

# Pennsylvania Statewide Transfer and Articulation System Uniform Standards for Credit for Prior Learning Exams

## Natural Sciences Exams

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## Introduction

In 2017 the Pennsylvania general assembly enacted legislation adding a section to the Pennsylvania Public School Code, 24 P.S. § 20-2002-C(d), requiring public institutions of higher education to:

- (1) Adopt and make public uniform standards for determining academic credit for prior learning as outlined in paragraph (4) within 18 months of the effective date of this subsection.
- (2) Agree to award academic credit for prior learning, which is determined to meet the standards established under section 2004-C(c)(6) and apply the credit toward graduation, unless prohibited by external accreditation or licensure.

This document establishes the uniform standard minimum scores for which all PA Transfer System participating institutions will award academic credit pursuant to 24 P.S. § 20-2002-C(d).

During the standard setting process, committees of faculty and personnel from Transfer System institutions developed minimum score standards for which any participating member of the PA College Transfer System will award credit, as well as additional guidance and recommendations for courses that institutions may offer as equivalencies for exam scores at or above the minimum. The course equivalency recommendations are considered guidance by the Oversight Committee and may vary between institutions in accordance with their course catalog and program design.

## Uniform Standard Minimum Scores for Awarding Academic Credit

<b>Exam</b>	<b>Minimum Score to Receive Credit</b>
<b>AP Exams</b>	
AP Biology	3
AP Chemistry	3
AP Environmental Science	3
AP Physics 1	3
AP Physics 2	3
AP Physics C: Mechanics	3
AP Physics C: Electricity and Magnetism	3
<b>CLEP Exams</b>	
CLEP Biology	50
CLEP Chemistry	50
CLEP Natural Science	50
<b>DSST Exams</b>	
Environmental Science	400
Astronomy	400
Health and Human Development	400
Introduction to Geology	400
<b>IB Courses/Exams</b>	
Biology (HL)	5
Chemistry (HL)	5
Design Technology (HL)	5
Physics (HL)	5

(HL)	Sports, Exercise & Health Science	5
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## Natural Sciences

### Advanced Placement (AP) Exams

#### AP Biology

AP Biology is an introductory college-level biology course. Students cultivate their understanding of biology through inquiry-based investigations as they explore the following topics: evolution, cellular processes — energy and communication, genetics, information transfer, ecology, and interactions.

##### *Minimum Score*

Credit will be awarded for a score of 3 or higher.

##### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://aphighered.collegeboard.org/setting-credit-placement-policy/credit-granting-recommendations>.

Current consensus of schools agrees that a score of 3 is equivalent to a letter grade of C which is a minimum transferable grade.

##### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 3, award credit for an equivalent and appropriate 3-credit biology course in the best interest of the student.

College Board recommends students retain their laboratory materials, as an institution may request submission of these materials prior to awarding lab credit, at the institution's discretion. Additionally, institutions may require a lab assessment to determine adequate lab skills to award lab credit. Institutions may choose to award additional credit for 4 or 5 scores based on course offerings.

#### AP Chemistry

The AP Chemistry course provides students with a college-level foundation to support future advanced course work in chemistry. Students cultivate their understanding of chemistry through inquiry-based investigations, as they explore topics such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium.

##### *Minimum Score*

Credit will be awarded for a score of 3 or higher.

##### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://aphighered.collegeboard.org/setting-credit-placement-policy/credit-granting-recommendations>.

Current consensus of schools agrees that a score of 3 is equivalent to a letter grade of C which is a minimum transferable grade.

##### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 3, award credit for an equivalent and appropriate 3-credit general education chemistry course (either science or non-science major credit) that is in the best interest of the student.

College Board recommends students retain their laboratory materials, as an institution may request submission of these materials prior to awarding lab credit, at the institution's discretion. Additionally, institutions may require a lab assessment to determine adequate lab skills to award lab credit. Institutions may choose to award additional credit for 4 or 5 scores based on course offerings.

## AP Environmental Science

The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science, through which students engage with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. Environmental Science is interdisciplinary, embracing topics from geology, biology, environmental studies, environmental science, chemistry, and geography.

### *Minimum Score*

Credit will be awarded for a score of 3 or higher.

### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://aphighered.collegeboard.org/setting-credit-placement-policy/credit-granting-recommendations>.

Current consensus of schools agrees that a score of 3 is equivalent to a letter grade of C which is a minimum transferable grade.

### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 3, award credit for an equivalent and appropriate 3-credit general education course that is in the best interest of the student. Institutions may choose to award additional credit for 4 or 5 scores based on course offerings.

## AP Physics 1

AP Physics 1 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of physics through inquiry-based investigations as they explore these topics: kinematics; dynamics; circular motion and gravitation; energy; momentum; simple harmonic motion; torque and rotational motion; electric charge and electric force; DC circuits; and mechanical waves and sound.

### *Minimum Score*

Credit will be awarded for a score of 3 or higher.

### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://aphighered.collegeboard.org/setting-credit-placement-policy/credit-granting-recommendations>.

Current consensus of schools agrees that a score of 3 is equivalent to a letter grade of C which is a minimum transferable grade.

### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 3, award credit for an equivalent and appropriate 4-credit algebra-based physics-1 course as identified by the institution in the best interest of students.

College Board recommends students retain their laboratory materials, as an institution may request submission of these materials prior to awarding lab credit, at the institution's discretion. Additionally, institutions may require a lab assessment to determine adequate lab skills to award lab credit. Institutions may choose to award additional credit for 4 or 5 scores based on course offerings.

## AP Physics 2

AP Physics 2 is an algebra-based, introductory college-level physics course. Students cultivate their understanding of physics through inquiry-based investigations as they explore these topics: fluids; thermodynamics; electrical force, field, and potential; electric circuits; magnetism and electromagnetic induction; geometric and physical optics; and quantum, atomic, and nuclear physics.

### *Minimum Score*

Credit will be awarded for a score of 3 or higher.

### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://aphighered.collegeboard.org/setting-credit-placement-policy/credit-granting-recommendations>.

Current consensus of schools agrees that a score of 3 is equivalent to a letter grade of C which is a minimum transferable grade.

### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 3, award credit for an equivalent and appropriate 4-credit algebra-based physics-2 course as identified by the institution in the best interest of students.

College Board recommends students retain their laboratory materials, as an institution may request submission of these materials prior to awarding lab credit, at the institution's discretion. Additionally, institutions may require a lab assessment to determine adequate lab skills to award lab credit. Institutions may choose to award additional credit for 4 or 5 scores based on course offerings.

## AP Physics C: Mechanics

AP Physics C: Mechanics is equivalent to a one-semester, calculus-based, college-level physics course, especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as kinematics; Newton's laws of motion; work, energy and power; systems of particles and linear momentum; circular motion and rotation; and oscillations and gravitation. Introductory differential and integral calculus is used throughout the course.

### *Minimum Score*

Credit will be awarded for a score of 3 or higher.

### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://aphighered.collegeboard.org/setting-credit-placement-policy/credit-granting-recommendations>.

Current consensus of schools agrees that a score of 3 is equivalent to a letter grade of C which is a minimum transferable grade.

### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 3, award credit for an equivalent and appropriate 4-credit calculus-based physics-2 course as identified by the institution in the best interest of students.

College Board recommends students retain their laboratory materials, as an institution may request submission of these materials prior to awarding lab credit, at the institution's discretion. Additionally, institutions may require a lab assessment to determine adequate lab skills to award lab credit. Institutions may choose to award additional credit for 4 or 5 scores based on course offerings.

## AP Physics C: Electricity and Magnetism

AP Physics C: Electricity and Magnetism is a one-semester, calculus-based, college-level physics course, especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as electrostatics; conductors, capacitors, and dielectrics; electric circuits; magnetic fields; and electromagnetism. Introductory differential and integral calculus is used throughout the course.

### *Minimum Score*

Credit will be awarded for a score of 3 or higher.

### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://aphighered.collegeboard.org/setting-credit-placement-policy/credit-granting-recommendations>.

Current consensus of schools agrees that a score of 3 is equivalent to a letter grade of C which is a minimum transferable grade.

### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 3, award credit for an equivalent and appropriate 4-credit calculus-based physics-1 course as identified by the institution in the best interest of students.

College Board recommends students retain their laboratory materials, as an institution may request submission of these materials prior to awarding lab credit, at the institution's discretion. Additionally, institutions may require a lab assessment to determine adequate lab skills to award lab credit. Institutions may choose to award additional credit for 4 or 5 scores based on course offerings.

## College Level Examination Program (CLEP) Exams

### CLEP Biology

The Biology examination covers material that is usually taught in a one-year college general biology course. The subject matter tested covers the broad field of the biological sciences, organized into three major areas: molecular and cellular biology, organismal biology, and population biology. The examination gives approximately equal weight to these three areas.

