girls and other clubs and school organizations.

There is a cost associated with ordering the patches themselves. Each patch costs $1.00 plus shipping.

Contact Information:

Cassandra Bosco, WAI Education and Industry Relations Director: cbosco@wai.org, 202-415-2798.

Attachment: Simple – Aviation Fun Patch information sheet

GIRLS LOVE AIRPLANES

WAI AVIATION FUN PATCH

Requirements to Earn the Aviation Fun Patch

Select at least 6 activities and lessons from the WAI Hands-On Aviation Education Materials.

FREE ACTIVITIES PROVIDED:

www.WAI.org/education/resources/hands-aviation-education-materials

TOPICS INCLUDE:

- Four Forces: Thrust
- Four Forces: Gravity
- Four Forces: Drag
- Four Forces: Lift
- Smart Parts
- Connections
- Aviation Terms
- Teamwork
- Fluid Mechanics
- Density/Polarity
- Helicopters

The Women in Aviation International Aviation Fun Patch is available for girls grades 4-12. The Patch is available to WAI Chapters, Girl Scouts, World Association of Girl Guides, American Heritage Girls, and other club and school organizations. The Patch program may be adapted to include challenges of varying degrees of difficulty for different levels.

The WAI Aviation Fun Patch is available through:

- WAI Chapters for Girls in Aviation Day or other chapter-sponsored events
- Girl Scouts, World Association of Girl Guides, American Heritage Girls, and other clubs and school organizations

Find a WAI Chapter near you:
www.WAI.org/chapters

Women in Aviation® INTERNATIONAL

WAI AVIATION FUN PATCH

ORDER FORM

Congratulations!

You and your girls have completed the required activities for an Aviation Fun Patch from WAI! We hope the girls find aviation fun and exciting by earning this Fun Patch—whether you use the WAI list of Activities at your troop meetings, attend a WAI Chapter event or Girls in Aviation Day. Girls can soar to new heights with a career in aviation and aerospace!

ORDER FORM

Please allow 2 weeks for processing and delivery.

Patches: $1.00 each

Shipping charges: Up to 100–$4.99; Over 100–$9.99

(U.S. only. Contact HQ for estimated shipping charges outside the U.S.)

TOTAL . . . . . .

Payment must be in U.S. dollars. Make check payable to Women in Aviation International.

Form of Payment

❑ MASTERCARD ❑ AMEX ❑ VISA ❑ CHECK #

CREDIT CARD

EXPIRATION DATE CID BILLING ZIP CODE SIGNATURE

MAILING ADDRESS

NAME PHONE

STREET EMAIL

CITY, STATE, ZIP

Morningstar Airport
3647 State Route 503 South
West Alexandria, OH 45381

937-839-4647 • www.WAI.org

Submit questions and forms to:
Sue Coon
scoon@wai.org
FAX 937-839-4645
or by mail to address at left

Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Women in Aviation International: Girls in Aviation Day
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom, Airport, Hanger
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$$
Funding Source:	Self, Membership
Participants:	Medium
Established:	2015
Region:	
Website:	https://www.wai.org/

Description of Activity:

Women in Aviation International (WAI) has created a Girls in Aviation Day (GIAD). It is an annual event where WAI Chapters across the world hold events celebrating women in aviation. WAI, the main organization provides a "GIAD Kit" that walks a local WAI chapter through the event. The local WAI chapter then supplies the man power for the events. Some of the information found in this "kit" includes:

- Sample agendas
- Media Information including sample news releases, posters, GIAD logos
- Ideas for attracting participants
- Tips for raising funds
- A form to request a Certificate of Insurance
- Information about the Girl Scout Aviation Girl fun patch
- Possible activities

WAI does promote the GIAD, however if a chapter wanted to conduct it a different day they could do so. In 2016, 111 WAI chapters across the world participated in Girls In Aviation Day. Some chapters partner with the aviation industry within their local community to put on the event. Here is a video from the Stars of the North Women in Aviation Chapter's Girls in Aviation Day 2016, https://www.facebook.com/starsofthenorth/. A Women In Aviation Chapter would put on the event and it is their choice if they want to charge attendees for the event. Membership to WAI is $45 annually.

Contact Information:

Molly Martin: mmartin@wai.org, 850-508-8769.

