



RESOURCE GUIDE



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Resource Guide for Aerospace Dimensions

Module 1 – Introduction to Flight

Web Sites:

- <http://www.grc.nasa.gov/www/k-12/aerosim/>
FoilSim is an interactive simulation software that determines the airflow around various shapes of airfoils. EngineSim is a simulator that models the design and testing of jet engines and the effects of engine type on aircraft range and speed. Also included is a Beginner's Guide to Aeronautics.
- <http://www.lerc.nasa.gov/WWW/k-12/airplane/bern.html>
NASA offers this detailed explanation of the theorem that makes Bernoulli's equation possible.
- <http://www.allstar.fiu.edu/aerojava/pic3-2.htm>
Summarizes how Bernoulli's discovery that an increase in fluid speed decreases fluid pressure on aircraft wings.
- <http://www.ed.ac.uk/~hotair/how.html>
How a hot air balloon works.
- <http://www.nasm.edu/galleries/gal109>
An exhibition at the National Air and Space Museum. How do things fly?

Videotapes:

- NASA CORE Educational Products:
"America's Wings" – Aeronautics and wing design are discussed.

Computer Software:

- Source: NASA (<http://exploringaerospace.arc.nasa.gov>)
"Exploring Aeronautics" – Introduction to aeronautics, historical timeline, different types of aircraft, and teaches students to use the tools of aeronautics used by researchers to test aircraft designs. (\$5)
CD-ROM

Current as of October 2000.

Module 2 – Aircraft Systems and Airports

Web Sites:

- <http://www.howstuffworks.com/turbine.htm>
How do gas turbine engines (and jet engines) work.
- <http://www.britannica.com/seo/r/rotary-engine>
Article from Britannica on rotary engines, gasoline engines, and propulsion systems.
- <http://www.mech.ubc.ca/Demo/howan.htm>
Parts of an airplane with diagram.
- <http://www.allstar.fiu.edu/AERO/parts-anim.htm>
Allstar network – NASA aeronautics learning laboratory for science, technology and research.
- <http://www.dfrc.nasa.gov/trc/saic/anatomy.html>
Anatomy of an airplane.
- <http://pbs.bilkent.edu.tr/wgbh/nova/supersonic/anatomy.html>
Anatomy of the Concorde with a diagram of Concorde with callouts to various features.
- <http://www.luscombeaircraft.com/about/spartan.html>
Information about the Spartan IIE.
- <http://www.britannica.com/bcom/eb/article/0/0,5716,120030+9+110747,00.html>
Article concerning air traffic control.

Current as of October 2000.

Module 3 – Air Environment

Web Sites:

- <http://www.athena.ivv.nasa.gov/curric/weather/hsweathr/index.html>
Predicting the weather.
- <http://www.usatoday.com/weather/wmeasur0.htm>
Measuring weather – information such as air pressure, observing clouds, humidity, rain, temperature, and wind.
- <http://www.weatherimages.org>
Contains interactive page, weathercams, weather books, etc.
- <http://explorezone.com>
Brief articles will introduce young scientists to exciting happenings around the globe and galaxy.
- <http://icp.giss.nasa.gov>
This site has a number of extensive learning modules focusing on different aspects of earth science. Great diagrams for printing!

Videotapes:

- NASA CORE Educational Products –
“Earth-Sun Relationship” – Van Allen belt solar wind, and magnetosphere are discussed. (\$10)
“Hurricane Below” – Growth and development of Hurricane Mimi. (\$15)
“Tornado Below” – Story of a student pilot’s narrow escape from the path of a tornado. (\$15)
- NASA CONNECT – Program 1: Plane Weather
Aviation weather as it relates to aviation safety. (\$16)

Computer Software:

- Source: NASA (CORE) (<http://catalog.core.nasa.gov>)
CD-ROM (Win 95) “Climate Change Presentation Kit” (\$5)
A resource that allows teachers to pick and choose the components to best communicate climate change issues to audiences. It contains fact sheets, a power point presentation, and interactive activities.

Current as of October 2000.