### *Minimum Score*

Credit will be awarded for a score of 50 or higher.

### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://clep.collegeboard.org/develop-your-clep-program/create-a-clep-policy/ace-credit-recommendations>.

Current consensus of schools and score of 50 is equivalent to a letter grade of C which is a minimum transferable grade.

#### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 50, award credit for an appropriate 3-credit, general education non-lab biology course as identified by the institution in the best interest of students. Placement for a second biology course to be determined at the institutional level based on course offerings at the school

### CLEP Chemistry

The Chemistry examination covers material that is usually taught in a one-year college course in general chemistry. Understanding of the structure and states of matter, reaction types, equations and stoichiometry, equilibrium, kinetics, thermodynamics, and descriptive and experimental chemistry is required, as is the ability to interpret and apply this material to new and unfamiliar problems. During this examination, an online scientific calculator function and a periodic table are available as part of the testing software.

#### *Minimum Score*

Credit will be awarded for a score of 50 or higher.

#### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://clep.collegeboard.org/develop-your-clep-program/create-a-clep-policy/ace-credit-recommendations>.

Current consensus of schools and score of 50 is equivalent to a letter grade of C which is a minimum transferable grade.

#### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 50, award credit for an appropriate 3-credit, general education non-lab chemistry course as identified by the institution in the best interest of students. Placement for a second chemistry course to be determined at the institutional level based on course offerings at the school

### CLEP Natural Science

The Natural Sciences examination covers a wide range of topics frequently taught in introductory courses surveying both biological and physical sciences at the freshman or sophomore level. Such courses generally satisfy distribution or general education requirements in science that usually are not required of, nor taken by, science majors. The Natural Sciences exam is not intended for those specializing in science; it is intended to test the understanding of scientific concepts that an adult with a liberal arts education should have. It doesn't stress the retention of factual details; rather, it emphasizes the knowledge and application of the basic principles and concepts of science, the comprehension of scientific information, and the understanding of issues of science in contemporary society.

#### *Minimum Score*

Credit will be awarded for a score of 50 or higher.

#### *Rationale*

This standard is in line with College Board and American Council on Education's minimum score recommendations <https://clep.collegeboard.org/develop-your-clep-program/create-a-clep-policy/ace-credit-recommendations>.

Current consensus of schools and score of 50 is equivalent to a letter grade of C which is a minimum transferable grade.



### *Additional Credit & Course Equivalency Guidance*

For individuals with a minimum score of 50, award credit for an appropriate 3-credit, general education non-lab science course as identified by the institution in the best interest of students. Placement for a second science course to be determined at the institutional level based on course offerings at the school

## DSST Exams

### Astronomy

The Astronomy exam covers topics such as Celestial mechanics, celestial systems, astronomical instruments, the solar system, nature & evolution, the galaxy, the universe, determining astronomical distances, and life in the universe.

#### *Minimum Score*

Credit will be awarded for a score of 400 or higher.

#### *Rationale*

The minimum score standard is in line with the American Council on Education's minimum score recommendations [https://www.getcollegetcredit.com/exam\\_fact\\_sheets/](https://www.getcollegetcredit.com/exam_fact_sheets/).

The credit and course equivalency guidance extends the ACE recommendation to address lab components of introductory courses.

#### *Additional Credit & Course Equivalency Guidance*

The committee recommends institutions award 3 credits for non-lab introductory astronomy course; if the introductory astronomy course is a lab course, require student to complete lab portion of course to get credit (3 or 4 credits as applicable).

### Environmental Science

The Environmental Science exam covers topics such as Ecological concepts (ecosystems, global ecology, food chains and webs), environmental impacts, environmental management & conservation, and political processes & the future.

#### *Minimum Score*

Credit will be awarded for a score of 400 or higher.

#### *Rationale*

The minimum score standard is in line with the American Council on Education's minimum score recommendations [https://www.getcollegetcredit.com/exam\\_fact\\_sheets/](https://www.getcollegetcredit.com/exam_fact_sheets/).

The additional guidance extends the ACE recommendation to address lab components of introductory courses.

#### *Additional Credit & Course Equivalency Guidance*

The committee recommends institutions award 3 credits for non-lab introductory environmental science course; if introductory environmental science course is a lab course, it is recommended to require student to complete lab portion of course to get credit (3 or 4 credits as applicable).