Attachment: Simple – sample of the 2017 WAI Girls in Aviation Day Information Kit

SAMPLE AGENDA FOR LOCAL *GIRLS IN AVIATION DAY* CHAPTER EVENT

Saturday, September 23, 2017

Your day may be totally different than this one. This agenda is supplied as a starting point to organize your own day…go ahead…make it your OWN!

8:00 a.m.: Set up; all chapter members are on site, in position

8:30 a.m.: Greeting, sign-in/registration, distribute nametags, introductions. Chapter members teach participants the phonetic alphabet, or lead another activity, while waiting for all participants to arrive.

9:00 a.m.: Official welcome by chapter president; Acknowledge sponsors and other groups that made the day possible. Describe the day's activities.

9:10 a.m.: Introduce role models – 4 or 5 minute talks by pilots, aviation mechanic, air traffic controller, business women, engineers, program managers, computer scientists, etc. to talk about career opportunities and training involved.

9:45 a.m.: Parts of an airplane: local pilot gives a walk-around of a GA airplane, showing the various parts and workings of the airplane. Girls are encouraged to take selfies with the airplane, or take individual or group photos with the airplane.

10:15 a.m.: Girls take part in various activity workstations such as Build an Airport, create aviation jewelry, flying a simulator, planning a flight, etc. They can move from activity to activity as they choose.

11:45 a.m.: Scavenger hunt.

12:30 p.m.: Sponsored lunch where chapter members, speakers & role models mingle with participants.

1:15 p.m.: Farewell and follow up: Girls are briefed on other aviation organizations and opportunities in their area. They are given a goody bag of resources to take home.

1:30 p.m.: End of program.

Girls IN AVIATION DAY
A Women in Aviation International® Event

How to Attract Participants for your Local Girls in Aviation Day

Reach out early: Communications can often take time to work their way through school systems and other large groups – and coordination of groups of students takes time too. Be sure to start your outreach efforts early!

Plan the day's events: Before you reach out into the community, you should know what you are offering. Plan activities that cover a wide range of interests from age 8 to age 16.

Determine the number of girls and chaperones you can accommodate given your event. This number could range from a dozen girls to several hundred girls and chaperones for larger venues and teams. Knowing the number will let you know how actively to recruit participants.

Talk to the aviation community: Reach out to AOPA members, your local EAA chapter, Ninety-Nines chapters, hangar tenants through your FBO and flight schools. Reach out to your local Aviation Exploring group too. Ask your local airport(s) if you can display Girls in Aviation Day posters.

Seek out the participation of your local Girl Scout council: Take advantage of the new Girl Scout *WAI Aviation Girl* Patch and invite your local Girl Scouts to your event. Reach out to local troops and the council a few months in advance so that Girls in Aviation Day can become part of their annual calendars. Make sure to stress the educational and participatory nature of the day!

Girls Inc: Girls Inc. inspires all girls to be strong, smart, and bold through direct service and advocacy. Reach out to your local girlsinc group at www.girlsinc.org.

Meet with your local schools. Have a meeting with guidance counselors about the career guidance available. There might even be an aviation based magnet school or two, or even a STEM focal point for your whole school system that can help get the word out in your school system. If you have contacts with individual teachers, definitely use those contacts to spread the word about Girls in Aviation Day!

Social Media: Don't forget to use your chapter's social media channels to assist in promoting the event. Free and easy! Many chapters have had success with taking out inexpensive Facebook ads, targeted by location and interest-area.

Parents, troop leaders and teachers are rightfully protective of children so make sure they know they are welcome at the event and that you conduct yourself in a professional manner that shows the day's events are worthwhile and well-planned.

Also, please remember that you represent not just your chapter, but Women in Aviation International.

