

# SCIENCE DEPARTMENT

COURSE TITLES	CREDIT	GRADE LEVEL				PREREQUISITE
		9	10	11	12	
<b><u>Required Courses</u></b>						
Biology I <b>N</b>	.5	x	x	x	x	None
Honors Biology I <b>N</b>	.5	x	x	x	x	None
Earth and Space Science <b>N</b>	.5	x	x	x	x	None
Honors Earth and Space Science <b>N</b>	.5	x	x	x	x	None
Chemistry I <b>N</b>	.5		x	x	x	Algebra I
Honors Chemistry I <b>N</b>	.5		x	x	x	Algebra I (grade of B or better)
Environmental Science <b>N</b>	.5		x	x	x	None
Honors Environmental Science <b>N</b>	.5	x	x	x	x	None
Biology II <b>N</b>	.5			x	x	Chemistry I
Honors Biology II <b>N</b>	.5		x	x	x	Chemistry I
Physics I <b>N</b>	.5			x	x	Algebra I
Honors Physics I <b>N</b>	.5			x	x	Geometry (corequisite)
<b><u>Elective Courses</u></b>						
AP Biology <b>N</b>	1			x	x	Honors Biology II
AP Chemistry <b>N</b>	1			x	x	Honors Chemistry II
AP Physics I <b>N</b>	.5			x	x	Honors Physics I
AP Physics II <b>N</b>	1			x	x	AP Physics I
Astronomy <b>N</b>	.5		x	x	x	Honors Earth & Space Science
Chemistry II <b>N</b>	.5		x	x	x	Chemistry I
Forensics <b>N</b>	.5			x	x	Biology II
Honors Anatomy & Physiology <b>N</b>	1		x	x	x	Biology II
Honors Chemistry II <b>N</b>	.5		x	x	x	Honors Chemistry I
Physics II <b>N</b>	.5			x	x	Physics I

**N** - NCAA approved courses

# BHS Graduation Path

- This path is designed to guide students to meet the graduation requirements in science. If you are planning on attending a 4-year college, it is strongly recommended that you consider the Accelerated Path.
- Students planning on attending any post-secondary education are encouraged to complete at least two elective courses in addition to the required six (preferably to include Chemistry II and/or Physics II).
- Any class can be replaced with an honors section, based upon student interest and the advice of teachers, counselors, and parents.
- Elective courses can be completed senior year, or earlier if the student has already met the prerequisites.

**Reminder:** Paths are a tool to better help students plan their academic careers. Courses can be rearranged, as necessary, to best match student needs and interests.

## **6 required science courses are in bold in table.**

All classes are 9 week classes, unless otherwise noted.

<b>Grade</b>	<b>Course 1</b>	<b>Course 2</b>
<b>9</b>	<b>Biology I</b>	<b>Earth/Space Science</b>
<b>10</b>	<b>Chemistry I</b>	<b>Environmental Science</b>
<b>11</b>	<b>Biology II</b> (Chemistry I prerequisite)	<b>Physics I</b> (Algebra I prerequisite)
<b>12</b>	Electives	

Suggested Electives:

- Anatomy/Physiology (18 weeks): After Biology II
- Chemistry II: After Chemistry I
- Forensics: After Biology II
- Physics II: After Physics I

## **BHS Accelerated Path**

- This path is designed to accommodate students who are planning on attending a 4-year college or university, and who may or may not be looking to pursue a STEM field. (STEM = Science Technology Engineering Math)
- Any honors class can be replaced with a general section, based upon student interest. It is encouraged that students taking the Accelerated Path take the majority of science classes at the honors level.
- Students planning on attending a 4-year college or university are strongly advised to complete at least two elective courses in addition to the required six (preferably to include Chemistry II and/or Physics II).
- Elective courses can be completed senior year, or earlier, if the student has already met the prerequisites.

**Reminder:** Paths are a tool to better help students plan their academic careers. Courses can be rearranged, as necessary, to best match student needs and interests.

### **6 required science courses are in bold in table.**

All classes are 9 week classes unless otherwise noted.

