

# FLIGHT TO THE FUTURE SHOW FACTSHEET

Below is a selection of external online resources related to the content of our show presented at the Big Bang Fair 2026. This list is provided for reference only. We are not responsible for the maintenance, availability, or content of these external websites.



## Part 1

The STEM Response Team explored the history of human flight and the science of wings, from the first balloon flights to powered aircraft.

It also highlighted female pioneers such as Sophie Blanchard, Bessie Coleman and Amelia Earhart. Experiments demonstrated density, Bernoulli's principle and the Coandă effect.

- How do birds fly:

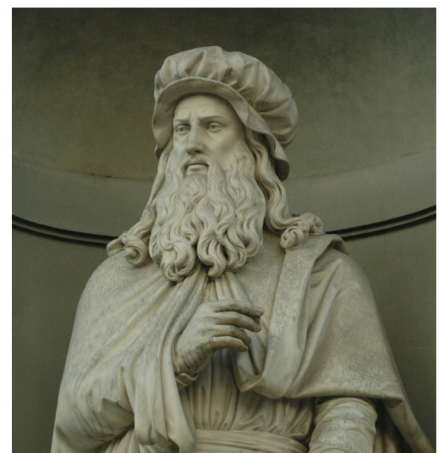
<https://www.nhm.ac.uk/discover/how-did-birds-and-other-dinosaurs-learn-to-fly.html>

- The Fall of Icarus Myth:

<https://sites.dartmouth.edu/vsfd18/the-rise-of-icarus-the-resurgence-of-the-fall-of-icarus-as-a-modern-myth/>

- Leonardo da Vinci and his flight studies:

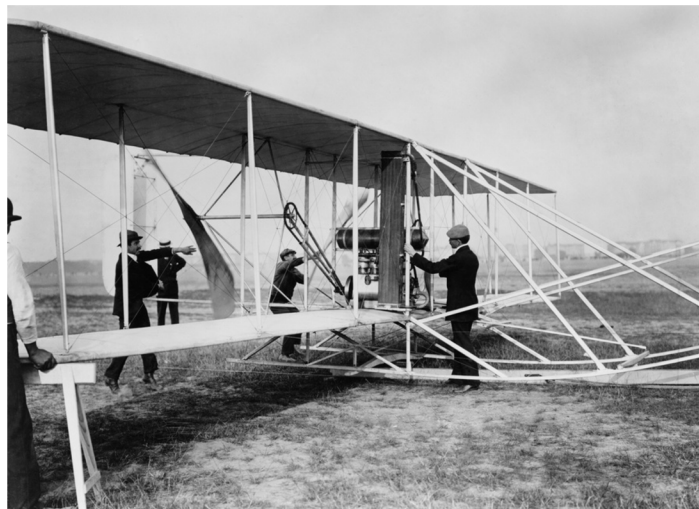
<https://museoleonardiano.it/en/collezione/flight-studies/>



Statue of Leonardo da Vinci.  
Galleria degli Uffizzi, Florence, Italy.

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- The hot air balloon flight - Montgolfier brothers:  
<https://en.chateauversailles.fr/discover/history/key-dates/first-hot-air-balloon-flight>
- Sophie Blanchard - the first professional female balloonist:  
<https://www.bbml.org.uk/international-womens-day/>
- Buoyancy:  
[https://www.grc.nasa.gov/WWW/k-12/WindTunnel/Activities/buoy\\_Archimedes.html](https://www.grc.nasa.gov/WWW/k-12/WindTunnel/Activities/buoy_Archimedes.html)
- Density of solids, liquids and gases:  
<https://www.bbc.co.uk/bitesize/articles/zqpkkty#zyn88hv>
- The Wright brothers and the first airplanes:  
<https://airandspace.si.edu/explore/stories/wright-brothers>



Orville Wright with his airplane in Berlin, Germany, at Tempelhof Field, 1909.  
Orville stands near the engine, as two men turn the propellers to start the engine.

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- Bessie Coleman -the first African-American woman to obtain a pilot's license:

<https://blog.sciencemuseum.org.uk/happy-birthday-bessie-coleman/>

- Amelia Earhart and the Atlantic Ocean crossing:

<https://www.nationalgeographic.com/history/article/amelia-earhart-aviation>



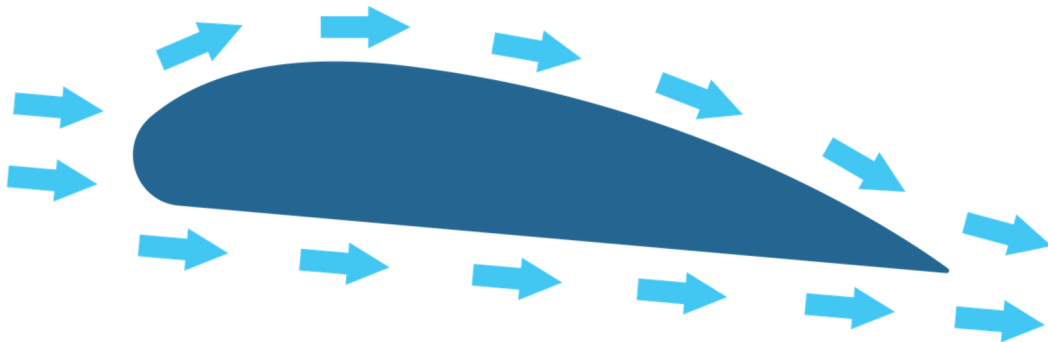
Bessie Coleman, as pictured in her aviation license, 1921.