Activity:	Class/Workshop
Target Group:	Elementary, Middle
Title:	Women in Aviation International - Hands-On Aviation Education Materials
Duration:	<3 hours
Emphasis:	Science, Technology, Engineering, Math
Staff:	V
Venue:	Classroom
Provider:	Organization
Specialized Equipment:	
Cost/Person:	$$
Funding Source:	Self, Membership
Participants:	Small
Established:	
Region:	
Website:	https://www.wai.org/education/resources/hands-aviation-education-materials

Description of Activity:

Women in Aviation International (WAI) has created various hands on activities specifically for girls, however, the activities could be used in any classroom setting for ages 4-12. The activities can be found at https://www.wai.org/education/resources/hands-aviation-education-materials. The topics for the activities include:

- The Four Forces of Flight: Thrust
- The Four Forces of Flight: Drag
- The Four Forces of Flight: Gravity
- The Four Forces of Flight: Lift
- Small Parts
- Connections
- Fluid Mechanics
- Density/Polarity
- Helicopters (WAI and Bell Helicopter created these activities)

Each activity contains an objective, problem as well as background information needed for the activity, lists the materials needed, states how much time is needed, gives instructions as well as discussion questions. They also include extension activities and culminating activities, so the activities can be adapted for various age groups.

*Women in Aviation International has a lot of resources available. Some of the information is available to the public and other information requires you to be a member or apart of another organization. The information related to the Aviation Fun Patch is available to WAI Chapters, Girl Scouts, World Association of Girl Guides, American Heritage Girls and other clubs and school organizations.

Contact Information:

Cassandra Bosco WAI Education and Industry Relations Director: cbosco@wai.org, 202-415-2798

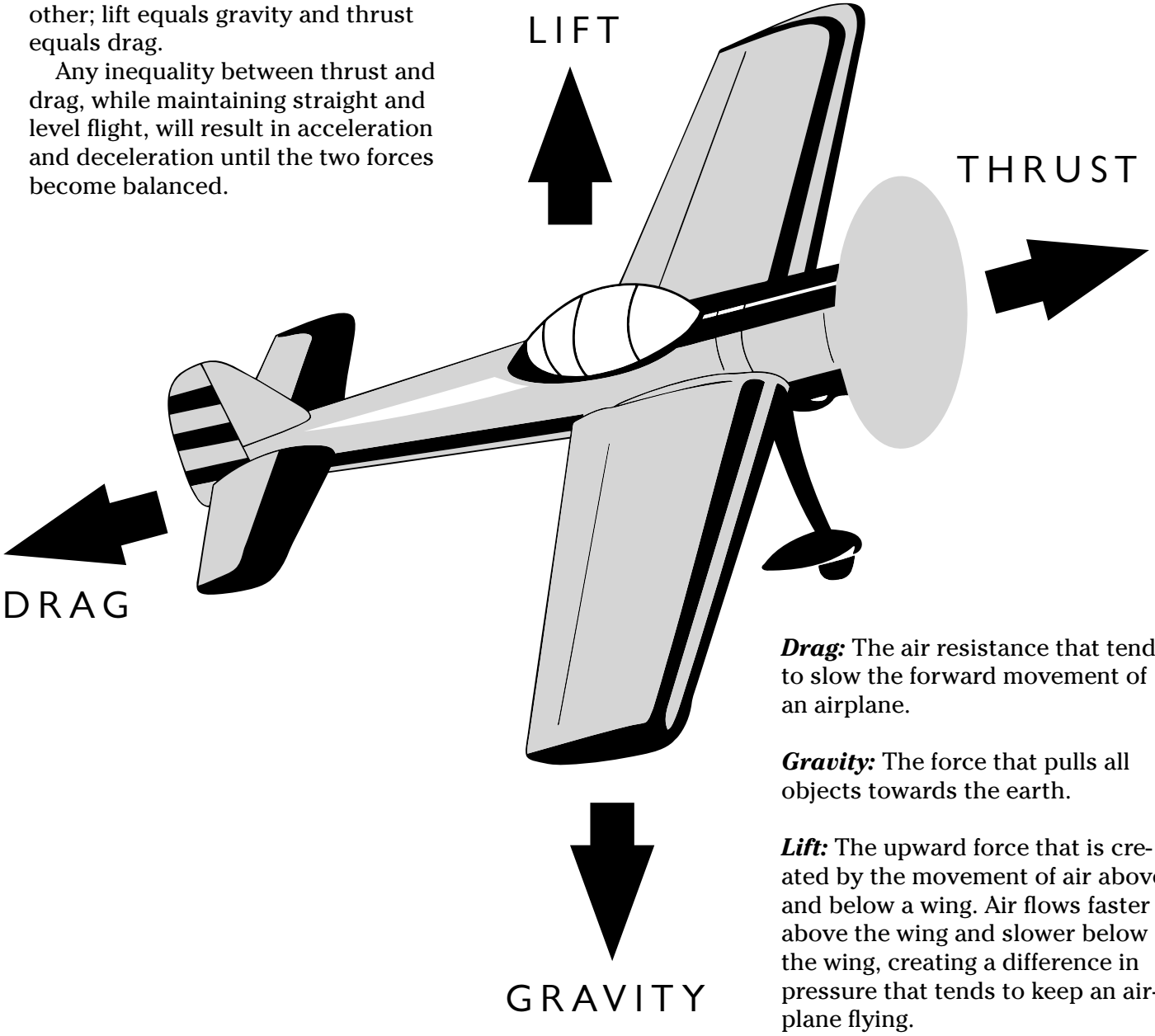
Attachment: Complex – The Four Forces of Flight – Thrust Activity. The other activities can be found at https://www.wai.org/education/resources/hands-aviation-education-materials.

