BROOKWOOD HIGH SCHOOL
SCIENCE ELECTIVES

Anatomy & Physiology

Anatomy & Physiology is an accelerated, honors-level science elective that is focused on the study of the structure and function of the human body. Anatomy can be a hard elective because it takes time to learn all the anatomy and then apply the new knowledge to understand how it works. Good study skills are necessary.

It is an ideal course for students considering careers in the health sciences like Nursing, Physical Therapy, and Athletic Training. It is also a great class for students with a general interest in the human body and a good sense of humor. This class will stretch your mind and body.

BE ADVISED: Students dissect rats, minks, and many sheep organs.

Topics covered:

- 1st semester examines the skeletal, muscular, and cardiovascular systems.
- 2nd semester focuses on the nervous, digestive, urinary, and reproductive systems.

Forensic Science

Do you enjoy learning about how even the best criminal masterminds almost always get caught? Or about how fingerprints at a crime scene can give criminal investigators the lead they need to break a case? Forensics isn't just for the professionals anymore.

Forensic Science involves the application of biology and physical sciences like chemistry, geology, and physics in the effort to solve crimes. In this course, students will perform various CSI-type activities such as investigating crime scenes, questioning witnesses, using microscopes, taking fingerprints, and participating in mock trials. Emphasis is always placed on observation skills and figuring out which of several suspects is guilty of various fictional and true crimes.

Robotics

Students will explore the field of robotic design using many hands on activities. Students will work in teams with the ultimate goal of designing a robot to complete a specific task. Students will also compete with their robot in a challenge with their classmates.

Students will develop skills in mechanical design and construction as they work in teams to build simple and complex robotic devices. Students will explore usage of robotics in modern business and industry. Students will apply concepts learned in physical science and physics classes to mechanical devices.

Students will focus on scientific inquiry and experimental design. Students will modify and upgrade their robot to improve its functionality. Students will also focus on collaboration as they work in teams to design and compete with their robot.

Energy & Power Technology

E&PT is an introductory, project-based course that explores the relationships between force, work, energy, and power. Students learn about the engineering design process as they build a Stirling engine, construct 2-liter bottle rockets, and assemble and drive an electric go-cart. This course explores and applies many physics concepts relating to electricity, work and power, and machines. If you like building and taking things apart, then consider Energy and Power Technology.

You can find out the answers to these questions and more!

- What sources of energy are we looking at in the near future to replace oil and coal?
- What is nuclear radiation and how dangerous is it really?
- What are all the little devices on a circuit board?

(READ MORE)

Natural Resource Management

Natural Resource Management (AKA Brookwood Aquaponics) is a STEAM course that not only counts as a 4th year science, but also a CTE course. Students will simultaneously learn entrepreneurship and work-ready skills through running a local school-based enterprise selling sustainable agriculture products that they design. This class also aims to bring fresh, local, sustainable food to our community. The money the students make on-line and at Farmer's Markets goes right back to the food co-ops we will be serving, to renew the seeds and fish eggs, and any other philanthropy they decide, making this a humanitarian "social enterprise".

Students meet the requirements for ag-ed through maintaining our STEAM lab and designing their own prototypes. This is a largely project-based class, expect to keep a STEAM notebook, to have active participation in our class business, learn through service, to interact with guest speakers, and deliver "Shark tank" like pitches! This class has a co-curricular club called SkilsUSA. Students will participate in class, but have the option of joining the outside of class activities and leadership conferences.

AP Environmental Science (APES)

Looking for a fourth-year science that is challenging and fun? Want to learn more about the world around you?

Interested in social issues that come from living in a "global village"? AP Environmental Science builds a foundation for understanding the relationships of humans to the natural world. It is dedicated to understanding how environmental problems arise (be they human-made or natural) and how we can work to resolve or prevent these problems in the future.

Did you know?

- The hole in the ozone layer has nothing to do with climate change.
- Tap water is safer than bottled water.
- There are two nuclear power plants in Georgia.
- Indoor air quality is WORSE than outdoor air quality.
- Natural food is not the same as organic.
- Hunting can be good for the environment.
- The biggest threat to human survival is the flu.
- BPA can be found in breast milk.
- There are 7 billion+ people on the planet.
- Women are kidnapped in Asia to be sold as brides.

You will learn about all of this and more in AP Environmental Science.

**APES is a course for science and non-science majors. It is typically a biological science or earth science credit in college.

(READ MORE)

AP Biology

AP Biology is a "science major" biology course. Over the course of the year, we discuss current and future topics in Biology, complete labs, and cover many different topics at a level that is well above that of a freshman Biology class. This class will prepare anyone who plans to major in science.

Who should take this class?

- Students who have earned an A or B in their biology and chemistry classes
- Students who have a sincere interest in biology and a strong work ethic

Student comments on AP Biology:

"*The class requires a lot of commitment to studying, writing, and reading on a daily basis."*
"This class is a class where you CANNOT slack off. It's a lot of fun but be prepared to read a lot."

AP Bio is for those interested in:

- the medical field
- challenging themselves
- learning more about biology
- going into a scientific field
- learning about evolution and expanding their knowledge of science for college

AP Chemistry

AP Chemistry is the equivalent of the introductory college chemistry required for all science majors. Taking AP Chemistry increases your success in a college science course by preparing you for the rigors of college.

TOP 5 reasons to take AP Chemistry:

1. *Avoid being weeded out*. If you plan on being a doctor, pharmacist, vet, or other advanced degreed profession, most universities use Chemistry as a "weed-out" course.

2. *"I plan to attend Georgia Tech or some other engineering school."* Chemistry is the first science class taken at the college level for all engineering programs – if you don't pass, you don't move on to the next course.

3. *Opt out of a lab class***.** All majors require students to take lab science courses, but you can use AP credit to opt out of the course.

4. *"I know that taking AP courses makes me better prepared to face the challenges of college academic life."* Successful completion of an AP class proves to colleges your willingness for hard work and to apply yourself to reach your academic potential.

5. *AP classes are one way that universities look at a high school transcripts to distinguish one good student from another.*

Each AP class a student completes doubles his/her chances of graduating from college.

Three Different AP Physics Courses AP Physics I, II and C

AP Physics I is a survey course that mirrors the college physics class required for pre-med, biology, and non-science majors. Since math is the language of physics, all students should be concurrently enrolled in pre-calculus or have taken it. Both of these courses are taught with an emphasis on active student inquiry as required by the College Board. AP Physics I can be taken as a first year course and it satisfies Gwinnett's core physics requirement. Students taking AP Physics I are NOT required to take **AP Physics II**.

AP Physics I focuses on motion, forces, momentum, work, energy, circular motion, waves, sound, basic electrostatics and electric circuits. After successful completion of AP Physics I, students with an interest in continuing their physics education may choose to take either AP Physics II or AP Physics C.

AP Physics C is a second year physics course that focuses on mechanics (motion) and electricity and magnetism. All students must have completed AP Physics I prior to the course, and they must be at least concurrently enrolled in AP Calculus. Unlike AP Physics I, which provides a survey of introductory physics, AP Physics C is an in-depth course in which students are required to use calculus to further their understanding of physics. AP Physics C is recommended for students pursuing degrees in physics, chemistry, or engineering.