



# HHS SCIENCE COURSES

2020-2021

# GRADUATION REQUIREMENT

- You must have 3 science classes.
- Required- 9<sup>th</sup> grade Physics
- Required- 10<sup>th</sup> grade Biology
- Required 3<sup>rd</sup> Science (10<sup>th</sup>- 12<sup>th</sup>)- You can pick from any of the other courses to meet the graduation requirement.
- Your science teacher can give you guidance on which class to pick for your 3<sup>rd</sup> science class.

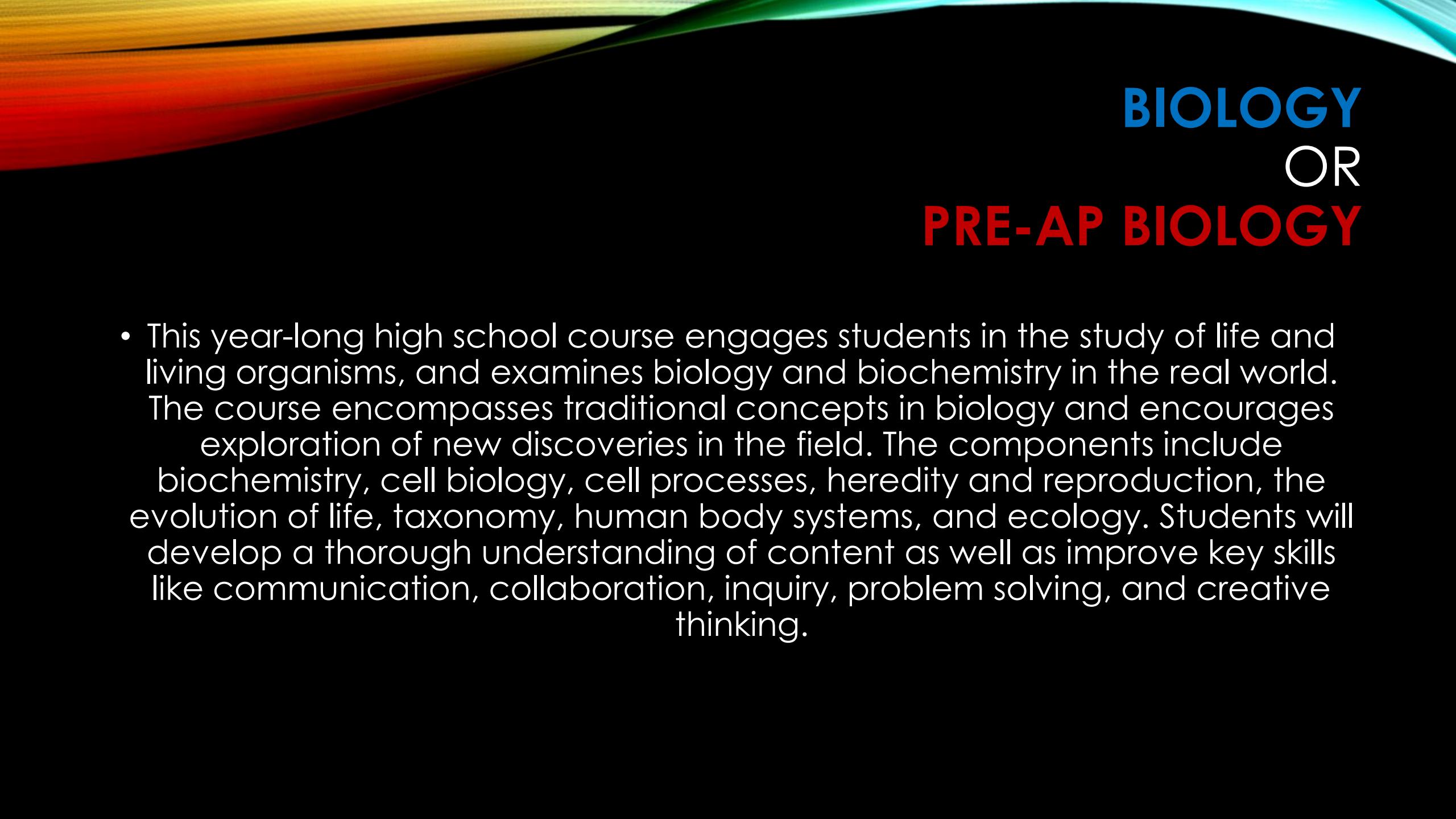
# SCIENCE COURSES OVERVIEW

- Biology
- Pre-AP Biology
- Chemistry
- Pre-AP Chemistry
- AMG
- Advanced AMG
- Human Anatomy & Physiology
- Advanced Anatomy & Physiology
- Systems Go I
- Systems Go II
- AP Biology
- AP Chemistry
- AP Physics I
- AP Physics II
- AP Environmental Science
- Dual Credit Biology
- Dual Credit Chemistry
- Dual Credit Physics
  - These courses are dependent on instructor availability.




# DUAL CREDIT

- Students can earn college credit through the NMJC for taking any of the following courses as Dual Credit (DC).
  - Biology I and II
  - Chemistry I and II
  - Physics I and II
- Students will receive the bonus points (7%) as well as earn credit for honor graduate status.



# BIOLOGY OR PRE-AP BIOLOGY

- This year-long high school course engages students in the study of life and living organisms, and examines biology and biochemistry in the real world. The course encompasses traditional concepts in biology and encourages exploration of new discoveries in the field. The components include biochemistry, cell biology, cell processes, heredity and reproduction, the evolution of life, taxonomy, human body systems, and ecology. Students will develop a thorough understanding of content as well as improve key skills like communication, collaboration, inquiry, problem solving, and creative thinking.



# CHEMISTRY OR PRE-AP CHEMISTRY

- This rigorous full-year course engages students in the study of the composition, properties, changes, and interactions of matter. The course covers the basic concepts of chemistry and includes virtual laboratory experiments that encourage higher-order thinking applications. There is also a wet lab component for each of these labs. The components of this course include the composition and properties of matter, changes and interactions of matter, organic chemistry, and nuclear chemistry. Throughout the course, students solve problems, reason abstractly, and learn to think critically.