THE FOUR FORCES OF FLIGHT–THRUST

An aircraft in straight and level flight is acted upon by four forces: ***lift, gravity, thrust,*** and ***drag.***

The opposing forces balance each other; lift equals gravity and thrust equals drag.

Any inequality between thrust and drag, while maintaining straight and level flight, will result in acceleration and deceleration until the two forces become balanced.



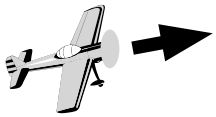
Drag: The air resistance that tends to slow the forward movement of an airplane.

Gravity: The force that pulls all objects towards the earth.

Lift: The upward force that is created by the movement of air above and below a wing. Air flows faster above the wing and slower below the wing, creating a difference in pressure that tends to keep an airplane flying.

Thrust: The force that moves a plane forward through the air. Thrust is created by a propeller or a jet engine.

THRUST



Foamie Flyer

OBJECTIVE:
Investigating the principle of thrust.

PROBLEM:
Does the amount of thrust affect the Foamie Flyer's flight?

MATERIALS:
Foam paper plates (full size), scissors, masking tape, large paper clips, rubber bands, non-bendable straws, rulers and copies of Blackline 1 for each student.

BACKGROUND:
Thrust is the force that moves a plane through the air. Because airplanes fly in a three-dimensional environment, the following terms refer to the various directions an airplane can move:

Pitch—to move the nose of the airplane up or down

Roll—to tilt one wing up and the other wing down

Yaw—to point the nose of the airplane left or right while remaining level with the ground

Bank—to tilt the airplane inward while making a turn

Airplanes, including even the Foamie Flyer, use a variety of "control surfaces" to change the speed and direction in which they fly. These control surfaces include:

Ailerons—movable sections, hinged on the rear edge of the wing near the wingtip, that cause the airplane to roll

Flaps—movable sections, hinged on the rear of the wing, that can be lowered to increase lift and drag during takeoff or landing

Stabilizer—the vertical stabilizer is the upright portion of the airplane tail, while the horizontal stabilizer is the small wing usually located on the back of the airplane.

