Science and technology are an essential and integral part of today’s world. Regardless of post-secondary plans, we believe that all Argo graduates should understand the process of science, so they will be empowered to make good decisions based on evidence. The science staff is committed to helping our students become scientifically literate; it is our goal to provide challenging coursework that will help all learners develop the skills of observation, communication, self-reflection, critical thinking, and skepticism.

### Suggested Science Sequence

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**Students may take AP Chemistry as sophomores pending successful completion of the Chemistry Jump Course in the summer before 10th grade.**

Class of 2021, and 2020: The two (2) year Science requirement must include 1 Life Science credit and 1 Physical Science credit. Beginning with the Class of 2022, the graduation requirement includes 2 years of Science, with no specific requirement for Life and Physical Science.

**Life Sciences**  
Biology  
AP Biology  
Medical Biology

**Physical Sciences**  
Earth Science  
Physics  
Chemistry
**Course Descriptions:**

**AP BIOLOGY**
SC980
Year: 11, 12
Credit: 1
This course is based on four Big Ideas, which encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about living organisms and biological systems. The following are Big Ideas:

- the process of evolution explains the diversity and unity of life
- biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis
- living systems store, retrieve, transmit, and respond to information essential to life processes
- biological systems interact, and these systems and their interactions possess complex properties

This course requires a teacher recommendation

**AP CHEMISTRY**
SC990
Year: 10, 11, 12
Credit: 1
The AP Chemistry course provides students with a college-level foundation to support future advanced coursework in chemistry. Students cultivate their understanding of chemistry through inquiry-based investigations, as they explore content such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium.

The AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first college year. The course content is organized into commonly taught units. The units have been arranged in a logical sequence frequently found in many college courses and textbooks. These units include:

Unit 1: Atomic Structure and Properties
Unit 2: Molecular and Ionic Compound Structure and Properties
Unit 3: Intermolecular Forces and Properties
Unit 4: Chemical Reactions
Unit 5: Kinetics
Unit 6: Thermodynamics
Unit 7: Equilibrium
Unit 8: Acids and Bases
Unit 9: Applications of Thermodynamics

**Recommended:** Semester grades of “A” or “B” in both semesters of Honors Chemistry or teacher recommendation. Sophomores may take this class if they have received an “A” or “B” in Honors Physics and successfully complete the Chemistry Jump Course in the summer after 9th grade. Juniors and Seniors do not need to take the Chemistry Jump Course.
AP PHYSICS C - MECHANICS
SC975
Year: 12
Credit: 1
AP Physics C: Mechanics covers the Big Ideas of a typical calculus-based, introductory college-level physics sequence. It is designed to prepare students for future advanced work in the sciences and engineering. Students will develop critical thinking and reasoning skills, as defined by the AP Physics C: Mechanics Learning Objectives. Concurrent enrollment in AP Calculus is required, as is two semesters of prior physics courses. Topics of study include:
- Use kinematic equations to predict motion
- Apply Newton’s laws to predict and describe motion
- Apply the laws of conservation of linear and angular momentum to analyze the motion of objects and systems of objects
- Trace the flow of energy through a system
- Describe oscillations of pendulums, springs, and orbiting objects

Recommended: Grade of B or higher in previous Physics class – concurrent enrollment in AP Calculus or successful completion of the AP Summer Bridge class. Students who will not be concurrently enrolled in AP Calculus must take AP Summer Bridge to learn the math necessary for this course.

BIOLOGY
SC630
Year: 11, 12
Credit: 1
This lab-based course encompasses ideas from all courses such as energy and matter and draws on the student’s knowledge of scientific inquiry/lab skills. The major concepts covered in this course include:
- evolution as a unifying theme
- chemical basis of life
- flow of energy in an ecosystem
- the use of molecular building blocks for growth and reproduction
- the storage, retrieval, and transmission of genetic material
- analyzing and writing a conclusion based on either qualitative or quantitative data

Recommended: SC620 or equivalent credit in Chemistry

CHEMISTRY
SC620
Year: 10, 11, 12
Credit: 1
Students will draw upon their knowledge of physics and will build a foundation for modern biology. This course covers topics such as, specific heat capacity, atomic structure, electronic structure, ionic and molecular compounds, stoichiometry, properties of solids and liquids, gases, solutions, acid-base chemistry, and reaction rates. The students must keep a lab notebook. At the end of this course students will be able to:
- execute chemical lab investigations and keep a lab notebook
- use algebraic functions to describe trends in scientific data
- interpret scientific data and draw reasonable conclusions from observations
- draw connections between chemistry, physics and biology
CHEMISTRY JUMP COURSE

Year: 2
Credit: 1 Elective
This course is intended for self-motivated, high achieving students who are interested in taking AP Chemistry without having first taken Honors Chemistry. This 10-week summer course covers the basic information needed to be successful in AP Chemistry. Topics include: nomenclature, atomic structure and periodic trends, chemical reactions, bonding, stoichiometry, structure and properties, gas laws, solutions, acids and bases. **Students will complete the majority of the work on their own using the online Canvas course and** will meet with the teacher once per week to complete labs, ask questions, and take tests. In addition, the teacher will be available to answer questions via email on a daily basis.

Successful completion of this course is required in order to enroll in AP Chemistry as a sophomore. Credit will be awarded on a pass/fail basis after a student has met the following criteria:

- all homework assignments, quizzes, labs, and tests have been completed
- overall course grade of 70% or higher
- attend at least 9 out of the 10 class sessions

**This course does not fulfill a science requirement but does earn elective credit.** If the student withdraws or does not successfully complete the course, he/she will be automatically enrolled in Honors Chemistry at the start of the next academic year.

