

SCIENCE

Science Course Sequence

9 th Grade	10 th Grade	11 th Grade	12 th Grade
Biology I	Chemistry	Physics I Honors	Anatomy & Physiology
		Physics I	
Biology I Honors	Chemistry I Honors	Physics I Honors	Anatomy & Physiology Honors or AP Chemistry or AP Biology Or AP Physics

Students may graduate with Williamson County honors if they complete the requirements for the regular diploma, take at least 4 years or more of math and at least 4 years of science, and earn a minimum of fourteen (14) credits at Honors or AP level with a minimum 3.5 cumulative GPA.

**The following Framework of Standards for Honors Courses is required by the State Board of Education to ensure that additional rigor is being provided in all honors courses:*

All honors courses substantially exceed the content standards, learning expectations, and performance indicators approved by the State Board of Education. They include instructional approaches that facilitate maximum interchange of ideas among students: independent study, self-directed research and learning, and appropriate use of technology. They must include multiple assessments exemplifying coursework (such as short answer, constructed-response prompts, performance-based tasks, open-ended questions, essays, original or creative interpretations, authentic products, portfolios, and analytical writing). Additionally, **an honors course shall include a minimum of five of the following components:*

1. Extended reading assignments that connect with specified curriculum.
2. Research-based writing assignments that address and extend the course curriculum.
3. Projects that apply course curriculum to relevant or real-world situations.

4. Open-ended investigations in which the student selects the questions and designs the research.
5. Writing assignments that demonstrate a variety of modes, purposes, and styles,
6. Integration of appropriate technology into the course of study,.
7. Deeper exploration of the culture, values, and history of the discipline.
8. Extensive opportunities for problem solving experiences through imagination, critical analysis, and application.
9. Job shadowing experiences with presentations which connect class study to the world of work.

3210 Biology

Grade Level: 9-12

Credit: 1

Biology is the study of all living organisms. Students will investigate the cell, genetics, diversity of organisms, interactions, photosynthesis, respiration, and evolution. The course will be taught with an emphasis on hands-on learning and technology and relevancy to major life issues and career choices. Students will take the State of Tennessee's Gateway Biology test in the spring. This will count 15% of the student's second semester grade. Passing this test is required in order to earn a high school diploma in 2005 and beyond.

3210 Biology I Honors*

Grade Level: 9

Credit: 1

This is a more in depth study of topics presented in biology. Students will use critical thinking skills and process skills as they analyze their scientific work. Students will be asked to integrate scientific facts into abstract processes as they make decisions and value judgments. Students will take the State of Tennessee's Gateway Biology test in the spring. This will count 15% of the student's second semester grade. Passing this test is required in order to earn a high school diploma in 2005 and beyond.

3221 Chemistry I

Grade Level: 9-12

Credit: 1

Recommended: Ability to solve one-variable equations

Chemical concepts and principles are developed in a logical yet flexible order, which is interesting and challenging for students. Strong emphasis is given to self-discovery and self-verification through direct laboratory experiences. Topics include atomic structure, formula writing, chemical equations, chemical reactions, ionization, equilibrium and others. Students will take a State of Tennessee end-of-course test beginning in the spring of 2003. This

test will count for 15% of the student's second semester grade.

3221 Chemistry I Honors*

Grade Level: 9-12

Credit: 1

Recommended: Successful completion of Honors Biology or department recommendation; Ability to solve one-variable equations

Chemistry concepts and principles are studied with a more in-depth focus and at a more accelerated pace than standard chemistry. Topics include stoichiometry, thermochemistry, bonding theories, electrochemistry and organic chemistry. This course is a prerequisite for AP Chemistry. Students will take a State of Tennessee end-of-course test beginning in the spring of 2003. This test will count for 15% of the student's second semester grade.

3251 Anatomy and Physiology

Grade Level: 11-12

Credit: 1

Standard physiology is the study of the human body's structures and functions. The course is designed for students who are interested in health and medical careers. The content is not as in-depth as honors physiology. Dissection is required.

3251 Anatomy and Physiology Honors*

Grade Level: 11-12

Credit: 1

This course studies the structure and function of the human body using a college level text and many lab exercises. It is more in depth than the standard anatomy and physiology course and moves at a faster pace, requiring excellent study habits. This is highly recommended for students planning to go into a biological or medical career. Dissection is required.

3231 Physics

Grade Level: 11-12

Successful completion of: Chemistry; Geometry The third lab science class in the Biology, Chemistry, Physics sequence.

This class represents a broad spectrum, introduction to the classical topics in physics. These topics include motion, waves, optics, electromagnetism and modern physics. The mathematical treatment is not as rigorous as Physics Honors. Laboratory investigations are an important part of the class. This is an excellent course for students who enjoy lab investigation.

3231 Physics I Honors*

Grade Level: 11-12

Credit: 1

Recommend: Successful completion of: Chemistry; Familiarity with trigonometric functions; Science Teacher Recommendation

This advance study of the nature of scientific laws and theories requires extensive laboratory work. A thorough knowledge of mathematical procedures, such as problems dealing with force, motion and energy are explored. Physics is highly recommended for those students who plan to pursue a science related career.

3225 AP Chemistry

Grade Level: 11-12

Credit: 1* (This is a double period course to account for a lab period per AP requirement)

Recommended: Successful completion of Honors Chemistry; Science Department Recommendation

The goal of this Advanced Placement course is to be the equivalent of a college General Chemistry course and is highly recommended to students planning to major in Chemistry and Biology. Students will attain a greater depth of understanding of topics such as the structure of matter, kinetic theory of gases, chemical equilibria, chemical kinetics, thermodynamics, quantitative determinations, and acid base theory. The students will gain competence in problem solving technique and develop clarity of logic and be able to express their ideas orally and written with clarity. The course also emphasizes college level labs and materials. Scores on the AP exam may earn the student college credit or advanced placement depending on the policy of the particular college.

3217 AP Biology

Grade Level: 11-12

Credit: 1 ((This is a double period course to account for a lab period per AP requirement)

Recommended: Successful completion of Biology and Chemistry; Science Department Recommendation

AP Biology is the equivalent of a college introductory biology course. Major themes include molecules and cells, genetics, evolution, organisms, and populations. Understanding biological processes will be the primary focus of study. This course is highly recommended for students who plan to major in a science in college, especially those planning to major in pre-med, biology, or chemistry. Twelve labs equivalent to college labs will be completed. Scores on the AP exam may earn the student college credit or advanced placement, depending on the policy of the particular college.

3234 AP Physics (C)

Grade Level: 12

Credit: 1

(This is a double period course to account for a lab period per AP requirement)

Recommended: Successful completion of Honors Physics and Science Teacher Recommendation

NOTE: It is understood that the mathematics of the course routinely requires Calculus. At minimum students take Calculus BC concurrently.

Areas of emphasis in this course include mechanics, electricity, and magnetism. Integration and differentiation will be used to describe the fundamental processes that characterize natural phenomena. Students who plan to specialize in physical science or engineering should consider this area of study. Scores on the AP exam may earn the student college credit or advanced placement, depending on the policy of the particular college.