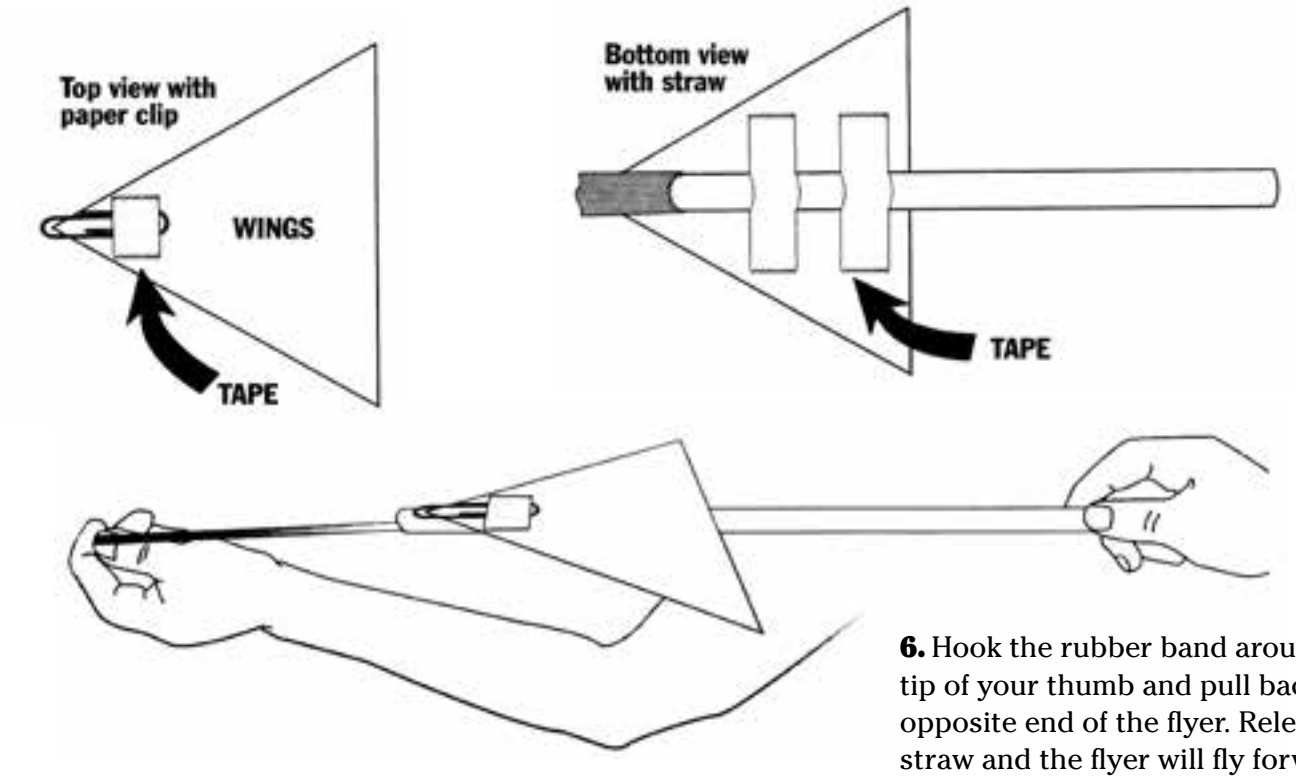
MANAGEMENT:
1. 45-60 minutes
2. Students will build their own flyer.
3. When launching the flyers, form groups of 3 or 4 so that all students are not launching at the same time.
4. This is an outdoor activity.
5. Foamie Flyers must be launched away from other children.
6. Save the unused parts of the plate for the extension activities

WORD BANK:
thrust, lift, gravity, drag, wings, nose, fuselage, ailerons, flaps, pitch, roll, yaw, bank

Foamie Flyer

PROCEDURE:

1. Give each child the materials.
2. Instruct students to fold back the top three centimeters of the straw and insert the rubber band into the fold.
3. Fold the straw over the rubber band and secure the end with masking tape. This creates the launcher for the flyer.
4. Instruct students to cut a triangle out of the foam plate from the flat inverted side of the plate. A good size to start with is 13 cm x 13 cm x 13 cm (equilateral triangle).
5. Tape the paper clip to the top of the foam wings. Then, tape the wings to the top of the launcher so that it extends slightly over the lip.



6. Hook the rubber band around the tip of your thumb and pull back on the opposite end of the flyer. Release the straw and the flyer will fly forward.

7. There should be a designated launch starting line. Call groups forward, one at a time, to launch their flyers. Each child should launch the flyer using two different amounts of thrust. They should first pull the nose of the flyer halfway to their elbow and let it fly. Next, they should pull the nose of the flyer all the way to their elbow and let it fly. The group should observe the changes in the flyer's flight and distance. These observations can be recorded on the Student Data Sheet, Blackline 1.

Foamie Flyer

DISCUSSION:

1. Does the amount of thrust affect the Foamie Flyer's flight?

2. What other factors affect how your flyer flew?

3. Why was your flyer successful or unsuccessful?

4. How does the thrust of the Foamie Flyer compare to the thrust of a real airplane?

EXTENSIONS:

1. Students can cut the wings flaps and ailerons into the back of the foam wings and can observe the changes in flight.

2. Students can alter the weight of the flyer and to observe the changes in flight by adding weight behind the wings with tape or paper clips.

