

CHESSIE Science Schedule  
Motion/Flight Unit  
Groups 4B



Resources Used for Motion/Flight Unit:  
*Handouts and website suggestions*  
Abeka, grade 5 Science, Investigating God's World

Week #1  
9/5

Newton's Laws of Motion

Prior to class,

Read: Handout for week one on Isaac Newton & the Laws of Motion

Complete: Homework questions for week #1, Isaac Newton background questions, matching & short answers

Website suggestion: <https://www.youtube.com/watch?v=KvPF0cQUW7s>

NASA you tube topic: Launchpad: Newton's Laws On-Board the International Space Station

Classtime: Activities today will focus on Newton's laws of motion

**Please note: Students should begin collecting recycleable material for their flying machine that they will assemble to bring to class on 10/3. Students should keep their recycleable material at home and assemble their flying machine to bring to class to share on Oct 3.**

Week #2  
9/12

The four forces of flight , the invention of the helicopter, Bernoulli's Principle

Prior to class,

Read: Handouts titled *How Airplanes Fly & How gravity works & Helicopter invention*

Complete: Homework questions for week #2 on the helicopter invention page and the How airplanes fly homework page

Website suggestion: <https://www.youtube.com/watch?v=ulcvE-bDyNc>

How does a plane fly? Animated youtube video

<https://www.youtube.com/watch?v=QggNdV9TmvA>

How do planes fly? National Geographic kids

Classtime: Bernoulli's principle shown with wind tubes, rocket balloons, ping-pong balls, funnels & straws

Week #3  
9/19

Lift verses gravity, the wing

Prior to class,

Read: Handout titled *all about airplanes*

Complete questions on handout on *all about airplanes*

Optional Website activity: <https://www.youtube.com/watch?v=AiTk5r-4coc>

Youtube video of the inner workings of an airplane

Classtime: paper airplane workshop. If you have a design that you would like to share, bring it to class today, parachute men

Week #1 of ecology  
9/26

Determining the health of a stream by the types and number of macroinvertebrates that are found. Class meeting at Azalea Park

**Prior to class,** Read: Macroinvertebrates as bioindicators of stream health--located at this link: <http://wupcenter.mtu.edu/education/stream/Macroinvertebrate.pdf>

**Complete:** Homework sheet for 9/26

**Website suggestion:**

<https://www.youtube.com/watch?v=1HysvsXcmVI>

Macroinvertebrates and water quality

Classtime: macroinvertebrate collection and identification & determining the health of The stream at Azalea Park.

Week #4  
10/3

Flight, Designing a futuristic fanciful flying machine

**Prior to class,** Work through the “design a flying machine” worksheet. Inventers often start this process by doodling, sketching, and brainstorming with others. Talk ideas over with your classmates and siblings or parents and use the worksheet as a guide. Collect the recycleable material you wish to use to assemble your machine. Give thought to how you will design your machine before you assemble it. Be sure to consider flight terms and how you can achieve a model with good thrust, low drag, a good weight to be balanced by lift. Answer the questions on the worksheet.

**Website suggestion:** <https://www.youtube.com/watch?v=pQ24NtnaLl8> Animation of flight terms and how they turn an airplane

Free powerpoint presentations on a variety of flight topics:

<https://people.pppst.com/wright-brothers.html>

<https://www.youtube.com/watch?v=bv3m57u6ViE>

Good explanation of Bernoulli's principle

**Optional:** Airplane parts word search

**Classtime: Students should bring their assembled futuristic, fanciful flying machine to class today. Their model is not necessarily meant to be able to fly. This model is to be a design that they believe would be good for flight. Does it have a design that will give it good thrust? Good lift balanced by weight and drag? Be ready to explain their model to the class using flight terms to explain why they think it would be an excellent flyer.**

Week #5  
10/10

Propellers, jet engines, rockets and flying through space

**Prior to class,**

Read: ABeka Text (grade 5) Investigating God's World p172-177

**Complete:** Comp check 6.8 p173, Comp Check 6.9 p177

**Classtime:** Guest pilot instructor, Dr. David Hudson.

*Our guest instructor today is pilot **Dr. David Hudson**, who has a very diverse background. He is now the Associate Vice President for Research at UVA but has a degree in neuroscience. He did research on circadian rhythms for years. (circadian rhythms are physical, mental and behavioral changes that follow a roughly 24-hour cycle, responding primarily to light and darkness in an organism's environment) He has been a private pilot for almost 20 years, flying "small" single engine aircraft. He has also instructed in the private pilot ground school class at PVCC and for local flight schools. Four years ago, he joined Civil Air Patrol and since then, most of his flying has been in Civil Air Patrol aircraft. Dr. Hudson has been married for 40 years and has 2 daughters. One is an emergency room doctor and the other is a Major in the Air Force who flies in the back of fighter aircraft. He played the bass for years in a Charlottesville based group called "Big Ray and the Kool Kats".*

