

# CAREERS IN AVIATION THRU STEM? THE AIRPORT IS A GOOD PLACE TO START

COMBINED WITH YOUR CLASSROOM PROGRAM IN SCIENCE, TECHNOLOGY, ENGINEERING, & MATH



## GET THE GEARS TURNING

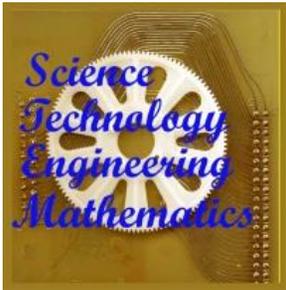
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ANOKA COUNTY-BLAINE AIRPORT

BLAINE AIRPORT PROMOTION GROUP

TOURS AVAILABLE K-12

## THE IMPORTANCE OF STEM (Science, Technology, Engineering & Mathematics)



**WHY STEM? What is it?**  
STEM is an acronym for Science, Technology, Engineering and Mathematics. On January 31, 2006, United States President George W. Bush announced the American Competitive Initiative.

The United States National Academies expressed their concern about the declining state of STEM education in the United States. Its Committee on Science, Engineering and Public Policy developed a list of 10 actions federal policy makers could take to advance STEM education in the United States to compete successfully in the 21<sup>st</sup> Century.

### THE TOP THREE RECOMMENDATIONS WERE TO:

1. Increase America's talent pool by improving K—12 science and mathematics education;
2. Strengthen the skills of teachers through additional training in science, math and technology;
- and 3. enlarge the pipeline of students prepared to enter college and graduate with STEM degrees.

STEM programs will implement higher cognitive skills for students and enable them to inquire and use techniques used by professionals in the Science, Technology, Engineering and Mathematical fields. STEM fields include an exhaustive list of disciplines that bring STEM education to all students rather than only the gifted programs. In 2012 President Obama renamed and broadened the "Mathematics and Science Partnership" to award grants to states for improving teacher education in these subjects.

In 2010 The Blaine Airport Promotion Group proposed a vision statement that would include programs to help develop a healthy airport through the

diverse community of businesses, general aviation and airport staff developing the potential of KANE airport. From this beginning a plan was developed to engage businesses on the airport to support the STEM initiative and invite schools to use the airport as a resource by providing tour and workshop programs for Aerospace related extensions to the schools classroom studies. This program has provided over 3500 K—12 student visits to businesses at the Blaine airport giving students a first-hand view of a completely operational airport, learn from professionals and historians and develop skills related to Aerospace technologies.

A June 2010 Airport Economic Impact Study, by the University of Minnesota reported that Minnesota's airports contributed more than \$12.1 Billion to the state's economy and provides 165,000 jobs that produce 6.4 Billion in taxable labor income. Minnesota's small and medium airports produce approximately \$184 Million in taxable labor income.

**Jobs are waiting to be filled by qualified graduates with STEM degrees. "You do the math" Jessica produced the left portion of the artwork as a thank you card to the Blaine airport on 11/21/11. Jessica will soon enter college and the job market with confidence.**

thank you

FRIEND OF THE BLAINE AIRPORT  
Jessica 11/21/11

You Do THE MATH

$$P = \frac{Fd}{t} = \frac{3000 \text{ lbs} \times 1200 \text{ ft}}{1 \text{ min}}$$

$$= 3.6 \times 10^6 \text{ ft-lbs/min} \times \frac{1 \text{ hp}}{3.3 \times 10^4 \text{ ft-lbs/min}}$$

$$= 109 \text{ HP}$$

Horsepower needed to overcome drag:

$$C_{Dw} \approx R_{Dw} - \frac{1}{2} R_{Dw} = \frac{8\pi G T_{Dw}}{c^2}$$

Drag = 350 lbs = thrust (steady-state flight)

$$\text{THP} = \frac{T \times V}{325 \text{ NM-lbs/hr-HP}} = \frac{350 \text{ lbs} \times 120 \text{ KTS}}{325}$$

$$= 129 \text{ HP}$$

$$C_d = C_{d0} + \frac{(C_l)^2}{\pi e AR}$$

Total HP = 109 + 129 = 238 HP

**STEM = Next Generation Engineers and Scientists**