# AMG OR ADVANCED AMG

- **AMG**- This laboratory science course is designed to introduce students to the principles and concepts of Earth and Space Science, as well as prepare them for additional coursework in the Earth and Space sciences. Concepts discussed include the origins of and objects in the universe, history of the Earth, Earth's structure and processes such as weathering, erosion, and plate tectonics, weather, climate, and human impact on the Earth.
- **Advanced AMG**- This laboratory science course is designed to introduce students to the principles and concepts of Earth and Space Science, as well as prepare them for additional coursework in the Earth and Space sciences. Concepts discussed include the origins of and objects in the universe, history of the Earth, Earth's structure and processes such as weathering, erosion, and plate tectonics, weather, climate, and human impact on the Earth. This course is designed to prepare students for AP Environmental Science and/or for students interested in careers related to environmental sciences and geology.



# **HUMAN ANATOMY & PHYSIOLOGY** OR **ADVANCED HUMAN ANATOMY AND PHYSIOLOGY**

- This course will require students to develop an understanding of the organization of the human body through studies of body systems, tissues and the cell and its chemistry. Students will spend time dissecting and viewing body systems as well as collecting and analyzing data. Students will use appropriate technology and be instructed in the safe use of laboratory equipment.

# SYSTEMS GO I

- **Systems Go I-** Students use applied sciences to engineer and build 4 rockets throughout the school year. The student will be informed of knowledge bases and problem-solving tools found within the four main energy systems: mechanical, fluid, electrical and thermal. Hands-on projects are contained within the inquisitive learning curriculum for the first semester to support problem-solving, critical thinking and cognitive reasoning.

# SYSTEMS GO II

- **Systems Go II-** Students study the history of rocketry and build a transonic rocket. The first semester encapsulates the 'early' design aspects of the vehicle's payload, the vehicle's performance and the vehicle's configuration. The students will begin to develop the flight profile. The profile will predict all flight dynamics and will determine propulsion performance and stresses that will be applied to the vehicle during the testing. The second semester will focus on the launching and flight of the rockets.