**Fees:** Summer school tuition

CHEMISTRY OF FOODS (SUMMER SCHOOL)

SC700
Year: 9, 10, 11, 12
Credit: 0.5 (Physical science or CTE credit)
In this course, students investigate the chemical components and physical properties of foods. This course involves laboratory experiences in both Science and Family and Consumer Sciences and is led by teachers from both departments. Students will gain an understanding of food science as well as an awareness of health, nutrition and culinary science principles. Science topics include: unit conversion, temperature conversions, elements/compounds/mixtures, chemical reactions, heat transfer, acid/bases, percent yield relating to meal planning. Scientific processes are utilized as students explore the physical and chemical properties of food and science cooking applications. This course is appropriate for students who are interested in a hands-on application of scientific principles to the study of cooking and nutrition.

EARTH SCIENCE

SC340
Year: 11, 12
Credit: 1
Earth Science is designed as a one-year course. Eight units of study are tied together through a set of enduring topics that are emphasized throughout the course. The topics below are designed to address three-dimensional learning standards including disciplinary core ideas, cross cutting concepts, and science practices:

- Space Systems: What is Earth’s place in the universe? What makes up our solar system?
- History of Earth: How has the Earth and life on it changed over time?
- Earth Systems: How does water influence Earth’s surface? How do major Earth systems interact?
- Weather and Climate: What factors interact and influence weather and climate?
- Human Sustainability and impact: How can natural hazards be predicted? How to human activities affect Earth’s systems?
**FORENSIC SCIENCE**
SC500  
Year: 12  
Credit: 1  
The purpose of this lab-based course is to gain experience in the most common investigative techniques currently used by forensic scientists, crime scene investigators, and other law enforcement agencies; and to develop an understanding of the scientific concepts which serve as a basis for these techniques. At the end of this course students will be able to:

- secure and document a crime scene  
- collect and evaluate DNA, blood, hair, fibers, and other trace evidence  
- chemically analyze unknown substances that might be found at a crime scene  
- use methods in forensic anthropology and psychology to evaluate evidence  

**Prerequisite:** 3 years of science

**HONORS CHEMISTRY**
SC920  
Year: 10, 11, 12  
Credit: 1  
Honors Chemistry is a rigorous, fast paced, lab-based course with an emphasis on calculations and explanation. This course covers various topics, including: specific heat capacity, atomic structure, electronic structure, ionic and molecular compounds, stoichiometry, properties of solids and liquids, gases, solutions, acid-base chemistry, simple reaction rates and equilibrium, redox reactions, nuclear chemistry, and organic chemistry. The course is designed to prepare the students for both college chemistry and AP Chemistry. The students must keep a lab notebook. At the end of this course students will be able to:

- explain phenomena on the macro- and molecular-level  
- execute chemical lab investigations and keep a lab notebook  
- understand the mathematical relationships in chemistry  
- draw connections between various topics  

**Recommended:** Completion of Honors Physics with a grade of A or B, or teacher recommendation.

**HONORS PHYSICS**
SC810  
Year: 9  
Credits: 1  
At the end of this lab-based course students will be able to:

- Execute lab investigations  
- Understand how physics relates to the world and universe around us  
- Use mathematical equations to predict motion  
- Apply Newton's laws to everyday situations  
- Gather evidence to support conservation of energy  
- Use mathematical models to predict electrostatic forces  
- Understand the nature of waves, including sound and light.  

**Recommended:** Students should be concurrently enrolled Honors Algebra 1 or Honors Geometry with a PSAT 8 math score of 440 of better. This class uses more mathematical computations and reasoning than SC610 Physics 1st.

**MEDICAL BIOLOGY**
SC650  
Year: 11, 12  
Credit: 1  
This lab-based course is designed for students who want to enter a medical profession. Students will gain knowledge in fundamental topics in human biology and how they pertain to the medical field. There will be a heavy emphasis on cellular biology, genetics, disease, immunology, evolutionary biology, and bioethics.  

**Recommended:** C or higher in Chemistry
PHYSICS 1st
SC610
Year: 9
Credits: 1
At the end of this lab-based course students will be able to:
- Execute lab investigations
- Understand how physics relates to the world and universe around us
- Use mathematical equations to predict motion
- Apply Newton's laws to everyday situations
- Gather evidence to support conservation of energy
- Use mathematical models to predict electrostatic forces
- Understand the nature of waves, including sound and light.

PHYSICS WITH ROBOTICS
SC615
Year:
Credit: 1
This introductory physics course is intended for 9th grade students who may be interested in a technology-related career such as engineering, computer programming, automotive technology, software or game development. Students will learn important concepts in physics such as kinematics, Newtonian mechanics, energy transformations, momentum, gravitation, electricity, waves, light, color and sound. At the same time, students will also learn how to program a simple robotic device in order to model and explore physics concepts.
By the end of this year-long course, students will be able to:
- Demonstrate understanding of kinematics, Newton’s laws, energy, momentum, electricity, and waves.
- Write and edit code in order to solve an engineering problem
- Design and test mathematical models
- analyze, interpret, and communicate data effectively

AP SUMMER BRIDGE PROGRAM
This is a summer course that is designed for students who wish to take an AP science class, but who may not have met the requirements printed in the course catalog. Each Advanced Placement science course (AP Biology, AP Chemistry, and AP Physics) will have its own Summer Bridge class. The course will focus on reviewing and strengthening essential skills from the corresponding Honors classes.
Students who have met the prerequisites for their chosen AP class are also encouraged to take this summer course as a means to enrich or refresh their knowledge. Students who take and pass the proficiency test may choose to opt out of the Summer Bridge Program.
In order to successfully complete the Summer Bridge class a student must:
- attend all classes (no absences, tardiness, or early departures)
- complete all labs, activities, and summer homework assignments