<b>Grade</b>	<b>Course 1</b>	<b>Course 2</b>	<b>Course 3</b>
<b>9</b>	<b>Honors Biology I</b>	<b>Honors Earth/Space Science</b>	<b>Honors Environmental Science</b>
<b>10</b>	<b>Honors Chemistry I</b> (Algebra I prerequisite)	Honors Chemistry II (Honors Chemistry I prerequisite)	<b>Honors Biology II</b> (Chemistry I prerequisite)
<b>11</b>	<b>Honors Physics I</b> (Geometry corequisite)	Physics II (Physics I prerequisite)	Elective
<b>12</b>	Electives		

#### Suggested Electives:

- AP Biology (18 weeks): After Honors Biology II
- AP Chemistry (18 weeks): After Honors Chemistry II
- AP Physics: After Honors Physics I (In place of Physics II)
- Anatomy/Physiology (18 weeks): After Biology II
- Astronomy: After Honors Earth/Space Science
- Chemistry II: After Chemistry I
- Forensics: After Biology II
- Physics II: After Physics I

## **BHS Advanced STEM Career Path**

- This path is designed for students who are planning on attending a 4-year college or university and pursuing a STEM field. (STEM = Science Technology Engineering Math)
- Students may choose to take some or all of the AP courses offered, and should talk to their teachers and counselor to determine the course load that best fits their goals.
- It is strongly encouraged that students taking this path will take the majority of science classes at the honors level, as many are prerequisites for further courses.
- Students planning on attending a 4-year college or university are also strongly advised to complete at least two elective courses in addition to the required six (preferably to include Chemistry II and/or Physics II).
- Elective courses can be completed senior year, or earlier, if the student has already met the prerequisites

**Reminder:** Paths are a tool to better help students plan their academic careers. Courses can be rearranged, as necessary, to best match student needs and interests.

### **6 required science courses are in bold in table.**

All classes are 9 week classes unless otherwise noted.

<b>Grade</b>	<b>Course 1</b>	<b>Course 2</b>	<b>Course 3</b>
<b>9</b>	<b>Honors Biology I</b>	<b>Honors Earth/Space Science</b>	<b>Honors Environmental Science</b>
<b>10</b>	<b>Honors Chemistry I</b> (Algebra I prerequisite)	Honors Chemistry II (Honors Chemistry I prerequisite)	<b>Honors Biology II</b> (Chemistry I prerequisite)
<b>11</b>	<b>Honors Physics I</b> (Geometry corequisite)	AP Physics (Honors Physics I prerequisite)	Elective
<b>12</b>	AP Biology (18 weeks) (Honors Biology II prerequisite)	AP Chemistry (18 weeks) (Honors Chemistry II prerequisite)	Elective

#### Suggested Electives:

- AP Biology (18 weeks): After Honors Biology II
- AP Chemistry (18 weeks): After Honors Chemistry II
- AP Physics: After Honors Physics
- Anatomy/Physiology (18 weeks): After Biology II
- Astronomy: After Honors Earth/Space Science
- Honors Chemistry II: After Honors Chemistry I
- Forensics: After Biology II
- Physics II: After Physics I if not taking AP Physics

## **COURSE DESCRIPTIONS**

The reference to standards in the NGSS course boxes is linked to the [NGSS Standards Web page](#). They are all linked by clicking on the standard.

### **AP BIOLOGY N**

**171511**

**GRADES: 11-12**

**\*PREREQUISITE: A grade of B or better in Honors Biology II and Chemistry I**

**1 CREDIT/2 TERMS**

This course will prepare students to successfully pass the Advanced Placement Biology exam written by the College Board in May. It is designed to be the equivalent of a college introductory biology course usually taken by biology majors. AP Biology students are expected to read nightly, write weekly essays, complete study guides, take exams and perform several labs throughout the semester. AP Biology is taught as a college level class in the high school setting, so the grading scale is adjusted to accommodate the rigorous material. The 4 “Big Ideas” as directed by the College Board are: 1) The process of evolution drives the diversity and unity of life. 2) Biological systems utilize energy and molecular building blocks to grow, to reproduce and to maintain homeostasis. 3) Living systems store, retrieve, transmit and respond to information essential to life processes. 4) Biological systems interact, and these interactions possess complex properties.

### **AP CHEMISTRY N**

**172511**

**GRADES: 11-12**

**\*PREREQUISITE: Honors Chemistry II**

**1 CREDIT/2 TERMS**

This is a college level course that expands topics covered in honors chemistry as well as introduce new areas of study such as electrochemistry and organic chemistry. It provides students a wide opportunity to develop and improve their investigative skills. Basic concepts of chemistry are reviewed, then developed into increasingly sophisticated ideas that are useful in other physical, biological, and applied sciences such as medicine, engineering, agriculture, and consumer sciences. Concepts covered include atomic structure and bonding, solution chemistry (including acids and bases), the behavior of gases, reaction kinetics and equilibrium, and thermodynamics. Students completing AP Chemistry may elect to take the National CEEB Advanced Placement Exam to earn college credit.