3. Students can use the leftover foam plate parts to add stabilizers and rudders to their flyers and observe changes in flight.

4. Try different size foam wings to observe changes in flight.

Foamie Flyer

Women in Aviation INTERNATIONAL

STUDENT DATA SHEET

Foamie Flyer Captain: _____

1. Did the amount of thrust affect the Foamie Flyer's flight?

_____

2. What did you observe when using different amounts of thrust to launch your Foamie Flyer?

_____

_____

3. How differently did the Foamie Flyer fly after modifications were made to the ailerons, flaps, stabilizers or rudder?

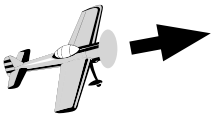
_____

_____

_____

Draw and label a diagram showing how thrust affected the flight of your flyer.

THRUST



Jammin' Jets

OBJECTIVE:

To use thrust as the main force while manipulating the design of an aircraft to increase the distance.

PROBLEM:

When using thrust to fly a Jammin' Jet, how do changes to the design affect the distance it can travel?

MATERIALS:

2 straws with different diameters, masking tape, scissors, index cards, rulers, tape measures, and a copy of Blackline 1 for each student.

BACKGROUND INFORMATION:

Airplane designers try to increase airplane thrust by making more powerful jet engines and propellers.

MANAGEMENT:

1. 45-60 minutes

2. Construct the Jammin' Jets individually, then work in groups of four to complete the activity.

3. A large open space is required for this activity.

4. Students should be instructed to blow only into their own straw and to launch the jets away from each other.

5. Set up a runway using tape measures for the students to launch their jets.

WORD BANK:

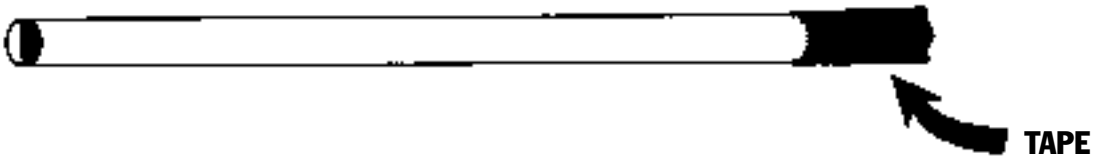
thrust, fuselage, wings, nose, stabilize

Jammin' Jets

PROCEDURE:

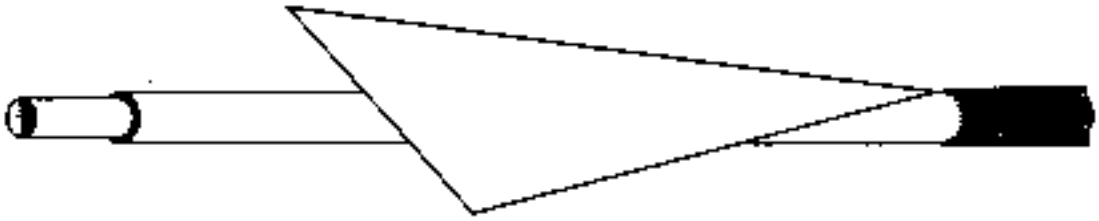
1. Hand out materials to each student.

2. Wrap a piece of tape around the front end of the straw with the larger diameter so that the opening is taped shut.



3. Allow the children to experiment by placing wings on different parts of the straw.

4. Insert the smaller straw into the larger straw, leaving an inch at the end of the smaller straw.



5. Demonstrate thrust by blowing into the smaller straw. This projects the jet forward.

6. If the front of the jet rises, wrap some tape near the front of it until it flies level. If the front of the jet falls, wrap some tape around the straw just behind the wings.

7. Students can practice flying the different jets within their group.

8. Choose the best jet and fly three trails recording the distance on the Student Data Sheet.

Jammin' Jets

DISCUSSION:

1. What force was used to propel your Jammin' Jet?

2. Did your jet fly in a straight line?

3. What changes did you make to help your jet fly straighter?

4. What design feature increased the distance?

EXTENSIONS:

1. Students use their best design in a Jammin' Jets rally.
The jets can compete against each other to see which one will fly the longest distance.