- Bernoulli principle:

<https://howthingsfly.si.edu/aerodynamics/air-motion>

- Coandă effect:

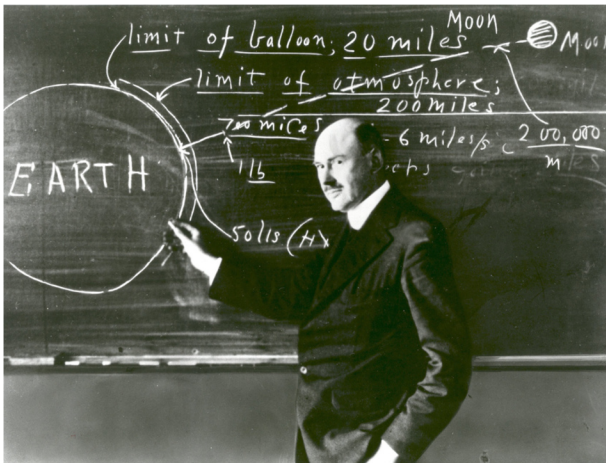
<https://thermofluids.co.uk/index.php/design-and-analysis/coanda-effect-research/>



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## Part 2

The STEM Response Team explored the history of modern rockets, explaining how they work and the principles of combustion. These concepts were brought to life through interactive demonstrations, including the fire triangle and the surprising energy stored in balloons. We also highlighted the crucial role rockets have played in space exploration, featuring pioneers such as Robert Goddard and Katherine Johnson.



Robert Goddard at Clark University, USA

- Robert Goddard - modern rocketry:  
<https://www.nasa.gov/dr-robert-h-goddard-american-rocketry-pioneer/>

- Katherine Johnson - complex calculations for space missions:  
<https://www.bbc.co.uk/teach/class-clips-video/articles/zhsncxs>

- Valentina Tereshkova - first woman in space:

[https://www.esa.int/About\\_Us/50\\_years\\_of\\_ESA/50\\_years\\_of\\_humans\\_in\\_space/First\\_woman\\_in\\_space\\_Valentina](https://www.esa.int/About_Us/50_years_of_ESA/50_years_of_humans_in_space/First_woman_in_space_Valentina)



The Valentina Tereshkova Planetarium in Yaroslavl, Russia.

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- How do rockets work?

[https://www.grc.nasa.gov/WWW/k-12/rocket/TRCRocket/rocket\\_principles.html](https://www.grc.nasa.gov/WWW/k-12/rocket/TRCRocket/rocket_principles.html)

- Make a balloon rocket:

<https://airandspace.si.edu/learn/learning-resources/activity/balloon-rockets#no-back>

- The Rocket Engine - propulsion system:  
<https://www1.grc.nasa.gov/beginners-guide-to-aeronautics/propulsion-system/>

- The fire triangle:  
<https://learningintheleaves.co.uk/the-fire-triangle>

- The Apollo 11 Moon landing:  
<https://www.bbc.co.uk/newsround/48789792>



The liftoff of Apollo 11, starting the Moon mission of astronauts Neil Armstrong, Michael Collins and Edwin Aldrin. July 16, 1969.

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## Part 3

The STEM Response Team explored the vast and extreme nature of space—highlighting just how immense and cold it is. They introduced the Artemis II mission, focusing on its objectives and the uniqueness of its crew, as well as what to expect from the next missions, including a Moon landing. The session also examined the Moon's extreme temperatures, concluding with striking demonstrations of hot and cold in action using liquid nitrogen.

- Moon exploration:

<https://www.nationalgeographic.com/science/article/moon-exploration>

- The Artemis programme:

<https://www.nasa.gov/humans-in-space/artemis/>

- Facts about the moon:

<https://www.nhm.ac.uk/discover/factfile-the-moon.html>

- What is space?

<https://www.nhm.ac.uk/discover/what-is-space.html>

- The scale of the Universe:

<https://scaleofuniverse.com/en-gb>

- The temperatures of the Universe:

<https://svs.gsfc.nasa.gov/14374>





## DID YOU KNOW?

You can study Aerospace Engineering at the University of Wolverhampton!

**BEng (Hons) Aerospace Engineering - University of Wolverhampton:**

**<https://www.wlv.ac.uk/courses/beng-hons-aerospace-engineering/>**

The aerospace field is extensive and services a rapidly expanding and exciting market. Graduates from this course will find many opportunities for well-paid jobs, such as designing aerospace components and systems or managing engineers and technicians. The multidisciplinary nature of the subject area provides career opportunities in a broad spectrum of industries, from design and manufacture to process control in the aerospace sector.

 [wlv.ac.uk/STEMResponseTeam](https://www.wlv.ac.uk/STEMResponseTeam)

# WHO ARE WE?



The **STEM Response Team** is an award-winning outreach and public engagement team from the Faculty of Science and Engineering (FSE) at the **University of Wolverhampton**.

**Our mission is to bring fantastic science, technology, engineering and maths (STEM) activities to schools and the community spaces across the West Midlands and the country as a whole and address areas of particular need where aspirations may be low to show that study in STEM is for everyone.**

From science shows in theatres, street entertainment, corporate events or workshops in classrooms the STEM response team can bring STEM to life in any venue.

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