### **AP PHYSICS I N**

**173631**

**GRADES: 11-12**

**\*PREREQUISITE: Honors Physics I**

**.5 CREDIT/1 TERM**

AP® Physics 1 is the first course in a two course sequence for AP Physics. AP® Physics 1: Algebra-based and AP Physics 2: Algebra-based is a two-year sequence equivalent to the first and second semesters of a typical introductory, algebra-based, college physics course. This two year sequence gives teachers the time needed to foster greater depth of conceptual understanding through the use of student-centered, inquiry based instructional practices. There will be an AP exam available at the end of this course to help students earn college credit. Each of the two courses in the sequence will have their own individual AP exams.

This course will address a number of concepts, a few of which are as follows: objects and systems have properties such as mass and charge. Systems may have internal structure. The behavior of objects with respect to their mass, position, velocity, and acceleration, and the results of interactions between these objects and the fields that they reside in. Interaction between systems can result in the transfer of energy of the system through work. A change to a system is constrained by the nature of conservation of energy, charge, and momentum. Waves allow the transfer of energy, and momentum between objects, but without permanently transferring the mass, and can be described in mathematical models.

### **AP PHYSICS II N**

**173623**

**GRADES: 11-12**

**\*PREREQUISITE: AP Physics I**

**1 CREDIT/2 TERMS**

AP® Physics 2 is the second course in a two course sequence for AP Physics. AP® Physics 1: Algebra-based and AP Physics 2: Algebra-based is a two-year sequence equivalent to the first and second semesters of a typical introductory, algebra-based, college physics course. This two year sequence gives teachers the time needed to foster greater depth of conceptual understanding through the use of student-centered, inquiry based instructional practices. This course will cover many of the topics from the first in the sequence, adding depth and additional concepts throughout the semester. There will be an additional AP exam available at the end of this course to help students earn college credit.

### **ASTRONOMY N**

**176111**

**GRADES: 10-12**

**\*PREREQUISITE: Honors Earth & Space Science**

**.5 CREDIT/1 TERM**

Astronomy is a 9-week class that focuses on becoming more familiar with the night sky. Lessons and skills include: locating constellations and other celestial coordinates, learning how we gather and interpret light from space to determine astronomical distances and other celestial properties, examining the probability of life beyond Earth. We will also explore current astronomical events/discoveries and how they relate to what we are

learning. Teaching strategies involve drawing on student interest through discussion, multimedia presentations, simulations, labs, and usage of our newly-updated planetarium.

## **BIOLOGY I N**

**171131**

**GRADE: 9-12**

**\*PREREQUISITE: NONE**

**.5 CREDIT/1 TERM**

This course will focus on Ecology, Evolution and Human Body Systems. Students will focus on using mathematical models and empirical evidence to construct models and evaluate explanations. Students will also communicate and design investigations to gain evidence about life.

### **STANDARDS:**

NGSS High School Life Science: [4-1, 4-2, 4-3, 4-4, 4-5, 2-1, 2-2, 2-4, 2-6 & 2-8](#)

NGSS High School Engineering and Technology Standards: [1-1, 1-2, 1-3 & 1-4](#)

## **HONORS BIOLOGY I N**

**171141**

**GRADE: 9-12**

**\*PREREQUISITE: NONE**

**.5 CREDIT/1 TERM**

**Honors level courses have higher reading and math expectations and more time will need to be spent working independently outside of class.**

This course will focus on Ecology, Evolution and Human Body Systems. Students will focus on using mathematical models and empirical evidence to construct models and evaluate explanations. Students will also communicate and design investigations to gain evidence about life.

### **STANDARDS:**

NGSS High School Life Science: [4-1, 4-2, 4-3, 4-4, 4-5, 2-1, 2-2, 2-4, 2-6 & 2-8](#)

NGSS High School Engineering and Technology Standards: [1-1, 1-2, 1-3 & 1-4](#)

## **BIOLOGY II N**

**171151**

**GRADE: 11-12**

**\*PREREQUISITE: Chemistry I**

**.5 CREDIT/1 TERM**

This course will focus on topics in biology that involve chemistry. Topics include the structure and function of DNA and its part in cell division, interacting systems in multicellular organisms, the link between homeostasis and feedback and the interdependence of photosynthesis and respiration. Students will be expected to construct explanations, develop models and apply concepts of math and statistics to arguments and investigations.