2. Different levels of thrust can be applied to see how this affects the stability of the plane.

CULMINATING ACTIVITY:

Set up a target (hula-hoop with paper plate inside) and see which jet
can land closest to the center of the target by adjusting the amount of applied thrust.
Award five points for jets that land in the hula-hoop and
ten points for landing on the paper plate.

Jammin' Jets

STUDENT DATA SHEET

Jammin' Jets Captain: _____

DISTANCE TRAVELED

TRIAL 1	TRIAL 2	TRIAL 3	AVERAGE

Diagram and label your best design.

What changes to the jet's design were not successful?

_____

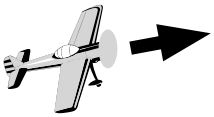
_____

Why do you think these changes were successful?

_____

_____

THRUST



Balloon Jet

OBJECTIVE:

Investigate the principle of thrust.

PROBLEM:

What force causes the Balloon Jet to move forward?

MATERIALS:

balloon (sausage-shaped works best), straws, spool of fishing line, scotch tape, a copy of Blackline 1 for each group, a copy of Blackline 1 for each student

BACKGROUND INFORMATION:

Thrust is the force created by a power source that moves the plane forward – either from a propeller or a jet engine. When the thrust is greater than the drag, a plane moves forward. This activity demonstrates Newton's Third Law of Motion: For every action, there is an equal and opposite reaction. Backward thrust of the air from the balloon produces the forward motion of the balloon.

MANAGEMENT:

1. 45-60 minutes

2. This activity works best with small cooperative groups of 3-4 students.

3. Pieces of fishing line should be cut to the length of the room available.

4. Create one Balloon Jet per group.

5. The class graph can be used for the main activity as well as the extensions.

6. Each group should always have a designated "balloon blower" so that the same student always inflates the balloon.

WORD BANK:

thrust, average (mean), launch

Balloon Jet

PROCEDURE:

1. Thread the fishing line through a straw and attach the ends of the fishing line securely to a wall or other object. The line should be taut.

2. Instruct the students to blow up their balloons to the desired size, measure its length and record it on the Group Data Sheet. Pinch off the end of the balloon so that no air is released.

3. Tape the balloon end to the straw.

4. The students will release the balloon from the designated starting point.

5. Observe and measure the distance the balloon travels and record it on the Group Data Sheet, Blackline 1.

6. Repeat the procedure two more times with balloons that are inflated to the same size. (Balloons may be a different size for each group.)

7. After the groups have completed the activity and data sheet, compare the results.

8. Each student will then complete his or her own Class Graph, Blackline 2.

Balloon Jet

DISCUSSION:

1. What makes the balloon jet travel forward?

2. Does the length of the Balloon Jet make a difference as to how far it travels? Why?

3. What else could affect the distance a Balloon Jet will travel?

EXTENSIONS:

1. Students could repeat the activity using different size or shape balloons.

2. The tautness of the line can be altered.

3. The angle of the line can be changed to show the effect of forward thrust.

4. The students can insert different size straws into the opening of the balloon to observe and measure changes in the distance the Balloon Jet travels.

5. Students can find the speed of their Balloon Jet by dividing the distance traveled by the time it took.

CULMINATING ACTIVITY:

Using variables from the main activity and the extensions, students can work to design a Balloon Jet that will travel the longest distance.

Balloon Jet

Women in Aviation INTERNATIONAL

GROUP DATA SHEET

Pilots: _____

Prediction: We think our balloon jet will travel _____ cm.

The name of our balloon jet is _____.

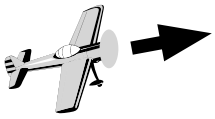
Diagram and label your balloon jet.

	DISTANCE TRAVELED			
BALLOON LENGTH	TRIAL 1	TRIAL 2	TRIAL 3	AVERAGE DISTANCE

Conclusion: What forces caused the balloon to move forward on the line?

_____

_____

THRUST 

Balloon Jet

Women in Aviation INTERNATIONAL

CLASS GRAPH

Pilot: _____

Title: _____

DISTANCE

GROUP _____	GROUP _____	GROUP _____	GROUP _____	GROUP _____	GROUP _____	GROUP _____