

# 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

ASK US:  
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ANOKA COUNTY-BLAINE AIRPORT

BLAINE AIRPORT PROMOTION GROUP

TOURS AVAILABLE K-12

## SOLAR ENERGY AND WAVELENGTH SPECTRUM

A **nanometer (one billionth of a meter)** is a unit of measure to specify wavelength of electromagnetic radiation of visible light ranges around 400 and 700 nm (nanometers). **Red** at the left of the color spectrum has the longest wavelength of 650 (nm) in our visible color spectrum. **Orange, Yellow, Green, Blue** progressively have shorter wavelengths and greater radiation. **Violet** has the shortest wavelength of 400 (nm) and greatest energy radiation. The human eye is not capable of detecting radiation of wavelengths outside the visible spectrum

On each end of the visible spectrum are wavelengths that are outside the visible capability of the human eye. The wavelengths outside the **red color** are longer and produce less radiation as they become longer in length. These are **Infrared radiation, Microwaves, and Radio waves**. **Infrared thermal radiation** is emitted by objects near room temperatures. The existence of infrared radiation was discovered in 1800 by astronomer William Herschel. Infrared light is used in industrial, scientific, and medical applications. Infrared imaging cameras are used to detect heat loss in buildings and other insulated systems, detection of overheating of equipment, and even observe blood flow in medical applications. In astronomy, telescopes using infrared wavelengths can observe objects that are blocked by clouds and dust.

The wavelengths beyond the **violet color** produce greater radiation and have shorter wavelengths as they progress as, **Ultraviolet Radiation, X-ray, and Gama-rays**. These wavelengths are invisible to humans, but a number of insects and birds have the ability to see in these light emitting frequencies.

**Ultraviolet radiation** is blocked by the ozone layer but about 3% of this radiation is filtered through providing the formation of vitamin D, but also is capable of causing long term skin damage. The discovery by Physicist, Victor Schumann in 1893 of radiation below 200 nm provided understanding of the effects of exposure on industrial products such as painted surfaces, plastics, and erosion of metal surfaces. Sun Screen products and other medical treatments were developed through these pioneering scientific breakthroughs.

**White light** is a mixture of the colors of the visible spectrum. **Black** is a total absence of light. **The Sun** is the greatest source of energy and produces the entire electromagnetic spectrum of radiation energy.

