Improving STEM Learning through Aerospace

Flight/Aeronautics
Did you know that you could earn your Private Pilot Certificate in High School. You can save about $32,000 in credits and flight fees by do this work early.

Aircraft Maintenance Technology
Did you know that you could earn your FAA Airframe and Powerplant Certificate while in high school.
Aviation Management/Operations
Did you know that Papa Johns Pizza has a corporate aviation presence? Earn dual college credit in the business side of aviation.

Air Traffic Control
Did you know that people separate aircraft at major airports in Los Angeles and Chicago? Earn Dual Credit from Middle Tennessee State University in ATC.

Aeronautical Engineering
Did you know that students design wings for aircraft at FHS? Earn dual college credit in engineering when you complete course requirements.
Space Systems Engineering
Did you know that high school students can design satellites that go into space? Earn dual credit from Morehead State University in Space Systems Engineering.

Aerospace Computer Engineering
You can earn up to 14 college credits in this pathway. Unmanned Aerial Systems and Satellites use computer programming to perform their missions.

Airport Design and Construction
Airport designers use civil engineers to plan and construct airfields. You can earn dual college credit in engineering if you complete this pathway.
In this pathway, you can learn advanced manufacturing fundamentals and earn an Associate's Degree from BCTCS.

Aerospace Manufacturing Systems

In this pathway, you can learn advanced manufacturing fundamentals and earn an Associate's Degree from BCTCS.

Unmanned Aerial Systems Technology

In this pathway, you learn to use UAS technologies to solve real-world problems.

Mission: College and Career Readiness

Improve STEM learning through the context of aerospace by providing direct experiences in...

- Flight and Aeronautics
  - Aerospace Engineering
    - Aeronautical Engineering
    - Space Systems Engineering
    - Aerospace Computer Engineering
    - Aircraft Design (Civil Engineering)
- Aviation Management and Operations
- Air Traffic Control
- Aircraft Maintenance
- Aerospace Advanced Manufacturing
- Unmanned Aerial Systems (UAS)
The IAE Network...
First Solo Flight at Summer Aviation Camp
Universities and Colleges

Aerospace Education affects...

The Institute’s Priorities...

- The Commonwealth Aerospace Education Center in Frankfort
- Increase industry staff to support our schools.
  - Aircraft mechanic
  - Aerospace engineer
- Provide additional resources to our schools.
Second Floor (Learning Labs)

- Two Classrooms
- Electrical Engineering
- Mechanical Engineering
- Flight Simulation
The Institute was awarded the **2013 Aviation Achievement Award by the Kentucky Aviation Hall of Fame.**

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**IAE Standards...**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
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<tbody>
<tr>
<td>General Education</td>
<td>IAE standards address key areas of knowledge, including math, science, technology, business, and history.</td>
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<tr>
<td>Individual Assessment</td>
<td>Students must pass a comprehensive written exam and demonstration of skills in each standard.</td>
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<tr>
<td>Professional Development</td>
<td>Teachers receive ongoing professional development in IAE-related topics.</td>
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<tr>
<td>Performance Assessment</td>
<td>Assessment is ongoing and includes formative and summative evaluations.</td>
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<tr>
<td>Certification</td>
<td>Certification is available for educators and schools who meet IAE standards.</td>
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<tr>
<td>Professional Network</td>
<td>Teachers and schools in the network collaborate on best practices and resources.</td>
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**On-site Facilitator and IAE Summer Institute**

Each school must have an on-site facilitator. Teacher facilitators participate in a two-day aerospace workshop in June.

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**FAA Ground School**

Students are enrolled in an aviation course of study which results in passing of the FAA Private Pilot Written Exam. This certification will help with Career and College Readiness.

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**Build A Plane Member**

This non-profit organization finds real aircraft for schools and other education organizations. The service is free at [www.buildaplane.org](http://www.buildaplane.org).

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**Flight Simulation**

Students are provided a flight simulator and flight controls to simulate a flight training environment.

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**Engineering Projects**

Student engineering teams participate in two projects: The Real World Design Challenge and the Wing Design Challenge. These projects are sponsored by NASA KY and UK College of Engineering.

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**Airport Collaboration**

Work with local airport to develop ways for students to connect to the aviation community in areas such as flight, airport operations, aeronautical engineering and other aviation careers.

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**SkillsUSA Aviation Challenge**

Network schools will send a team of four students to participate in a statewide aviation competition. Students will take an aeronautical knowledge test, preflight of aircraft, cross-country flight plan, aircraft recognition, and flight simulation. The event is in late February.

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**Wing Design Competition**

WDC Teams from network schools will meet to demonstrate their solution to an aeronautical engineering problem. Awards will be provided after the event has completed.

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**Young Eagles (EAA)**

Students will participate in EAA's Young Eagles program. In Young Eagles, students from ages 8-17 are provided free orientation flights. The website is [www.youngeagles.org](http://www.youngeagles.org).

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**Special Electives from Post-Secondary Partners**

Schools will provide qualified students access to special aerospace courses that will complete seven career pathways. These courses are being developed by our post-secondary partners and will be offered online.
Research Study...

- Preliminary Data Shows
- Over 600 students in 2013-14
- Almost 200% growth in 4 years in participating school districts
- 50% of our students are in poverty
- 100% graduation
- 17% higher than state average on ACT
- Average ACT score meets college readiness benchmarks in math and science
- 75% of students pursue STEM field after high school. 25% in aerospace.

Questions?