## Health and Human Development

The Health and Human Development exam covers topics such as Human development and relationships, fitness & nutrition, disease & prevention, consumer awareness, psychological disorders & addictive behaviors, intentional injuries & violence.

### *Minimum Score*

Credit will be awarded for a score of 400 or higher.

### *Rationale*

The minimum score standard is in line with the American Council on Education's minimum score recommendations [https://www.getcollegecredit.com/exam\\_fact\\_sheets/](https://www.getcollegecredit.com/exam_fact_sheets/).

### *Additional Credit & Course Equivalency Guidance*

The committee recommends awarding 3 credits for a health/wellness course; a slight variation from the ACE recommendation, which suggests credit for "Health and Human Development" course.

## Introduction to Geology

The Instruction to Geology exam covers topics such as Igneous, sedimentary, and metamorphic rocks, weathering, groundwater, glaciers, oceanic systems, deserts, winds, hydrologic cycle, internal Earth processes, mineral & energy resources, environmental geology.

### *Minimum Score*

Credit will be awarded for a score of 400 or higher.

### *Rationale*

The minimum score standard is in line with the American Council on Education's minimum score recommendations [https://www.getcollegecredit.com/exam\\_fact\\_sheets/](https://www.getcollegecredit.com/exam_fact_sheets/).

### *Additional Credit & Course Equivalency Guidance*

The committee recommends awarding 3 credits for non-lab introductory geology course; if introductory geology course is a lab course, it is recommended to require student to complete lab portion of course to get credit (3 or 4 credits as applicable).

## International Baccalaureate (IB) Exams

Through studying a science subject, students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, the emphasis on a practical approach. In addition, through the overarching theme of the "Nature of Science" this knowledge and skills will be put into the context of way science and scientists work in the 21st Century and the ethical debates and limitations of creative scientific endeavor.

The sciences are taught practically. Students have opportunities to design investigations, collect data, develop manipulative skills, analyze results, collaborate with peers and evaluate and communicate their findings. The investigations may be laboratory based or they may make use of simulations and data bases. Students develop the skills to work independently on their own design, but also collegiately, including collaboration with schools in different regions, to mirror the way in which scientific research is conducted in the wider community.

Higher Level IB Courses include 240 hours of instruction (compared to 150 hours for standard level); This committee is recommending college credit be awarded for higher level exams only.

### **IB BIOLOGY HL**

Biology is the study of life. The vast diversity of species makes biology both an endless source of fascination and a considerable challenge. Biologists attempt to understand the living world at all

levels from the micro to the macro using many different approaches and techniques. Biology is still a young science and great progress is expected in the 21st century. This progress is important at a time of growing pressure on the human population and the environment.

By studying biology in the DP students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, it is the emphasis on a practical approach through experimental work that characterizes the sciences. Teachers provide students with opportunities to design investigations, collect data, develop manipulative skills, *analyze* results, collaborate with peers and evaluate and communicate their findings.

#### *Minimum Score*

Credit will be awarded for a score of 5 or higher.

#### *Rationale*

The scoring descriptors in the International Baccalaureate guidance documentation indicate that students scoring 5 or higher on this assessment demonstrate a sound understanding of the concepts covered by the course.

#### *Additional Credit & Course Equivalency Guidance*

A score of 5 or higher on the IB Biology HL exam may equate to up to 8 credits of introductory biology coursework. The curriculum includes investigative lab instruction which may be simulated or hands-on experiences, institutions may factor the type of instruction into their decision to award lab credit or not. Ultimately, credit should be awarded based on student's selected program, program structure, and best interests of the student at the discretion of the awarding institution.

## IB CHEMISTRY HL

Chemistry is an experimental science that combines academic study with the acquisition of practical and investigational skills. Chemical principles underpin both the physical environment in which we live and all biological systems. Chemistry is often a prerequisite for many other courses in higher education, such as medicine, biological science and environmental science.

Both theory and practical work should be undertaken by all students as they complement one another naturally, both in school and in the wider scientific community. The DP chemistry course allows students to develop a wide range of practical skills and to increase facility in the use of mathematics. It also allows students to develop interpersonal and information technology skills, which are essential to life in the 21<sup>st</sup> century.

By studying chemistry students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, it is the emphasis on a practical approach through experimental work that characterizes the subject.

#### *Minimum Score*

Credit will be awarded for a score of 5 or higher.

#### *Rationale*

The scoring descriptors in the International Baccalaureate guidance documentation indicate that students scoring 5 or higher on this assessment demonstrate a sound understanding of the concepts covered by the course.