Module 4 – Rockets

Web Sites:

- <http://spacelink.nasa.gov/Instructional.Materials/NASA.Educational.Products/Rockets>
Teachers guide for rocketry containing the history, scientific principles, and mathematics of rockets. *Need Adobe Reader.
- <http://sln.fi.edu/tfi/programs/g-scouts/history.html>
The history of rocket science.
- http://www.lerc.nasa.gov/www/k-12/TRC/Rockets/history_of_rockets.html
Brief history of rockets from Greeks to Goddard.
- http://adc.gsfc.nasa.gov/adc/education/space_ex/rockets.html
Rockets. The evolution of the rocket – it's history, index of rockets, how they work, and how to make your own rockets.
- <http://www.boeing.com/companyoffices/history/boeing/rockets.html>
Boeing: History – Jets and Rockets. A brief history from 1957-1970.
- <http://science.ksc.nasa.gov/history/rocket-history.txt>
A brief written history of rocketry.

Videotapes:

- NASA Educational Products
“Newton in Space” – demonstrates the importance of Newton’s Laws of Motion to spaceflight. (\$15)

Current as of October 2000.

Module 5 – Space Environment

Web Sites:

- <http://comets.amsmeteors.org>
Helps you learn about “shooting stars” and other cosmic interlopers.
- <http://www.jpl.nasa.gov/basics>
Basics of Space Flight Learners’ workbook.
- <http://science.msfc.nasa.gov/headlines/ssn.stm>
Science news.
- <http://www.astronomynotes.com/intro.htm>
Resource in astronomy education.
- <http://www.solarviews.com>
Information on planets, comets, asteroids, meteorites, and more.
- <http://library.thinkquest.org/12272/data/TSS.html>
Find information on each of the planets, the sun, and the Marsian asteroid belt.
- <http://einstein.stcloudstate.edu/Dome/foyer2.html>
View the stars from different latitudes north and south. Learn the star names and the constellations.

Videotapes:

- NASA Educational Products
 - “All Systems Go!” – contains information and activities (teacher’s guide) and concerns the effects of microgravity on an astronaut’s body systems. (\$16)
 - “Assignment Spacelab” – uses microgravity environment of Earth’s orbit for scientific experiments. (\$15)
 - “Microgravity” – Focuses on four scientific disciplines in microgravity studies: fluid physics, materials science, biotechnology, and combustion. (\$25)
 - “The New Solar System” – Tour of the solar system with collection of visuals. (\$25)
 - “Universe” – Watch the universe evolve and how gravity, swirling clouds of gases and cosmic matter transformed into stars and galaxies.(\$16)
 - “The Night Sky Series (8-part series on 1 tape) – Includes visibility of astronomical events, planets, stars, and constellations, eclipses, observing tips, computer software, spacecraft missions, and special events. (\$32)

Computer Software:

- Source: NASA

“Welcome to the Planets” (MAC/Windows 3.1) – 190 selected images of planets, comets, asteroids, meteorites, and lunar samples.

Current as of October 2000.

Module 6 – Spacecraft

Web Sites:

- <http://www.kepler.arc.nasa.gov/>
This site discusses the Kepler Mission at NASA and has links to Kepler's Life, his laws and additional reading on planet detection.
- <http://spaceflight.nasa.gov/index-m.html>
Up to the minute information on the shuttle, the International Space Station, Real Time Data, and more, from NASA.
- http://windows.engin.umich.edu/cgi-bin/tour_def/space_missions/manned_table.html
Chronology of manned space missions from Gagarin in 1961 to STS-61 in 1993.
- <http://www.historychannel.com/exhibits/moonshots/timeline.html>
A timeline (with videos to be purchased through the Discovery Channel) of space activity from 1957 to 1998.
- <http://kids.msfc.nasa.gov/Rockets/>
NASA kids program concerning the Space Shuttle, airplanes, satellites, space probes, rocket detector, and more.

Videotapes:

- NASA Educational Products
 - “Go for EVA” – Reasons for wearing spacesuits during space walking missions, how spacesuits work, and what kinds of jobs astronauts perform while space walking. (\$15)
 - “Let's Talk Robotics” – Introduction to the use of robots in space exploration. (\$10)
 - “Living in Space” – Explores the astronomical highway that is leading to living and working in space. (\$16)
 - “The Time of Apollo” – Offers tribute to the accomplishments of the Apollo missions. (\$16)
 - “America in Space: The First 40 Years” – From Mercury to the International Space Station and Mars. (\$25)
 - “Mercury/Gemini/Apollo Overview” - Provides summary of Mercury, Gemini, and Apollo missions. (\$15)

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