### **STANDARDS:**

NGSS High School Life Science Standards: [1-1, 1-3, 1-4, 1-5, 1-6, 1-7, 2-3, 2-5, 3-1, 3-2 & 3-3](#)

## **HONORS BIOLOGY II N**

**171152**

**GRADE: 10-12**

**\*PREREQUISITE: Chemistry I**

**.5 CREDIT/1 TERM**

**Honors level courses have higher reading and math expectations and more time will need to be spent working independently outside of class.**

This course will focus on topics in biology that involve chemistry. Topics include the structure and function of DNA and its part in cell division, interacting systems in multicellular organisms, the link between homeostasis and feedback and the interdependence of photosynthesis and respiration. Students will be expected to construct explanations, develop models and apply concepts of math and statistics to arguments and investigations.

### **STANDARDS:**

NGSS High School Life Science Standards: [1-1, 1-3, 1-4, 1-5, 1-6, 1-7, 2-3, 2-5, 3-1, 3-2 & 3-3](#)

## **CHEMISTRY I N**

**172111**

**GRADE: 10-12**

**\*PREREQUISITE: Algebra 1**

**.5 CREDIT/1 TERM**

This course assesses standards dealing with phases of matter, energy, periodic trends, chemical reactions and atomic structure. There is a second quarter of chemistry offered as an elective for students. It is recommended that all honors chemistry students take Honors Chemistry II and college bound general chemistry students (especially those who may continue in a science field) take Chemistry II prior to graduation.

### **STANDARDS:**

NGSS High School Physical Science Standards: [1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8, 2-6, 3-1, 3-2 & 3-4](#)

**HONORS CHEMISTRY I N**

172121

GRADE: 9-12

\*PREREQUISITE: Algebra 1 (grade of B or better)

.5 CREDIT/1 TERM

**Honors level courses have higher reading and math expectations and more time will need to be spent working independently outside of class.**

This course assesses standards dealing with phases of matter, energy, periodic trends, chemical reactions and atomic structure. There is a second quarter of chemistry offered as an elective for students. It is recommended that all honors chemistry students take Honors Chemistry II and college bound general chemistry students (especially those who may continue in a science field) take Chemistry II prior to graduation.

**STANDARDS:**

NGSS High School Physical Science Standards: [1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-8, 2-6, 3-1, 3-2 & 3-4](#)

NGSS High School Engineering and Technology Standards: [1-1, 1-2, 1-3, & 1-4](#)

**CHEMISTRY II N**

172112

GRADES: 10-12

\*PREREQUISITE: Chemistry I

.5 CREDIT/1 TERM

This is a course to follow Chemistry I or Honors Chemistry I for those students who want to enhance their chemistry background. It is recommended for the college bound student, especially those who want to continue in a science field. Topics covered include composition of matter, stoichiometry, gas laws, and acids and bases.

**HONORS CHEMISTRY II N**

172122

GRADES: 10-12

\*PREREQUISITE: Honors Chemistry I

.5 CREDIT/1 TERM

**Honors level courses have higher reading and math expectations and more time will need to be spent working independently outside of class.**

This is a course to follow Chemistry I or Honors Chemistry I for those students who want to enhance their chemistry background. It is recommended for the college bound student, especially those who want to continue in a science field. Topics covered include composition of matter, stoichiometry, gas laws, and acids and bases.

**EARTH AND SPACE SCIENCE N**

170121

GRADE: 9-12

\*PREREQUISITE: NONE

.5 CREDIT/1 TERM

This course covers topics in astronomy and geology.. Students will focus on constructing explanations and developing models using mathematical computation and empirical evidence. Students will emphasize applying scientific reasoning to explanations and models of earth and space systems and how they are connected.

**STANDARDS:**

NGSS High School Earth and Space Science: [1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-8, 2-1 & 2-3](#)

NGSS High School Engineering and Technology: [1-1, 1-2, 1-3, & 1-4](#)

**HONORS EARTH AND SPACE SCIENCE N**

170131

GRADE: 9-12

\*PREREQUISITE: NONE

.5 CREDIT/1 TERM

**Honors level courses have higher reading and math expectations and more time will need to be spent working independently outside of class.**

This course covers topics in astronomy and geology.. Students will focus on constructing explanations and developing models using mathematical computation and empirical evidence. Students will emphasize applying scientific reasoning to explanations and models of earth and space systems and how they are connected.

**STANDARDS:**

NGSS High School Earth and Space Science: [1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-8, 2-1 & 2-3](#)

NGSS High School Engineering and Technology: [1-1, 1-2, 1-3, & 1-4](#)

**ENVIRONMENTAL SCIENCE N**

175111

**GRADES: 10-12****\*PREREQUISITE: NONE****.5 CREDIT/1 TERM**

This course deals with impacts of change on our environment. Students will develop mathematical models and form solutions to environmental issues. Students will plan and conduct at least one investigation into an environmental issue using their models. Students will evaluate arguments about what impacts certain actions have on the environment.