#### *Additional Credit & Course Equivalency Guidance*

A score of 5 or higher on the IB Chemistry HL exam may equate to up to 8 credits of introductory chemistry coursework. The curriculum includes investigative lab instruction which may be simulated or hands-on experiences, institutions may factor the type of instruction into their decision to award lab credit or not. Ultimately, credit should be awarded based on student's selected program, program structure, and best interests of the student at the discretion of the awarding institution.

## IB DESIGN TECHNOLOGY HL

The Design Technology course aims to develop internationally minded people whose enhanced understanding of design and the technological world can facilitate our shared guardianship of the planet and create a better world. Inquiry and problem-solving are at the heart of the subject. DP design technology requires the use of the design cycle as a tool, which provides the methodology used to structure the inquiry and analysis of problems, the development of feasible solutions, and the testing and evaluation of the solution. A solution can be defined as a model, prototype, product or system that students have developed independently.

DP design technology achieves a high level of design literacy by enabling students to develop critical-thinking and design skills, which they can apply in a practical context. While designing may take various forms, it will involve the selective application of knowledge within an ethical framework.

#### *Minimum Score*

Credit will be awarded for a score of 5 or higher.

#### *Rationale*

The scoring descriptors in the International Baccalaureate guidance documentation indicate that students scoring 5 or higher on this assessment demonstrate a sound understanding of the concepts covered by the course.

#### *Additional Credit & Course Equivalency Guidance*

A score of 5 or higher on the IB Design Technology exam may equate to up to 6 credits of introductory Art coursework.

## IB PHYSICS HL

Physics is the most fundamental of the experimental sciences, as it seeks to explain the universe itself, from the very smallest particles to the vast distances between galaxies. Despite the exciting and extraordinary development of ideas throughout the history of physics, observations remain essential to the very core of the subject. Models are developed to try to understand observations, and these themselves can become theories that attempt to explain the observations.

Besides helping us better understand the natural world, physics gives us the ability to alter our environments. This raises the issue of the impact of physics on society, the moral and ethical dilemmas, and the social, economic and environmental implications of the work of physicists.

By studying physics students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, it is the emphasis on a practical approach through experimental work that characterizes the subject. Teachers provide students with opportunities to develop manipulative skills, design investigations, collect data, analyze results and evaluate and communicate their findings.

#### *Minimum Score*

Credit will be awarded for a score of 5 or higher.

#### *Rationale*

The scoring descriptors in the International Baccalaureate guidance documentation indicate that students scoring 5 or higher on this assessment demonstrate a sound understanding of the concepts covered by the course.

#### *Additional Credit & Course Equivalency Guidance*

A score of 5 or higher on the IB Physics HL exam may equate to up to 8 credits of introductory physics coursework. The curriculum includes investigative lab instruction which may be simulated or hands-on experiences, institutions may factor the type of instruction into their decision to award lab credit or not. Ultimately, credit should be awarded based on student's selected program, program structure, and best interests of the student at the discretion of the awarding institution.

## IB SPORTS, EXERCISE, & HEALTH SCIENCE HL

Sports, exercise and health science (SEHS) is an experimental science course combining academic

study with practical and investigative skills. SEHS explores the science underpinning physical performance and provides the opportunity to apply these principles. The course incorporates the disciplines of anatomy and physiology, biomechanics, psychology and nutrition. Students cover a range of core and option topics and carry out practical (experimental) investigations in both laboratory and field settings. The course offers a deeper understanding of the issues related to sports, exercise and health in the 21st century and addresses the international dimension and ethics related to both the individual and global context.

Apart from being worthy of study in its own right, SEHS is good preparation for courses in higher or further education related to sports fitness and health and serves as useful preparation for employment in sports and leisure industries.

#### *Minimum Score*

Credit will be awarded for a score of 5 or higher.

#### *Rationale*

The scoring descriptors in the International Baccalaureate guidance documentation indicate that students scoring 5 or higher on this assessment demonstrate a sound understanding of the concepts covered by the course.

#### *Additional Credit & Course Equivalency Guidance*

A score of 5 or higher on the IB Sports, Exercise & Health Science HL exam may equate to up to 8 credits of introductory Physical Education, Kinesiology, or Health Science coursework. The curriculum includes investigative lab instruction which may be simulated or hands-on experiences, institutions may factor the type of instruction into their decision to award lab credit or not. Ultimately, credit should be awarded based on student's selected program, program structure, and best interests of the student at the discretion of the awarding institution.