

Science Course Sequences and Graduation Requirements – SY2526

Considerations for Standard and Advanced Diploma:

Students working for the 22 credit (standard) diploma must have three credits (one verified) from two different areas: biological science, chemical science, earth science, and physical science.

Students working for the 26 credit (advanced) diploma must have four credits (one verified) from three different areas: biological science, chemical science, earth science, and physical science.

Science Courses Available in FCPS:

Discipline	Course	Prerequisites
Biological Sciences	Biology 1 ¹ Biology 1 HN ¹	None
	Environmental Science ²	
	AP Biology IB Biology SL, HL DE Biology	Biology 1 and Chemistry 1
	AP Environmental Science ² IB Environmental Systems SL ² DE Environmental Science	
	Bio 2: Anatomy & Physiology DE Human Anatomy and Physiology	
	Bio 2: Genetics	
Chemical Sciences	Chemistry 1 ¹	Biology 1 and Algebra 1
	Chemistry 1 HN ¹ Advanced Chemistry for IB Schools ¹	Biology 1 and Geometry Corequisite: Algebra 2
	AP Chemistry IB Chemistry SL, HL DE Chemistry	Chemistry 1 and Algebra 2
Physical Sciences	Active Physics ³	None
	Physics 1 Physics 1 HN AP Physics (1, 2, C) IB Physics SL, HL DE Physics	Biology 1 and Chemistry 1 See extended descriptions below Math requirements vary by level

Discipline	Course	Prerequisites
Earth Sciences	Environmental Science ²	None
	Earth Science 1 ¹	None
	ES 2: Adv. Topics in Earth Science	Biology 1 and either Chemistry 1 OR Earth Science 1
	ES 2: Oceanography	
	ES 2: Astronomy	
	AP Environmental Science ² IB Environmental Systems & Societies SL, HL ² DE Environmental Science ²	Biology 1 and Chemistry 1
Other Do not count for science graduation requirements	Science Research	11th, 12th grade course
	Forensic Science Geospatial 1 AV/DE	Biology 1 & Chemistry 1
	Geospatial 2 AV/DE	Geospatial 1

¹ Indicates that the course has an end of course assessment to be used for verified credit.

² Courses can be classified as either a Biological or Earth Science credit towards graduation requirements.

³ Active Physics is designed for students weak in Math 8 or Algebra 1. Not for seniors to get a final science credit. It is not recognized as a physics course by VA colleges/NCAA.

****AP Computer Science A or IB Computer Science HL/SL can be used to meet a science graduation credit for standard or advanced diplomas; however, it cannot be counted towards the science discipline requirement**

Considerations for transfer students:

Physical Science (physics and chemistry content only) is an 8th grade science course in VA, and there is no Virginia School Board approved code to match it to, so there is no way to apply it to a standard high school science credit. The course can count as a credit in the elective category.

Integrated Science (usually three different sciences) can count as a specific science discipline IF there is a syllabus review and there is sufficient content to apply the course to one of the science disciplines. It counts as a science credit, and can be applied to the fourth science credit for an advanced studies diploma. Contact the science office for assistance with the syllabus review.

Other VDOE Science Courses: The VDOE offers additional courses that meet graduation requirements for laboratory sciences (e.g. Ecology) that may not be offered by FCPS. More information on these courses can be found [here](#).

The state of VA requires three science credits from two disciplines for a standard diploma. **To earn an advanced studies diploma a student must have 4 science credits from 3 different science disciplines, regardless of their status as a transfer student.**

Considerations for Physics:

Algebra-based physics

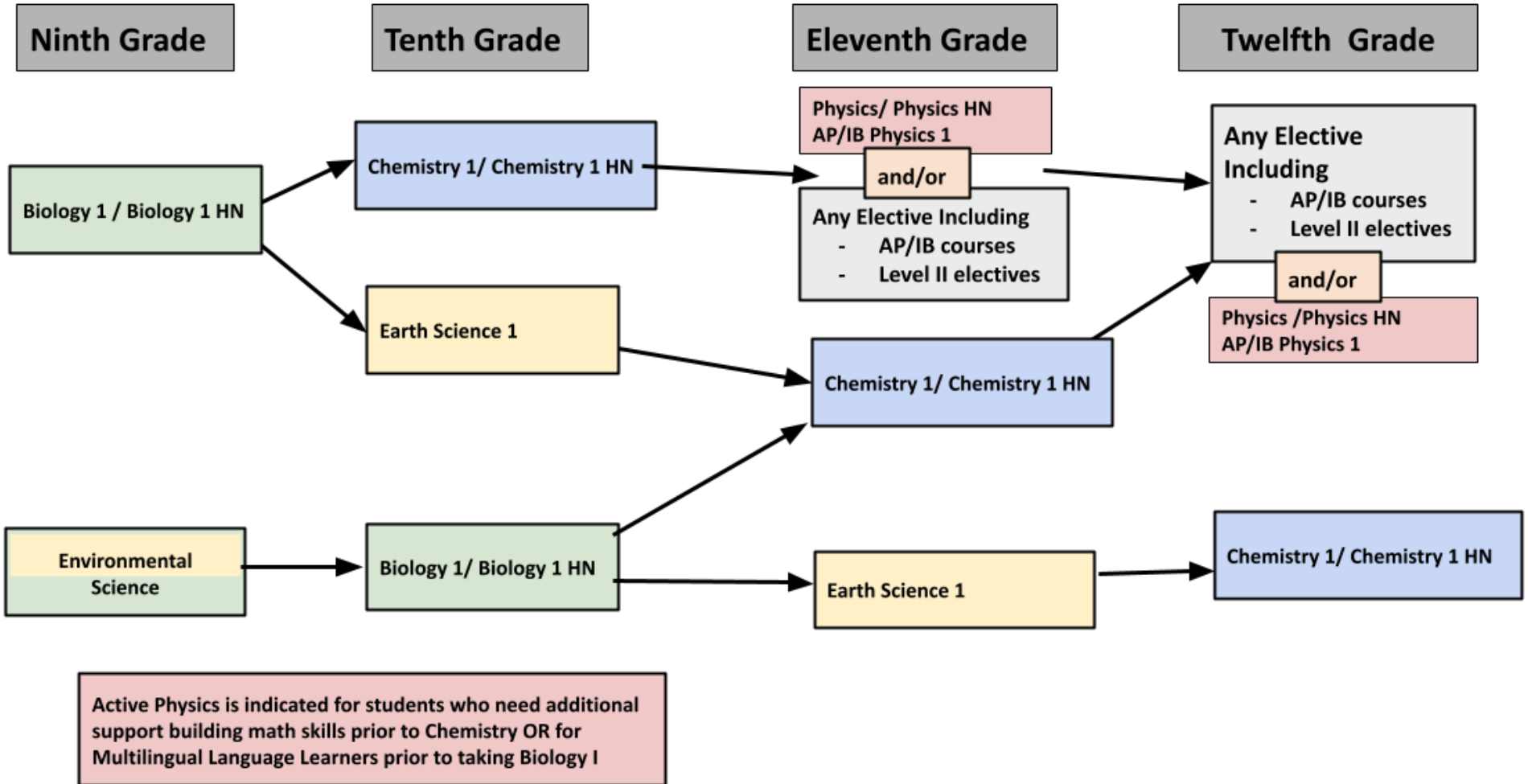
Physics 1	Physics 1 HN	AP Physics 1	AP Physics 2
Open to grades 11,12	Open to grades 11,12	Open to grades 11,12	Open to grades 12
No external exam	No external exam	External exam (1 semester college credit possible)	External exam (1 semester college credit possible)
No point (GPA)	+0.5 point (GPA)	+1.0 point (GPA)	+1.0 point (GPA)
Pre-Req of Geometry	Pre-Req of Algebra 2	Pre-Req of Algebra 2	Pre-Req of AP Physics 1
Scientific investigation, nature of science, motion, forces, energy, waves, fields, circuits, and non-Newtonian topics	More depth in all Physics 1 topics and more mathematically challenging problems. Algebra-based.	Similar depth and mathematical rigor (Algebra based) to Physics 1 HN. Equivalent of a first-semester introductory college course.	Second course in Algebra-based Physics sequence. Extended topics such as thermodynamics and optics.
none	Externally moderated project (science fair) required	none	none

Calculus-based physics courses:

AP Phy C - Mech and E&M	OR	AP Phy C - Mech	AP Phy C – E&M
Open to grades 11,12		Open to grades 11,12	Open to grades 11,12
2 External exams (2 semesters college credit possible)		1 External exam (1 semester college credit possible)	1 External exam (1 semester college credit possible)
1 credit yearlong class		1 credit yearlong class	1 credit yearlong class
+1.0 point (GPA)		+1.0 point (GPA)	+1.0 point (GPA)
Co-Req of AB or BC AP Calculus		Co-Req of AB or BC AP Calculus	Co-Req of AB or BC AP Calculus
Pre-Req of Physics		Prerequisite Chemistry	Pre-Req of Physics
Advanced Physics topics in both Mechanics and Electricity & Magnetism using Calculus		Advanced Physics topics in only Mechanics using Calculus	Advanced Physics topics in only Electricity & Magnetism using Calculus
		These two courses can be taken concurrently or over the course of two years.	

October, 2024
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Recommended Course Pathway



AP Courses

**Prerequisites of Biology & Chemistry

AP Chemistry

AP Biology

AP Environmental Science

AP Physics 1

AP Physics C: M or E&M

AP Physics 2

** AP Physics 1 is a prerequisite

IB Courses

**Prerequisites of Biology & Chemistry

IB Chemistry

IB Biology

IB Environmental Systems &
Societies

IB Physics 1

For Full List of IB courses and
progression, please see IB DP
Coordinator

Level 2 Electives

**Prerequisites of Biology & Chemistry

Bio 2: Anatomy & Physiology

Bio 2: Genetics

Level 2 Electives

**Prerequisites of Biology & either Chemistry
OR Earth Science

ES 2: Astronomy

ES 2: Adv. Topics in Earth
Science

ES 2: Oceanography

Dual Enrollment Courses

**Prerequisites of Biology & Chemistry

** Subject to NVCC prerequisites

Chemistry

Biology

Environmental Science

Human Anatomy

General Electives offered through Science Department

** These courses do not meet the graduation
requirements for Science

Geospatial Analysis 1 DE/AV

Forensics Science

Geospatial Analysis 2 DE/ AV

Science Research

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