**STANDARDS:**High School Earth Science Standards: [2-2, 2-4, 2-6, 3-1, 3-2, 3-3, 3-5 & 3-6](#)High School Life Science Standard: [2-7, 4-6](#)High School Engineering and Technology Standards: [1-1, 1-2, 1-3, & 1-4](#)High School Physical Science: [3-3](#)**HONORS ENVIRONMENTAL SCIENCE N**

175112

**GRADES: 9-12****\*PREREQUISITE: NONE****.5 CREDIT/1 TERM**

**Honors level courses have higher reading and math expectations and more time will need to be spent working independently outside of class.**

This course deals with impacts of change on our environment. Students will develop mathematical models and form solutions to environmental issues. Students will plan and conduct at least one investigation into an environmental issue using their models. Students will evaluate arguments about what impacts certain actions have on the environment.

**STANDARDS:**High School Earth Science Standards: [2-2, 2-4, 2-6, 3-1, 3-2, 3-3, 3-5 & 3-6](#)High School Life Science Standard: [2-7, 4-6](#)High School Engineering and Technology Standards: [1-1, 1-2, 1-3, & 1-4](#)High School Physical Science: [3-3](#)**FORENSICS N**

174141

**GRADES: 11-12****\*PREREQUISITE: Biology II****.5 CREDIT/1 TERM**

Students in Forensic Science will learn the services of a crime laboratory and rules of processing evidence from a crime scene. Students will study methods of analyzing physical evidence including hair, glass, fiber, DNA, fingerprints, bone, and serology evidence.

**HONORS ANATOMY & PHYSIOLOGY N**

171311

**GRADES: 10-12****\*PREREQUISITE: Biology II****1 CREDIT/2 TERMS**

This course is designed primarily for students who have an interest in pursuing one of the health related fields or biology as a career. The course contains the following topics: mammalian anatomy, digestive system, nutrition, circulatory system, excretory system, respiratory system, musculoskeletal system, nervous system, and the reproductive system. Where practical, the students act as the laboratory test subjects. All students should have a well based understanding of mammalian anatomy and physiology as well as some knowledge of the improper functioning of human physiological activities upon completion of the course.

**PHYSICS I N**

173113

**GRADE: 11-12****\*PREREQUISITE: Algebra I****.5 CREDIT/1 TERM**

This course will focus on forces of gravity, electricity and magnetism and how they impact motion and collisions involved in linear motion. Ideas of momentum and mechanical energy will be applied to motions and collisions. Students will also investigate physics principles that are required to understand how a cell phone allows near instantaneous communication across the globe. Students will apply mathematical models to design, refine and evaluate investigations and arguments in science.

**STANDARDS:**NGSS High School Physical Science Standards: [2-1, 2-2, 2-3, 2-4, 2-5, 3-3, 3-5, 4-2, 4-3, 4-4 & 4-5](#)NGSS High School Engineering and Technology Standards: [1-1, 1-2, 1-3, & 1-4](#)

**HONORS PHYSICS I N**

173123

**GRADE: 11-12****\*PREREQUISITE: Geometry (corequisite)****.5 CREDIT/1 TERM**

This course will focus on forces of gravity, electricity and magnetism and how they impact motion and collisions involved in linear motion. Ideas of momentum and mechanical energy will be applied to motions and collisions. Students will also investigate physics principles that are required to understand how a cell phone allows near instantaneous communication across the globe. Students will apply mathematical models to design, refine and evaluate investigations and arguments in science.

**STANDARDS:**NGSS High School Physical Science Standards: [2-1, 2-2, 2-3, 2-4, 2-5, 3-3, 3-5, 4-2, 4-3, 4-4 & 4-5](#)NGSS High School Engineering and Technology Standards: [1-1, 1-2, 1-3, & 1-4](#)**PHYSICS II N**

173114

**GRADES: 11-12****\*PREREQUISITE: Physics I****.5 CREDIT/1 TERM**

This course will expand upon the concepts covered in Physics I by applying the same concepts to 2 dimensional motion. Students will use mathematical models to predict and analyse the behavior of projectiles moving through the air, the result of several forces acting upon an object simultaneously, and the results of interactions between two or more objects. Students will also explore the principles of electricity using direct current circuits, and explore aspects of special relativity.