# AP BIOLOGY

- The AP Biology course is designed to offer students a solid foundation in an introductory college –level biology. By structuring the course around the four big ideas, enduring understandings, and science practices I assist students in developing an appreciation for the study of life and help them identify and understand unifying principles within a diversified biological world.
- At the end of the course, students will have an awareness of the integration of other sciences in the study of biology, understand how the species to which we belong is similar to, yet different from, other species, and be knowledgeable and responsible citizens in understanding biological issues that could potentially impact their lives.
  - Students will be required to take the AP Biology exam in May.
- Students will receive the bonus points (10%) as well as earn credit for honor graduate status

# DUAL CREDIT BIOLOGY

- Students who meet the Accuplacer requirements will be able to take Dual Credit Biology I and II.
- 4 hours of credit for General Biology I (Fall).
- 4 hours of credit for General Biology II (Spring).
- General Biology I stresses the concepts, characteristics, and diversities of life. Emphasis is placed upon the scientific method, the chemistry of living organisms, cell structure and function, photosynthesis, cellular respiration, cell reproduction, inheritance, molecular genetics, and biotechnology.
- General Biology II stresses the origins of life, the diversity of viruses, bacteria, protists, and fungi; the diversity of plants, plant structure and function; animal diversity, animal structure and function; as well as evolution, animal behavior, ecology of populations, ecosystems, and environmental concerns.

# AP CHEMISTRY

- The AP Chemistry course is designed to be the equivalent of a college introductory chemistry course. Topic emphasis includes: Structure of Matter (atomic theory and bonding); States of Matter (gases, liquids, solids, and solutions); Reactions (types of chemical reactions, stoichiometry, equilibrium, kinetics, and thermodynamics); and Descriptive Chemistry (labs). It will include extensive lab work and problem solving. This course will prepare students for the AP Chemistry Exam given in May.
  - Students will be required to take the AP Chemistry exam in May.
- Students will receive the bonus points (10%) as well as earn credit for honor graduate status

# DUAL CREDIT CHEMISTRY

- Students who meet the Accuplacer requirements will be able to take Dual Credit Chemistry I and II.
- 4 hours of credit for General Chemistry I (Fall).
- 4 hours of credit for General Chemistry II (Spring).
- General Chemistry I is a comprehensive study of chemical behavior of matter. The study of atomic theory, chemical bonding, elemental periodicity, nomenclature, and physical properties in relation to structure are the major topics covered in this course.
- General Chemistry II is a continuation of General Chemistry I. Major topics include solutions, equilibrium, elementary thermo-dynamics, reaction kinetics, acids-bases, and electro-chemistry.

# AP PHYSICS I

- This course is designed to prepare students for both college-level physics and success in AP Physics II. Areas of study include Kinematics, Dynamics, Energy, Momentum, Rotational and Circular Motion, Circular motion, and Waves. It will also introduce electric circuits.
  - Students will be required to take the AP Physics I exam in May.
- Students will receive the bonus points (10%) as well as earn credit for honor graduate status

# AP PHYSICS II

- This AP Physics course is designed to be the equivalent of a college introductory physics course. Areas of study include fluid mechanics; thermodynamics; electricity and magnetism; optics; atomic and nuclear physics.
  - Students will be required to take the AP Physics II exam in May.
- Students will receive the bonus points (10%) as well as earn credit for honor graduate status

# DUAL CREDIT PHYSICS

- Students who meet the Accuplacer requirements will be able to take Dual Credit Physics I and II.
- 4 hours of credit for General Physics I (Fall).
- 4 hours of credit for General Physics II (Spring).
- General Physics I involves the principles of mechanics and heat.
- General Physics II is a continuation of General Physics I, with a study of magnetism, electricity, sound, and light.

# AP ENVIRONMENTAL SCIENCE

- The AP Environmental Science course is designed to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world; to identify and analyze environmental problems both natural and human-made; to evaluate the relative risks associated with these problems; and, to examine alternative solutions for resolving and/or preventing them. This course will embrace topics from geology, biology, environmental studies, environmental science, chemistry and geography. The course will include a laboratory component and field trips to resource areas and hands-on investigation.
- Students will be required to take the AP Environmental Science exam in May.
- Students will receive the bonus points (10%) as well as earn credit for honor graduate status